Petition for Amendment of Site Certification Big Bend Power Station Unit 4 — PA 79-12T

Big Bend III Solar Project

Prepared for:

TECO TAMPA ELECTRIC AN EMERA COMPANY

Prepared by:

ECT Environmental Consulting & Technology, Inc.
1408 North Westshore Boulevard, Suite 115, Tampa Florida 33607
ECT No. 200628-0100

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List of Acronyms and Abbreviations

AC	alternating current
APE	area of potential effect
ASC-1	Agricultural, Single-Family Conventional (land use category)
BB	Big Bend
BMP	best management practice
CCR	coal combustion residuals
CHHA	Coastal High Hazard Area
CO_2	carbon dioxide
COC	condition of certification
CRAS	cultural resources assessment survey
DC	direct current
ECT	Environmental Consulting & Technology, Inc.
ESA	Endangered Species Act of 1973
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDHR	Florida Division of Historical Resources
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
First Solar	First Solar Electric, LLC
Fla. Stat.	Florida Statutes
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FLUM	future land use map
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
ft	foot
FWC	Florida Fish and Wildlife Conservation Commission
I-75	Interstate 75

List of Acronyms and Abbreviations
(Continued, Page 2 of 2)

kV	kilovolt
LDC	land development code
LI	Light Industrial (land use category)
LOS	level of service
MW	megawatt
MW_{AC}	megawatt alternating current
NAVD88	North American Vertical Datum of 1988
NHPA	National Historic Preservation Act of 1966
NLAA	not likely to adversely affect
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
OSW	Other Surface Water
PPSA	Florida Electrical Power Plant Siting Act
PV	photovoltaic
RES-20	Residential-20 (land use category)
RES-6	Residential-6 (land use category)
RMC-16	Residential-Multifamily, Conventional (land use category)
SPCC	spill prevention, control, and countermeasures
Tampa Electric	Tampa Electric Company
TBRPC	Tampa Bay Regional Planning Council
TIA	Tampa International Airport
US 301	U.S. Highway 301
US 41	U.S. Highway 41
USFWS	U.S. Fish & Wildlife Service

1.0 Introduction

Tampa Electric Company (TEC) is planning to expand its solar electric generation capabilities at its existing Big Bend (BB) Power Station in southwestern Hillsborough County, Florida (see Figure 1-1). The proposed expansion will involve the installation and operation of new photovoltaic (PV) solar panels on approximately 92.7 acres of land in the eastern portion of the BB Power Station property. The area was incorporated into the BB Power Station certified site boundary as part of the Big Bend Modernization site certification modification approved in January 2018. The new facilities will be capable of producing approximately 15 megawatts (MW) alternating current (MW_{AC}). The planned facility will be referred to as the BB III Solar Project, or Project.

The purpose of this petition for amendment of the site certification for BB Power Station (PA 79-12) is to obtain certification (i.e., approval) for the construction and operation of the proposed BB III Solar Project on the total approximately 92.7-acre Project Site (Site).

Tampa Electric is proposing the BB III Solar Project to meet certain of its business needs based on potential future regulations, focus group results polling its customers' desire for solar energy, and economic benefits. Further, its strategic considerations for the Project are designed to address the renewable energy and sustainability climate of the electric utility industry, including the following benefits:

- Renewable solar generation is one pathway to help lower Tampa Electric's overall carbon dioxide (CO_2) emissions.
- The Project addresses increased interest in utility-scale ownership of PV solar facilities.
- Tampa Electric has received positive response to its other solar projects at BB and Tampa International Airport (TIA), and this Project builds on that goodwill.
- The Project provides energy diversity.

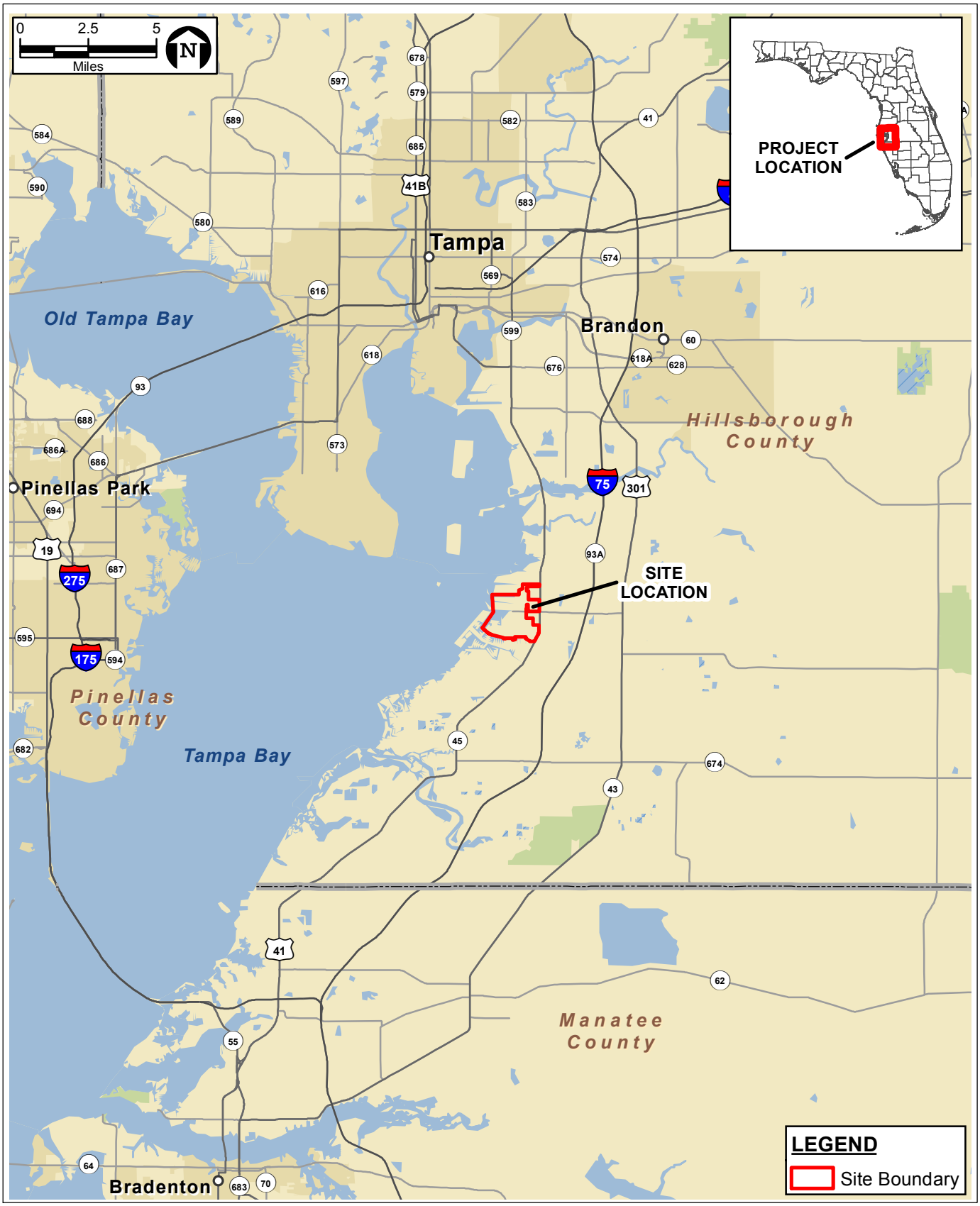


FIGURE 1-1.
LOCATION OF BIG BEND III SOLAR PROJECT
BIG BEND POWER STATION

Sources: FDOT, 2020; ESRI, 2020; ECT, 2021.

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- The Project offers capacity value in higher energy demand months.
- Tampa Electric would own the environmental attributes and any future renewable energy credits from the BB III Solar Project.

The proposed BB III Solar Project will be located on approximately 92.7 acres of Tampa Electric-owned property at the BB Power Station site. Currently, facilities on the Big Bend Station property include two coal-fired units (i.e., Units 3 and 4), a two-on-one, combined-cycle natural gas-fired unit, and various associated facilities to support the power generation units. The property also includes the approximately 23-MW BB I Solar project power generating facility, which was placed in service in February 2017. In addition, the site contains Tampa Electric's Manatee Viewing Center, which has hosted more than 5 million visitors since it opened in 1986, and the Florida Conservation and Technology Center, which is a partnership between Tampa Electric, the Florida Aquarium, and the Florida Fish and Wildlife Conservation Commission (FWC).

Portions of the BB Power Station property were certified in August 1981 (PA 79-12T) for the addition of Unit 4, pursuant to the Florida Electrical Power Plant Siting Act (PPSA), Sections 403.501 through .518, Florida Statutes (Fla. Stat.). The original certification and conditions of certification (COCs) covered only the construction and operation of BB Unit 4 and associated facilities. Units 1, 2, and 3 were not subject to PPSA requirements since the units were constructed prior to the effective date of the PPSA. The BB I Solar facilities were added to the certified facilities in 2017, based on Tampa Electric's request for an amendment of the site certification, which was approved by the Florida Department of Environmental Protection (FDEP) on May 9, 2016. The most recent modification to the site certification was approval of the Big Bend Modernization Project, which incorporated the inclusion of the Project Site to the certified boundary. A recent amendment for a battery energy storage system pilot project was approved on April 9, 2019.

Figure 1-2 shows the certified boundary of the BB Power Station site. Currently, the certified area includes approximately 1,774 acres of Tampa Electric-owned property.

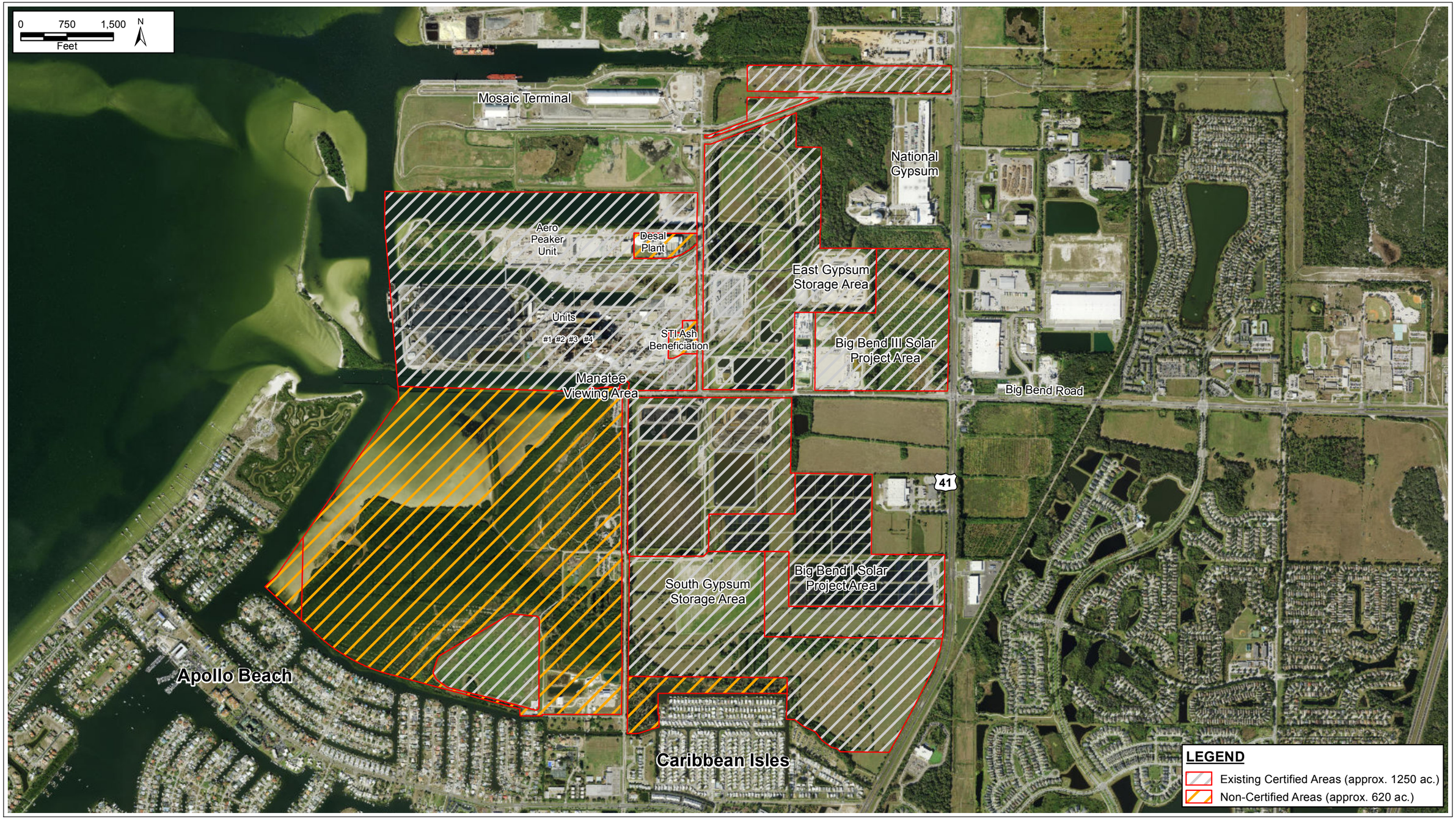


FIGURE 1-2.
BIG BEND POWER STATION SITE
PPSA CERTIFIED AND NONCERTIFIED AREAS

Sources: SWFWMD Imagery, 2020; TECO, 2021; ECT, 2021.

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Under the PPSA, this petition for amendment of the site certification is being filed with the FDEP Siting Coordination Office and submitted to the affected agencies and other parties to the original and any subsequent certification proceedings. The petition includes descriptions of the proposed BB III Solar Project facilities and anticipated environmental effects due to the construction and operation of the Project. Of note, the Project will not involve any impacts to wetlands, other than shading, and applicable environmental resource permit application forms and supporting information (i.e., primarily related to stormwater management systems) are provided as an attachment in accordance with the COCs for the BB Power Station PA 79-12T, January 28, 2020.

2.0 Project Description

TECO's proposed BB III Solar Project will involve the construction and operation of an approximately 15-MW_{AC} renewable solar energy generation facility. The Project will be located on Tampa Electric's existing BB Power Station site in southwestern Hillsborough County, Florida, approximately 10 miles south of the city of Tampa. The BB Power Station site is located between U.S. Highway 41 (US 41) and Tampa Bay and just north of the unincorporated Apollo Beach community. Several other industrial facilities, such as the Mosaic Company phosphate marine terminal and a National Gypsum wallboard facility, are located north of the BB Power Station site.

2.1 Project Location

As shown in Figure 2-1, the proposed BB III Solar Project will be located in an approximately 92.7-acre area in the eastern portion of Tampa Electric's BB Power Station property (Project Site). The Project Site consists primarily of fallow agricultural land located in the northwestern quadrant of the intersection of US 41 (a four-lane, divided highway) and Big Bend Road. The western portion of the Project Site is in use as a laydown area for construction of the new natural gas-fired unit. The western adjacent properties are a cement manufacturing facility and a former gypsum storage area. To the north is undeveloped land followed by National Gypsum (a wallboard manufacturer). To the east is US 41 followed by a gasoline station and industrial/ warehousing uses. To the south is vacant land owned by TEC. The nearest residential uses are located at least 0.5 mile to the east and southeast.

The Project Site is relatively flat at approximately 5 feet (ft) above mean sea level (see Figure 2-2). Project Site soils consist of fine, poorly drained sand with a seasonal high-water table near the land surface to a depth of approximately 10 inches during wet periods. However, during prolonged dry periods, the water table can drop to 40 inches below land surface.

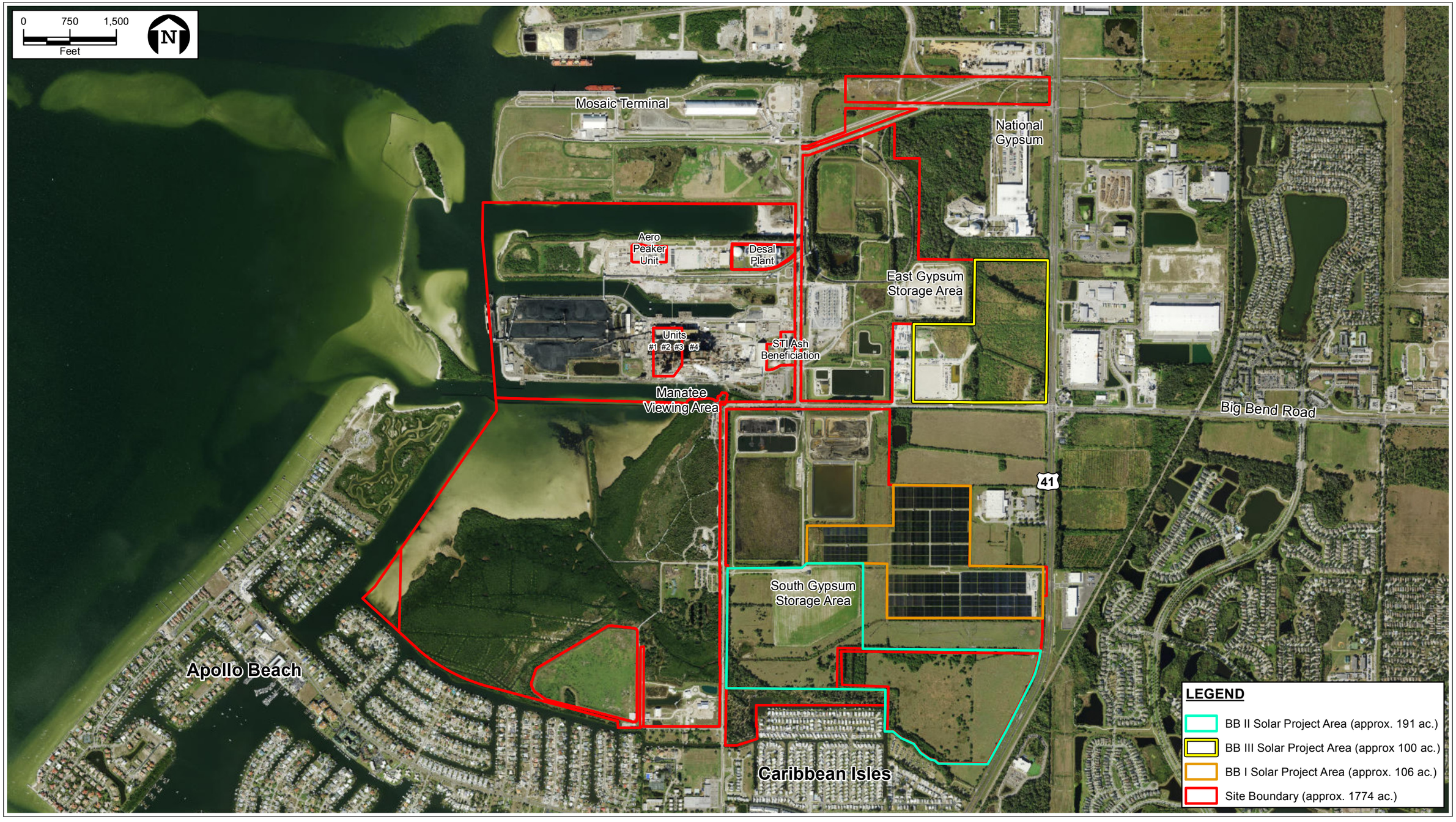


FIGURE 2-1.

BIG BEND III SOLAR PROJECT AREA ON
BIG BEND POWER STATION SITE

Sources: FLDOT, 2017; TECO, 2016; ECT, 2016.

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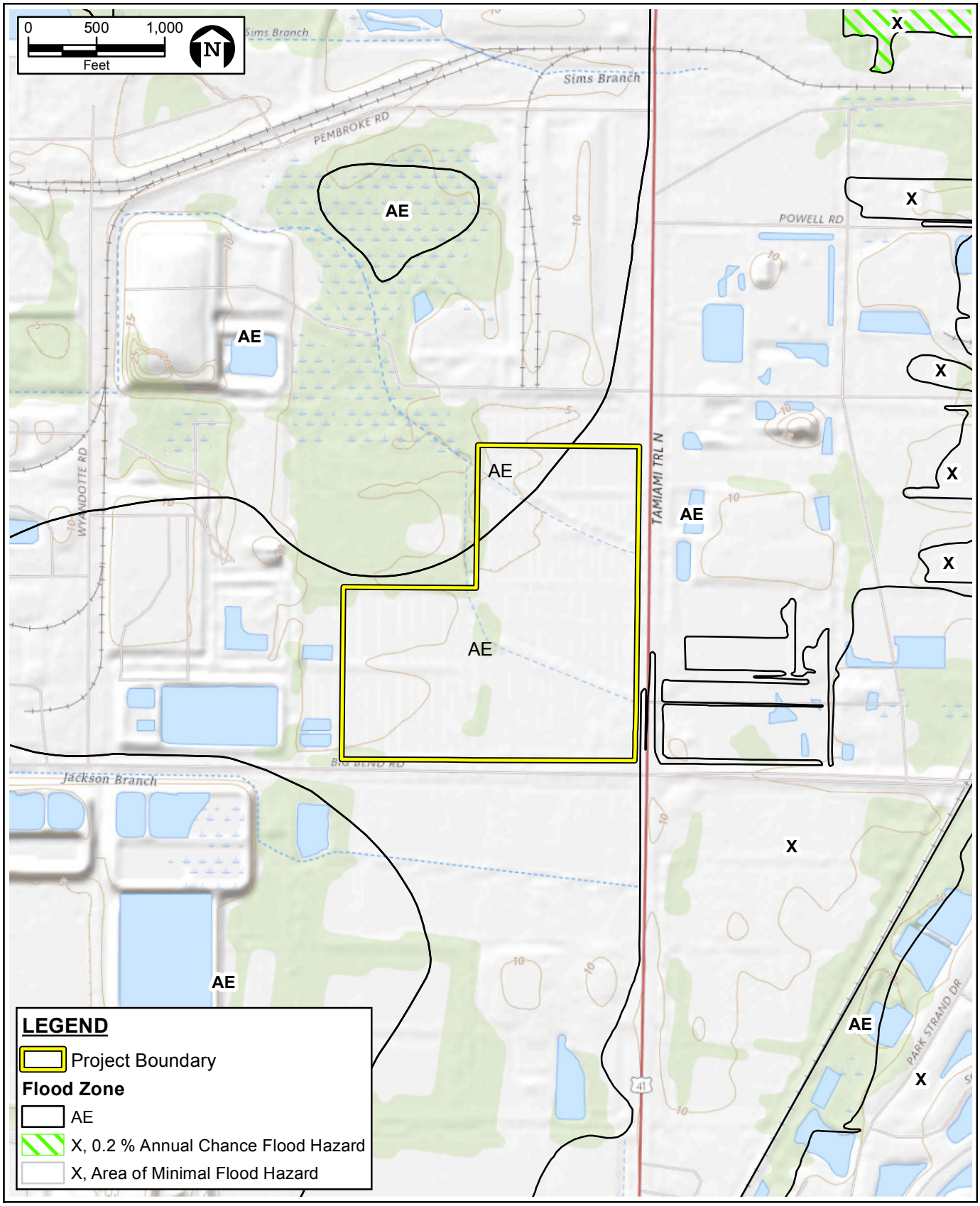


FIGURE 2-2.

TOPOGRAPHIC AND FLOOD ZONE MAP
BIG BEND III SOLAR PROJECT

Sources: FEMA, 2017; USGS, Gibsonton Quad, 2016; ECT, 2021.

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According to the Federal Emergency Management Agency (FEMA) flood insurance rate map information shown on Figure 2-2, the majority of the Project Site is located within the 100-year flood zone AE with base flood elevations of 10 to 11 ft North American Vertical Datum of 1988 (NAVD88).

Most of the Project Site consists of fallow agricultural fields that are not currently planted. The western approximately 29 acres are cleared and in use as construction laydown (see Figure 2-3). A review of historical aerial photographs (1938 and 1957) indicates the large ditches on the Project Site were constructed prior to 1938 and possibly as early as the 1920s when South Tamiami Trail (US 41) was constructed along the eastern boundary. The ditches carry flow from the highway and drain into a swamp located offsite to the west, which discharges via a tidally influenced ditch into Hillsborough Bay. The Site was cleared and apparently used for row crops or fish farming by the 1950s. The review of a 1968 aerial photograph and later historical aerial photographs indicates a horticultural nursery was present in the southern portion near the intersection of South Tamiami Trail and Big Bend Road for several decades. Although row crop furrows are evident on aerial photographs from the early 2000s, cultivation appears to have ceased around 2010 or 2011. The land has been abandoned since that time and has recruited considerable invasive vegetation. Most of the Site not being used for laydown is comprised of the unmanaged growth of invasive species such as Brazilian peppers (*Schinus terebinthifolia*), tallowtrees (*Triadica sebifera*), and cogongrass (*Imperata cylindrica*) and agricultural weeds such as Caesarweed (*Urena lobata*), common ragweed (*Ambrosia artemisiifolia*), and guineagrass (*Urochloa maxima*). The land currently in use as a laydown yard and staging area has a surface of gravel with upland cut ditches and a pond to handle stormwater. A portion of the uplands contains monocultures of exotic species such as Brazilian peppers and Australian pines (*Casuarina equisetifolia*), while remnant areas of live oak (*Quercus virginiana*) are also present. There are several upland cut ditches on the Site that drain to the west and one man-made excavation that appears to have been the result of old fencing and other infrastructure removal in the past. The area maintains enough water to support a wetland plant community of southern cattails (*Typha domingensis*) and coastalplain willows (*Salix caroliniana*).

As shown in Figure 2-3, the western portion of the Project Site is in use for construction laydown activities. It is anticipated that this area will no longer be required for this purpose by the third quarter of 2023.

2.2 Project Description

The proposed BB III Solar Project will involve the construction and operation of an approximately 15-MW_{AC} renewable solar energy generation facility. The facility will consist of multiple arrays of solar PV panels, an electrical collection system and direct current (DC)-to-alternating current (AC) inverters, a new underground, 34.5-kilovolt (kV) transmission line interconnection to a medium-voltage sectionalizing cabinet on the BB II Solar site, access roads, and stormwater management measures. Figure 2-4 shows the layout of the proposed BB III Solar Project facilities on the Project Site.

Figure 2-4 shows the layout of the proposed BB III Solar Project facilities on the Project Site.

TEC retained Culpepper & Terpening, Inc., to design the BB III Solar Project. The proposed renewable energy generation facility will employ thin film PV panels that absorb sunlight and directly produce electricity. The Project will have a maximum generation capacity of approximately 15 MW_{AC} and will be owned by TEC. The final Project design may be adjusted based on results of ongoing engineering and site studies but will not alter the Project's overall footprint or maximum generation capacity.

In general, solar electric generation facilities consist of three main systems: the PV field and support structures, an electrical collection and inverter system, and the electrical substation. The PV panels are anti-reflective coated and will be attached to a single-axis tracking system mounted on embedded (pounded) steel posts. The tracking system allows the panels to rotate east-to-west throughout the day to track the movement of the sun, maximizing energy yield. Support posts will extend approximately 4 to 7 ft above grade to elevate the exposed electrical equipment at least 1 ft above established base flood elevations. When fully constructed, the typical height of horizontal PV panels will be approximately 6 ft, with a maximum height of up to 15 ft at full rotation.

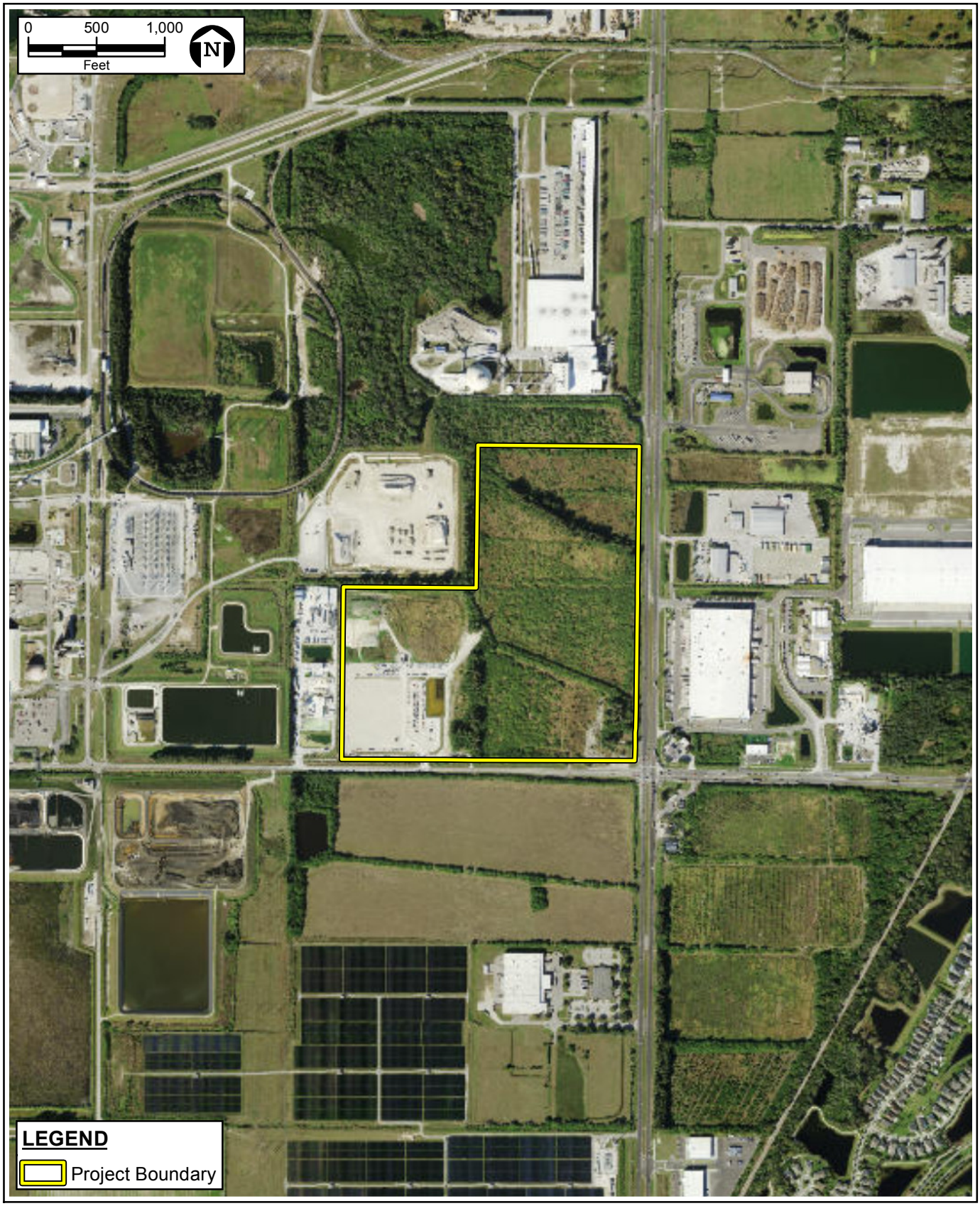


FIGURE 2-3.

BIG BEND III SOLAR PROJECT

Sources: SWFWMD Imagery. 2020; ECT, 2021.

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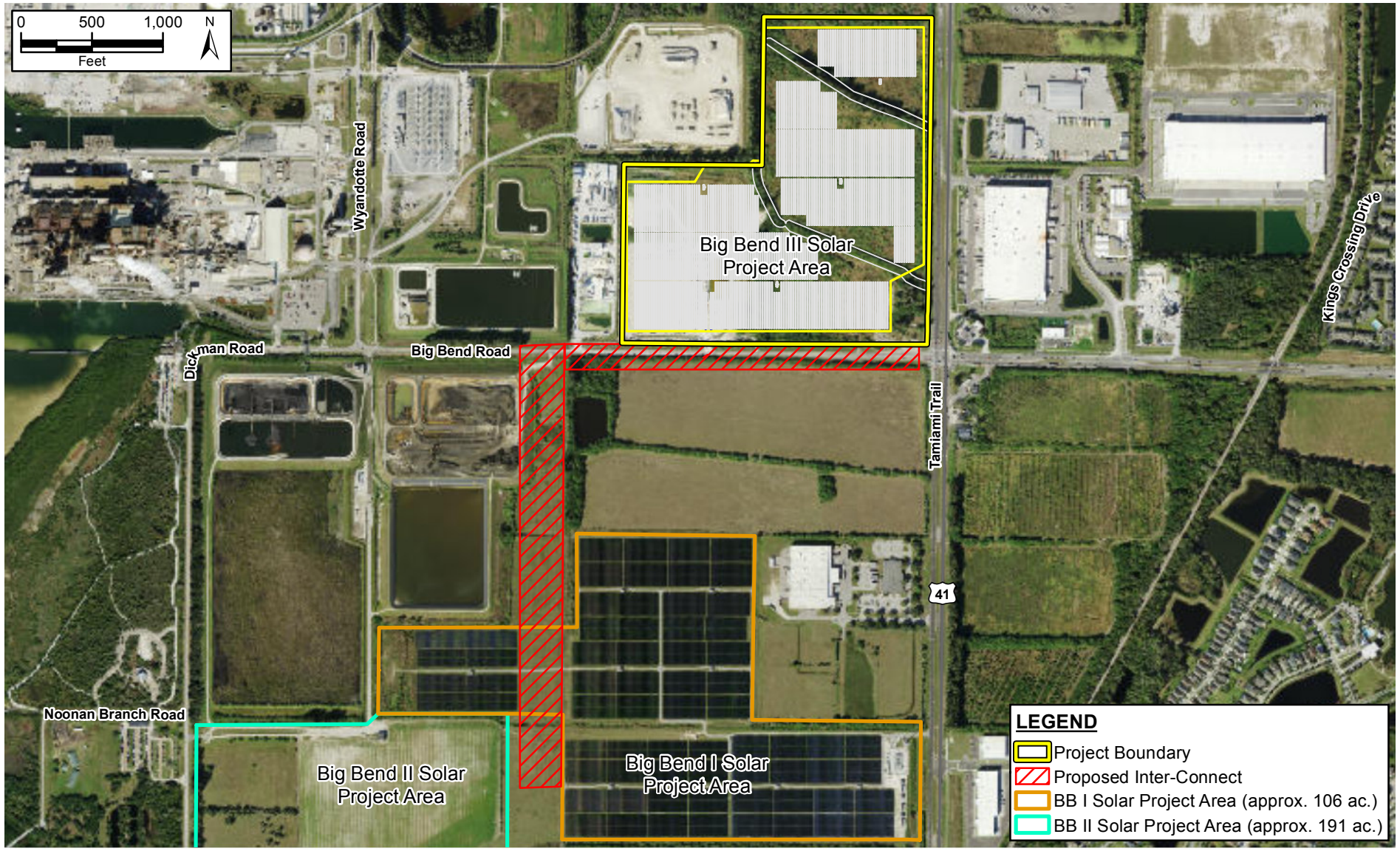


FIGURE 2-4.

SITE DEVELOPMENT PLAN
BIG BEND III SOLAR FARM
HILLSBOROUGH COUNTY, FLORIDA

Sources: SWFWMD, 2020; ECT, 2021.

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M:\acad\2020\200628\BigBend3_SiteLayout.mxd NAD 1983 StatePlane Florida West FIPS 0902 FeetTransverse Mercator unash 7/8/2021 1:18:02 PM

The PV panels will be arranged in north-to-south rows with center-to-center spacing of approximately 12 to 16 ft. The rows of PV panels will be organized into electrical groups referred to as "arrays." The arrays will include inverters that convert the DC power from the solar panels to AC power, which is utilized on the power grid. Each array will encompass approximately 15 acres to produce approximately 3 MW of electricity and will include one modular inverter. The size of each array will depend on the capacity of the inverters mounted on the array's associated inverter skid. Each inverter skid is anticipated to be an approximately 10-ft-by-35-ft structure up to 15 ft in height. The inverter skids will be mounted on steel or concrete structures to be elevated above base flood elevation. Each inverter skid will have an associated transformer to step up electricity voltage from the inverter output voltage, which will minimize electrical losses in the collection system. From each such transformer, electricity will be conveyed via a collection system, where all circuits will be combined. To interconnect the BB III Solar Project to the electrical grid, a new underground, 34.5-kV transmission line will be constructed from the Project Site to the BB II Solar Project along the existing 230-kV transmission line corridor located to the west. The Project will have a maximum capacity of 15 MW_{AC} electricity for transmission into the power grid and will interconnect to the existing electrical substation at the proposed BB II Solar facility located south of the Project Site. The interconnection will be an underground, 34.5-kV feeder from the Project, west along either the northern or southern right-of-way of Big Bend Road, and south within an existing transmission line corridor to a sectionalizing cabinet located on the BB II Solar site. Figure 2-4 depicts the interconnection route.

Figure 2-5 provides a representative photograph of a typical solar PV panel array. Figure 2-6 provides a representative photograph of a typical single-axis tracking solar PV panel array and steel support structures at ground level. Figure 2-7 presents an example of the elevated inverter skid.

A 6-ft-tall security fence with 12 inches of barbed wire will surround the solar facility. A 20-ft-wide, aggregate base, compacted access road will be installed from a proposed driveway from Big Bend Road into the Project Site. The driveway will be designed in accordance with applicable permitting standards. A second, temporary access from US 41 for construction traffic



FIGURE 2-5.

PHOTOGRAPH OF TYPICAL SOLAR PV PANEL ARRAY

Source: First Solar, 2017.

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FIGURE 2-6.

PHOTOGRAPH OF TYPICAL SOLAR PV PANEL ARRAY AND SUPPORT STRUCTURES AT GROUND LEVEL

Source: B&M, 2016.

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FIGURE 2-7.

PHOTOGRAPH OF ELEVATED INVERTER SKID

Source: B&M, 2016.

will be provided for right-in, right-out movements. The temporary access will be designed and constructed in accordance with Florida Department of Transportation (FDOT) specifications. The most critical/heaviest loads utilizing the access road will be the inverter skid deliveries. A 20-ft-wide perimeter road will be constructed on the interior side of the Project fence. The surfacing of this road will be compacted native soil or aggregate base. Approximately 12- to 20-ft-wide interior roads will be installed for access to the arrays and inverter skids. These interior roads will be constructed at grade and may incorporate a geotextile fabric underlayment.

2.3 Construction Activities

Construction activities for the Project will consist of the following:

- Best management practices (BMPs) implementation for erosion control and site clearing
- Grading and site preparation, including fencing and roadway installation
- Foundation and solar panel support racking installation
- PV panel and inverter skid installation
- Electrical collection system installation
- Testing and commissioning

Initial site clearing activities within the Project boundary will involve removal of trees necessary for solar array installation and prevention of shading on the panels. Trees within the actual solar array/inverter and roadway areas will be entirely removed, including stumps and roots. Areas disturbed by grading will be seeded with native grasses. Sloped areas particularly subject to erosion will be protected by seeding and other appropriate erosion control methods. Herbicides will be used to treat tree stumps during initial clearing and for weed and vegetation management during operations. Site preparation activities will be conducted in accordance with applicable stormwater management requirements. The stormwater plans will primarily involve shallow drainage ditches/swales along access roads. Since the solar panels and inverter skids are mounted on piles above the 100-year floodplain elevation, and the panels themselves do not alter drainage patterns, stormwater runoff characteristics will be basically the same as existing conditions.

During construction, water is not anticipated to be needed to support the activities. Drinking water for the construction workforce will be provided by bottled water, and portable toilets will

be used for sanitary service. In the event water is needed to achieve proper compaction of roadway or equipment areas, water would be hauled to the site by tanker truck.

Construction of the BB III Solar Project may require a peak workforce of up to 300 management, supervisory, and craft workers. Workers will access the site from Big Bend Road, which is expected to have minimal impact on traffic flow. In addition, Project construction is expected to require approximately 10 to 12 truck deliveries per day for materials and equipment. The Project will be built in one phase.

The Project has been designed to avoid impacts to jurisdictional wetlands, wetland buffers, and significant other surface waters, such as natural streams and other important drainages. Staging areas will be located within the Project boundary footprint. Where proposed construction activities occur near wetlands or water bodies, appropriate erosion and sediment control BMPs will be implemented to prevent disturbance of the wetlands or wetland buffers. Sediment controls may include installation of staked silt fences along wetland buffers. If required, a spill prevention, control, and countermeasures (SPCC) plan will be developed and implemented for Project construction and operation. The SPCC plan would address fuels, lubricants, and hydraulic fluids expected to be used for construction equipment. The equipment will be properly maintained to minimize leaks and, as warranted, prevent spills.

PV solar panels are designed to absorb radiation (i.e., sunlight), not to reflect it. To minimize glare issues, the proposed solar PV panels will be constructed of dark-colored (i.e., blue or black) materials and covered with an antireflective coating. Modern solar PV panels reflect as little as 2 percent of incoming sunlight. Also, a number of PV solar installations with current anti-reflective technology have been successfully located at or near United States airports, such as TEC's solar PV installation at the existing BB I Solar Project and at TIA in Tampa.

2.4 Operation Activities

After commercial service begins, solar PV electric generating facilities typically require only minimal operational and maintenance activities. BB III Solar Project facilities will automatically operate and synchronize with the transmission grid every day and disconnect every night. The

facilities will be operated remotely using electronic communications systems by TEC personnel currently operating other electric generating facilities at the BB Power Station. The remote communication systems will be used to monitor system electrical output, performance, and reliability and identify malfunctioning equipment or systems. Therefore, the Project will not require onsite operational personnel. Existing TEC personnel will periodically inspect the facilities and perform maintenance, as needed.

The operation of the BB III Solar Project electric generation facilities will produce up to 15 MW_{AC} of clean, renewable power and will not produce air pollutant emissions.

Project operations will not require the use of water. Because of frequent rainfall in the Project region, washing of the solar PV panels is not anticipated, and there are no plans for other water use, such as irrigation. Therefore, the Project will also not produce any wastewater that requires treatment or discharge/disposal. As discussed previously, the stormwater management plan for the Project will be designed to meet applicable permitting requirements. The plan will primarily involve shallow drainage ditches/swales and culverted crossings along the access road. Since the solar panels and inverter skids are mounted on piles above the 100-year flood elevation, stormwater runoff characteristics will be basically the same as existing conditions.

Project operations will not produce solid or hazardous wastes. Most of the equipment for the facility are self-contained modular units (i.e., solar panels, inverters, and transformers). If such equipment is broken or malfunctions and cannot be repaired, the equipment will be removed and replaced with a new unit. The broken equipment will be trucked offsite for appropriate repair or disposal. No chemicals, fuels, or lubricants will be stored on the site.

The operational life of the proposed BB III Solar Project is expected to be 25 to 30 years.

3.0 Environmental Effects of the Project

As required under the provisions of Rule 62-17.205(1) of the Florida Administrative Code (F.A.C.), Post-certification Amendments, the following subsections describe the expected potential effects of the proposed BB III Solar Project on the environment. These descriptions focus on the key areas of potential effects associated with the construction and operation of the Project. In general, due to the location, design, and nature of the technology, overall potential environmental effects of the Project are expected to be minor.

3.1 Air Quality

The proposed BB III Solar Project will involve the use of solar PV technology to convert sunlight into renewable electrical energy.

During construction of the Project, three general activities will produce air emissions. First, land clearing, grading, site preparation, and vehicle movement will produce fugitive dust emissions. Second, internal combustion engines in construction equipment will emit nitrogen oxides, CO_2, and other combustion products. Third, construction worker and delivery truck travel to and from the site will result in vehicular emissions. The level of emissions during construction will generally be low and will vary due to weather conditions and on an hourly and daily basis as construction progresses. As needed, appropriate measures will be used to control/limit air emissions such as watering trucks for dust suppression and proper equipment maintenance. Construction-related air emissions will be intermittent, limited to the Project Site, and temporary over the 4- to 8-month construction period. Any potential emissions are expected to have minimal impact on air quality in the Project Site.

During operation, the proposed Project will produce up to 15 MW_{AC} of power and will not produce air pollutant emissions. The solar PV technology for electric generation is considered a clean renewable energy technology. Therefore, the proposed Project will have a beneficial effect on air quality.

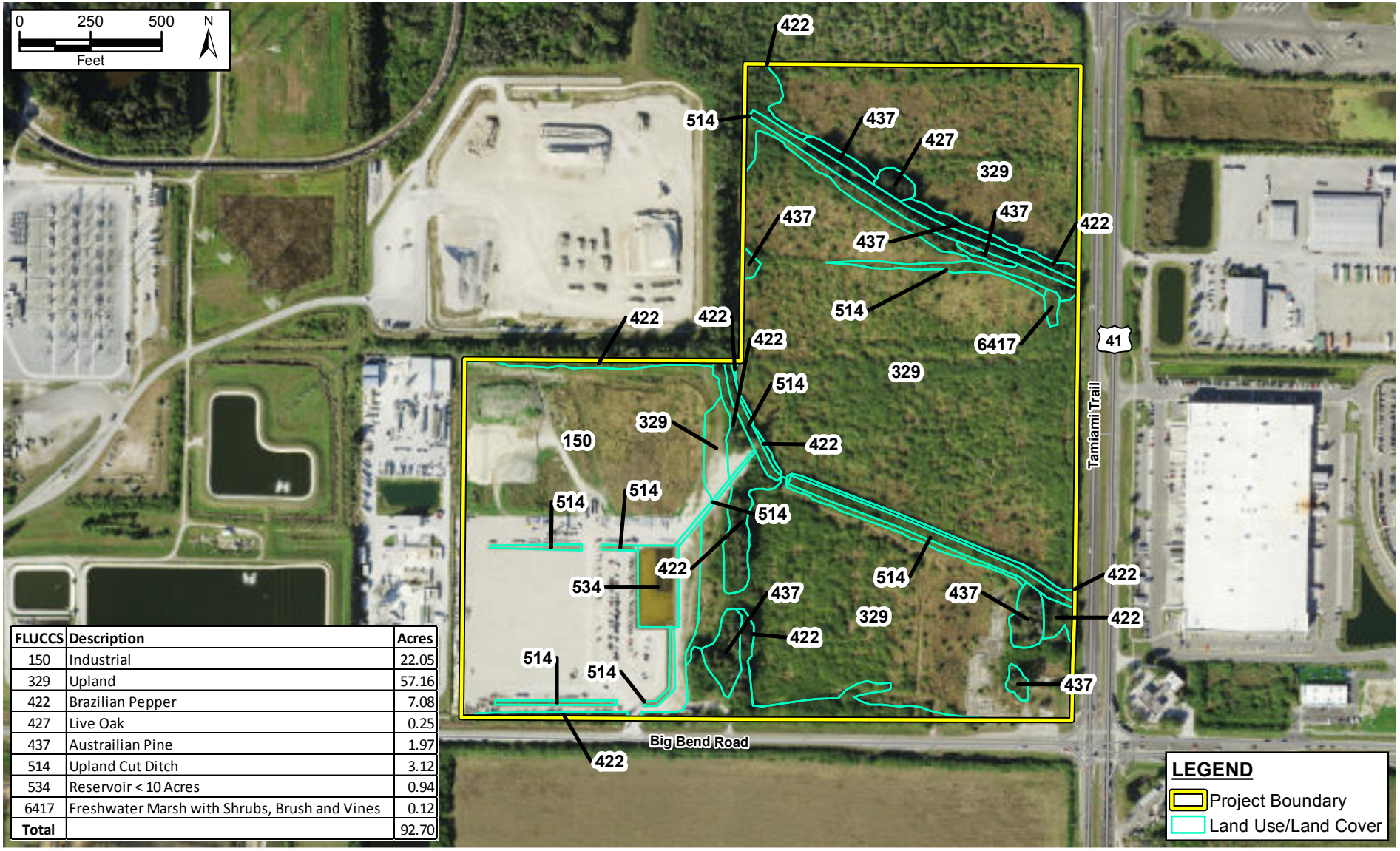
3.2 Surface Water

Historically, the Project Site has been used for agriculture, including a nursery and row crops, and had been developed with a residence. No agricultural activities have been conducted for approximately 10 years, and most of the Subject Property is not in any use. The western approximately 29 acres are in use as construction laydown. As shown in Figure 3-1, the Project Site has two surface water features that are ditches oriented northwest-to-southeast. Upland-cut agricultural drainage ditches occur throughout the Project Site. As shown in the proposed site development plan provided in Figure 2-4, the existing crossings of the two ditches will be improved with new culverts.

According to the Hillsborough County Stormwater Management Master Plan, the BB Power Station site, including the BB III Solar Project Site, is located within the Bull Frog/Wolf Branch watershed. The Project Site generally drains to the northwest and discharges into an unnamed creek that ultimately discharges to Tampa Bay, approximately 0.7 mile to the west.

Currently, water is not anticipated to be required for Project construction or operation. In the event water is needed during construction to achieve proper compaction of roadways or equipment pads or for fugitive dust control, limited amounts of water would be hauled to the Project Site by tanker truck. Also, no wastewater will be produced or discharged from Project construction or operation activities. Therefore, the Project is not expected to impact surface water resources in the area.

The stormwater management plan for the Project Site will be designed in accordance with applicable permitting surface water management regulations. Because of the generally flat topography of the Project Site requiring only minimal grading, stormwater runoff characteristics across the Project Site with the Project will be basically the same as the predevelopment, existing conditions. Minor grading will be performed along the primary access road from Big Bend Road within the Project Site. Roadside ditches/swales, approximately 6 inches deep, will be graded along the access road to provide for compensatory storage in accordance with applicable permitting requirements. During construction activities, appropriate BMP measures will be



FLUCCS	Description	Acres
150	Industrial	22.05
329	Upland	57.16
422	Brazilian Pepper	7.08
427	Live Oak	0.25
437	Austrailian Pine	1.97
514	Upland Cut Ditch	3.12
534	Reservoir < 10 Acres	0.94
6417	Freshwater Marsh with Shrubs, Brush and Vines	0.12
Total		92.70

FIGURE 3-1.

LAND USE / LAND COVER MAP

Sources: SWFWMD, 2020; ECT, 2021.

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implemented to control sedimentation and erosion. The graded areas will be revegetated with native grasses and will contain check dams to allow runoff to infiltrate. Appropriately designed culverts will be installed at internal roadway crossings of drainage features.

As discussed previously, much of the Project Site is located within the FEMA 100-year floodplain. The proposed solar panels and inverter skids will be located on piles/piers to elevate the equipment at least 1 ft above the 100-year flood elevation and allow stormwater flows to pass beneath the equipment without increasing flood depths. Therefore, no adverse impacts to surface waters or floodplains are anticipated because of Project construction or operation.

3.3 Groundwater

The proposed Project will not use groundwater during construction or operations. Due to the nature of the Project equipment and planned installation methods, no dewatering or deep excavations for foundations are needed during construction. Construction contractors will be required to follow appropriate measures to minimize the potential for spills of fuels, lubricants, or chemicals used during construction. In the unlikely event of a spill, appropriate containment and cleanup measures will be followed in accordance with applicable local, state, and federal regulations.

During operation, no fuels, chemicals, or other potentially hazardous materials will be stored on the Project Site. The onsite transformers on the inverter skids will contain nonhazardous vegetable and mineral oils, which do not normally require replacement.

Therefore, the proposed Project construction and operation are not expected to adversely impact onsite or offsite groundwater resources.

3.4 Ecology/Wetlands

The following subsections provide descriptions of the ecological resources on the proposed Project Site and summarize the expected impacts of construction and operation.

3.4.1 Wetlands and Land Use

To determine the ecological resources on the Project Site, Environmental Consulting & Technology, Inc. (ECT), ecologists conducted a wetlands and land use/cover survey of the Project Site on October 7, 8, and 13, 2020. The Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999) was used to identify the land use and cover types on the Project Site. These FLUCFCS categories were classified and mapped to Level III. The most current FLUCFCS does not differentiate among the various types of linear water bodies (i.e., linear water bodies are classified as FLUCFCS 510, Streams and Waterways). For the purposes of the BB III Solar Project, natural streams, artificially created linear water bodies, and channelized streams were separately described and classified using a modified Level III FLUCFCS (i.e., FLUCFCS 511, 512, and 513, respectively). Finally, a wildlife-based habitat classification scheme was included by using the Florida Natural Areas Inventory (FNAI) 2010 Guide to the Natural Communities of Florida. FNAI categories are based on "natural" areas. Disturbed areas are also categorized under Appendix 2, Altered Land Cover Types.

Figure 3-1 shows the location and extent of each of the vegetation/land use types and natural resources identified on the Site. Overall, seven categories/land uses were identified. As shown in Figure 3-1, most of the Site (i.e., approximately 59 percent) consists of other shrubs and brush and industrial (approximately 25 percent is in use as construction laydown). The construction laydown area encompasses approximately 29 acres in the western portion of the Site. The remaining land use types are Brazilian pepper, live oak, Australian pine, upland cut ditches, and freshwater marsh.

The following paragraphs describe land use and cover types.

100 Urban and Built-Up

150 Industrial (FNAI: Developed)—This area is almost one-third of the Site and is currently used as a laydown yard and staging area for an ongoing construction project. The area surface is gravel with upland cut ditches and a pond to control stormwater. The ditches and pond were not delineated because of heavy equipment and truck traffic in the area. Overflow of the pond drains directly east to Other Surface Water (OSW) No. 4.

300 Rangeland

329 Other Shrubs and Brush (FNAI: Abandoned Field/Abandoned Pasture)—This land was cleared in the late 1920s to 1930s and intensively cultivated from the 1940s to approximately 2010/2011. Since that time, the land has recruited a dense cover consisting of Brazilian peppers, tallowtrees, shrub verbena (*Lantana strigocamara*), saltbush (*Baccharis halimifolia*), cogongrass, guineagrass, sand burrs (*Cenchrus* spp.), caesarweed, beggarticks (*Bidens alba*), rose natalgrass (*Melinis repens*), fanpetals (*Sida* spp.), common ragweed, and other plants generally considered invasive species and/or agricultural weeds.

400 Upland Forests

422 Brazilian Pepper (FNAI: Invasive Exotic Monoculture)—The upland forest areas are heavily dominated by mature Brazilian pepper trees that have excluded almost all other plant species.

427 Live Oak (FNAI: Mesic Hammock)—There is a small stand of live oaks present in the northern field of the Site.

437 Australian Pine (FNAI: Invasive Exotic Monoculture)—Australian pines were planted along the ditches to prevent erosion and serve as windbreaks for the row crop fields. These trees were also planted in scattered locations on the Site. The ground cover under these trees is a thick layer of pine needles, which excludes the growth of other plant species.

500 Water

514 Upland Cut Ditches (FNAI: Canal/Ditch)—Sometime before 1938, the diagonal ditches across the Site were excavated. The spoils along the ditches were planted with Australian pines and have recruited Brazilian pepper trees. The interiors of the ditches are heavily shaded and sparsely vegetated. Some plants noted within the beds of the ditches are alligatorweed (*Alternanthera philoxeroides*), water hemp (*Boehmeria cylindrica*), peppervine (*Nekemias arborea*), widespread maidenfern (*Thelypteris kunthii*), and manyflower marshpennywort (*Hydrocotyle umbellata*). The flow was observed as slow in the ditches, and a minor tidal influence is possible especially during storm events. The water in the ditches is mostly dark, but some areas are turquoise with an oily sheen in places. Most of these ditches are similar (i.e., OSW1, OSW3 and OSW4), but one ditch follows along where a fence once stood, is shallow,

and is mostly defined by Brazilian peppers and a lack of herbaceous cover (i.e., OSW2). There are upland cut, man-made ditches that were also delineated along the roadsides outside property boundaries (i.e., OSW5, OSW6, OSW7, OSW8, and OSW9). These drainage ditches are mostly maintained by roadside mowing.

534 Reservoirs Less than 10 Acres (FNAI: Artificial Pond)—A small, man-made stormwater pond occurs in the industrial area of the Project Site (i.e., OSW13-534). This pond will be filled after construction on the Big Bend Unit 1 Modernization Project is completed.

600 Wetlands

6417 Freshwater Marsh with Shrubs, Brush, and Vines (FNAI: None)—This is a man-made excavation that appears to have been the result of old fencing and other infrastructure removal in the past. The area maintains enough water to support a wetland plant community of southern cattails and coastalplain willows. The western portion follows along where a fence once stood, is shallow, and is mostly defined by Brazilian peppers and a lack of herbaceous cover.

3.4.2 Wildlife and Listed Species

The FNAI database was accessed for Hillsborough County to review the listed animals, plants, and plant communities that could potentially occur within or in the vicinity of the Project Site. The Atlas of Florida Vascular Plants, Institute for Systematic Botany, University of South Florida, was consulted for proper plant species taxonomic nomenclature. The FWC Water Bird Colony Locator and Bald Eagle Nest Locator were accessed for the occurrence of documented wading bird rookeries or bald eagle nest sites within the surrounding area, respectively. The Audubon Florida Eagle Watch Bald Eagle Nest Locator was also accessed for more up-to-date information on bald eagle nesting. In addition, the U.S. Fish & Wildlife Service (USFWS) Wood Stork Nesting Colonies Map was reviewed for recent nearby wood stork colonies active between 2010 and 2019.

On October 7, 8, and 13, 2020, two ECT ecologists conducted surveys for listed animal and plant species on the Project Site. Survey methodologies for listed species were generally based on the most current FWC and USFWS guidelines available. The listed species surveys were conducted

in concert with wetlands delineations. Vehicular and pedestrian transects in combination with visual scanning were utilized in surveying most of the Project Site.

The Project Site is mostly degraded improved pasture with considerable intrusion of Brazilian pepper trees, especially along old fence lines and ditches. The wooded portions provide shrub and canopy for passerines, and the open grassy areas provide opportunities for raptors to hunt.

During the field survey, little wildlife was seen, except for northern mockingbird (*Mimus polyg*lottus), northern cardinal (*Cardinalis cardinalis*), European starling (*Sturnus vulgaris*), and palm warbler (*Setophaga palmarum*). No herpetofauna were seen. Raccoon (*Procyon lotor*) tracks and scat were seen in ditches. Small game trails were observed, possibly rabbit or rodent, but no other mammal signs were identified. The few wildlife species that were seen, as well as others in the area, have become adapted to the altered condition of the Site, and regional wildlife populations should not be significantly affected by Project development. No listed wildlife species with the potential to occur on the Project Site were observed during the field survey.

The potential for occurrence of the listed species on the Project Site was determined by a habitat analysis, literature review, and ground surveys. The FNAI Species Tracking List identified 23 listed plants and 21 listed animals (8 reptiles, 12 birds, and 1 mammal) as occurring within Hillsborough County, Florida. Based on an evaluation of habitat preference and distribution of species, out of the 44 listed plant and animal species recorded for Hillsborough County, no listed plant species, 12 listed animal species (5 reptiles and 7 birds), and 1 delisted but still protected bird species were identified as having the potential to occur within or in proximity to the Project Site. The following narrative provides more details regarding the listed/protected species that might occur onsite.

3.4.2.1 Reptiles

American Alligator and American Crocodile

American alligators (*Alligator mississippiensis*) occur in every county of Florida, inhabiting freshwater marshes, swamps, rivers, and lakes. The American alligator is federally protected by the Endangered Species Act of 1973 (ESA) as a threatened species due to a similarity of appearance to the American crocodile (*Crocodylus acutus*), a federally designated threatened

reptile species and threatened species by Florida's Endangered and Threatened Species Rule. This listing provides federal protection for alligators, while allowing for state-approved management and control programs. Because of their range of distribution in Florida, crocodiles are not expected to occur within the Project Site. No alligators were seen during the surveys, but they could be present in the larger ditches onsite. Since development is not anticipated to impact the drainage ditches, adverse effects to the American alligator are considered unlikely from construction activities, and there are no development restrictions associated with the species.

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*) is both a state-listed threatened species and candidate species for federal protection under the ESA. During the initial field surveys, 15 to 20 percent of the potentially suitable upland habitats located within and along Project Site limits were surveyed for gopher tortoise burrows. No gopher tortoise burrows were found during the surveys. A 100-percent gopher tortoise survey will be conducted prior to construction to locate tortoises and their burrows as required under FWC's Gopher Tortoise Permitting Guidelines (revised August 2020). If potentially occupied gopher tortoise burrows are found on the Project Site, appropriate authorizations will be requested from FWC prior to construction to relocate tortoises from the development footprint to an approved recipient site. Burrow commensal species will either be avoided or relocated prior to construction in accordance with FWC's Gopher Tortoise Permitting Guidelines. Any remaining gopher tortoise burrows located on the Project Site that are not within or near the development footprint, and therefore considered to not be potentially affected by clearing or construction activities, will be protected using exclusion fencing, if necessary.

Short-tailed Snake and Florida Pine Snake

The state-listed threatened short-tailed snake (*Stilosoma extenuatum*) and Florida pine snake (*Pituophis melanoleucus mugitus*) are fossorial species. The short-tailed snake is a small, slender fossorial snake with a gray colored body with several brown spots separated by yellow to red sections, a small head that is indistinct from its body, smooth scales, and a tail that makes up less than 10 percent of the body length. The Florida pine snake is a large, powerful snake with disproportionately small head that ranges from beige to tan in color. These fossorial species prefer xeric habitats, and the Florida pine snake is a commensal species commonly associated

with the tunnels of gopher tortoises as well as pocket gophers. Xeric upland habitats do not occur on the Project Site. Therefore, these two species of listed snakes are not expected to occur. Any Florida pine snakes or other commensals that might be encountered during authorized gopher tortoise burrow excavations would also be relocated in accordance with guidance found in the FWC Gopher Tortoise Permitting Guidelines prior to any construction activities.

Eastern Indigo Snake

Eastern indigo snakes (*Drymarchon corais couperi*) are federally and state-listed as a threatened species. Since eastern indigo snakes can be found in nearly any wooded upland habitat throughout Florida, they have the potential to occur on the project site. They are also a commensal species commonly associated with gopher tortoise burrows. Eastern indigo snake was not observed on the project site. However, TEC will voluntarily implement the measures described in their Standard Protection Measures for the Eastern Indigo Snake (August 12, 2013). These protection measures include, but are not limited to, training contractors in the proper identification of eastern indigo snakes and posting signs on the construction site to aid in the proper identification and procedures if an eastern indigo snake is encountered. If an eastern indigo snake is encountered, work in the area will be stopped until the eastern indigo snake has safely evacuated the area on its own. Since these guidelines will be followed for protection of the eastern indigo snake during clearing, development should receive a not-likely-to-adversely-affect (NLAA) determination using USFWS's 2010 amended August 13, 2013, eastern indigo snake programmatic effect determination key in review of U.S. Army Corps of Engineers permit applications. An NLAA determination would fulfill the requirements of Section 7 of the ESA. USFWS and FWC should concur with the finding, and no additional correspondence should be necessary.

3.4.2.2 Birds

Wood Stork

The wood stork (*Mycteria americana*) is a federal and state-listed threatened wading bird species. The FWC Water Bird Colony Locator was specifically reviewed for occurrence of wood storks in the area. The closest recorded wood stork colony is a potentially active nesting site located 10.83 miles to the northeast (name: Ferman Corporation; atlas number: 0; last active in 2019). The Project Site and environs contain suitable wood stork foraging habitat, but no wood

storks were seen during the wildlife surveys. Wood storks are not expected to be adversely affected by development of the Site because:

- The closest nesting site is 10.83 miles away. Therefore, regional wood stork nesting populations should not be disturbed by construction activities.
- The Project Site is surrounded by adequate habitat of better quality, so, during construction, any local wood stork populations should not be deprived of habitat within which to forage.
- Impacts to wetlands are not proposed. Therefore, the amount of suitable foraging habitat in the core foraging area of nearby colonies should not be affected.

Little Blue Heron, Tricolored Heron, and Roseate Spoonbill

Little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Platalea alata*) are all state-listed as threatened species. Wading birds inhabit freshwater, saltwater, and/or brackish water wetland habitats. The FWC Water Bird Colony Locator indicates the closest historical water bird colonies (last known as active in the 1990s) are located 3.67 miles to the northwest (i.e., Water Bird Colony atlas numbers: 615007 and 615333). None of the listed wading birds was seen onsite. Based on the presence of wetlands and ditches, wading birds have the potential to utilize the Project Site for foraging and nesting. No wading bird nests were found during ground searches. Wading bird populations in the immediate region should not be significantly affected by development, because there is ample foraging area of better quality occurring on adjoining lands. Therefore, the proposed construction activities and use of the Project Site will not impact the ability of wading birds to forage.

Florida Sandhill Crane

The Florida sandhill crane (*Antigone canadensis pratensis*) is state-listed as a threatened species. There are two subspecies of sandhill cranes that occur in Florida: the greater sandhill crane (*Antigone canadensis tabida*) and the state-designated threatened Florida sandhill crane. The Project Site has open land that would provide foraging habitat for Florida sandhill cranes. No potential nesting habitat for this species is present onsite. No Florida sandhill cranes or nest sites were seen during the surveys. FWC recommends that surveys for nesting sandhill cranes be conducted immediately prior to any construction that occurs during the January through August breeding season. If there is evidence of nesting during this period, FWC recommends any active

Florida sandhill crane nests be buffered by 400 ft to avoid disturbance by human activities. If nesting is discovered after construction has begun or if maintaining the recommended buffer is not possible, TEC will coordinate with FWC regarding mitigation options.

Florida Burrowing Owl

The burrowing owl (*Athene cunicularia floridana*) is state-listed as a threatened species that prefers open xeric pastures with low vegetation. There are no xeric pastures on the Project Site, and no burrowing owls or burrows were found. Since no burrowing owls or their burrows were seen during the surveys, the likelihood of occurrence for the burrowing owl is considered low.

Southeastern American Kestrel

Two subspecies of American kestrel occur in Florida: a northern subspecies (*Falco sparverius sparverius*) that winters between September and April and a resident, non-migratory subspecies, the southeastern American kestrel. The southeastern American kestrel is a state-listed threatened species. No kestrels were seen on the Project Site during the wildlife surveys. There is limited kestrel hunting habitat available on and in the vicinity of the Project Site.

Bald Eagle

Although the bald eagle is no longer classified by USFWS or FWC as threatened or endangered, it is protected under the Federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, as well as Florida State Bald Eagle Rule 62A-16.002, F.A.C. No bald eagles nor nest sites were observed during the wildlife surveys. According to the FWC Bald Eagle Nest Locator and Historical Bald Eagle Nesting Areas websites, a nest site is located approximately 0.3 miles to the east (i.e., Nest ID HL041/Nesting Area ID 979—last known active in 2010). Because the closest known bald eagle nest location is greater than 0.3 miles away and thus outside the 660-ft nest protection buffer, construction activities will not negatively impact bald eagles.

The Project Site offers minimal habitat for foraging and nesting/denning for most wildlife, except animals such as raccoons, opossums, and cattle egrets that have adapted to urban conditions. The nearby coastline of Tampa Bay, with its beaches, salt marshes, and mangrove swamps provides considerably better opportunities for use by wading birds, passerines, and raptors. The Site's past agricultural use has eradicated any threatened or endangered plants that

may have been on the land prior to clearing. Based on the analyses and survey conducted, potential adverse effects to state-listed threatened or endangered animal species are not anticipated from development of the Project Site as long as gopher tortoises and burrow commensals within potentially active burrows located within areas of potential construction are captured and relocated, and no nesting areas of any listed species are found to be in conflict with proposed construction activities.

3.4.3 Preconstruction Listed Species Surveys

As required under the existing COCs for the BB Power Station (i.e., Specific Condition II, FWC, A. Listed Species Survey, and B. Listed Species Locations), TEC will conduct additional wildlife and species-specific surveys of the Project Site prior to initiation of site clearing and construction activities. The species-specific surveys will follow established protocols approved by USFWS and FWC and will include, but not be limited to, gopher tortoise surveys. The results of these preconstruction surveys will be provided to FWC in accordance with the referenced specific condition.

3.4.4 Species Management

Based on previous discussions with FWC representatives regarding the BB I Solar Project, FWC has expressed a potential concern with birds mistaking the solar panel arrays for water bodies and colliding into the panels. The Project has been designed to minimize or avoid such concerns. The solar panels will be constructed of dark-colored materials and will be covered with antireflective coatings to reduce glare. Also, since the panels will use a sun tracker system, the panels will rotate during daylight hours, which should deter the birds from mistaking the panels as water bodies. TEC currently has solar panel arrays at the BB I Solar site, TIA, and the Manatee Viewing Center and has not experienced bird collision issues at those facilities.

In accordance with the existing COC B.II.B.3 for the BB Power Station, in the unlikely event bird collision issues arise during Project operations, TEC will consult with FWC, FDEP, and other agencies to determine appropriate steps to minimize or mitigate such issues.

3.5 Socioeconomics

3.5.1 Site and Adjacent Property Uses

As shown in Figure 2-1, the properties adjacent to the Project Site currently consist of facilities associated with the BB Power Station and a cement manufacturer (B.E.T.-ER Mix, Inc.) to the west; Big Bend Road followed by vacant land owned by TEC to the south; US 41 followed by a gasoline station and industrial/warehouse use to the east, and vacant land and a gypsum storage area to the north.

Currently, the Project Site primarily consists of fallow agricultural land and approximately 29 acres in use as construction laydown.

3.5.2 Governmental Jurisdictions

The BB III Solar Project is located within unincorporated Hillsborough County, north of the unincorporated area of Apollo Beach. The nearest incorporated municipality to the site is Tampa, located approximately 11 miles to the north-northwest. Unincorporated Brandon is located approximately 11 miles to the northeast, and incorporated Plant City is located more than 22 miles to the northeast.

The Project Site is also within the jurisdiction of the Tampa Bay Regional Planning Council (TBRPC) and the Southwest Florida Water Management District.

3.5.3 Comprehensive Planning and Zoning

The following subsections describe the current future land use plan designation and the current zoning districts for the Project Site based on applicable sections of the Hillsborough County Comprehensive Plan and the Hillsborough County Land Development Code (LDC).

Based on the evaluation of existing conditions and consistency with the comprehensive plan, zoning, and land development regulations, the proposed BB III Solar Project is a compatible development on the Site and is not expected to result in impacts to the sociopolitical environment in the surrounding area.

3.5.3.1 Comprehensive Plan

The Local Government Comprehensive Planning and Land Development Regulation Act of 1985 (Chapter 163, Fla. Stat.) requires counties and municipalities within the state to prepare comprehensive plans. The Project is located in the Community Mixed Use-12 (CMU-12) and Heavy Industrial (HI) land use designations of the Hillsborough County Future Land Use Map (FLUM). According to the future land use element of the Hillsborough County Comprehensive Plan, the CMU-12 land use designation allows up to 12 dwelling units per acre. Typical uses are identified as residential, community-scale retail commercial, office, research corporate park, light industrial multi-purpose, and clustered residential and/or mixed-use projects at appropriate locations. Agricultural uses may be permitted pursuant to policies in the agricultural objective areas of the future land use element.

The intent of the HI land use category is to provide areas for industrial development with a potential to produce the most intense objectionable accompanying effects. Allowable uses include processing, manufacturing, and assembling of materials with associated storage as well as electrical generation plants. Typical uses are identified as industrial. Agricultural uses may be permitted pursuant to policies in the agricultural objective areas of the future land use element.

The land use categories surrounding the Project Site are HI to the north and west, CMU-12 to the south, and Light Industrial to the east. Figure 3-2 depicts the onsite and surrounding future land use map designations.

A review of the FLUM series indicates a portion of the Project Site is located within the Coastal High Hazard Area (CHHA) overlay. The CHHA is defined as the area below the elevation of the Category 1 storm surge line as established by TBRPC using the Sea, Lake, and Overland Surges from Hurricanes computerized storm surge model. The coastal management element of the Hillsborough County Comprehensive Plan contains goals, objectives, and policies addressing the coastal planning area. The BB Power Station is identified as a water-dependent use. Objective 7 addresses water-dependent and water-related uses. Policy 7.1 (in part) states, “The County shall give priority to locating water-dependent and water-related uses within the coastal planning area designed for industrial development on the Future Land Use Map.”

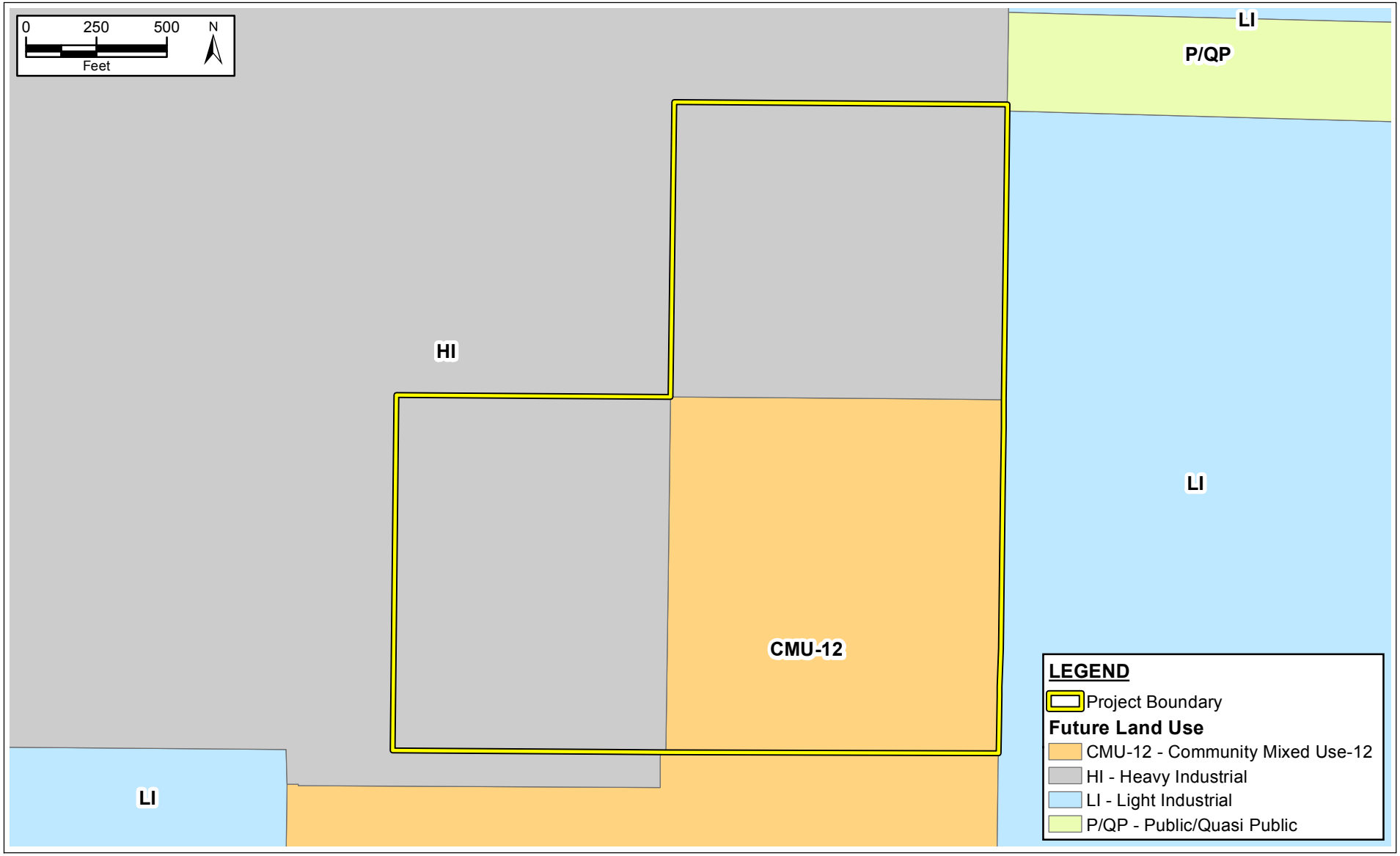


FIGURE 3-2.

FUTURE LAND USE MAP

Sources: Hillsborough County, 2020; ECT, 2021.

TECO TAMPA ELECTRIC AN EMERA COMPANY

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According to the livable communities element of the Hillsborough County Comprehensive Plan, the entire BB Power Station site is located within the SouthShore Areawide community planning area. The community plan for the SouthShore area recommends strategies for growth and development in three main areas: transportation, environmental/natural, and cultural/historical. There are references to the Hillsborough County Corridor Preservation Plan map, Hillsborough County Greenways map, and SouthShore Historical Resources Inventory map. Review of these maps indicates roadway improvement in the vicinity of the site is the future six-laning of US 41. There are no greenways depicted in the vicinity of the Site. No designated historical landmarks or properties eligible for local landmark designation or listing on the National Register of Historic Places (NRHP) are depicted in the vicinity of the Site. The community vision and strategies do not change allowable uses, maximum densities, or other changes in land use approvals.

3.5.3.2 Zoning

As shown in Figure 3-3, the Project Site is zoned Planned Development (PD) 89-0064, PD 08-1100, and Agricultural Rural (AR). The allowed uses in the PD zoning districts are identified as all uses permitted within the M (manufacturing) zoning district. The purpose of this district is to provide areas for manufacturing, processing or assembling uses, intensive commercial uses, and other industrial uses in appropriate areas of Hillsborough County in conformance with the provisions of the Hillsborough County Comprehensive Plan.

At a meeting with Hillsborough County planners in November 2020, it was determined the proposed solar energy use can be accommodated within the existing future land use map categories of HI and CMU-12 and the existing zoning districts. The interpretation is that solar energy production is a conditional use in both the AR and M zoning districts. Therefore, a FLUM amendment is not required. Appendix A contains a copy of the results of the meeting with Hillsborough County.

The proposed use is a conditional use in both the AR and M zoning districts. Section 6.11.125 of the Hillsborough County Comprehensive Plan specifically addresses solar energy production facilities as follows:

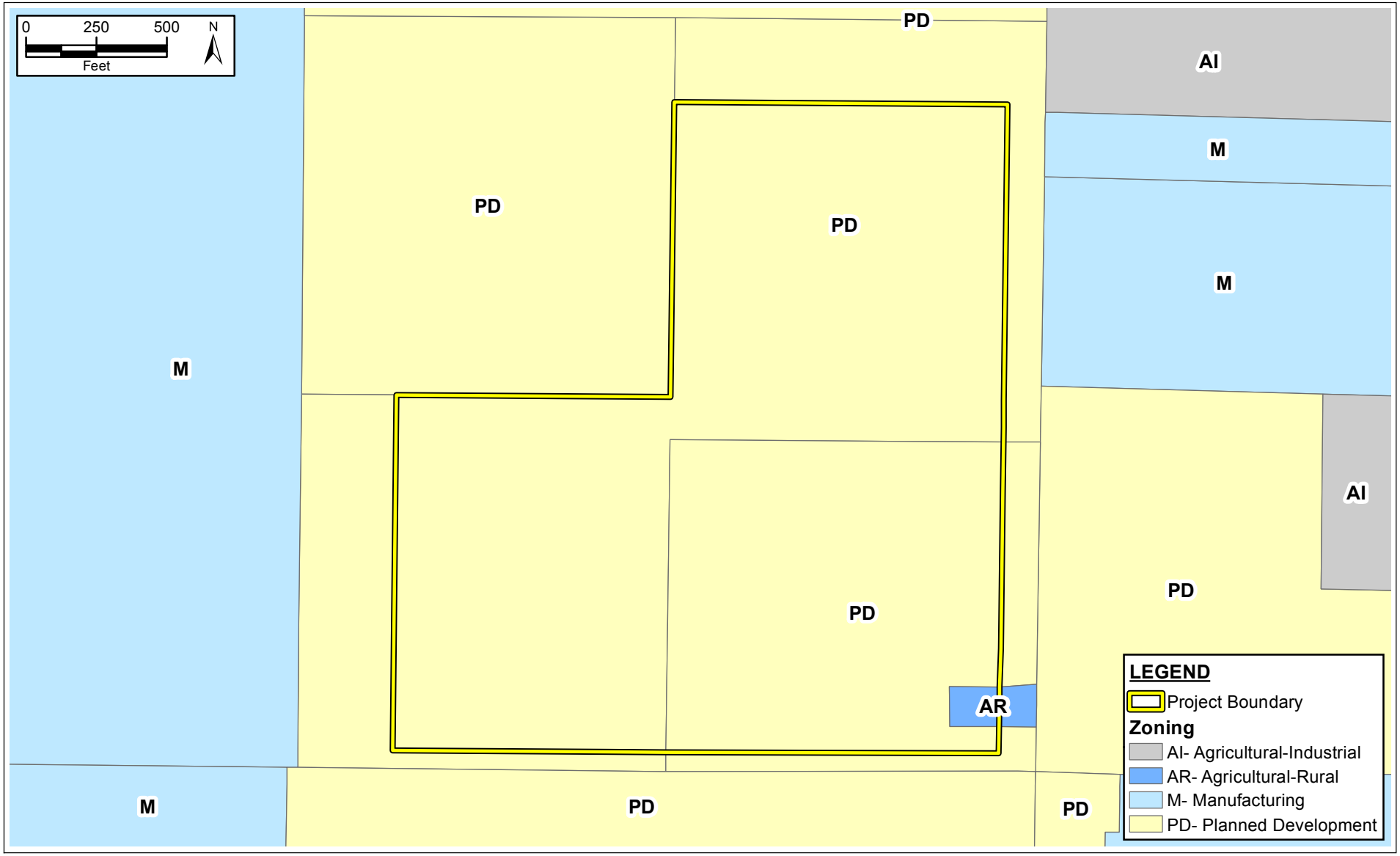


FIGURE 3-3.

ZONING MAP

Sources: Hillsborough County, 2020; ECT, 2021.

TECO TAMPA ELECTRIC AN EMERA COMPANY

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A. "In agricultural zoning districts, the host parcel shall be a minimum of five acres in size.
B. In agricultural zoning districts, a minimum setback of 50 feet shall be required from all boundaries of the site. This setback shall apply to all solar panels and other above-ground structures excluding transmission line poles.
C. In agricultural zoning districts, the solar panels shall be ground mounted and have a maximum height of 15 feet as measured when the panels are tilted to the design degree that creates the greatest overall height. All other structures shall conform with principal structure height requirements of this Code.
D. Ground-mounted facilities shall be enclosed with a security fence with a minimum height of six feet to discourage unauthorized entry. The fence location and maximum height shall comply with the requirements of this Code. Clearly visible warning signs shall be placed on the fence and/or site perimeter advising of potential high voltage hazards.
E. In agricultural zoning districts, the facility shall be classified a Group 1 use for buffering and screening purposes under this Code.
F. Where ground-mounted solar panels face abutting residentially developed or zoned parcels or public roadways and screening is not otherwise required under the provisions of this Code, the panels shall be made of glare reducing materials or shall be visually screened from said abutting parcels and roadways as follows:
    1. In agricultural districts, the screening shall be comprised of evergreen plants with a minimum opacity of 75 percent at the time of planting. The plants shall be six feet in height or the height of the solar panels, whichever is less. Alternatively, an increased setback of 100 feet may be provided in lieu of screening.
    2. The Administrator may waive these screening requirements in cases where equivalent or greater screening is provided by existing vegetation, fences or non-residential structures on the host parcel and/or abutting residential parcels or roadways.
G. Onsite power lines and interconnections shall be placed underground to the greatest extent possible.
H. Prior to preliminary site plan approval or construction plan where the preliminary process is waived, the applicant shall submit proof of notice to the utility company that

operates the power grid where the solar energy production facility will be located of the intent to develop an interconnected power generation facility. Prior to site construction plan approval, the applicant shall submit proof of an executed interconnection agreement with the utility or other written proof of an agreement with the utility that construction can proceed.

I. A solar energy production facility shall be considered abandoned after a one-year period without energy production. The property owner shall be responsible for removing all energy production and transmission equipment and appurtenances within 120 days of abandonment.

J. Solar power generation facilities which require certification under the Florida Electrical Power Plant Siting Act shall be allowed only in Planned Development districts which specifically permit the use."

The proposed Project will comply with these specific requirements. The proposed facility meets or will be able to meet all conditions noted in this section of the LDC. Notably, the acreage of the Project Site exceeds the required minimum size; the setbacks will be 50 ft along the western and southern boundaries; the panels will be ground-mounted, glare-reducing, and less than 15 ft in height; the facility will be entirely fenced; and there will be no overhead power lines onsite. Only the land use category to the south, across Big Bend Road, allows residential uses. There are no existing residences located within 0.5 mile of the property boundaries. The estimated power generation is 15 MW_{AC}, well below the 75 MWs required for certification under the Florida Power Plant Siting Act. No variances are required for construction and operation of the proposed facility. Regarding solar panel glare, the PV panels will be constructed of dark-colored materials (usually blue or black) and will be covered with antireflective coatings to reduce glare.

Surrounding zoning districts are PD to the north and west, PD-Mixed Use to the south (land owned by TEC), and PD and M to the east. The PD approved for the southern adjacent property is for a maximum of 399,000 square feet of commercial uses and a maximum of 120,000 square feet of office/light industrial/corporate park uses. The PD approved for the eastern adjacent properties allows for commercial, general business, industrial, manufacturing, and distribution uses. The PD located north of the western portion of the Subject Property was approved for a

gypsum storage facility, and the PD located north of the eastern portion allows manufacturing uses.

Construction and operation impacts of the proposed BB III Solar Project on land use on and in the vicinity of the Project Site are expected to be insignificant. The proposed Project use is allowed within the current land use categories and zoning districts and meets the specific requirements of the conditional use. Also, the proposed Project use is located within the certified boundary of the BB Power Station site.

3.5.4 Transportation

Transportation facilities that will service the Project Site are proximate roadways. Major roadways within a 5-mile radius of the Project Site include US 41, Big Bend Road, Interstate 75 (I-75), and U.S. Highway 301 (US 301). US 41, I-75, and US 301 are identified as state principal arterials on the Hillsborough County 2025 Functional Classification Map. Big Bend Road is identified as a local minor arterial. The Project Site will be accessed from Big Bend Road along the southern boundary, and there will be a temporary access from US 41 located along the eastern boundary, which will be right-in, right-out only.

The active construction laydown area has an unpaved access from Big Bend Road. This access road will be paved and extended into the Project Site. Internal, private roads will be provided for access to the solar panels and other improvements.

No public or private aviation facilities are located within a 5-mile radius of the Project Site. The closest airport to the site is MacDill Air Force Base, approximately 6.6 miles to the northwest. Peter O. Knight airport is located approximately 8.7 miles to the north-northwest. The Wimauma Air Park Airport (private airport) is located approximately 8.3 miles to the southeast. TIA lies approximately 15 miles to the northwest.

During construction of the Project, construction labor force and delivery traffic will use the upgraded access from Big Bend Road and a temporary access from US 41 which will be right-in, right-out only. Entering and exiting traffic will likely be southbound on US 41 and westbound and eastbound on Big Bend Road. Delivery traffic is likely to exit I-75 at Big Bend Road and

travel west to the Project Site. Construction worker traffic will follow a similar pattern as well as workers traveling north and south on US 41 and then entering the Project Site from Big Bend Road or US 41 (southbound traffic). These routes are expected to be adequate for Project construction traffic. Access to the Project Site will be controlled for security purposes. It is not anticipated there will be any required short-term closures of any roadways.

The Hillsborough County 2019 Level of Service (LOS) Report prepared by the Hillsborough Metropolitan Planning Organization does not provide traffic counts for Big Bend Road west of US 41. The annual average daily traffic for the segment of Big Bend Road from US 41 east to the I-75 north ramp is 23,500 or LOS C. The county minimum LOS standard for Big Bend Road is LOS D, with a capacity of 37,810.

Some temporary construction-related transportation impacts are expected as a result of movement of construction workers, machines, and equipment to and from the Project Site. The peak number of construction workers is anticipated to be 300, and 10 to 12 deliveries per day are expected. For the purposes of a transportation analysis, the following assumptions apply:

- Construction-related trip generation of 2.0
- Vehicle occupancy rate of 1.2
- All westbound trips (Big Bend Road to access road)

Access to the Project Site will be controlled.

Using these assumptions, a total of 500 daily trips will be generated during the expected peak construction employment period with as many as an additional 20 to 24 daily trips for deliveries.

The original Big Bend Unit 4 Site Certification Application transportation analysis found the roadway links and intersections within the traffic impact area would operate at acceptable LOS with the existing geometry. No additional roadway improvements were recommended, and none were required after construction of the plant entrances. As noted previously, excess capacity is available on Big Bend Road. Therefore, even at the peak of construction activities for the Project, the surrounding roadway network is expected to operate at an acceptable LOS.

During construction activities, construction vehicles (e.g., graders, bulldozers, dump trucks) will also access the Project Site. The majority of these heavier construction vehicles are anticipated to remain onsite for the duration of the initial construction activities, entering at initiation and exiting at completion. Since the majority of these vehicles are not expected to make daily trips to and from the Project Site, potential traffic impacts from these vehicles are expected to be minimal.

Operation of the Project will not create any additional employment. Therefore, there will be no impacts to transportation or any public facilities. Any required inspections and maintenance will be performed by existing TEC BB Power Station employees.

3.5.5 Public Services and Facilities

3.5.5.1 Medical Facilities

The nearest hospital to the Project Site is St. Joseph South Hospital located on Big Bend Road, approximately 2.3 miles to the east. South Bay Hospital is located in Sun City Center approximately 5.6 miles to the south-southeast. Tampa General Hospital is located approximately 10.9 miles to the north-northeast (approximately 16 miles by ambulance). These three hospitals are equipped with emergency rooms, and Tampa General Hospital is equipped with a trauma center.

3.5.5.2 Fire Protection and Emergency Rescue Services

The nearest fire station to the Project Site is Fire Station 29 located at 626 Golf and Sea Boulevard in Apollo Beach, approximately 3.4 miles to the southwest. Fire and Rescue Station 3 (Summerfield), located at 10817 Big Bend Road, is approximately 4.4 miles to the east. Fire and Rescue Station 12 (Gibsonton), at 8612 Gibsonton Drive, is located approximately 5.2 miles to the northeast. Fire and Rescue Station 28 (Sun City Center), at 4551 Sun City Center Boulevard, is located approximately 12 miles to the southeast. There is a fire engine located at Fire Station 29, and fire trucks and rescue vehicles are assigned to the other nearby stations.

3.5.5.3 Police Protection

The Project Site is located in unincorporated Hillsborough County and receives police services from the Hillsborough County Sheriff's Department. The Project Site is located in District IV. The district office is located in Ruskin, approximately 9.7 miles to the south.

Approximately 15 to 20 officers per two, 12-hour shifts work out of the District IV office. Responses are prioritized according to urgency, with an estimated response time of less than 10 minutes for a routine response, with a considerably shorter time expected for high-priority emergencies. Because the Project Site lies in unincorporated Hillsborough County and is more than 10 miles from the nearest municipality, responses by city police departments under most all circumstances are not expected.

3.5.5.4 Potable Water, Sanitary Sewer, and Solid Waste

The Project Site is located in the urban service area of Hillsborough County, an area provided with public potable water supply and sanitary sewerage service. Although sanitary sewerage service is available in the general area, there will be no provision for such services onsite since there will be no operational employees. Portable facilities will be provided during construction. There is no potable water service supplied to the Project Site, and no potable water services are requested, because there will be no employees onsite after construction.

Operation of the Project will not negatively affect essential services or facilities. While the Project will rely on local police and fire protection, the existing BB Power Station is already equipped with its own fire protection and other safety-related systems, and the Project Site will be secured with controlled, fenced access. Medical facilities in the surrounding area are sufficient to handle most emergencies involving the construction workforce.

There will be no connection to Hillsborough County sanitary sewer or potable water systems and, therefore, no impact to distribution lines or treatment capacities during construction or operation. Portable facilities will be made available during construction. Bottled water will be made available to construction workers.

Solid waste generated during construction activities will be disposed in accordance with applicable rules and regulations. Disposal of solid waste (i.e., typical municipal solid waste) will be in appropriate waste collection containers located around the construction areas; the waste will be transported offsite for disposal at an approved solid waste landfill (South County). Construction debris, such as scrap wood, concrete, and metal, will first be transported to a specified salvage storage area on the Project Site where they will be separated and stockpiled for potential salvage and recycling. Construction debris not salvaged or recycled will be transported to the South County Landfill.

Used oil from construction vehicles and equipment will be collected in appropriate containers and transported offsite for recycling or disposal at an approved facility. The approved disposal facility will be an existing facility that has been permitted for commercial recycling or disposal of used oils.

Individual contractors will be responsible for handling any hazardous materials required to perform their tasks and any resulting hazardous wastes. This responsibility includes the proper recordkeeping, transportation, storage, handling, and offsite disposal of such wastes in accordance with federal and state hazardous waste regulations.

3.6 Archaeological and Historical Sites

A cultural resources assessment survey (CRAS) addendum of the proposed BB III Solar Project Site was conducted by Janus Research (Janus) in October 2020. The western portion of the Project Site was the subject of a CRAS conducted by Janus in 2018 as part of the Big Bend Modernization Project. No cultural resources were identified, and the State Historic Preservation Office concurred with this finding in a June 13, 2018, letter (see Appendix B).

The objective of the current survey was to identify archaeological and historical resources within and adjacent to the Project Site and assess the significance of identified resources in terms of eligibility for existing in the NRHP. The CRAS was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as implemented by Title 36, Part 800 (Protection of Historic Properties, as amended) of the Code of Federal Regulations (CFR);

Chapter 267, Fla.Stat.; the minimum field methods, data analysis, and reporting standards embodied in the Florida Division of Historical Resources (FDHR's) Cultural Resource Management Standards and Operations Manual (February 2003); and Chapter 1A-46, F.A.C. (Archaeological and Historic Report Standards and Guidelines). Appendix B provides a copy of the CRAS and a copy of the letter from FDHR concurring with the findings of the CRAS that no additional work is recommended.

According to 36 CFR 800.16(d) of the NHPA, the area of potential effect (APE) for the CRAS is, "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." The survey for archaeological sites typically focuses on identifying and evaluating resources within the geographic limits of the proposed action and its associated ground-disturbing activities. The APE for historical resources includes the area of the proposed activities as well as the areas within which potential visual or noise effects could be observed. As shown in Figure 3-4, the archaeological APE for the CRAS included the Project Site where the proposed PV solar panel arrays, inverter skids, and access road will be located. The historical and archaeological APE consisted of the footprint of the Project Site.

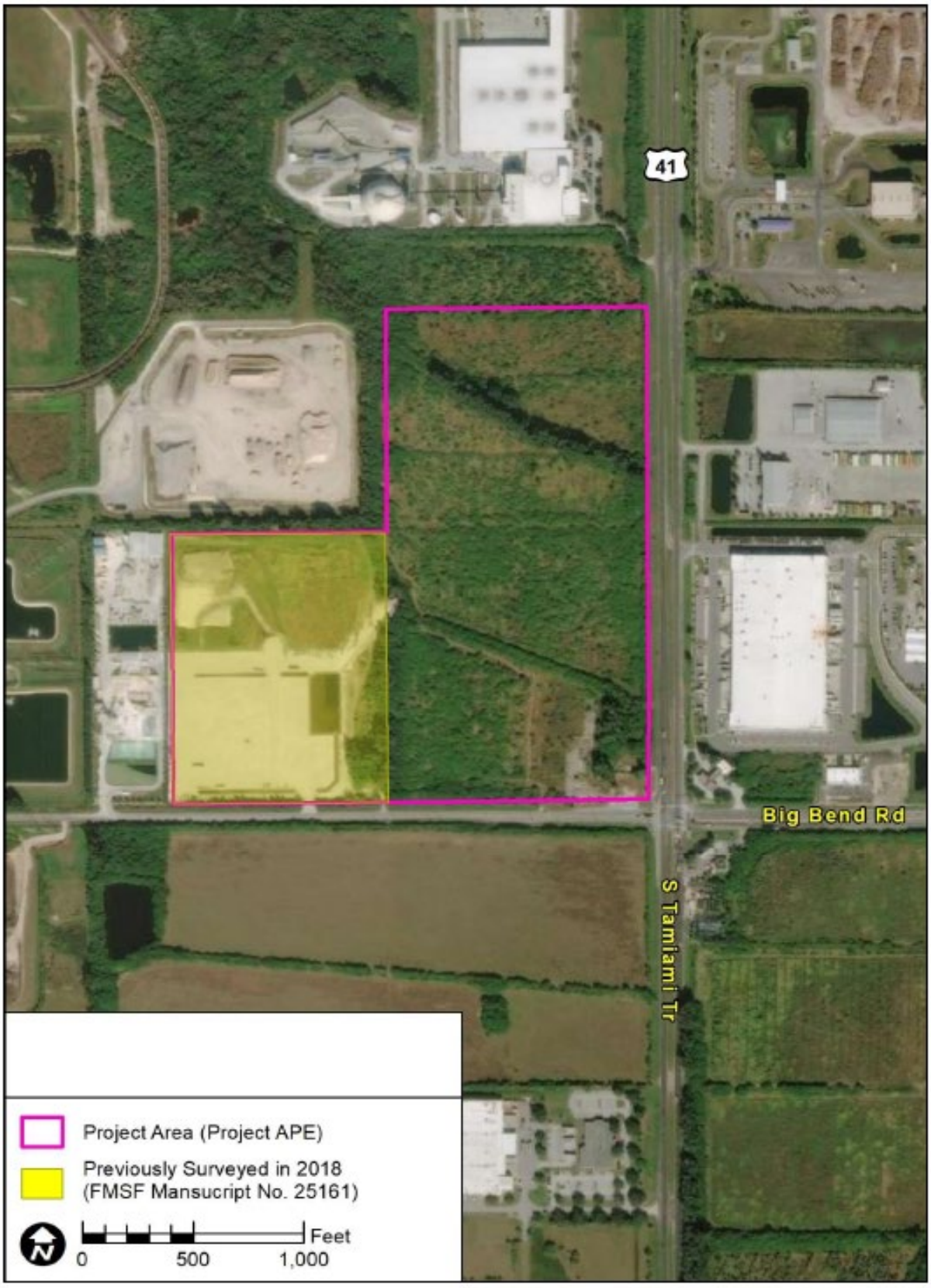


FIGURE 3-4.

PROJECT APE RELATIVE TO THE 2018 SURVEY BOUNDARY

Source: Janus Research, 2020.

TECO TAMPA ELECTRIC AN EMERA COMPANY

As an initial step in the CRAS, an archaeological and historical literature and background information search pertinent to the Project Site was conducted to determine the type, chronological placement, and location of known cultural resources within the APE. This search included a review of Florida Master Site File (FMSF) data, previous surveys, property appraiser records, and historical research material. No archaeological sites have been recorded within the Project Site. The FMSF search identified four previously conducted cultural resources survey in proximity to the Project Site. The FMSF data identified seven previously recorded archaeological sites within 1 mile but not close to (greater than 0.5 mile) the Project Site. The FMSF background search also identified no previously recorded historical resource within the historical resource APE. Figure 3-5 depicts the previously identified archaeological resources.

To assess the probability for archaeological sites, the Archaeological Site Predictive Model for Hillsborough County developed by Janus was reviewed for the Project Site. The archaeological APE was indicated as having a low probability for archaeological sites. Based on these findings, an archaeological field survey consisting of a pedestrian survey and subsurface testing was conducted. As shown in Figure 3-6, six shovel tests were excavated systematically to test 10 percent of the low probability zone. In addition, systematic surface inspections were conducted for the entire archaeological APE. No cultural resource material was recovered from the subsurface shovel test efforts.

No newly or previously recorded archaeological sites or archaeological occurrences were identified within the archaeological APE. The survey did not identify any newly recorded historical resources and confirmed that the two previously recorded structures formerly located within the current APE, 8HI11369 and 8HI11370, are no longer extant. Based on the results of the CRAS, no further work is recommended.

Although unlikely, should the Project development activities uncover archaeological materials, the activity in the area of the material will be stopped, and the FDHR will be consulted to determine appropriate action, consistent with the current COCs (i.e., B.III.B) for the BB Power Station.

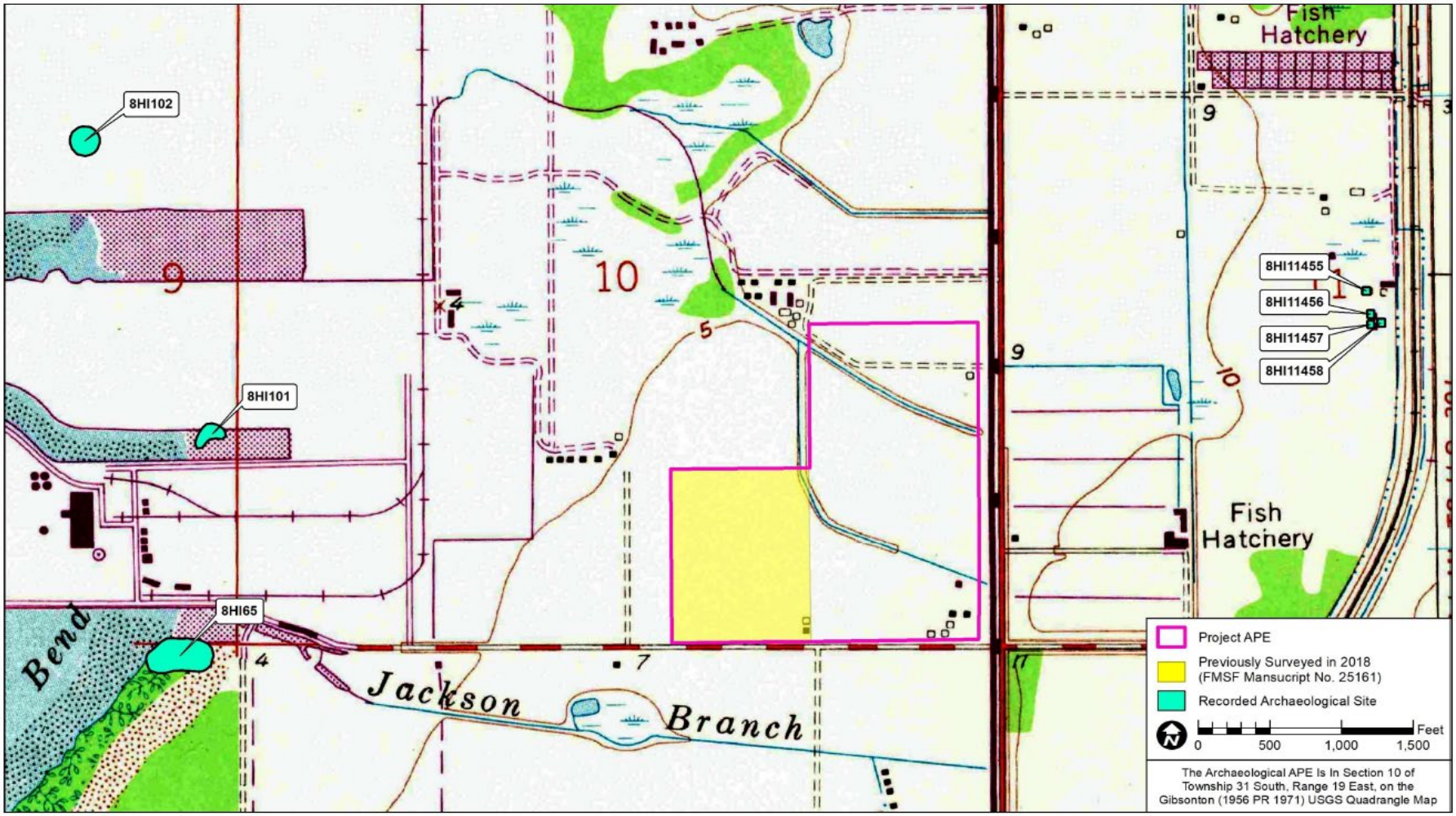


FIGURE 3-5.

PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES WITHIN 1 MILE OF THE PROJECT APE ILLUSTRATED ON A TOPOGRAPHIC MAP

Source: Janus Research, 2020.

TECO TAMPA ELECTRIC AN EMERA COMPANY

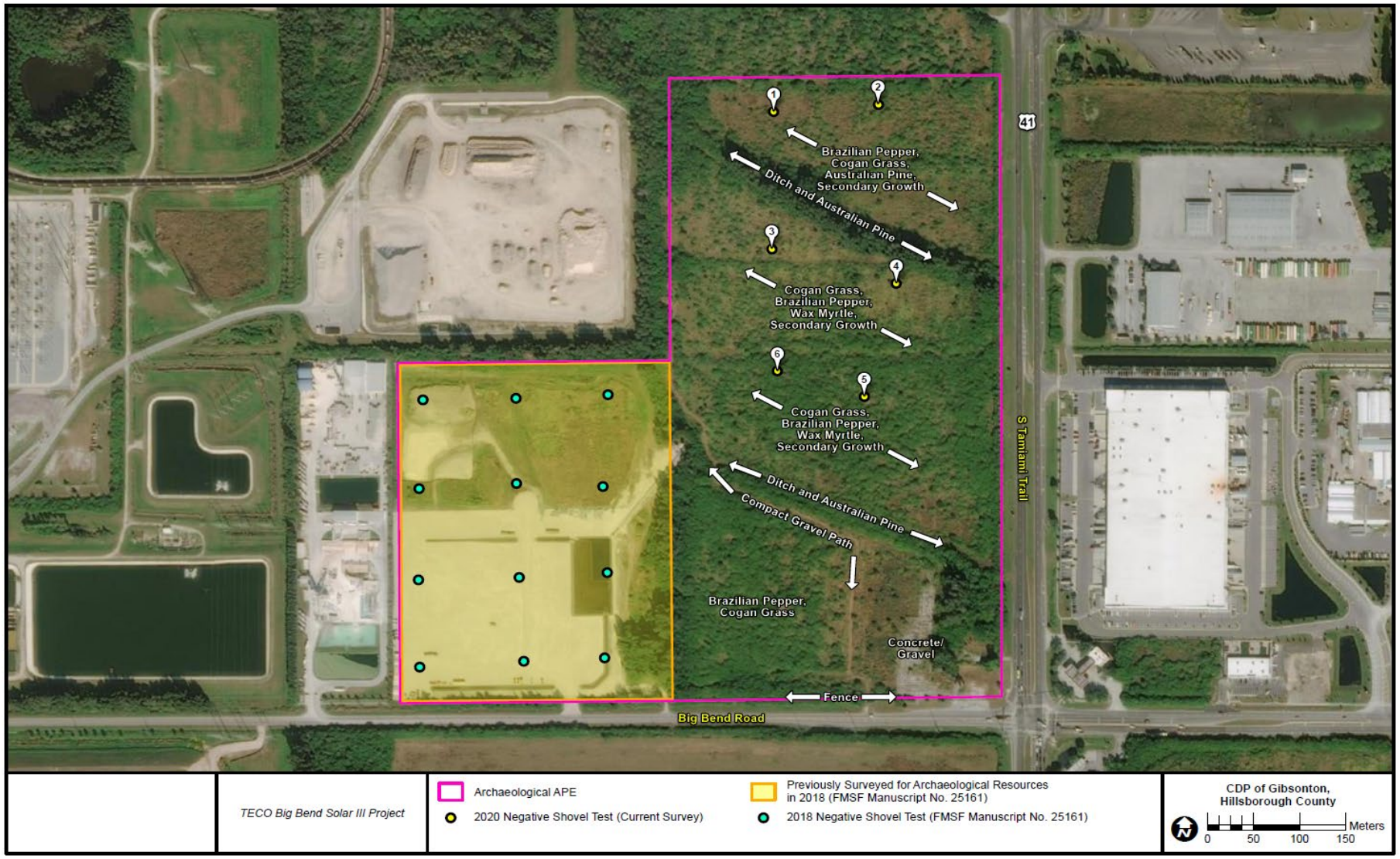


FIGURE 3-6.

LOCATIONS OF SHOVEL TESTS AND CURRENT CONDITIONS ON AN AERIAL PHOTOGRAPH

Source: Janus Research, 2020.

TECO TAMPA ELECTRIC AN EMERA COMPANY

Appendix A

Hillsborough County Rezoning Approval Letter

Big Bend III Solar

Hillsborough County Zoning Staff Comments

A Re-Zoning Pre-Submittal Meeting was held on November 24, 2020 to discuss the development of the subject property as a solar power generating facility. The property is currently zoned Planned Development (PD) 89-0064, PD 08-1100, and Agricultural Rural (AR). The approved PD uses include Manufacturing (zoning) uses. The proposed use is a conditional use in both the AR and M zoning districts subject to the standards established in the Land Development Code. A public hearing is not required. The applicant may, at its discretion, modify one or more of the existing conditions of the PDs at a Personal Appearance before the Board of County Commissioners.

Hillsborough County Land Development Code Excerpts

Sec. 2.02.02. - Allowable Uses In Zoning District

1. The table below indicates the categories of uses which are allowable in each standard zoning district within Hillsborough County. The categories of uses are arranged in the vertical column on the left side of the table and the zoning districts are listed across the top. "P" indicates that the use is permitted, subject to the standards of this Code. "C" indicates the use is a Conditional Use that may be allowed in the identified district pursuant to conformance with the design standards contained in Article VI. No public hearing is required for Conditional Uses unless otherwise stated in the applicable standards in Article VI. "S" designates uses as Special Uses that may be established in the district, pursuant to a noticed public hearing as described in Part 10.02.00 and in conformance with the standards contained in Article VI. An "A" indicates the use is an Accessory Use that may be established in the district pursuant to the requirements of Article VI. Uses identified with an "N" are potentially permitted Conditional Uses in the identified district pursuant to the criteria contained in Section 6.11.65 (Non-Industrial Uses in Industrially Designated Areas). A blank space indicates that the use is prohibited. All uses are subject to the development standards of the zoning district in which it is to be located as well as all other rules and regulations of this Code and Hillsborough County.
2. All uses are potentially permitted in Planned Development (PD) districts, subject to the Policies of the Comprehensive Plan, the requirements of Part 5.03.00 of this Code and all other rules regulations and ordinances of Hillsborough County. Land uses permitted in existing Planned Development districts are specified in the PD's conditions of approval. Requests for rezonings or modifications to Planned Developments are reviewed in accordance with Part 10.03.00 of this Code.

    a. In Planned Development (PD) districts approved after October 1, 2005, wireless communication facilities shall be permitted only if expressly allowed as a specifically identified use by the conditions of approval. In such cases, the location of the facility, height of the antenna support structure and design and/or camouflage requirements shall be addressed by the PD site plan and conditions. Notwithstanding, wireless communication facilities which comply with the provisions of Sections 6.11.29.A-B. shall be permitted in any PD district.

3. All uses permitted in Traditional Neighborhood Developments (TNDs), Pedestrian-Oriented Developments (PODs) and Transit-Oriented Developments (TODs) are identified in Part 5.08.00 of this Code.

Table of Allowable Uses in Zoning Districts
Key: **P** = Permitted. **C** = Conditional Use, permitted pursuant to standards of Article VI (no public hearing required unless specified in applicable section) and the procedures of Section 10.01.00. ;b§\b; = Special Use, noticed public hearing required and subject to standards of Article VI. Reviewed pursuant to Section 10.02.00. **A** = Accessory use, permitted pursuant to Article VI. **N** = Potentially permitted pursuant to Section 6.11.65. **CNR** = Conditional Use/No Review, permitted without prior zoning review subject to requirements of Part 6.11.00. **Blank** = Prohibited.

Solar Energy Production Facility is allowed as a Conditional Use in the AM, A, AR, AS, and M zoning districts.

Sec. 6.11.01. - Generally

A. Conditional uses contained in this Part have been determined to require additional design standards to ensure compatibility with adjacent uses and the surrounding neighborhood. The standards described for each use below shall supplement and be in addition to the standards and criteria otherwise required within this Code. Unless otherwise required herein, compliance with these supplemental standards shall be determined during development review and shall not require any additional procedural steps or review processes.
B. Special uses contained in this Part shall be considered and approved, approved with conditions, or denied in accordance with the requirements of 10.02.00 for the issuance of development orders. Changes to previously approved Special Uses contained in this part shall be considered and approved, approved with conditions or denied in accordance with the requirements of 10.02.00. The special uses contained in this Part may only be permitted upon demonstration of compliance with all of the requirements of this Part and the requirements of Section 5.0 or, when applicable, Section 4.0 of the Development Review Procedures Manual.
C. To determine if a use contained in this Part is a conditional or special use, refer to Table 2.02.02. Notwithstanding the provisions of Section 6.11.01.A. above, certain uses identified as conditional uses in Table 2.02.02 require, due to location circumstances, review in accordance with Section 6.11.01.B. above. The regulations provided in this Part identify those conditional uses and the circumstances resulting in the requirement for review in accordance with 6.11.01.B.

Sec. 6.11.125. - Solar Energy Production Facility

A. In agricultural zoning districts, the host parcel shall be a minimum of five acres in size.
B. In agricultural zoning districts, a minimum setback of 50 feet shall be required from all boundaries of the site. This setback shall apply to all solar panels and other above-ground structures excluding transmission line poles.

1. In the M (Manufacturing) district, solar panels and other above-ground structures excluding transmission line poles shall conform with principal structure setback requirements.

C. In agricultural zoning districts, the solar panels shall be ground mounted and have a maximum height of 15 feet as measured when the panels are tilted to the design degree that creates the greatest overall height. All other structures shall conform with principal structure height requirements of this Code.

1. In the M district, all structures including solar panels shall conform with principal structure height requirements of this Code.

D. Ground-mounted facilities shall be enclosed with a security fence with a minimum height of six feet to discourage unauthorized entry. The fence location and maximum height shall comply with the requirements of this Code. Clearly visible warning signs shall be placed on the fence and/or site perimeter advising of potential high voltage hazards.

E. In agricultural zoning districts, the facility shall be classified a Group 1 use for buffering and screening purposes under this Code. In the M district, ground-mounted facilities shall be classified a Group 6 use; however, buffering and screening shall be required only where abutting parcels have a Group 3 or lower intensity classification. Building-mounted facilities shall have the same intensity classification as the host use.

F. Where ground-mounted solar panels face abutting residentially developed or zoned parcels or public roadways and screening is not otherwise required under the provisions of this Code, the panels shall be made of glare reducing materials or shall be visually screened from said abutting parcels and roadways as follows:

1. In agricultural districts, the screening shall be comprised of evergreen plants with a minimum opacity of 75 percent at the time of planting. The plants shall be six feet in height or the height of the solar panels, whichever is less. Alternatively, an increased setback of 100 feet may be provided in lieu of screening.
2. In the M district, the screening shall be comprised of a solid fence or wall, chain link fence with opaque slates, or evergreen plants with a minimum opacity of 75 percent at the time of planting. The screening shall be six feet in height or the height of the solar panels, whichever is less.

   The Administrator may waive these screening requirements in cases where equivalent or greater screening is provided by existing vegetation, fences or non-residential structures on the host parcel and/or abutting residential parcels or roadways.

G. On-site power lines and interconnections shall be placed underground to the greatest extent possible.

H. Prior to preliminary site plan approval or construction plan where the preliminary process is waived, the applicant shall submit proof of notice to the utility company that operates the power grid where the solar energy production facility will be located of the intent to develop an interconnected power generation facility. Prior to site construction plan

approval, the applicant shall submit proof of an executed interconnection agreement with the utility or other written proof of an agreement with the utility that construction can proceed.

I. A solar energy production facility shall be considered abandoned after a one-year period without energy production. The property owner shall be responsible for removing all energy production and transmission equipment and appurtenances within 120 days of abandonment.

J. Solar power generation facilities which require certification under the Florida Electrical Power Plant Siting Act shall be allowed only in Planned Development districts which specifically permit the use.

Appendix B

Cultural Resources Assessment Survey and FDHR Concurrence Letters

25161

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Lawrence N. Curtin
Holland & Knight, LLP
315 South Calhoun Street, Suite 600
Tallahassee, Florida 32301

June 13, 2018

RE: DHR Project File No.: 2016-1484-G, Received by DHR: May 11, 2018
Cultural Resources Assessment Survey of the Tampa Electric Company (Tampa Electric) Big Bend 1 Modernization, Hillsborough County, Florida

Dear Mr. Curtin,

Our office reviewed the referenced project in accordance with Chapters 267 and 403, *Florida Statutes*, and implementing state regulations, for possible effects on historic properties listed, or eligible for listing, in the *National Register of Historic Places* (NRHP), or otherwise of historical, architectural or archaeological value.

In April 2018, Janus Research (Janus) conducted the above referenced cultural resource assessment survey (CRAS) as on behalf of Tampa Electric Company (TEC) and Environmental Consulting & Technology, Inc. (ECT). Janus encountered no cultural resources within the area of potential effect (APE) during their investigation and recommends no additional work in the APE.

Based on the information provided, our office concurs with the results of the survey and determined that the proposed project will likely have no effect on historic properties listed, or eligible for listing, in the NRHP, or otherwise of historical, architectural or archaeological value. Our office finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.*

If I can be of any further help, or if you have any questions about this letter, please feel free to contact Lindsay Rothrock at *Lindsay.Rothrock@dos.myflorida.com.*

Sincerely,

For

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

FLORIDA DEPARTMENT of STATE

RON DESANTIS
Governor

LAUREL M. LEE
Secretary of State

Adam Schieffer
Janus Research, Inc.
1107 N. Ward Street
Tampa, Florida 33607

February 24, 2021

RE: DHR Project File No.: 2016-1484-K Received by DHR: December 3, 2020
Cultural Resources Assessment Survey Addendum for the TECO Big Bend Solar III Project Area Hillsborough County, Florida

Dear Mr. Schieffer:

We note that in October of 2020, Janus Research (Janus) conducted the above referenced Phase I cultural resource assessment survey (CRAS) on behalf of Environmental Consulting and Technology, Inc. (ECT) and Tampa Electric Company (TECO), as due diligence in anticipation of further permitting. Our office proceeded to review this report with the expectation that ECT and TECO will be engaging in permitting processes that will require this office to comment on possible adverse impacts to cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP), or otherwise of historical, architectural, or archaeological significance. We recommend at the time such actions are taken, a copy of this letter be forwarded to the permitting agency(ies) with the application. This letter does not constitute a review under Section 106 of the National Historic Preservation Act.

An adjacent parcel was previously surveyed, and reviewed by this office (DHR correspondence 2016-1484-G, sent on May 11, 2018. The above report is an addendum to this previous work. No cultural resources were identified within the 62.1-acre survey area. The survey confirmed that two previously recorded structures formerly located within the current APE, 8HI11369 and 8HI11370, are no longer extant. Janus proposes that this 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, and recommends no additional work in the APE.

We find the report complete and sufficient in accordance with Chapter 1A-46, Florida Administrative Code. Because this project is not yet subject to permitting requirements from a state or federal agency, our office abstains from supplying a determination of effects until such time that permitting agencies (and associated permit requirements) are identified for this project. If I can be of any further help, or if you have any questions about this letter, please feel free to contact Clete Rooney at *Cletus.Rooney@dos.myflorida.com*.

Sincerely,

Jason Aldridge
For

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

CULTURAL RESOURCES ASSESSMENT SURVEY ADDENDUM FOR THE TECO BIG BEND SOLAR III PROJECT AREA HILLSBOROUGH COUNTY, FLORIDA

Prepared for:

Environmental Consulting and Technology, Inc.
1408 N. Westshore Boulevard, Suite 115
Tampa, Florida 33607

Prepared by:

Janus Research
1107 N. Ward Street
Tampa, Florida 33607

December 2020

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INTRODUCTION

The survey work for the cultural resource assessment survey (CRAS) addendum for the Tampa Electric Company (TECO) Big Bend Solar III Project Area in southwestern Hillsborough County was conducted in October 2020. The objective of the archaeological and historic resources survey was to identify cultural resources located within the project area of potential effect (APE) and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places* (National Register) according to the criteria set forth in 36 CFR Section 60.4.

This CRAS was conducted in anticipation of United States Army Corps of Engineers (USACE) and Florida Department of Environmental Protection (FDEP) permits. This assessment complies with Section 106 of the *National Historic Preservation Act (NHPA) of 1966* (Public Law 89-665, as amended), as implemented by 36 CFR 800 -- *Protection of Historic Properties* (incorporating amendments effective August 5, 2004); the revised Chapter 267, *Florida Statutes* (*F.S.*); and standards embodied in the Florida Division of Historical Resources' (FDHR's) *Cultural Resource Management Standards and Operational Manual* (February 2003), and Chapter 1A-46 (*Archaeological and Historical Report Standards and Guidelines*), *Florida Administrative Code*. All work also conforms to professional guidelines set forth in the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716, as amended and annotated). Principal Investigators meet the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) for archaeology, history, architecture, architectural history, or historic architecture.

The Big Bend Solar III project area (project area) covers 90.2 acres located in Section 10 of Township 31 South, Range 19 East, on the Gibsonton (1956 Photorevised [PR] 1971) United States Geological Survey (USGS) quadrangle map (Figures 1 and 2). Approximately 28.1 acres of the current project area were recently surveyed in 2018 and no cultural resources were identified within the current APE as a result of that work (Janus Research 2018; Florida Master Site File Manuscript No. 25161) (see Figures 1 and 2). In a letter dated June 13, 2018, the State Historic Preservation Office (SHPO)/FDHR concurred with the determination that no historic properties were identified during the survey (Appendix A). Due to the association and overlap with the previous survey, and because the current project area shares the same environmental and cultural contexts, the reader is referred to the 2018 report for more detailed environmental, archaeological, and historical overviews.

Project Description

The project consists of a new solar photovoltaic (PV) facility that will be constructed upon a portion of a TECO-owned site in Hillsborough County, Florida that was historically agricultural land. The project will consist of solar photovoltaic panels, inverters, transformers, and a substation.

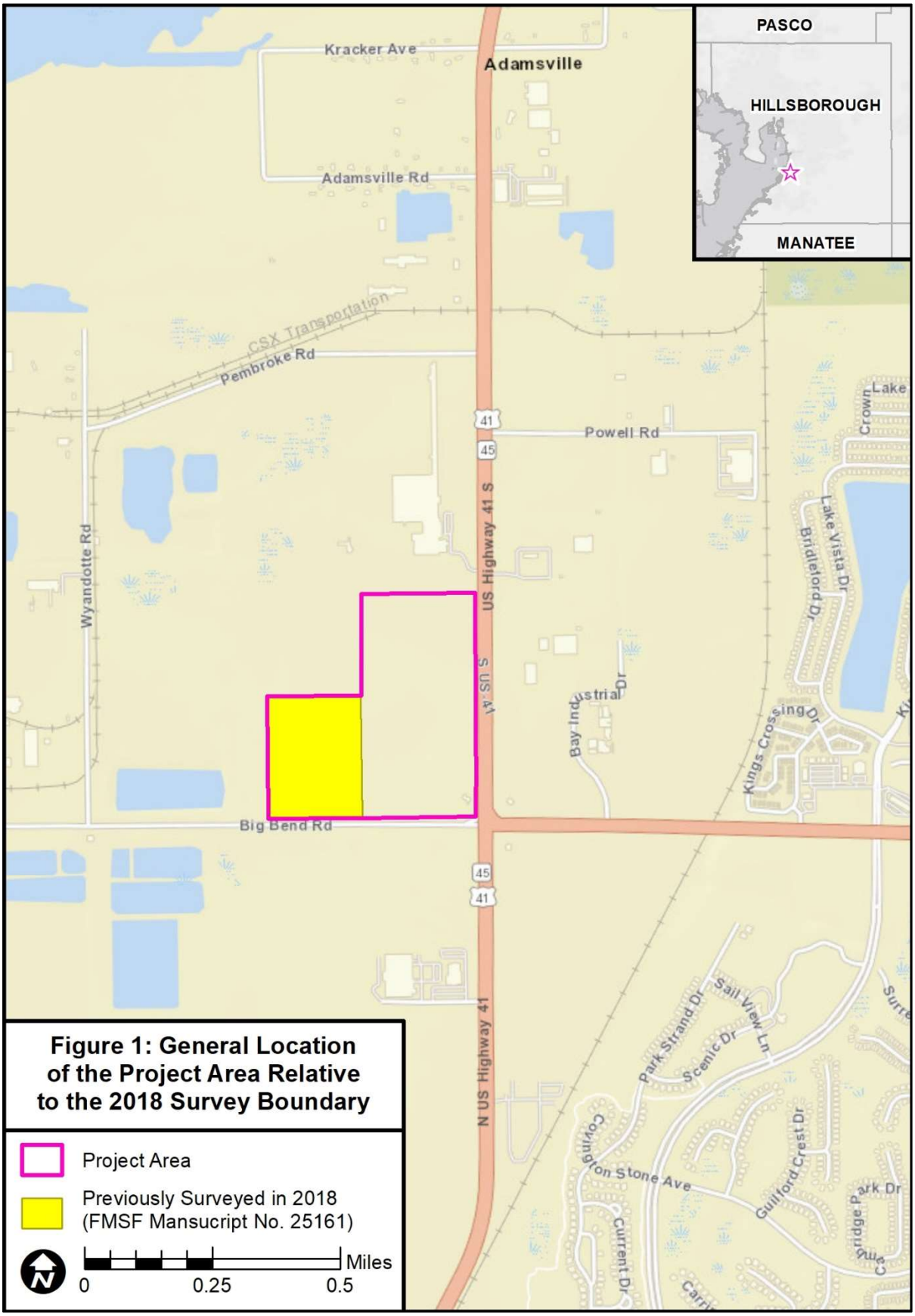


Figure 1: General Location of the Project Area Relative to the 2018 Survey Boundary

Project Area

Previously Surveyed in 2018 (FMSF Mansucript No. 25161)

0 0.25 0.5 Miles

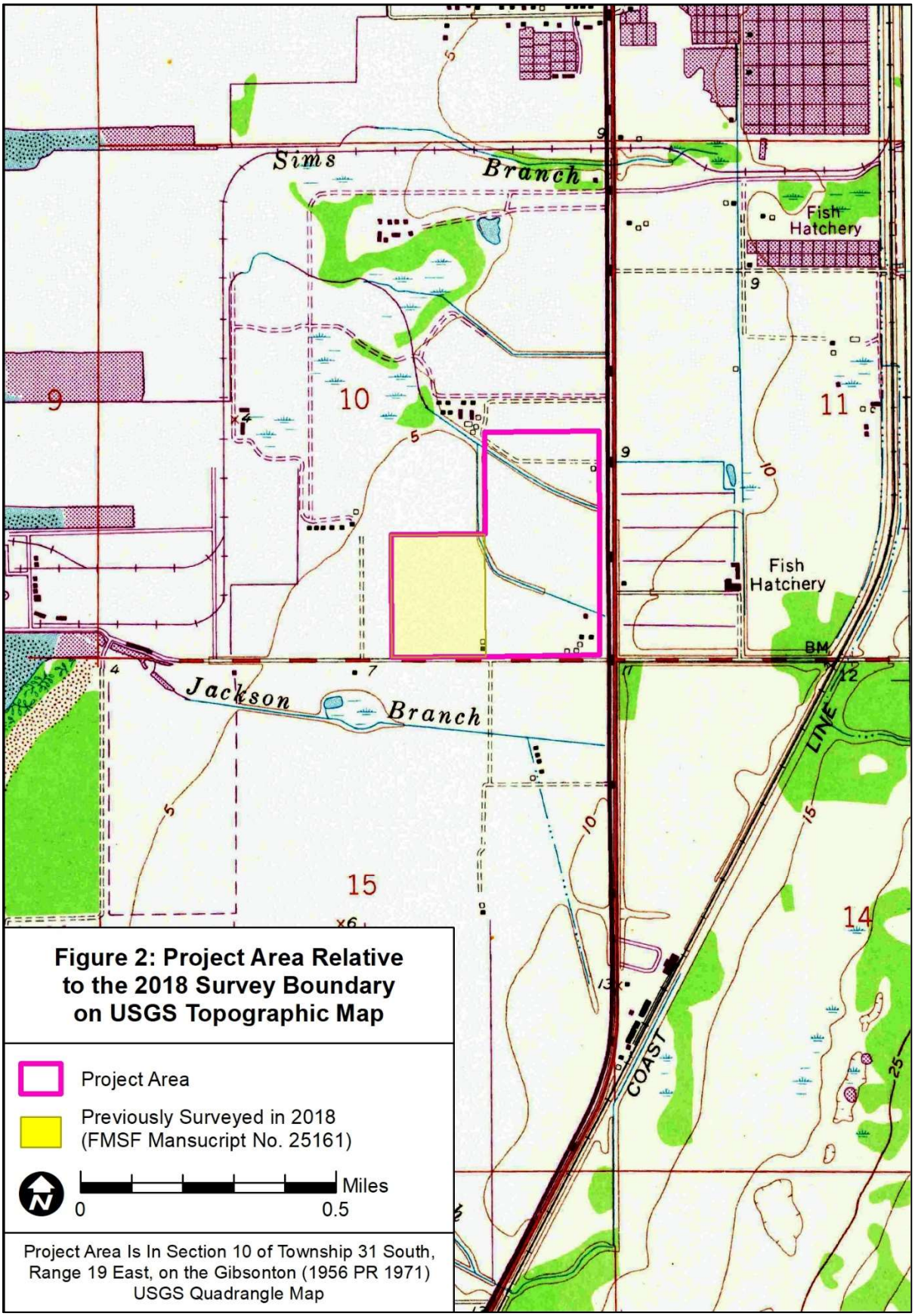


Figure 2: Project Area Relative to the 2018 Survey Boundary on USGS Topographic Map

AREA OF POTENTIAL EFFECT

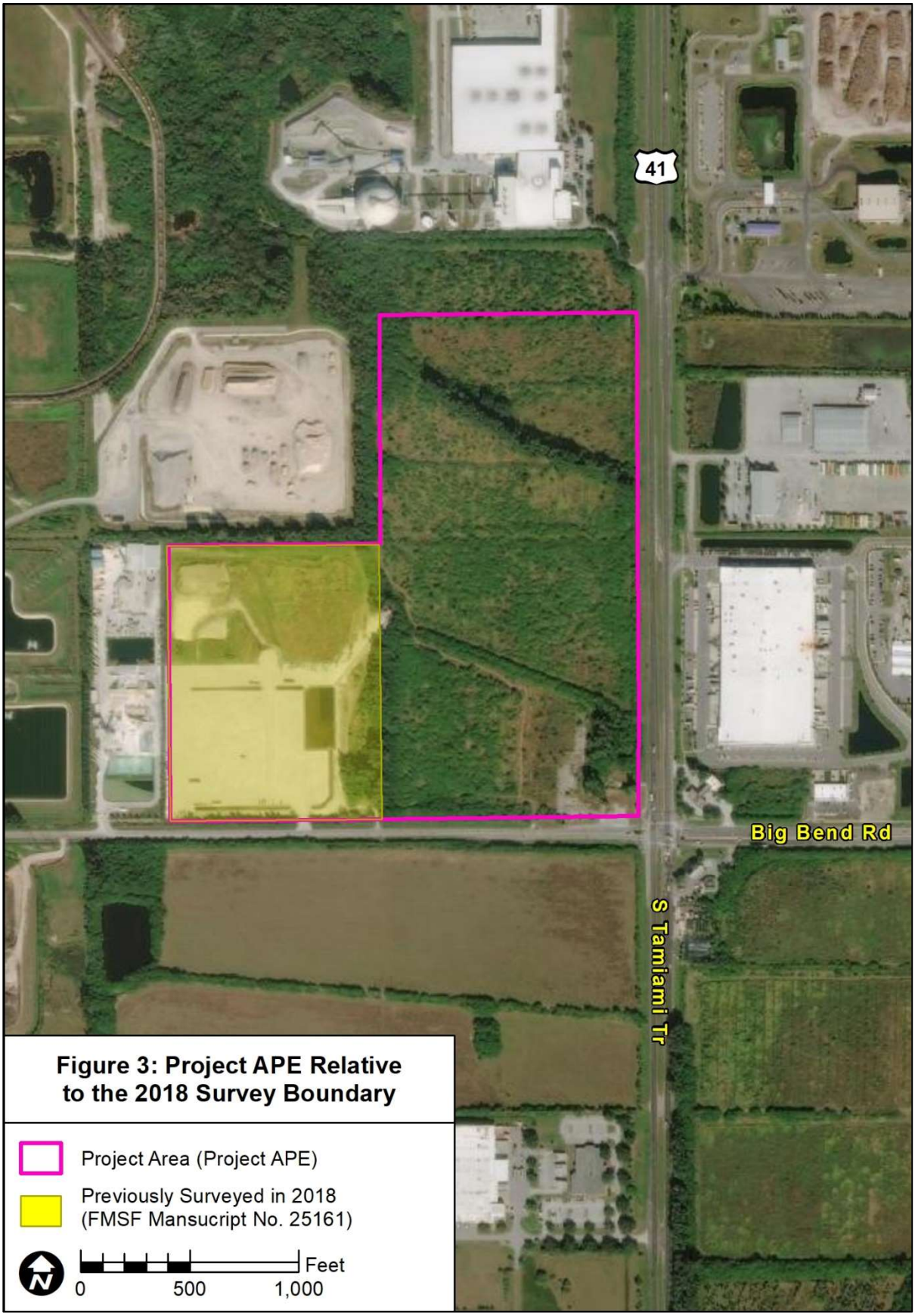
According to 36 CFR 800.16(d), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking as well as its geographical setting and must include measures to identify and evaluate archaeological resources. The project APE, therefore, considers the improvements that will be implemented as part of the proposed project and the extent of potential ground disturbance as well as the setting and character of the project area. The survey for archaeological sites typically focuses on identifying and evaluating cultural resources within the geographic limits of the proposed action and its associated ground disturbing activities.

The project area is located within an area of Hillsborough County consisting of marine terraces containing sandy soils on flats of mesic or hydric lowlands (USDA 1989). The project area has been used for agricultural purposes since the mid-20th century and is currently undeveloped. Most of the surrounding area is part of the TECO Big Bend Power Station and includes solar fields and other TECO related facilities. Farmland and non-historic commercial or industrial areas are to the immediate east of the APE. Based on the nature of the proposed project, the setting, and character of the area, the historic and archaeological APE for the project (project APE) consists of the footprint of the project area (Figure 3).

PHYSICAL ENVIRONMENT OF THE PROJECT APE

A review of the General Land Office (GLO) historic plat map and surveyor's field notes (Florida Department of Environmental Protection [FDEP] 1847a, 1847b) was conducted to examine past environmental conditions within the vicinity of the archaeological APE. In the surveyor's notes, the APE was described as 3rd rate pine land. No landscape features, such as earthen mounds trails, roads or structures are shown on the map or described in the surveyor's notes (Figure 4).

A review of aerial photographs from 1938, 1950, 1957, and 1980 (FDOT, Surveying and Mapping Office 1996–2019; University of Florida, George A. Smathers Libraries 1999–2016) was conducted to examine land use changes through time. In 1938 (Figure 5), the northern portion of the APE was in cultivation while the majority of the southern part was unimproved flatwoods with very few trees; the extreme southeastern corner of the property was cleared and included at least one structure. There were two ditches running northwest to southeast across the width of the property. No hammocks or ponds are visible. In 1950, all of the northern study area was in cultivation, while the southeastern corner included some cultivation and one or more buildings (Figure 6). Additional ditches oriented east to west have been added to increase drainage and compartmentalize the fields. The APE remained relatively unchanged through the late-1950s (Figures 7). By 1980, additional development occurred in the southern end of the property and several agricultural greenhouses are present. By 2015, no structures remained in the APE and agricultural activity stopped.


41
Big Bend Rd
S Tamiami Tr
Figure 3: Project APE Relative to the 2018 Survey Boundary
Project Area (Project APE)
Previously Surveyed in 2018
(FMSF Mansucript No. 25161)
N
0
500
1,000
Feet

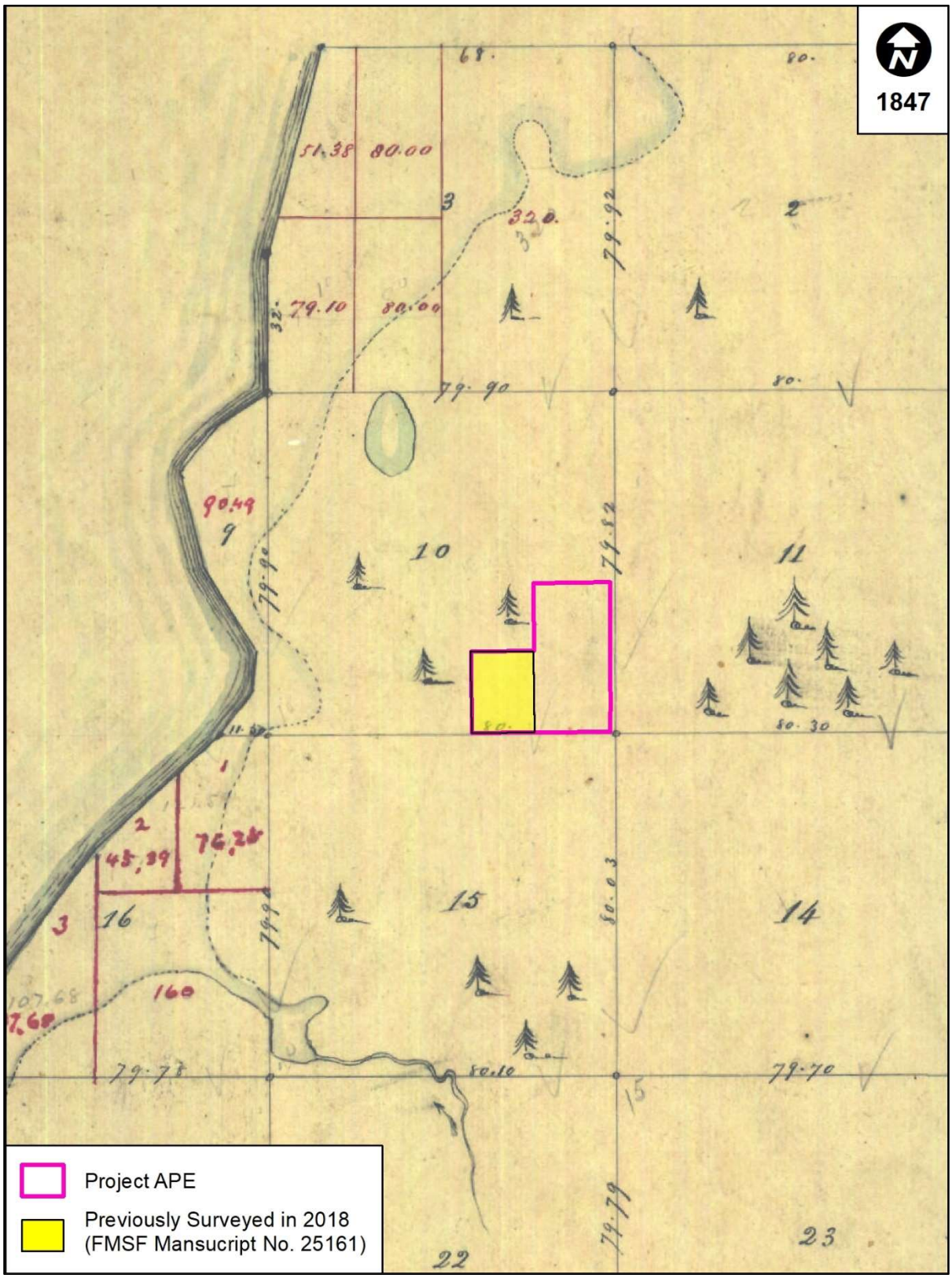


Figure 4: Project APE Illustrated on 1847 Historic Plat Map

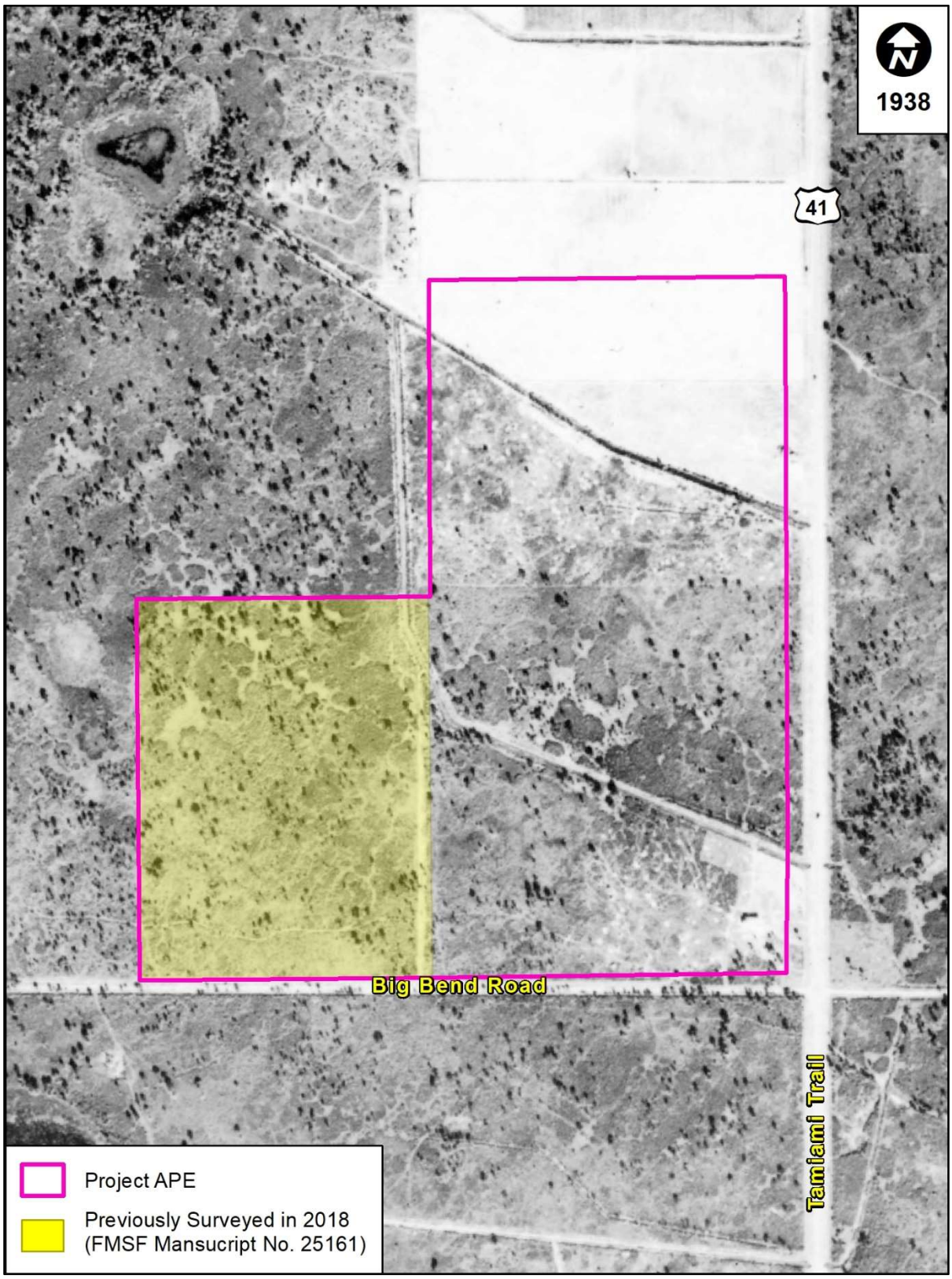


Figure 5: Project APE Illustrated on 1938 Aerial Photograph

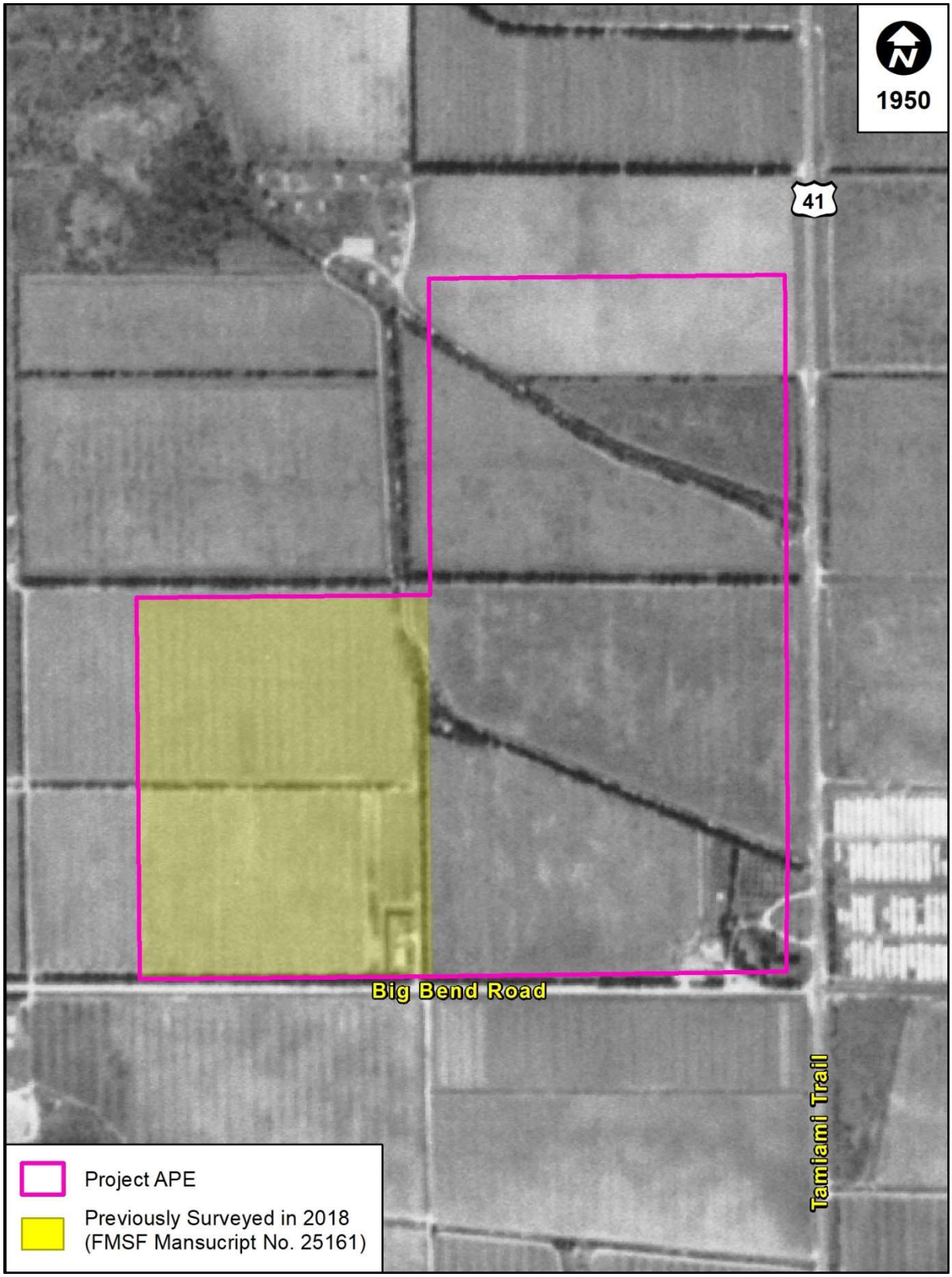


Figure 6: Project APE Illustrated on 1950 Aerial Photograph



Figure 7: Project APE Illustrated on 1957 Aerial Photograph

Three Hillsborough County soil surveys were reviewed to better understand the local environment and help assess the potential for archaeological sites. The 1958 soil survey identified the soil within the APE as poorly drained Ruskin fine sand and noted a high seasonal water table. Associated vegetation includes pines with an occasional cabbage palm as well as saw palmetto and grasses (USDA 1958:34). The 1989 and 2020 soil surveys also identified only one detailed soil type within the APE, Wabasso fine sand, 0 to 2 percent slopes. This poorly drained soil is associated with the seasonally inundated flatwoods. Associated vegetation consists of longleaf and slash pine (USDA 1989:48, 49, USDA 2020:13–15).

FLORIDA MASTER SITE FILE SEARCH AND LITERATURE REVIEW

An updated archaeological and historical literature and background information search of the FMSF pertinent to the project APE was conducted to determine the types, chronological placement, and location of cultural resources within the APE. A review of FMSF data, previous surveys, property appraiser records, and historical research material was conducted to determine the potential for cultural resources within the project APE that are listed, eligible, or considered eligible for listing in the National Register, or that have potential or confirmed human remains. The FMSF is an important planning tool that assists in identifying potential cultural resources issues, as well as resources that may warrant further investigation and protection. It can be used as a guide but should not be used to determine the official position of the FDHR/SHPO regarding the significance of a resource.

Previously Conducted Cultural Resource Surveys

The FMSF GIS data show that four previous surveys have been conducted in close proximity to the project APE (Table 1). As noted previously, FMSF Manuscript No. 25161 (Janus Research 2018) covered the western portion of the current APE. No cultural resources were encountered and SHPO concurred with the results of the survey (Appendix A).

Table 1. Previous Surveys Conducted Proximate to the Project Area

FMSF Survey No.	Report Title	Author(s)	Publication Date
6116	CRAS of the Proposed Hillsborough County Water Department's Falkenburg to South County Water Main, Hillsborough County, Florida	Southeastern Archaeological Research (SEARCH)	2000
15804	CRAS Big Bend Distribution Center, Hillsborough County, Florida	Archaeological Consultants, Inc. (ACI)	2008
15978	CRAS US 41 from 12th Street to Kracker Avenue PD &E Study, Hillsborough County, Florida	ACI	2008
25161	CRAS of the TECO Big Bend 1 Modernization, Hillsborough County, Florida	Janus Research	2018

The second survey (ACI 2008b; FMSF Manuscript No. 15978) was conducted within and adjacent to the east side of the APE and focused on US 41 from 12th Street to Kracker Avenue. No archaeological sites were identified in the vicinity of the current APE. Two historic structures, 8HI11369 and 8HI11370, were identified within the current APE in 2008, on the west side of US 41. Both structures were determined National Register–ineligible by the SHPO as a result of the 2008 survey. Background research and the current fieldwork confirmed that these structures are no longer extant.

In 2000, SEARCH conducted a survey of a 27-mile long by a 7-feet wide corridor to the west of the APE. The resultant report, *CRAS of the Proposed Hillsborough County Water Department's Falkenburg to South County Water Main, Hillsborough County, Florida* (SEARCH 2000; FMSF Manuscript No. 6116), reported no archaeological or historical resources proximate to the current APE.

The fourth survey was conducted outside of the current APE and to the east of US 41. In 2008, ACI conducted an archaeological and pedestrian survey of 120 acres for Duke Realty Corporation LLC (ACI 2008a; FMSF Manuscript No. 15804). No cultural resources were located in the portions of the project area closest to the current APE. The 2008 report documented four newly recorded historic archaeological sites (structural remains) located approximately 0.5 miles to the east of the TECO Big Bend Solar III APE. The SHPO determined all four were National Register–ineligible.

Previously Recorded Resources

The search of the FMSF data identified seven previously recorded archaeological sites within one mile of the APE, but none of these sites are near the APE (Table 2; Figure 8). The search of the FMSF data also noted two previously recorded historic resources within the APE, a c. 1935 Frame Vernacular building formerly located at 101 Big Bend Road (8HI11369) and a c. 1950 Masonry Vernacular building formerly located at 103 Big Bend Road (8HI11370). These resource were both determined National Register–ineligible by SHPO in 2009, and as noted previously, are no longer extant within the APE.

Table 2. Previously Recorded Archaeological Sites within One Mile of the Project Area

FMSF No.	Site Name	Site Type	SHPO National Register Evaluation *
8HI65	Big Bend	Shell midden	Not Evaluated
8HI101	Elsberry	Shell midden	Not Evaluated
8HI102**	Cooley Site	Shell midden	Not Evaluated
8HI11455	Big Bend 1	1950s/60s structural ruins	Ineligible
8HI11456	Big Bend 2	1950s/60s structural ruins	Ineligible
8HI11457	Big Bend 3	1950s/60s structural ruins	Ineligible
8HI11458	Big Bend 4	1950s/60s structural ruins	Ineligible

* As recorded in the FMSF; may require re-evaluation

** FMSF database indicates that human remains are or may be present at this site

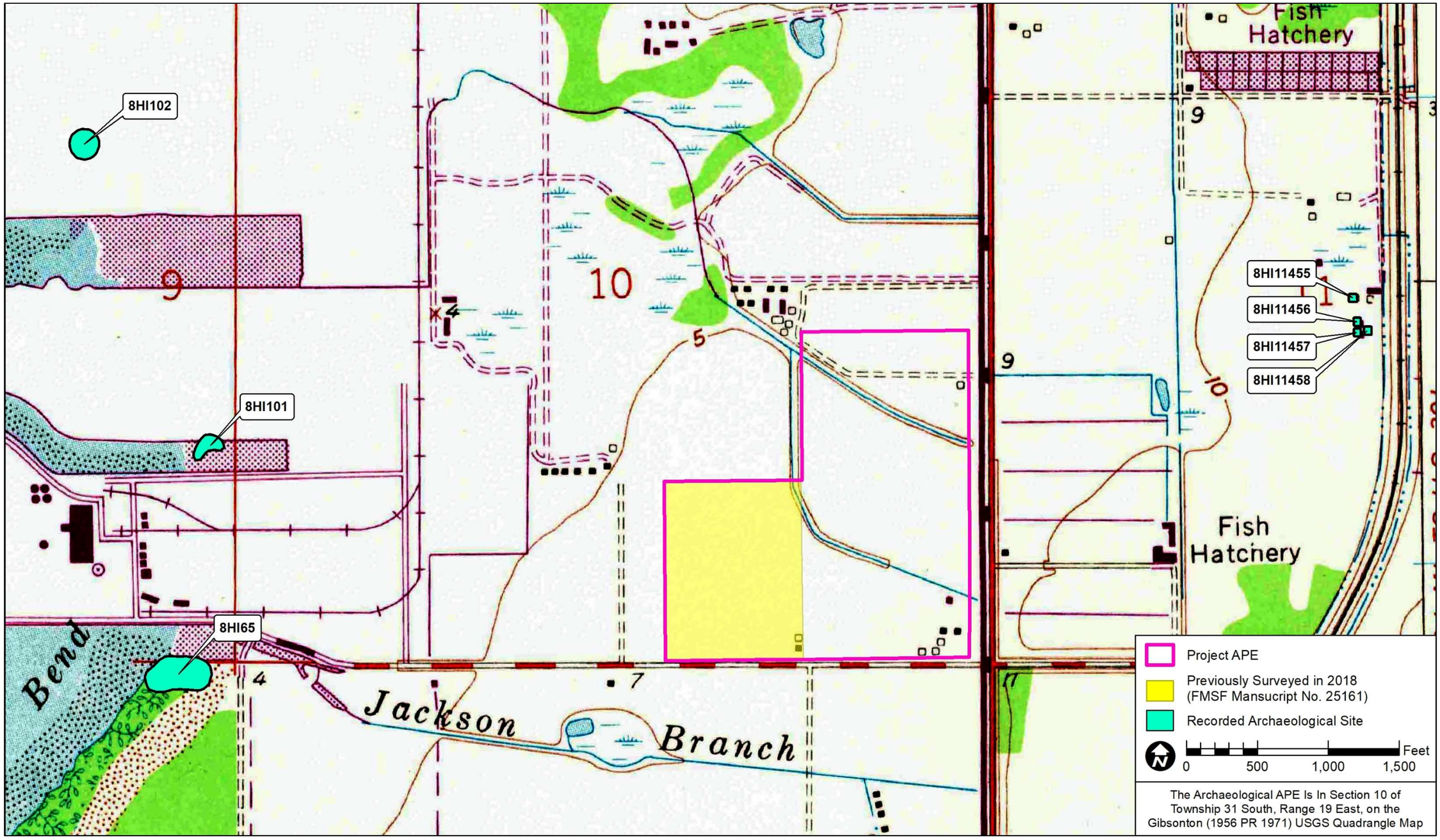


Figure 8: Previously Recorded Archaeological Sites within One Mile of the Project APE Illustrated on a Topographic Map

PROJECT RESEARCH DESIGN AND SITE LOCATION MODEL

The background research and literature review, in conjunction with pertinent environmental variables, contributed to the formulation of project-specific field methods designed to locate and evaluate previously unrecorded archaeological sites within the archaeological APE. Four environmental factors are typically used to help predict site locations: distance to fresh (potable) water, distance to hardwood hammocks, topography, and soil type (soil drainage). The updated site potential analysis focused on the portion of the APE that was not previously surveyed for archaeological resources in 2018.

Archaeological Site Location Model

Freshwater is an important resource, as the need for water is universal. This variable would have been of greater importance during the Paleoindian and Early Archaic periods (12,000–5000 BC) when the perched water system was more restricted. Before modern drainage, the archaeological APE was within flatwoods, which was likely seasonally wet. No major sources of permanent freshwater are near the project APE. The closest freshwater sources are the small, channelized drainages that run through the project area. Sims Branch, an intermittent stream, and a wetland pond are over 400 meters to the north of the project area and Jackson Branch, also an intermittent stream, is over 200 meters to the south.

Hardwood hammocks (hydric, mesic, or xeric) provide a variety of resources that would have been available to early inhabitants of the region. Often, areas of higher relative elevation correspond with better-drained soils or the presence of hardwood hammocks (xeric and mesic). No hammocks were identified within the APE during the review of historic plat maps or historic aerial photographs. Historically, the APE consisted of low-lying flatwoods that were cleared and under cultivation by 1950. The elevations of the APE ranges from 5 to 10-feet above mean sea level and no knolls or hammocks were identified within the APE during the review of historic plat maps or historic aerial photographs.

The characteristics of soils have been used successfully by several researchers in the formulation of predictive models for precontact site location. As mentioned previously, the soil within the archaeological APE is poorly drained and consists of sandy soil on flats of mesic or hydric lowlands. Based on the background research and analysis of environmental variables, the archaeological APE was determined to have a low potential for containing archaeological sites.

METHODS

The field survey consisted of a pedestrian survey and subsurface testing. A visual inspection of exposed ground was conducted to look for evidence of archaeological sites or environmental features indicative of increased archaeological potential. The pedestrian survey also considered the presence of any historic resources. Subsurface testing employed conventional shovel testing throughout the investigation. Shovel tests were circular and approximately 20 inches (50 centimeters) in diameter. They were excavated to a minimum depth of 39 inches (1 meter)

unless excavation was inhibited by bedrock or pit slumping due to the influx of water. All excavated soil was dry screened through ¼-inch (0.64-centimeter) hardware cloth suspended from portable wooden frames.

As noted, the archaeological APE consists of poorly drained soils and was determined to have low archaeological potential. No hammocks were noted on the historic maps or aerials and drainage ditches were present within the APE. Based on this, the number of shovel tests needed to test 10 percent of the testable low probability zone at 100-meter intervals was calculated. This number of tests was excavated within the low probability zone judgmentally or systematically, as appropriate, based on topographical and environmental features.

Standard archaeological methods for recording field data were followed throughout the project. Current conditions were marked aerial field maps of the project area and photographs taken to document the existing conditions. The identification number, location, stratigraphic profile, and soil descriptions were recorded for every shovel test excavated. The locations of all tests were plotted on field maps of the archaeological APE and recorded with WAAS-enabled hand-held Global Positioning System (GPS) units (UTM-NAD83). The location of the excavated shovel tests, as well as the current conditions of the archaeological APE, are illustrated relative to the archaeological APE on aerial imagery in Appendix B.

RESULTS

The APE consists primarily of grassy pasture/scrub with two ditches that cross the property from northwest to southeast. The ditches may formerly have been unnamed drainages that were improved prior to 1938, as they appear on the aerial photograph from that year. The pasture contains hip-high cogon grass, Brazilian pepper, salt bush, wax myrtle, Australian pine, and some secondary growth. Six (6) shovel tests were excavated (Appendix B) and no cultural material was recovered. Representative photographs of the project area and three of the shovel tests are included in Figures 9–15.

All of the shovel tests encountered water at depths ranging from 50 centimeters below surface (cmbs) to 80 cmbs. Four of the six tests encountered bedrock at 55–80 cmbs. The soils in the tests were fairly consistent. The strata in Shovel Test (ST) 1 consisted of dark gray sandy loam from 0–18 cmbs, light gray sand from 18–33 cmbs, dark brown sandy clay from 33–39 cmbs, orange brown clay with phosphate inclusions from 39-70 cmbs, and water at 70 cmbs. No cultural material was recovered in any of the shovel tests, and none was noted during the pedestrian inspection. The pedestrian survey also confirmed the absence of historic resources within the historic resources APE.

CONCLUSIONS

No newly or previously recorded archaeological sites or archaeological occurrences were identified within the archaeological APE. The survey did not identify any newly recorded historic resources and confirmed that the two previously recorded structures formerly located within the current APE, 8HI11369 and 8HI11370, are no longer extant. Based on the results of the CRAS, no further work is recommended.



Figure 9: View of Project Area Near ST 1, Facing West



Figure 10: Project Overview Near ST 2, Facing North



Figure 11: View of Northern Ditch Near ST 3, Facing East



Figure 12: View of Project Area Near ST 3, Facing East



Figure 13: ST 1 with Water at 70 cmbs, Facing North



Figure 14: ST 2 with Water and Bedrock at 70 cmbs, Facing South



Figure 15: ST 3 with Water at 80 cmbs, Facing West

Unanticipated Finds

Should construction activities uncover archaeological remains, it is recommended that activity in the immediate area of the remains be stopped while a professional archaeologist evaluates the remains. If human remains are found during construction or maintenance activities, the provisions of Chapter 872.05, *F.S.* will apply. Chapter 872.05 states that, when human remains are encountered, all activity that might disturb the remains shall cease and may not resume until authorized by the District Medical Examiner or the State Archaeologist. The District Medical Examiner has jurisdiction if the remains are less than 75 years old or if the remains are involved in a criminal investigation. The State Archaeologist may assume jurisdiction if the remains are 75 years of age or older.

Curation

The Survey Log (Appendix C) and a copy of this report are curated at the FMSF in Tallahassee. Field notes and other pertinent project records are temporarily stored at Janus Research and returned to the client, as appropriate.

REFERENCES CITED

Archaeological Consultants, Inc.
2008a CRAS Big Bend Distribution Center, Hillsborough County, Florida. Manuscript on file, DHR, Tallahassee.
2008b CRAS US 41 from 12th Street to Kracker Avenue PD &E Study, Hillsborough County, Florida. Manuscript on file, DHR, Tallahassee.

Florida Department of Environmental Protection (FDEP)
1847a Plat Map for Township 31 South, Range 19 East. Division of State Lands, Board of Trustees Land Document System. Electronic document, http://labins.org/survey_data/landrecords/landrecords.cfm, accessed October 5, 2020.
1847b Surveyor's Notes for Township 31 South, Range 19 East. Electronic document, http://labins.org/survey_data/landrecords/landrecords.cfm, accessed October 5, 2020.

Florida Department of Transportation (FDOT), Surveying and Mapping Office
1996–2019 Aerial Photography Archive. Electronic documents, https://fdotewp1.dot.state.fl.us/AerialPhotoLookUpSystem/, accessed October 2, 2020.

Florida Division of Historical Resources
2003 Cultural Resource Management Standards and Operational Manual. Module Three: Guidelines for use by Historic Preservation Professionals. Electronic document, https://dos.myflorida.com/media/31394/module3.pdf, accessed August 31, 2020.

Janus Research
2018 *CRAS of the TECO Big Bend 1 Modernization, Hillsborough County, Florida.* Manuscript on file, Janus Research, Tampa.

Southeastern Archaeological Research, Inc.
2000 CRAS of the Proposed Hillsborough County Water Department's Falkenburg to South County Water Main, Hillsborough County, Florida. Manuscript on file, DHR, Tallahassee.

United States Department of Agriculture (USDA)
1958 *Soil Survey of Hillsborough County Area, Florida.* United States Department of Agriculture/Natural Resources Conservation Service.
1989 *Soil Survey of Hillsborough County Area, Florida.* United States Department of Agriculture/Natural Resources Conservation Service.
2020 *Custom Soil Resource Report for Hillsborough County, Florida*. USDA/NRCS Soil Conservation Service.

University of Florida, George A. Smathers Libraries
1999–2019 Aerial Photography: Florida Collection. University of Florida Digital Collections. Electronic documents, http://ufdc.ufl.edu/aerials, accessed October 2, 2020.

APPENDIX A:

2018 SHPO CONCURRENCE LETTER FOR FMSF MANUSCRIPT NO. 25161

25161

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Lawrence N. Curtin
Holland & Knight, LLP
315 South Calhoun Street, Suite 600
Tallahassee, Florida 32301

June 13, 2018

RE: DHR Project File No.: 2016-1484-G, Received by DHR: May 11, 2018
Cultural Resources Assessment Survey of the Tampa Electric Company (Tampa Electric) Big Bend 1 Modernization, Hillsborough County, Florida

Dear Mr. Curtin,

Our office reviewed the referenced project in accordance with Chapters 267 and 403, *Florida Statutes*, and implementing state regulations, for possible effects on historic properties listed, or eligible for listing, in the *National Register of Historic Places* (NRHP), or otherwise of historical, architectural or archaeological value.

In April 2018, Janus Research (Janus) conducted the above referenced cultural resource assessment survey (CRAS) as on behalf of Tampa Electric Company (TEC) and Environmental Consulting & Technology, Inc. (ECT). Janus encountered no cultural resources within the area of potential effect (APE) during their investigation and recommends no additional work in the APE.

Based on the information provided, our office concurs with the results of the survey and determined that the proposed project will likely have no effect on historic properties listed, or eligible for listing, in the NRHP, or otherwise of historical, architectural or archaeological value. Our office finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.*

If I can be of any further help, or if you have any questions about this letter, please feel free to contact Lindsay Rothrock at *Lindsay.Rothrock@dos.myflorida.com.*

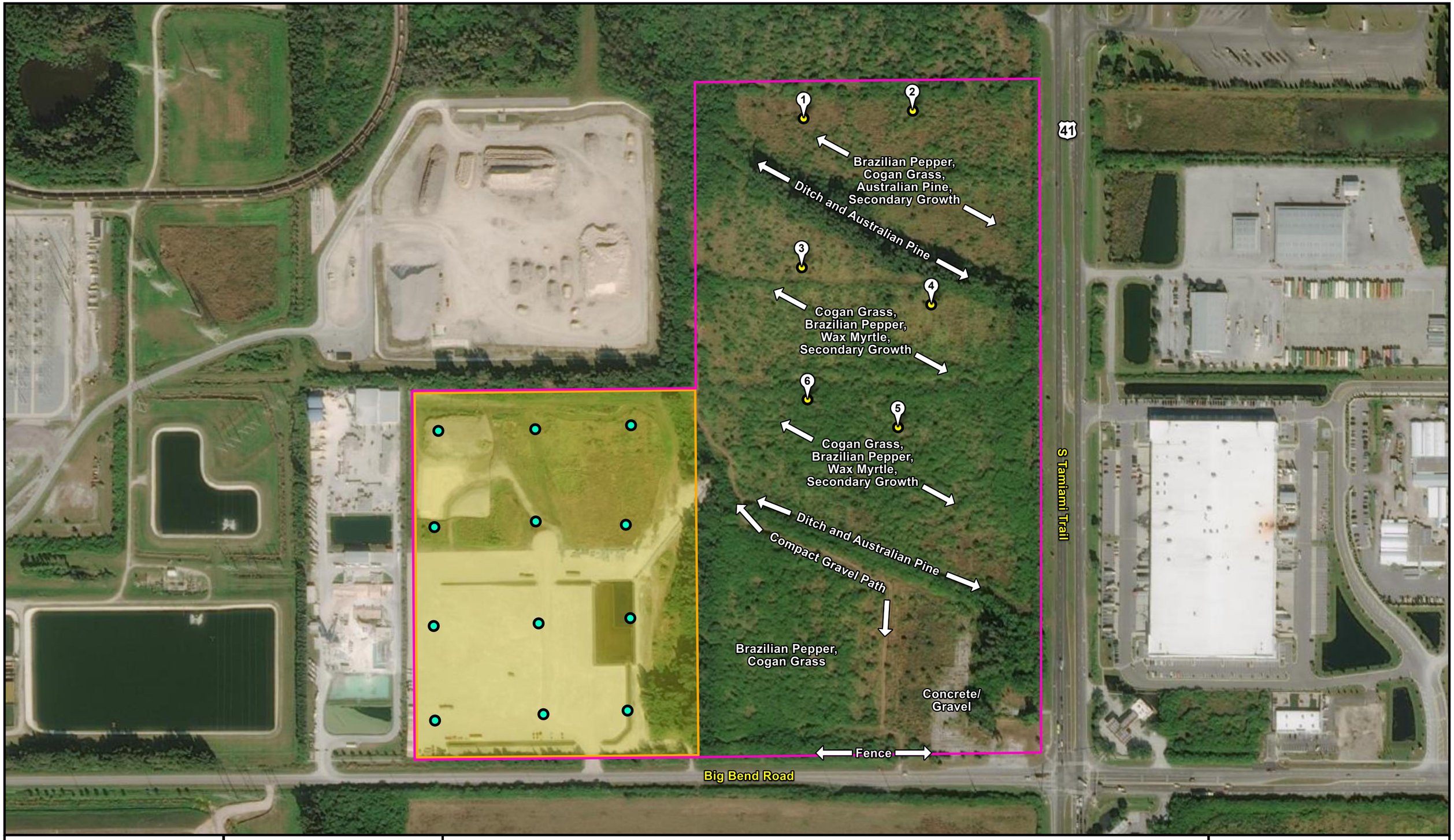
Sincerely,

For

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

APPENDIX B:

LOCATIONS OF SHOVEL TESTS AND CURRENT CONDITIONS ON AN AERIAL PHOTOGRAPH



Locations of Shovel Tests and Current Conditions On An Aerial Photograph

TECO Big Bend Solar III Project

Archaeological APE

2020 Negative Shovel Test (Current Survey)

Previously Surveyed for Archaeological Resources in 2018 (FMSF Manuscript No. 25161)

2018 Negative Shovel Test (FMSF Manuscript No. 25161)

CDP of Gibsonton, Hillsborough County

N

0 50 100 150 Meters

APPENDIX C:

SURVEY LOG

Ent D (FMSF only) _____

Survey Log Sheet

Florida Master Site File
Version 5.0 3/19

Survey # (FMSF only) _____

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Manuscript Information

Survey Project (name and project phase)
Big Bend Solar III Addendum Survey

Report Title (exactly as on title page)
CRAS ADDENDUM FOR THE TECO BIG BEND SOLAR III PROJECT AREA, HILLSBOROUGH COUNTY, FLORIDA

Report Authors (as on title page) 1. Janus Research 3. _____
2. _____ 4. _____

Publication Year 2020 **Number of Pages in Report** (do not include site forms) 22

Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*.)
Janus Research, 1107 N Ward St, Tampa FL 33607

Supervisors of Fieldwork (even if same as author) Names Kathleen S. hoffman; Amy Streelman

Affiliation of Fieldworkers: Organization Janus Research City Tampa

Key Words/Phrases (Don't use county name, or common words like *archaeology*, *structure*, *survey*, *architecture*, *etc.*)
1. Big 3. Solar 5. Jackson 7. _____
2. Bend 4. III 6. Sims 8. _____

Survey Sponsors (corporation, government unit, organization, or person funding fieldwork)
Name _____ Organization Environmental Consulting & Technology, Inc.
Address/Phone/E-mail 1408 N Westshore Blvd, Suite 115, Tampa, FL 33607

Recorder of Log Sheet Janus Research **Date Log Sheet Completed** 11-2-2020

Is this survey or project a continuation of a previous project? ☐No ☒Yes: **Previous survey #s (FMSF only)** _____

Project Area Mapping

Counties (select every county in which field survey was done; attach additional sheet if necessary)
1. Hillsborough 3. _____ 5. _____
2. _____ 4. _____ 6. _____

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)
1. Name GIBSONTON Year 1971 4. Name _____ Year _____
2. Name _____ Year _____ 5. Name _____ Year _____
3. Name _____ Year _____ 6. Name _____ Year _____

Field Dates and Project Area Description

Fieldwork Dates: Start 10-6-2020 End 10-6-2020 **Total Area Surveyed** (fill in one) _____hectares 90.20 acres
Number of Distinct Tracts or Areas Surveyed 1
If Corridor (fill in one for each) **Width:** _____meters _____feet **Length:** _____kilometers _____miles

Florida Master Site File / Div. of Historical Resources / R.A. Gray Bldg / 500 S Bronough St., Tallahassee, Florida 32399-0250
Phone 850.245.6440, Fax 850.245.6439, Email: SiteFile@dos.myflorida.com

Survey Log Sheet

Survey #_____

Research and Field Methods

Types of Survey (select all that apply): ☒archaeological ☒architectural ☐historical/archival ☐underwater ☐damage assessment ☐monitoring report ☐other(describe): _____

Scope/Intensity/Procedures

50 cm diameter shovel tests (n=6) were dug judgmentally to cover approximately 10% of low probability areas. All soil was screened. Visual inspection of project APE.

Preliminary Methods (select as many as apply to the project as a whole)

☐Florida Archives (Gray Building)	☐library research- *local public*	☒local property or tax records	☒other historic maps	☐LIDAR
☐Florida Photo Archives (Gray Building)	☐library-special collection	☐newspaper files	☒soils maps or data	☐other remote sensing
☒Site File property search	☐Public Lands Survey (maps at DEP)	☒literature search	☐windshield survey	
☒Site File survey search	☐local informant(s)	☐Sanborn Insurance maps	☒aerial photography	

☐other (describe): _____

Archaeological Methods (select as many as apply to the project as a whole)

☐Check here if **NO** archaeological methods were used.

☐surface collection, controlled	☐shovel test-other screen size	☐block excavation (at least 2x2 m)	☐metal detector
☐surface collection, uncontrolled	☐water screen	☐soil resistivity	☐other remote sensing
☒shovel test-1/4"screen	☐posthole tests	☐magnetometer	☒pedestrian survey
☐shovel test-1/8" screen	☐auger tests	☐side scan sonar	☐unknown
☐shovel test 1/16"screen	☐coring	☐ground penetrating radar (GPR)	
☐shovel test-unscreened	☐test excavation (at least 1x2 m)	☐LIDAR	

☒other (describe): _____

Historical/Architectural Methods (select as many as apply to the project as a whole)

☐Check here if **NO** historical/architectural methods were used.

☐building permits	☐demolition permits	☐neighbor interview	☐subdivision maps
☐commercial permits	☐windshield survey	☐occupant interview	☐tax records
☐interior documentation	☐local property records	☐occupation permits	☐unknown

☒other (describe): Visual Survey of APE

Survey Results

Resource Significance Evaluated? ☐Yes ☒No

Count of Previously Recorded Resources 0 **Count of Newly Recorded Resources** 0

List Previously Recorded Site ID#s with Site File Forms Completed (attach additional pages if necessary)

List Newly Recorded Site ID#s (attach additional pages if necessary)

Site Forms Used: ☐Site File Paper Forms ☒Site File PDF Forms

REQUIRED: Attach Map of Survey or Project Area Boundary

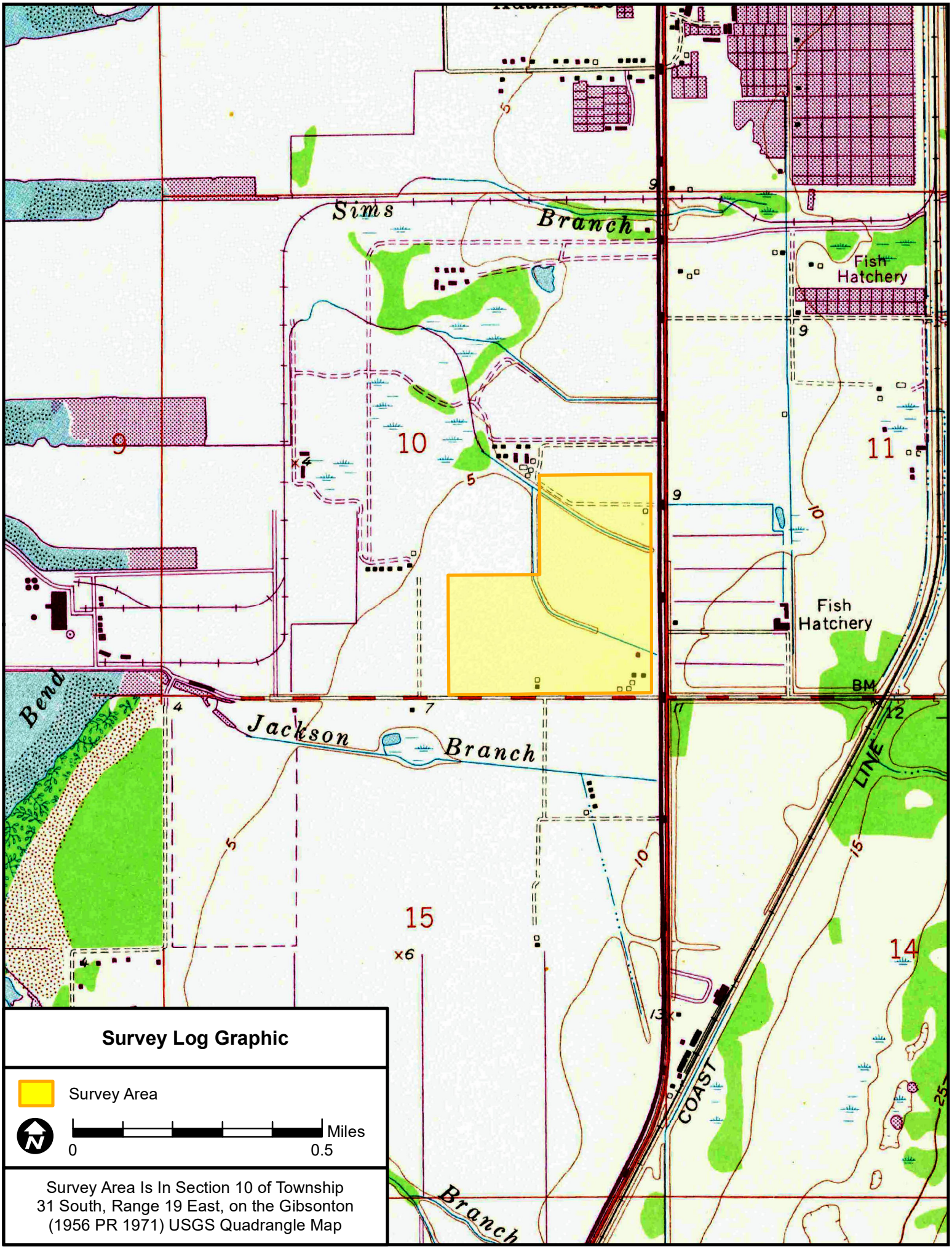
SHPO USE ONLY	SHPO USE ONLY	SHPO USE ONLY

Origin of Report: ☐872 ☐Public Lands ☐UW ☐1A32 # _____ ☐Academic ☐Contract ☐Avocational ☐Grant Project # _____ ☐Compliance Review: CRAT # _____

Type of Document: ☐Archaeological Survey ☐Historical/Architectural Survey ☐Marine Survey ☐Cell Tower CRAS ☐Monitoring Report ☐Overview ☐Excavation Report ☐Multi-Site Excavation Report ☐Structure Detailed Report ☐Library, Hist. or Archival Doc ☐Desktop Analysis ☐MPS ☐MRA ☐TG ☐Other: _____

Document Destination: Plottable Projects **Plotability:** _____

Florida Master Site File / Div. of Historical Resources / R.A. Gray Bldg / 500 S Bronough St., Tallahassee, Florida 32399-0250
Phone 850.245.6440, Fax 850.245.6439, Email: SiteFile@dos.myflorida.com



Survey Log Graphic

Survey Area

N

Miles

0 0.5

Survey Area Is In Section 10 of Township 31 South, Range 19 East, on the Gibsonton (1956 PR 1971) USGS Quadrangle Map

Appendix C

Environmental Resource Permit Application

TAMPA ELECTRIC COMPANY
BIG BEND III SOLAR
POWER PLANT PROJECT
ENVIRONMENTAL RESOURCE PERMIT APPLICATION

PREPARED FOR:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Southwest District Office
Division of Environmental Resources
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

PREPARED BY:

P.O. Box 111
Tampa, Florida 33601

AND

1408 North Westshore Boulevard, Suite 115
Tampa, Florida 33607

JULY 2021
200637-0200-12NR

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- Figure 3 – Soils Map
- Figure 4 – Land Use and Cover Map

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TAB 1

APPLICATIONS FORMS

Form 62-330.060(1) 404 Section A

Application for
Individual and Conceptual Approval
Environmental Resource Permit,
State 404 Program Permit,
and Authorization to Use State-Owned
Submerged Lands

Florida Department of Environmental Protection/

Water Management Districts

Effective December 22, 2020

Instructions for Use of This Form:

This form is designed to assist you in submitting a complete application. All applications must include Section A-General Information for All Activities. Sections B through H list typical information that is needed based on the proposed activities and are only required as applicable. Part 1-C of Section A will guide you to the correct sections needed based on your proposed activities. Applicants are advised to consult Chapter 62-330, F.A.C., and the Environmental Resource Permit Applicant's Handbook Volumes I and II for information regarding the ERP permitting process and requirements while preparing their application. Internet addresses for Chapter 62-330, F.A.C., and the Applicant's Handbook, Agency contact information, and additional instructions for this form can be found in Attachment 1.

What Sections of the Application Must I Fill Out?

Type of Activity	Section A	Section B	Section C	Section D	Section E	Section F	Section G	Section H	Section I
Fill in wetlands or waters for a single family residence?	Y	Y	N	N	N	N	N	N	Y, if in assumed waters
Docks, shoreline stabilization, seawalls associated with a single family residence?	Y	Y	N	N	N	Y, as needed	N	N	Y, if in assumed waters
Wetland impacts (other than association with an individual residence)?	Y	N	Y	N	N	N	N	N	Y, if in assumed waters
Boating facilities, a marina, jetty, reef, or dredging?	Y	N	Y	Y	N	Y, as needed	N	N	Y, if in assumed waters
Any work on state owned submerged land?	Y	N	Y	N	N	Y	N	N	Y, if in assumed waters
Construction of a stormwater management system?	Y	N	Y, as needed	N	Y	N	N	N	N
Constructing a mitigation bank?	Y	N	Y	N	Y, as needed	N	Y	N	Y, if in assumed waters
Creating a mine?	Y	N	Y, as needed	N	N	N	N	Y	Y, if in assumed waters

If you have any questions, or would like assistance completing this form, please contact the staff of the nearest office of either the Florida Department of Environmental Protection (DEP) or a Water Management District (WMD) (see Attachment 2).

Section A:
General Information for All Activities

Part 1: Name, Application Type, Location, and Description of Activity

A. Name of project, including phase if applicable: **Tampa Electric Company (TEC) Big Bend III Solar Power Plant.**

B. This is for (check all that apply):

☒ Construction and operation of **new** works, activities, and/ or a stormwater management system

☐ **Conceptual Approval** of proposed works, activities and/ or a stormwater management system

☐ Modification or alteration of **existing** works, activities, and/or a stormwater management system. Provide the existing DEP or WMD permit #, if known: Note: Minor modifications do not require completion of this form, and may instead be requested by letter in accordance with section 6.2 of Applicant's Handbook Volume I.

☐ **Maintenance or repair** of works, activities, and/ or a stormwater management system previously permitted by the DEP or WMD. Provide existing permit #, if known:

☐ Abandonment or removal of works, activities, and/ or a stormwater management system.

Provide existing DEP or WMD permit #, if known:

☐ Operation of an **existing unpermitted** work, activity, and/or stormwater management system.

☐ Construction of additional phases of a permitted work, activity, or system.

Provide the existing DEP or WMD permit #, if known:

☒ A State 404 Program authorization:

☐ Exemption ☒ General Permit ☐ Individual Permit

If requesting an Exemption or General Permit provide Rule #, if known: **62-331.245**

☐ **By checking this box**, I hereby voluntarily waive, in accordance with Rule 62-330.090(8), F.A.C., the agency action deadlines in section 5.5.3 of Volume I in the event my project also requires a State 404 Program authorization (other than an exemption) under Chapter 62-331, F.A.C., and request that the agency actions for the ERP and State 404 Program authorizations be issued at the same time. (This is strongly recommended to ensure consistency, and to reduce the potential need for project modifications to resolve inconsistencies that may occur when the agency actions are issued at different times.) If this box is checked and the Agency(ies) determines that no State 404 Program authorization is required, the Agency will continue to abide by section 5.5.3 of Volume I.

C. **List the type of activities proposed. Check all that apply**, **and provide the supplemental information requested in each of the referenced application sections.** Please also reference Applicant's Handbook Volumes I and II for the type of information that may be needed.

☐ Activities associated with one single-family residence, duplex, triplex, or quadruplex that do not qualify for an exemption or a General Permit: **Provide the information requested in Section B. Do not complete Section C.**

☒ Activities within wetlands or surface waters, or within 25 feet of a wetland or surface water, (not including the activities associated with an individual single-family residence). Examples include dredging, filling, outfall structures, docks, piers, over-water structures, shoreline stabilization, mitigation, reclamation, and restoration/enhancement. **Provide the information requested in Section C.**

☐ Activities within navigable or flowing surface waters such as a multi-slip dock or marina, dry storage facility, dredging, bridge, breakwaters, reefs, or other offshore structures: **In addition to Section C, also provide the information requested in Section D.**

☐ Activities that are (or may be) located within, on, or over state-owned submerged lands (See Chapter 18-21, F.A.C. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21): **In addition to Section B or C, also provide the information requested in Section F.**

☒ Construction or alteration of a stormwater management system serving residential, commercial, transportation, industrial, agricultural, or other land uses, or a solid waste facility (excluding mines that are regulated by DEP). **Provide the information requested in Section E.**

☐ Creation or modification of a Mitigation Bank (refer to Chapter 62-342, F.A.C. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-342): **Provide the information requested in Section G.**

☐ Mines (as defined in Section 2.0 of Applicant's Handbook Volume I) that are regulated by the DEP: **Provide the information requested in Section H.**

☐ Other, describe: Please contact the Agency to determine which additional sections of the application are needed. See Attachment 2 for Agency contacts.

D. Describe in general terms the proposed project, system, works, or other activities. For permit modifications, please briefly describe the changes requested to the permit: **TEC proposes to build a third solar power plant with internal access roads and a stormwater management system on the Big Bend Power Station property (i.e., Big Bend III Solar) located in Apollo Beach, Hillsborough County, Florida (see Figures 1 and 2). Installation of a solar power plant is just one example of how TEC invests in renewable energy sources.**

E. Project/Activity Street/Road Address or other location (if applicable): **Access Roads: U.S. Highway 41 and Big Bend Road**
City: **Apollo Beach** County(ies): **Hillsborough** Zip: **33572**

Note: For utility, road, or ditch/canal activities, provide a starting and ending point using street names and nearest house numbers or provide length of project in miles along named streets or highways. **N/A**

F. Project location map and Section, Township, and Range information (use additional sheets if needed): Please attach a location map showing the location and boundaries of the proposed activity in relation to major intersections or other landmarks. The map should also contain a north arrow and a graphic scale; show Section(s), Township(s), and Range(s); and must be of sufficient detail to allow a person unfamiliar with the site to find it. **Please refer to Figures 1 and 2.**

Section(s): **10;** Township: **31 South;** Range: **19 East (Hillsborough County, Florida).**
Land Grant name, if applicable: **N/A**

G. Latitude (DMS) **27º 47' 41.970" N;** Longitude (DMS) -**82º 23' 15.845" W**; (Taken from central location of the activity). Explain source for obtaining latitude and longitude (i.e. U.S.G.S. Quadrangle Map, GPS, online resource): **Google Earth**.

H. Tax Parcel Identification Number(s): **U-10-31-19-ZZZ-000001-73800.0; U-10-31-19-ZZZ-000001-73810.0; U-10-31-19-ZZZ-000001-73820.0; U-10-31-19-ZZZ-000001-73930.0; and U-10-31-19-ZZZ-000001-73840.0.**[Number may be obtained from property tax bill or from the county property appraiser's office; if on multiple parcels, provide multiple Tax Parcel Identification Numbers]

I. Directions to Site (from major roads; include distances and landmarks as applicable): **From the city of Tampa, take Interstate (I)-75 south for approximately 14 miles to Apollo Beach, Exit 246. Exit on ramp heading west onto Big Bend Road. Proceed west for about 1.5 miles to U.S. Highway 41. At the intersection of Big Bend Road and U.S. Highway 41, continue heading west on Big Bend Road for approximately 0.10 mile and turn off on the north or right side of Big Bend Road at a dirt entrance to a locked gate that can be used to access the eastern side of the property. Another entrance is located an additional 0.13 mile west to a gravel driveway at another locked gate. A third entrance at another gravel road to the western, developed side of the project site is located an additional 0.07 mile or 0.3 mile from the intersection of U.S. Highway 41 and Big Bend Road. The project site is a secured facility. Please contact TEC prior to property access.**

J. Project area or phase area: **92.7 acres**

K. Name of waterbody(ies) (if known) in which activities will occur or into which the system will discharge: **The proposed system will discharge to unnamed ditches and ultimately Tampa Bay.**

The following questions (M-O) are not applicable to activities related to an individual single-family residence, including a dock, pier, and/or seawall associated with that residence.

L. Is it part of a larger plan of development or sale? ☐ yes ☒ no

M. Impervious or semi-impervious area excluding wetlands and other surface waters (if applicable): **Currently, there are approximately 1.07 acres of existing impervious surfaces onsite, however a total of approximately 1.47 acres of impervious surfaces will be associated with the proposed development (i.e., an increase of 0.40 acres of impervious surfaces).**

N. Volume of water the system is capable of impounding (if applicable): **Based on the stormwater treatment system proposed, approximately 6.21 acre-ft. of water quality treatment volume will be available for the developed project site, when only 0.12 acre-ft will be required.**

Normal Pool:	acre-feet.	Depth	ft.
Maximum Pool:	acre-feet.	Depth	ft.

Part 2: Supplemental Information, and Permit History

A. Is this an application to modify an existing Environmental Resource Permit or to construct or implement part of a multi-phase project, such as a project with a Conceptual Approval permit? ☐ Yes ☒ No (If you answered "yes", please provide permit numbers below*):* **N/A**

Agency	Date	Permit/Application No.	Project Name

B. Indicate if there have been any **pre-application meeting(s)** with the DEP, WMD, or delegated local government, or other discussions, meetings, or coordination with other stakeholders or agencies about the proposed project, system or activity. **No.** If so, please provide the date(s), location(s) of the meeting, and the name(s) of Agency staff that attended the meeting(s): **N/A**

Agency	Date	Location	Meeting Attendees

C. **Attach a depiction (plan and section views), which clearly shows the works or other activities proposed to be constructed.** Use multiple sheets, if necessary, a scale sufficient to show the location and type of works, and include a north arrow and a key to any symbols used. **Specific information to be included in the plans is based on the activities proposed and is further described in Sections B-H**. However, supplemental information may be required based on the specific circumstances or location of the proposed works or other activies.

TEC has undertaken an initiative to develop, own and operate solar photovoltaic (PV) projects as part of our broader energy resource mix. TEC has been conducting a site selection study to identify potential sites for development of up to 1,200 megawatts (MW) of solar PV electric generating facilities. Based on the assumption that 1 MW of solar generation requires approximately 5 acres of land, the planned facilities would require approximately 6,000 acres of buildable land. TEC focused the siting efforts on lands located within or in proximity to our service territory (i.e., Hillsborough, Pasco and Polk Counties). The study also focused on parcels that had single landowners and capable of supporting at least 50 to 75 MW of solar PV electric generation (i.e., a minimum of 250 to 375 acres). Proximity to existing roadways and TEC's existing electrical transmission lines were also considered in evaluating the potential locations. In addition, TEC identified potential environmental constraints such as the presence of wetlands, surface water bodies, and threatened and endangered species based on information from available data sources. Initially, TEC reviewed over 200 potential solar power sites that encompassed a total of over 70,000 acres. Several potential solar power sites were selected for further evaluation. TEC conducted more detailed due diligence analyses on these subject properties including onsite field studies such as environmental site assessments, wetland and other

surface water delineations, listed species surveys, cultural resource assessments, and grand tree surveys. After it was determined that the majority of the land surveyed on a subject property was highly altered and therefore potentially available for development of a solar PV project, TEC designed a site plan that specifically avoided or minimized impacts to wetlands and their upland buffers and to other surface waters such as natural and channelized/otherwise altered creeks, upland cut ditches, and man-made ponds to the greatest extent practicable. In addition to our in-house review, TEC also reviewed other potential sites proposed by other solar power plant developers. TEC selected several project sites to permit the development of solar PV electric generating facilities. One of the properties that is already under TEC ownership and has been evaluated by TEC for permitting the construction of a new PV renewable energy generating facility is the Big Bend III property (formerly known as the ABI Property). The proposed Big Bend III Solar Power Plant project site is approximately 92.7 acres and located east-southeast of the existing Big Bend Power Station in Hillsborough County, Florida (Section 10, Township 31 South, Range 19 East).

The proposed project site is bordered on the east by U.S. Highway 41 (South Tamiami Trail), on the south by Big Bend Road, on the west by the former East Gypsum Storage Area and a cement manufacturing plant and on the north by undeveloped land adjacent to the National Gypsum Company wallboard facility. Approximately 30 percent on the western side of the project site is currently being used as a remote construction laydown area for the Big Bend Unit 1 Modernization Project. The remainder of the project site is mostly abandoned, overgrown agricultural land. Most of the land in the project area is flat and ranges from approximately 3.00 to 9.38 ft. above sea level. TEC proposed this project site as an excellent candidate for solar power plant development due to its 1) highly altered condition (upland areas have mostly been previously converted to agriculture and then abandoned or developed as a construction laydown area with intent for removal after the intended use is completed), 2) availability as a large area of open land already owned by TEC, 3) proximity to another existing TEC solar power generating facility (i.e., Big Bend I Solar) and the recently permitted TEC solar power generating facility (i.e., Big Bend II Solar) located approximately 0.75 mile to the south that will be utilized for interconnection to the power grid and 4) potential for direct access from two separate paved roadways that border the project site (i.e., U.S. Highway 41 and Big Bend Road).

The proposed solar energy generation facility will employ thin-film PV panels that absorb sunlight and directly produce electricity. The facility will consist of a solar field of PV panels mounted on steel support structures, an electrical collection system that aggregates the output from the PV panels and converts the electricity from direct current (DC) to alternating current (AC), which will be combined and transformed to a voltage of 34.5-kilovolt (kV) and then transmitted through a new underground 34.5-kV transmission line interconnect to the Big Bend II Solar Power Plant Site. The PV panels will be anti-reflective coated and will be attached to single-axis tracking systems mounted on embedded (pounded) steel posts. The tracking system will allow the panels to rotate east-to-west throughout the day to track the movement of the sun, maximizing energy yield. Support posts will extend approximately 4 to 7 ft. above grade to elevate the panels and any exposed electrical equipment at least 1 foot above established base flood elevation(s) for the project site. When fully constructed, the tracking system will have a maximum height of up to 15 ft. at full rotation, and approximately 6 ft. in height at stow (horizontal). The PV panels will be arranged in north-to-south rows with center-to-center spacing of approximately 12 to 16 ft. The rows of PV panels will be organized into electrical groups referred to as "arrays." The arrays will include inverters that convert the DC power from the solar panels to AC power, which is utilized on the power grid. Each array will encompass approximately 15 acres to produce approximately 3 MW of electricity and will include one modular inverter. The size of each array will depend on the capacity of the inverters mounted on the array's associated inverter skid. Each inverter skid is anticipated to be an approximately 10-ft.-by-35-ft. structure up to 15 ft. in height. The inverter skids will be mounted on steel or concrete structures to be elevated above base flood elevation. Each inverter skid will have an associated transformer to step up the electricity voltage from the inverter output voltage, which will minimize electrical losses in the collection system. From each such transformer, electricity will be conveyed via a collection system, where all circuits will be combined. To interconnect the Big Bend III Solar Power Plant to the electrical grid, a new, underground 34.5-kV transmission line will be constructed from the project site to the Big Bend II Solar Project along the existing 230-kV transmission line corridor located to the west. The Big Bend III Solar Project will have a maximum capacity of 15.52 MW of AC electricity for transmission into the power grid, which

is less than the 75-MW threshold established by the Florida Electrical Power Plant Siting Act. This facility is a certified facility because it is on Big Bend property. The final project design may be modified based on results of ongoing engineering and site studies but will not alter the Project's overall footprint or maximum generation capacity.

A 20-ft. wide, aggregate base, compacted access road will be constructed for the proposed driveway from Big Bend Road. The driveway will be designed in accordance with Hillsborough County standards. Approximately 12- to 20-ft. wide, interior roads will be installed for access to the arrays and inverter skids. These interior access roads will be constructed at-grade and may incorporate a geotextile fabric or geogrid underlayment, where needed. The most critical/heaviest loads utilizing these access roads will be the high-voltage equipment and inverter skid deliveries. Internal site access roads will be constructed of aggregate base material over compacted native subgrade. The internal roads will be designed in accordance with Hillsborough County standards.

The construction and operation of the proposed solar power plant was specifically designed to avoid or minimize impacts to wetlands and other surface waters and their associated upland buffers to the extent practicable. However, stormwater treatment for the proposed facilities will be necessary. Therefore, surface runoff from the proposed access roads (unpaved) will be directed via overland flow to the 25-ft. wide Vegetative Natural Buffers (VNB) located throughout the site. The VNB are areas with vegetation suitable for nutrient uptake and soil stability that will be set aside between developed areas and a receiving water or wetlands for stormwater treatment purposes. These buffers have been designed to provide treatment from the first 1 inch of runoff from the added impervious surfaces (i.e., access roads and inverter pads).

Initial site clearing activities within the Project boundary involves removal of trees necessary for solar array installation and prevention of shading on the panels. Trees within the actual solar array/inverter and roadway areas will be entirely removed, including stumps and roots. Areas disturbed by grading will be seeded with native grasses. The seed mix within the solar panel area will be low-growing grasses or vegetative cover designed to minimize mowing and reduce maintenance. Sloped areas particularly subject to erosion will be protected by seeding and other appropriate erosion control methods. Herbicides may be used sparingly for vegetation maintenance. Site preparation activities will be conducted in accordance with applicable Hillsborough County and DEP stormwater management requirements.

Construction and maintenance access to the solar power plant will be gained via Big Bend Road onto the existing or improved farm roads. Staging areas will be located within the footprint of the project construction areas. Where proposed construction activities occur adjacent to wetlands, appropriate erosion and sediment controls (i.e., Best Management Practices) will be implemented to prevent disturbance of the wetland or wetland buffers. Sediment controls include the installation of staked silt fences along wetland buffers. Following the completion of construction, no disturbances to wetland substrates and/or vegetation will occur as a result of operation or maintenance activity. If needed, a spill prevention, control, and countermeasures (SPCC) plan will also be developed and implemented for Project construction. The SPCC plan would address fuels, lubricants, and hydraulic fluids expected to be used for construction equipment. The equipment will be properly maintained to minimize leaks and, as warranted, prevent spills. Equipment and vehicle maintenance will be performed offsite at an appropriate facility.

Due to the highly altered condition of the project area and implementation of environmentally sensitive project designs, construction and maintenance activities should not result in significant adverse impacts on habitat, wildlife, or aquatic life. Construction duration is anticipated to be approximately 4 to 8 months. Initial site preparation activities are scheduled to begin on January 1, 2022, after acquisition of any required local, State and/or federal authorizations or approvals, and installation and commissioning of the Project is expected to be completed on December 31, 2022. The Project is anticipated to have an operational lifespan of approximately 25 to 30 years.

On October 7, 8 and 13, 2020, wetland ecologists with Environmental Consulting & Technology, Inc. (ECT) conducted wetland delineations and jurisdictional determinations on the Big Bend III Property. ECT delineated wetlands and other surface waters in the field using accepted, standard State and federal wetland delineation methodologies (e.g., the DEP regulations, Section 62-340 Florida Administrative Code [F.A.C.], including the Florida Wetlands Delineation Manual [1995] and the Routine Onsite Determination Methods as described in the U.S. Army Corps of Engineers [USACE] 1987 Wetlands Delineation Manual, the 2010 Regional Supplement to the USACE Wetlands Delineation Manual: Atlantic and Gulf Coastal Plan Region [Version 2.0], and the most current and complete vegetative index [2018 USACE National Wetland Plant List], respectively). Pink surveyor's flags labeled with the words "wetlands delineation" were tied at strategic locations along the identified jurisdictional boundaries on existing vegetation. Each flag was labeled with a code to identify the wetland/surface water. George F. Young, Inc. (GFY), the Project Surveyor, followed the ECT ecologists in the field to survey the wetland flagged locations. The coordinates of wetland-flagged locations were also taken by ECT using a hand-held, differentially corrected, Trimble global positioning system (GPS). The GPS wetland-flagged location coordinates and a corresponding map were produced by ECT and provided to GFY for assistance in conducting the certified wetland survey for the project site. The wetland survey is believed to be accurate and consistent with both State and federal wetland delineation methods and adequate to use for project planning and wetland permitting (see Appendix A). The surveyed jurisdictional lines were overlaid on the project site and together with other available existing and proposed project-related data are provided on the site plan construction drawings (see Appendix B). Figures 1 and 2 provide the location of the project. Figure 3 is a soils map of the project site. Figure 4 is a land use and cover map for the project site. Appendices A, B, C, D, E, F, G, H, and I provide the property deed and boundary/wetland surveys; site construction plans; geotechnical engineering report; ground photographs of representative wetlands and other surface waters; drainage report; cultural resource assessment survey report; completed baseline wetland Uniform Mitigation Assessment Method worksheets; Frac-Out Contingency Plan; and adjacent property ownership map, respectively.

TEC contracted with Culpepper and Terpening, Inc. and ECT to provide engineering and stormwater designs and environmental consulting for preparation of the Environmental Resource Permit application for the Project, respectively. DEPCOM Power, Inc. will be constructing the proposed Project. ECT is the designated Environmental Consultant for the Project. TEC will own and operate the Big Bend III Solar power generation facility.

D. Processing Fee: Please submit the application processing fee along with this application form and supplemental information. Processing fees vary based on the size of the activity, the type of permit applied for, and the reviewing Agency. Please reference Appendix D of Applicant's Handbook Volume I to determine the appropriate fee. **This ERP application is being submitted in accordance with the Conditions of Certification (COC) of the existing Site Certification for Big Bend Power Station Unit 4 (PA79-12) to obtain a determination of compliance for the construction and operation of the proposed Big Bend III Solar Power Plant. Since the applicant is only seeking compliance with the above-referenced COC, an ERP is not required and therefore the permitting processing fee is waived.**

Part 3: Applicant and Associated Parties Information

Instructions: Please complete the following sections. For corporations, list a person who is a registered agent or officer of the corporation who has the legal authority to bind the corporation.

A. Applicant (Entity Must Have Sufficient Real Property Interest)
☒ **This is a Contact Person for Additional Information**

Last Name: **Kroh** First Name: **Stanley** Middle Initial: **M**
Title: **Manager of Land and Stewardship Programs, Environmental Services** Company: **Tampa Electric Company**
Address: **P.O. Box 111**
City: **Tampa** State: **Florida** Zip: **33601-0111**
Home Telephone: **N/A** Work Telephone: **813-228-4257**
Cell Phone: **N/A**
E-mail Address: **smkroh@tecoenergy.com**

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☒

B. Land Owner(S) (If Different or in Addition to Applicant)
☐ **Check here if landowner is also a co-applicant**

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone:
E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

C. Operation and Maintenance Entity(see Applicant's Handbook I, Section 12.3)

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone:
E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

D. Co-Applicant (If Different or In Addition to Applicant and Owner)

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone:
E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

E. Registered Professional Consultant
☐**This is a contact person for additional information**

Last Name:	First Name:	Middle Initial:
Title:	Company:	
Address:		
City:	State:	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:		
E-mail Address:		

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

F. Environmental Consultant
☒**This is a contact person for additional information**

Last Name: **Arcuri**	First Name: **Anthony**	Middle Initial: **N**
Title: **Principal Scientist/Natural Resources Power & Energy Manager**		
Company: **Environmental Consulting & Technology, Inc.**		
Address: **1408 North Westshore Boulevard, Suite 115**		
City: **Tampa**	State: **Florida**	Zip: **33607**
Home Telephone: **N/A**	Work Telephone: **813-289-9338**	
Cell Phone: **813-293-0762**		
E-mail Address: **tarcuri@ectinc.com**		

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

G. Agent Authorized to Secure Permit (If Different from Consultant)

Last Name:	First Name:	Middle Initial:
Title:	Company:	
Address:		
City:	State:	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:		
E-mail Address:		

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐
If necessary, please add additional pages for other contacts and property owners related to this project.

H. Real Property Interest

a. Permits are only issued to entities having sufficient real property interest as described in Section 4.2.3(d) of Applicant's Handbook Volume I**. Please attach evidence of the applicant's real property interest over the land upon which the activities subject to the application will be conducted, including mitigation areas (if applicable).** Refer to Sections 4.2.3(d)-(e) for sufficient real property interest documentation. **Evidence of the applicant's real property interest (i.e., warranty deed) is provided in Appendix A.**

b. For activities that require a recorded notice in accordance with rule 62-330.090(7), F.A.C., please provide either the complete legal description of the property or a copy of the pages of the document recorded in the public records that contains the complete legal description. If the land upon which the proposed activities are to occur is not owned by the applicant, the applicant must also provide copies of any right-of-way, leases, easements, or other legal agreement which authorizes the applicant to perform the activities on those lands. **A signed and sealed property boundary of the project site with a complete legal description is also provided in Appendix A.**

Part 4: Signatures and Authorization to Access Property

Instructions: For multiple applicants please provide a separate Part 4 for each applicant. For corporations, the application must be signed by a person authorized to bind the corporation. A person who has sufficient real property interest (see Section 4.2.3(d) of Applicant's Handbook Volume I) is required in (B) to authorize access to the property, except when the applicant has the power of eminent domain.

A. By signing this application form, I am applying for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application and represent that such information is true, complete and accurate. I understand this is an application and not a permit, and that work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto does not relieve me of any obligation for obtaining any other required federal, state, water management district, or local permit prior to commencement of construction. I agree to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a different responsible operation and maintenance entity. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Stanley M. Kroh
Typed/Printed Name of Applicant or Applicant's Authorized Agent

Stanley M Kroh
Signature of Applicant or Applicant's Authorized Agent

7/1/2021
Date

Manager of Land and Stewardship Programs, Environmental Services
(Corporate Title if applicable)

B. Certification of Sufficient Real Property Interest And Authorization For Staff To Access The Property:

I certify that:

☒ **I possess sufficient real property interest in or control, as defined in Section 4.2.3 (d) of Applicant's Handbook Volume I,** over the land upon which the activities described in this application are proposed and I have legal authority to grant permission to access those lands. I hereby grant permission, evidenced by my signature below, for staff of the Agency to access, inspect, and sample the lands and waters of the property as necessary for the review of the proposed works and other activities specified in this application, upon advance notice. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review, inspection, and/ or sampling. Further, if a permit is granted, upon advance notice, I agree to provide entry to the project site for such agents or personnel with proper identification to determine compliance with permit conditions and permitted plans and specifications.

OR

☐ I represent an entity having **the power of eminent domain and condemnation authority**, and I/we shall make appropriate arrangements to enable staff of the Agency to legally access, inspect, and sample the property as described above.

Stanley M. Kroh
Typed/Printed Name

Stanley M Kroh
Signature

7/1/2021
Date

Manager of Land and Stewardship Programs, Environmental Services
(Corporate Title if applicable)

C. Designation of Authorized Agent (If Applicable):

I hereby designate and authorize to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirements which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S., and 18 U.S.C. Section 1001.

_____ _____

Typed/Printed Name of Applicant Signature of Applicant Date

(Corporate Title if applicable)

Form 62-330.060(1) 404 Section C

Section C: Supplemental Information for Works or Other Activities In, On, or Over Wetlands and/or Other Surface Waters

Instructions: **This section is for applications that do not involve activities associated with an individual single-family residence, duplex, triplex, or quadruplex. For those activities, please use Section B.** This form is to be completed if the proposed work or activity will occur in, on, over, or within 25 feet of a wetland or other surface water. The supplemental information required by this section is in addition to the information required by Section A of the application.

Part 1: Wetland or Other Surface Water Impact Summary

1. Describe the basic purpose of the project or activity: **The basic purpose of the project is to build a new solar power plant to provide an alternate method of producing clean energy and continue to provide the public with sufficient and uninterrupted electrical power service.**

2. Total area of work (dredging, filling, construction, alteration, or removal) in, on, or over wetlands or other surface waters: **A portion of the solar arrays are proposed to be constructed over approximately 0.51 acre of a shrubby marsh (i.e., 0.12 acre of W1-6417) and a dead-end ditch (i.e., 0.39 acre of OSW2-514). In addition to the construction of solar arrays, TEC proposes to fill approximately 0.035 acre of two drainage ditches (i.e., 0.015 acre of OSW1-514 and 0.02 acre of OSW3-514) for the construction of internal access road crossings (i.e., 1,512 sq. ft.; 0.035 ac. of proposed fill impacts in other surface waters).**

3. Total volume of material to be dredged or filled in wetlands or other surface waters: **N/A**
   a. to be dredged: **0** cubic yards,
   b. to be filled: **179** cubic yards.

4. Identify the seasonal high water level (SHWL) and wetland normal pool elevations for each wetland or surface water within the project site. For tidal wetlands and/or surface waters provide the elevation of mean high and mean low water. Include an aerial photograph showing the location of each sampling location, dates, datum, and methods used to determine these elevations. **The project site is mapped as having 57-Wabasso fine sand, 0 to 2 percent slopes throughout (Figure 3). This soil type is fine, nearly level and poorly drained sand with a seasonal high-water table to a depth of 10 inches below the ground surface during wet periods. During prolonged droughts, the water table can drop to 40 inches below the ground surface. On April 20, 2021, a geotechnical investigation was completed by S&ME, Inc. to determine subsurface conditions at the project site (see Appendix C). The report initially established the seasonal high groundwater level to be a half to one and a half foot below the ground surface based on soil type. However, subsurface investigations identified ground water levels above and below the ground surface, therefore it was determined that the groundwater level should be considered to be at the ground surface for design purposes.**

5. Name of waterbody(ies) (if applicable & if known) in which work will occur? **Work is not proposed in a named waterbody. The project site is located within the Bull Frog/Wolf Branch watershed. The project site drains to the northwest and discharges offsite into an unnamed drainage that ultimately discharges into Hillsborough Bay located approximately 0.7 mile to the west.**

6. Is the activity proposed in an Outstanding Florida Water or Aquatic Preserve?
☐ yes, name: ☒ no ☐ I don't know

7. Has there ever been a formal or informal wetland determination for the project site? If yes, provide the identifying number and/or a copy of the jurisdictional map. **No. On October 7, 8 and 13, 2020, wetlands and surface water features were delineated by ECT wetlands ecologists on the project site. ECT delineated wetlands and other surface waters in the field using accepted, standard State and federal wetland delineation methodologies (e.g., the DEP regulations, Section 62-340 Florida Administrative Code [F.A.C.], including the Florida Wetlands Delineation Manual [1995] and the Routine Onsite Determination Methods as described in the U.S. Army Corps of Engineers [USACE] 1987 Wetlands Delineation Manual, the 2010 Regional Supplement to the USACE Wetlands Delineation Manual: Atlantic and Gulf Coastal Plan Region [Version 2.0], and the most current and complete vegetative index [2018 USACE National Wetland Plant List], respectively). Pink surveyor's flags labeled with the words "wetlands delineation" were tied at strategic locations along the identified jurisdictional boundaries on existing vegetation. Each flag was labeled with a code to identify the wetland/surface water. George F. Young, Inc. (GFY), the Project Surveyor, followed the ECT ecologists in the field to survey the flagged locations. The coordinates of the flagged locations were also taken by ECT separately using a hand-held, differentially corrected, Trimble global positioning system (GPS). The coordinates for the GPS flagged locations and a corresponding map were produced by ECT and provided to GFY for assistance in conducting the certified wetland and other surface waters survey. A certified wetland and other surface waters survey was produced by GFY for the project site (i.e., Appendix A). The referenced wetland and other surface waters survey provided in Appendix A is accurate and consistent with both State and federal wetland delineation methods and adequate to use for project planning and wetland permitting. However, in addition to the surveyed wetlands and surface water features, man-made ditches and a stormwater pond located along the western side of the project site were mapped by hand using a recent aerial photograph (photo date 1/2021) because there was too much truck traffic and heavy equipment activity during the jurisdictional reviews to conduct a proper survey of these additional jurisdictional areas in the field (i.e., it was too dangerous to conduct the field work). The hand-drawn ditches and pond along with the referenced surveyed wetland and other surface waters were placed on a land use and cover map of the project site (see Figure 4). The referenced ditches and stormwater pond that were hand drawn were constructed at the designated remote construction laydown area for the Big Bend Unit 1 Modernization Project. Big Bend Unit 1 of the Big Bend Power Station is being modernized and repowered by replacing the conventional fossil fuel-fired steam unit with a natural gas-fired combined cycle generating unit. Prior to the proposed development, these erosion and sediment control facilities are planned to be filled in after the modernization project is completed. An engineering drawing of the stormwater pond, also referred to as Construction Sediment Pond 1, and associated ditches which was included in the Site Certification Application modification submittal for the referenced modernization project is also provided in Appendix A. The wetland jurisdictional determination has not been verified by DEP agency staff.**

8. Provide a map(s) of the project area and vicinity delineating USDA/NRCS soil types. **See Figure 3.**

9. Provide recent aerials legible for photointerpretation (no photocopies) with a scale of 1" = 400 ft, or more detailed, with project boundaries and wetland boundaries delineated on the aerial. **See Figure 4.**

10. Provide maps accurately portraying the existing and proposed natural vegetative community types and land cover classifications using recognized classification schemes. Suggested sources include: the Florida Natural Areas Inventory Guide to the Natural Communities of Florida (2010) available at http://www.fnai.org/naturalcommguide.cfm, or the Florida Land Use and Cover Classification System (FLUCCS) (FDOT 1999, available at http://www.dot.state.fl.us/surveyingandmapping/documentsandpubs/fluccmanual1999.pdf). For vegetated areas dominated by exotic vegetation, use the descriptors representative of the native community type that was present prior to exotic infestation. **The Florida Land Use, Cover and Forms Classification System (FLUCFCS) (Florida Department of Transportation [FDOT], 1999) was used to identify the land use and cover types for the proposed project site. The surveyed wetlands were overlaid on the most current aerial photographic background available and observed FLUCFCS types were mapped. These FLUCFCS categories were classified and mapped to Level III. However, the FLUCFCS Level II classification of 510 Streams and Waterways is not extended to Level III classifications in the 1999 FDOT FLUCFCS. To better define the drainages that exist on the project site, a modified land use/cover Level III code was utilized from the State of Florida Mining Reclamation and Restoration Standards (Rule 62C-16.0051[4], Florida Administrative Code [F.A.C.]). Any man-made drainage ditches cut through uplands were classified as FLUCFCS 514. Finally, a wildlife-based habitat classification scheme was included by using the Florida Natural Areas Inventory (FNAI) 2010 Guide to the Natural Communities of Florida. FNAI categories are based on "natural" areas. However, disturbed areas are also categorized under "Appendix 2. Altered Land Cover Types".**

The project site is mapped as 57-Wabasso fine sand, 0 to 2 percent slopes (see Figure 3). This soil type is nearly level, poorly drained and typically associated with seasonally flooded, low-lying pine flatwoods. An historic 1938 aerial photograph indicates that the northern portion of the project site was in cultivation, while most of the southern area was unimproved flatwoods with scattered pine trees. The large ditches on this property were constructed prior to 1938, possibly as early as the 1920s when the Tamiami Trail was constructed. The ditches carry flow from the highway and drain into wetlands located offsite. Ultimately, these offsite wetlands drain via a tidally influenced ditch to Hillsborough Bay. The abutting land was cleared and apparently used for row cropping. Most of the acreage in the general vicinity were put to row cropping or fish farming by the 1950s. A 1968 and later historic aerial photographs indicate that a horticultural nursery was present on the property at the intersection of South Tamiami Trail and Big Bend Road for several decades. Although the row crop furrows are evident on aerial photographs from the early 2000s, it appears that cultivation ceased about 2010 or 2011. The land has been mostly abandoned since that time and has recruited considerable nuisance/invasive vegetation throughout. The only recent development noted was on 2021 aerial photography along approximately 29 acres of the western side of the project site. This area was cleared and is currently in use as a remote construction laydown and staging area for the new natural gas fired unit (i.e., Big Bend Unit 1 Modernization Project). The land has a surface layer of gravel together with upland cut ditches and a pond to handle stormwater.

On October 7, 8 and 13, 2020, ECT ecologists mapped the land use and/or cover types present on the project site. There is one wetland (W) and ten other surface water (OSW) features on the project site. Currently, there is only one shrubby marsh (i.e., W1-6417) on the project site. In addition, there are nine man-made drainage ditches dug through uplands (i.e., OSW1-514, OSW2-514, OSW3-514, OSW4-514, OSW10-514, OSW10A-514, OSW11-514, OSW11A-514, and OSW12-514) and one small man-made pond (i.e., OSW13-534) on the project site. An additional five man-made upland cut drainage ditches are located just offsite (i.e., OSW5-514, OSW6-514, OSW7-514, OSW8-514, and OSW9-514). Ground photographs of representative wetlands and other surface waters are provided (Appendix D). The following narrative describes the land use/cover types occurring within the project site.

100 URBAN AND BUILT-UP

150 Industrial (FNAI: Developed) – This area is roughly one third of the property and is currently used as a remote laydown yard and staging area for on-going construction projects. The area has a surface of gravel with upland-cut ditches and a pond to handle stormwater. The ditches and pond were not delineated in the field because of the presence of heavy equipment and truck traffic in the area (i.e., it was not safe to survey the area). The overflow of the pond drains to OSW4. The ditches and pond will be filled after construction is completed on the Big Bend Unit 1 Modernization Project.

300 RANGELAND

329 Shrub and Brushland (FNAI: Abandoned Field/Abandoned Pasture) – This land was cleared in the late 1920s to 1930s and intensively cultivated from the 1940s to about 2010/2011. Since that time, the land has recruited a dense cover consisting of Brazilian pepper (*Schinus terebinthifolia*), tallowtree (*Triadica sebifera*), shrub verbena (*Lantana strigocamara*), saltbush (*Baccharis halimifolia*), cogongrass (*Imperata cylindrica*), guineagrass (*Urochloa maximum*), sand burrs (*Cenchrus* spp.), caesarweed (*Urena lobata*), beggarticks (*Bidens alba*), rose natalgrass (*Melinis repens*), fanpetals (*Sida* spp.), common ragweed (*Ambrosia artemisiifolia*), and other plants generally considered to be invasive species and/or agricultural weeds.

400 UPLAND FORESTS

422 Brazilian Pepper (FNAI: Invasive Exotic Monoculture) – These areas are heavily dominated by mature Brazilian pepper trees that have excluded almost all other plant species. Brazilian peppers were introduced to Florida in the mid-1800s as an ornamental. The high production of berries has allowed the tree to spread rapidly especially in areas of disturbance.

427 Live Oak (FNAI: Mesic Hammock) – There is a small stand of remnant live oaks (*Quercus virginiana*) present in the north field of the property.

437 Australian Pine (FNAI: Invasive Exotic Monoculture) – Australian pines (*Casuarina equisetifolia*) were planted along the ditches to prevent erosion and serve as windbreaks for the row crop fields. These trees were also planted in scattered locations on the project site. The ground under these trees has a thick layer of "needles" which excludes the growth of other plant species.

500 WATER

514 Upland Cut Ditches (FNAI: Canal/Ditch) – The diagonal ditches across this property were excavated sometime before 1938 (i.e., OSW1-514, OSW2-514, OSW3-514, and OSW4-514). The spoils along the ditches were planted with Australian pines and have recruited Brazilian pepper trees. The interiors of the ditches are heavily shaded and sparsely vegetated. Some plants noted within the beds of the ditches are alligatorweed (*Alternanthera philoxeroides*), water hemp (*Boehmeria cylindrica*), peppervine (*Nekemias arborea*), widespread maidenfern (*Thelypteris kunthii*), and manyflower marshpennywort (*Hydrocotyle umbellata*). The flow was slow and it is possible that there is a minor tidal influence especially during storm events. Additional man-made upland cut drainage ditches are located along the roadsides of U.S. Highway 41 and Big Bend Road just offsite (i.e., OSW5-514, OSW6-514, OSW7-514, OSW8-514, and OSW9-514). The most recently excavated drainage ditches located in the industrial area of the project site will be filled after construction is completed on the Big Bend Unit 1 Modernization Project (i.e., OSW10-514, OSW10A-514, OSW11-514, OSW11A-514, and OSW12-514).

534 Reservoirs less than 10 acres (FNAI: Artificial Pond) – A small man-made stormwater pond occurs in the industrial area of the project site (i.e., OSW13-534). This pond will be filled after construction is completed on the Big Bend Unit 1 Modernization Project.

600 WETLANDS

6417 Freshwater Marsh with Shrubs, Brush, and Vines (FNAI: Canal/Ditch) – This is part of an artificial swale that appears to have been created after old fencing and other infrastructures were removed in the past. The eastern end of the swale maintains enough water to support a wetland community (i.e., W1-6417) of southern cattails (*Typha domingensis*) and coastalplain willows (*Salix caroliniana*). The western portion, which is classified as an upland cut ditch (OSW2-514), follows where a fence once stood, is shallow, and mostly defined by Brazilian peppers and a lack of herbaceous cover.

The acreages and percentages of land cover and use types are provided on Figure 4.

11. Impact Summary Tables (located at the end of this section):

    a. For all projects, complete Table 1, 2 and 3 as applicable. **Table 1 has been completed; Tables 2 and 3 are not applicable.**

    b. For shoreline stabilization projects, provide the information requested in Table 4. **N/A**

12. If the activity is located on state owned submerged lands and requires a lease or easement, provide a list of names and addresses from the latest county tax assessment roll of all property owners located within a 500 ft. radius of the proposed lease or easement boundary in mailing label format, or you may elect to send notice to those persons by certified mail, with the return-receipt card addressed to the DEP or water management district, as applicable, in accordance with subsection 18-21.005(3), F.A.C., and Section 253.115, F.S. Attach additional sheets, if necessary. **N/A**

    1. Name:
       Mailing Address:
       City, State, Zip Code:

    2. Name:
       Mailing Address:
       City, State, Zip Code:

    3. Name:
       Mailing Address:
       City, State, Zip Code:

    4. Name:
       Mailing Address:
       City, State, Zip Code:

    5. Name:
       Mailing Address:
       City, State, Zip Code:

    6. Name:
       Mailing Address:
       City, State, Zip Code:

Part 2: Environmental Considerations

Note: for many questions, a state statute/Applicant's Handbook Volume I (AH I)/State 404 Program Applicant's Handbook section is cited to assist the applicant in addressing these questions.

1. Elimination or Reduction of Impacts (Avoidance and Minimization). Describe measures taken to eliminate or reduce impacts to wetlands and other surface waters (Refer to AH I Section 10.2.1). **During an environmentally responsive siting of the Tampa Electric Company (TEC) solar power plant, TEC investigated over 200 potential solar plant sites totaling over 70,000 acres. In addition to their in-house review, TEC also reviewed other potential sites proposed by other solar power plant developers. Ultimately, the proposed project site was chosen as an excellent candidate for solar power plant development because of its 1) highly altered condition (upland areas have mostly been previously converted to agriculture and then abandoned or developed as a construction laydown area with intent for removal after the intended use is completed), 2) availability as a large area of open land already owned by TEC, 3) proximity to another existing TEC solar power generating facility (i.e., Big Bend I Solar) and the recently permitted TEC solar power generating facility (i.e., Big Bend III Solar) located approximately 0.75 mile to the south that can be utilized for interconnection to the power grid and 4) potential for direct access from two separate paved roadways that border the project site (i.e., U.S. Highway 41 and Big Bend Road). In this already highly altered area, solar power plant construction or maintenance should not significantly impact native vegetation, wildlife, or aquatic life. After the project site was selected, impacts to wetlands and other surface waters were avoided or minimized by the following actions:**

   1) The alignment of the solar arrays and access roads was selected to avoid or minimize impacts to wetlands and other surface waters within the project site to the greatest extent practicable.

   2) Construction of the solar facility will mostly result in minor re-grading activities associated with access roads and the arrays.

   3) Any potential future potential continuation of agricultural operations and the existing remote construction laydown area for the Big Bend Unit 1 Modernization Project will be removed from the project site and the proposed facility will result in the future minimal use by humans or machinery after construction is completed.

   Therefore, the proposed project has been designed in the most environmentally sensitive manner possible.

2. Fish, Wildlife, Listed Species, and their Habitats. Provide results of any wildlife assessments that have been conducted on the project site and provide any comments, biological opinions, formal or informal consultation decisions, or recommended actions you have received pertaining to the project from the Florida Fish and Wildlife Conservation Commission, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. (*Refer to AH I Section 10.2.2*). **Prior to submission of ERP applications, surveys for listed species are always conducted to verify presence/absence of listed species and any unique or critical habitats that could potentially support them, identify and map the location of any listed species, assess the potential impacts to listed species from project development, and determine appropriate minimization measures and/or mitigation for any potential impacts to listed species. In addition to an inventory of the occurrence of any vertebrate species, any sightings of listed species would include recording the number of individuals, documenting the location using a global positioning system, identifying and mapping the representative habitat and taking photographs.**

   On October 7, 8 and 13, 2020, ECT ecologists conducted preliminary listed species surveys of the project site. The field surveys were performed by ECT ecologists traversing the more accessible areas of the project site by vehicle and walking in areas restrictive to vehicular use (e.g. difficult terrain and/or dense vegetation). Weather conditions were hot and humid with sporadic breezes. Only a few species of animals were observed during the wildlife surveys either directly or through signs thereof such as calls, tracks, scat, and burrows. Avian species

seen or indirectly identified through calls included northern mockingbird (*Mimus polyglottus*), northern cardinal (*Cardinalis cardinalis*), palm warbler (*Setophaga palmarum*), and European starling (*Sturnus vulgaris*). No herpetofauna were seen. Raccoon (*Procyon lotor*) tracks and scat were observed in ditches. Finally, small game trails, possibly made by rabbits or rodents, were also seen.

Most of the project site planned for development consists of fallow agricultural land. The above-referenced wildlife species as well as others in the area that have become adapted to agricultural operations and regional wildlife populations are not expected to be significantly affected by the proposed actions. Specific impacts to terrestrial and aquatic animals due to site construction varies by species and depends primarily on the extent of habitat alteration and continued availability of such habitat after construction. The project site is not located on or in the vicinity of any federally designated critical habitat. In addition, no aquatic habitats critical to the continued regional presence of important species will be affected. The use of mostly agricultural land together with existing paths and roads will minimize habitat losses and creation of barriers to animals' movements.

Individual small burrowing mammals (e.g., rodents), reptiles, or amphibians may be lost during site clearing. Such individual losses, however, will not affect local or regional populations. No losses of medium-sized or large mammals, birds, or other mobile species due to direct impacts or habitat alterations are expected because of the mobility of these animals. Therefore, no adverse impacts are expected to local or regional populations of game species, species of special concern or commercial importance, or threatened or endangered species occurring or potentially occurring within the project area.

Since the solar arrays will be mostly installed on the existing, abandoned agricultural uplands, no significant impacts to resident birds or migratory species are expected. Local disturbance or displacement of wildlife due to construction noise will be minor and short-term since construction activities in any one location will be intermittent and are not expected to last more than a few weeks.

3. Water quantity impacts to wetlands and other surface waters (*Refer to AH I Section 10.2.2.4 and AH II*).

   a. Does the activity include a proposed surface water management system with a control elevation different than the wetland normal pool elevation(s) of existing or proposed created wetlands or other surface waters? **No. The Drainage Report is provided in Appendix E.**

   b. If yes to (a), provide documentation (e.g. drawdown assessment or other methods) that shows the proposed surface water management system will not change the hydroperiod of the existing or created wetland or other surface water. **N/A**

4. Public Interest Test. Please describe how the proposed activity will ***not be contrary*** to the public interest, OR if such an activity significantly degrades or is located within an Outstanding Florida Water (OFW), that the regulated activity will be ***clearly in*** the public interest (*Refer to AH I Section 10.2.3*).
   The proposed project will not be contrary to the public interest because of the associated environmental benefits. The proposed solar PV facility is a renewable and sustainability method of energy generation. In addition, as stated previously, the siting of the proposed project was conducted in the most environmentally sensitive manner possible. After the project site was selected, disturbances to terrestrial, wetland, and aquatic systems at the project site were further minimized or avoided to reduce any potential impacts to sensitive habitats and/or endangered and threatened species associated with solar power plant construction and maintenance. The following methods were utilized to avoid or minimize potential project-related impacts:

1) **The alignment of the solar arrays and access roads was selected to avoid or minimize impacts to wetlands and other surface waters within the project site to the greatest extent practicable.**

2) **Construction of the solar facility will mostly result in minor re-grading activities associated with access roads and arrays.**

3) **Any potential future potential continuation of agricultural operations and the existing remote construction laydown area for the Big Bend Unit 1 Modernization Project will be removed from the project site and the proposed facility will result in the future minimal use by humans or machinery after construction is completed.**

Therefore, the proposed activity will not be contrary to the public interest and will ultimately serve the citizens with sufficient and uninterrupted electrical power service.

a. Please describe how the project will be designed to avoid adverse effects to public health, safety, or the welfare or the property of others. **Constructing the solar power plant on TEC-owned property located mostly on abandoned, overgrown agricultural land will avoid any adverse effects to the public health, safety or welfare because the area is not located on the property of private citizens. After construction, TEC will resume a normal maintenance and patrolling program on the project site. The intent of this maintenance and patrolling program is to maintain the structural safety of the facility and uninterrupted transmission of electrical power. These activities will be conducted to explore alternate methods of producing clean, renewable energy and continue to provide the public with sufficient and uninterrupted electrical power service.**

b. Please describe how the project will be designed to avoid adverse effects to the conservation of fish and wildlife, including endangered or threatened species, or their habitats. **The potential for occurrence of the listed species on the project site was determined by a habitat analysis, literature review, and ground surveys. The FNAI Species Tracking List provided information on animal and plant species listed as endangered, threatened, or species of special concern by the Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Agriculture and Consumer Services and/or U.S. Fish and Wildlife Service (USFWS) that have been recorded as present in Hillsborough County, Florida. The FWC Historic Water Bird Colony Locator and Historical Bald Eagle Nesting Areas websites were accessed for the occurrence of any documented wading bird rookeries or bald eagle (*Haliaeetus leucocephalus*) nest sites within the surrounding area, respectively. The Florida Audubon EagleWatch Bald Eagle Nest Locator was also accessed for any available more up to date information on bald eagle nesting. In addition, the USFWS Wood Stork (WOST) Nesting Colonies Map was reviewed for recent nearby wood stork colonies active between 2010 and 2019. The FNAI Species Tracking List identified 23 listed plants and 21 listed animals (8 reptiles, 12 birds and 1 mammal) as occurring within Hillsborough County, Florida. Based upon an evaluation of habitat preference and distribution of species, out of the 44-listed plant and animal species recorded for the County, no listed plant species, 12 listed animal species (5 reptiles and 7 birds) and one delisted, but still protected bird species, were identified as having the potential to occur within or in proximity to the project site. No listed species were observed on the project site during field surveys. The following narrative provides details on the thirteen state-protected or managed species and federally protected species considered to be wetland dependent that have the potential to occur on or within project environs.**

HERPETOFAUNA

American Alligator

The American alligator (*Alligator mississippiensis*) is the largest aquatic reptile in North America. It has a long-armored body with thick scales or bony plates. It has short, powerful legs and a long, round snout. American alligators occur in every county of Florida inhabiting freshwater marshes, swamps, rivers, and lakes. The American alligator is federally protected by the Endangered Species Act as a threatened species due to its similarity of appearance to the American crocodile (*Crocodylus acutus*), a federally-designated threatened reptile species, and as a federally-designated threatened species by Florida's Endangered and Threatened Species Rule. This listing provides federal protection for alligators, while allowing for state-approved management and control programs. American alligators can be legally taken only by individuals with proper licenses and permits. No alligators were seen onsite. Since development is not anticipated to significantly impact wetlands or the drainage ditches on the project site, adverse effects to the American alligator are considered unlikely from construction activities and there are no development restrictions associated with the species. However, if the presence of alligators on the property presents a safety issue during construction, maintenance or operation, TEC could elect to have alligators legally trapped and removed from the property by FWC-licensed and permitted alligator trappers.

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*) is both a State threatened species and candidate species for federal protection under the Endangered Species Act. It is a medium to large terrestrial reptile with a gray to brown colored upper shell, a yellow bottom shell and stumpy, unwebbed feet used for burrowing. It inhabits a variety of high, dry sandy habitats such as longleaf pine-xeric oak, sandhill, scrub, dry hammock, pine flatwoods, dry prairie, coastal grasslands and dunes, mixed hardwood-pine communities and pastures. During the October 2020 field surveys, 15 to 20 percent of potentially suitable upland habitats located within and along the project limits were surveyed for gopher tortoise burrows. No gopher tortoise burrows were found during the surveys. A 100 percent gopher tortoise burrow survey will be conducted prior to construction to locate tortoises and their burrows as required under FWC's Gopher Tortoise Permitting Guidelines (Revised August 2020). If potentially occupied gopher tortoise burrows are found on the project site, appropriate authorizations will be requested from FWC prior to construction to relocate tortoises from the development footprint to an approved recipient site. Burrow commensal species will either be avoided or relocated prior to construction in accordance with the FWC Gopher Tortoise Permitting Guidelines. Any remaining gopher tortoise burrows located on the project site that are not within or near the development footprint, and therefore considered to not be potentially affected by clearing or construction activities, will be protected using exclusion fencing, if necessary.

Short-tailed Snake and Florida Pine Snake

The State-threatened short-tailed snake (*Stilosoma extenuatum*) and Florida pine snake (Pituophis *melanoleucus mugitus*) are fossorial species. The short-tailed snake is a small, slender fossorial snake with a gray colored body with several brown spots that are separated by yellow to red sections, a small head that is indistinct from its body, smooth scales, and a tail that makes up less than 10 percent of the body length. The Florida pine snake is a large, powerful snake with disproportionately small head that ranges from beige to tan in color. These fossorial species prefer xeric habitats and the Florida pine snake is a commensal species commonly associated with the tunnels of gopher tortoises as well as pocket gophers. Xeric upland habitats do not occur on the project site. Therefore, these two species of listed snakes are not expected to occur. Any Florida pine snakes or other commensals that might be encountered during gopher tortoise burrow excavations would also be relocated in accordance with guidance found in the FWC Gopher Tortoise Permitting Guidelines prior to any construction activities.

Eastern Indigo Snake

Eastern indigo snakes (*Drymarchon corais couperi*) are listed as a state and federally threatened species. Since eastern indigo snakes can be found in nearly any wooded upland habitat throughout Florida, they have the potential to occur on the project site. They are also a commensal species commonly associated with gopher tortoise burrows. Eastern indigo snake was not observed on the project site. However, TEC will voluntarily implement the measures described in the *Standard Protection Measures for the Eastern Indigo Snake* (August 12, 2013). These protection measures include, but are not limited to, training contractors in the proper identification of eastern indigo snakes and posting signs on the construction site to aid in the proper identification and procedures if an eastern indigo snake is encountered. If an eastern indigo snake is encountered, work in the area will be stopped and will not recommence until the eastern indigo snake has safely evacuated the area on its own. Since these guidelines will be followed for the protection of the eastern indigo snake during clearing, development should receive a "not likely to adversely affect" (NLAA) determination using the USFWS 2010 amended August 13, 2013 eastern indigo snake programmatic effect determination key in review of USACE applications. A NLAA determination would fulfill the requirements of Section 7 of the Endangered Species Act. The USFWS and FWC should concur with the finding and no additional correspondence should be necessary.

BIRDS

Wood Stork

The wood stork (*Mycteria americana*) is a State and federally listed threatened species. It is a large, long-legged wading bird with mostly white plumage, except for the black tail and some of the wing feathers, gray rough scaly skin on the head and upper neck, a black bill and black legs with pink toes. It forages in a variety of freshwater and saltwater wetlands and ditches. It nests in mixed hardwood swamps, sloughs, mangroves and cypress domes/strands in Florida. The closest recorded wood stork colony is a potentially active nesting site located 10.44 miles to the northeast (name: Ferman Corporation; atlas number: 0; last active in 2019). The project site and environs does contain some potentially suitable wood stork foraging and nesting habitat, but no wood storks were seen during the wildlife surveys. Wood storks are not expected to be adversely affected by the development of the project site because:

1. **The closest nesting site is 10.44 miles away; therefore, regional populations of nesting wood storks should not be disturbed by construction activities.**
2. **The project site is surrounded by adequate habitat of better quality so that during construction any local wood stork populations should not be deprived of habitat on which to forage.**
3. **Minor fill impacts to wetlands and surface waters are proposed (i.e., less than 1/10 of an acre), therefore the proposed project will not affect the amount of suitable foraging habitat in the Core Foraging Area of nearby colonies.**

Based upon the guidelines provided in the USFWS September 2008 wood stork effects determination key in review of USACE applications, the proposed project should receive a "Not Likely to Adversely Affect" (NLAA) determination for wood stork populations (i.e., the project site is located over 2,500 feet from any nesting colonies and there is less than a tenth of an acre of proposed fill in ditches and wetlands which should not affect the amount of suitable foraging habitat in the Core Foraging Area of nearby colonies). A NLAA determination would fulfill the requirements of Section 7 of the Endangered Species Act for the USFWS and the FWC should concur with the finding and no additional correspondence should be necessary.

Little Blue Heron, Tricolored Heron, and Roseate Spoonbill

Little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Platalea alata*) are all State listed as a threatened species. The little blue heron is a medium to large, long-legged heron with a dark blue-gray body, greenish legs, purple-maroon head and neck, yellow eyes, and a long pointed pale blue or greenish bill with a black tip. The tricolored heron is a medium to large, long-legged, long-necked heron with a long pointed yellowish or greyish bill with a black tip. The legs and feet are dark. Adults have a blue-grey head, neck, back and upper wings, with a white line along the neck. The belly is white. The roseate spoonbill is a large wading bird known for its pink plumage and distinctive spoon-shaped bill. Its upper neck and back are colored white, while the wings and feathers underneath display the more recognizable light shade of pink. Wading birds inhabit freshwater, saltwater and/or brackish water wetland habitats. The FWC Historic Water Bird Colony Locator indicates that the closest historic water bird colonies (last known as active in the 1990s) are located 3.63 miles to the northwest (i.e., Water Bird Colony atlas numbers: 615007 and 615333). None of the listed wading birds were seen onsite. Based on the presence of wetlands, wading birds have the potential to utilize the project site for foraging and nesting. However, no wading bird nests were found during ground searches. Wading bird populations in the immediate region should not be significantly affected by development because there is ample foraging area of better quality occurring on adjoining lands. Therefore, the proposed construction activities and use of the project site will not impact the ability of wading birds to forage.

Florida Sandhill Crane

The Florida sandhill crane (*Antigone canadensis pratensis*) is state listed as a threatened species. It is a large bird that can be almost 4 feet in height. It is a gray long-legged and long-necked bird with a bald spot of red skin on its head, white cheeks, and a long and pointed bill. It inhabits freshwater marshes, prairies, pastures, and pond/lake edges in peninsular Florida to southern Georgia. Florida sandhill cranes prefer foraging in wet prairies, the shallow edges of freshwater marshes and ponds, pasture, and other grassy ruderal habitats. Their nest is a mound of herbaceous plant materials in shallow water or the ground of marshy areas. There are two subspecies of sandhill cranes that occur in Florida: the greater sandhill crane (*Antigone canadensis tabida*) and the state-designated threatened Florida sandhill crane. The project site does have open land that would provide foraging habitat for Florida sandhill cranes, but no potential nesting habitat for this species. No Florida sandhill cranes or nest sites were seen during surveys of the project site. The FWC recommends that surveys for nesting sandhill cranes be conducted immediately prior to any construction that occurs during the January through August breeding season. If there is evidence of nesting during this period, FWC recommends that any active Florida sandhill crane nests be buffered by 400 feet to avoid disturbance by human activities. If nesting is discovered after construction has begun or if maintaining the recommended buffer is not possible, TEC will coordinate with FWC regarding mitigation options.

Florida Burrowing Owl

The burrowing owl (*Athene cunicularia floridana*) is state listed as a threatened species. The Florida burrowing owl is a small, ground-dwelling owl with long legs, white chin stripe, round head, and stubby tail. Adults are boldly spotted and barred with brown and white. It prefers open xeric pastures with low vegetation. There are no xeric pastures on the project site and no burrowing owls or burrows were found. Since no burrowing owls or their burrows were seen during the survey, the likelihood of occurrence for the burrowing owl is considered very low. ECT will survey for the burrowing owl concurrent with pre-clearing surveys for the gopher tortoise. If burrowing owls are discovered after construction has begun or if maintaining the recommended buffer is not possible, TEC will coordinate with FWC regarding mitigation options.

Southeastern American Kestrel

Two subspecies of American kestrel occur in Florida: a northern subspecies (*Falco sparverius sparverius*) that winters here between September and April, and a resident, non-migratory subspecies, the southeastern American kestrel (*Falco sparverius paulus*). The southeastern American kestrel is a State listed threatened species. The southeastern American kestrel is the smallest falcon in the United States. The male has blue-gray wings, while the female is larger and has a more uniformly rufous back and wings. Both sexes have a mustached black-and-white facial pattern with strong perpendicular lines extending below the eye and near the ear, and a black band at the base of a rufous tail. Falcons in general have long, pointed wings and long tails. Kestrels seen in Florida during May-June are resident southeastern American kestrels. American kestrel nest in cavities that they do not excavate. Instead, they must depend on woodpeckers and natural processes to create holes in trees. Kestrels nest predominantly in dead, but standing longleaf pine trees, called snags, usually in the abandoned cavities of pileated woodpeckers. Typically, American kestrels can be seen perching on telephone wires at the edge of a field or other open area. Kestrels nest between mid-March and early June. No kestrels were seen on the project site.

Bald Eagle

Although the bald eagle is no longer classified by the USFWS or FWC as threatened or endangered, it is protected under the Federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, as well as Florid State Rule. Bald eagles are large, predatory raptors that are recognizable for their brown body and wings, white head and tail, and hooked yellow beak. Their feet, which are also yellow, are equipped with sharp black talons. No bald eagles nor nest sites were observed during the wildlife survey. According to the FWC Historical Bald Eagle Nesting Areas website, a historic nest site is located approximately 0.29 mile to the east of the project site (i.e., Nesting Area ID 979—last known active in 2010). Because the closest known bald eagle nest location is greater than 0.29 mile away and thus outside the 660-ft. nest protection buffer, construction activities will not negatively affect bald eagles. If a nest site is established on or near to the project site all applicable state and federal guidelines will be followed during construction.

SUMMARY

The project site offers scant habitat for forage and nesting/denning for most wildlife, except for animals that have adapted to urban conditions. The nearby coastline of Tampa Bay with its beaches, salt marshes/flats and mangrove swamps provide considerably better opportunities for use by wading birds, passerines and raptors. No listed/protected species were observed on the project site. A 100 percent survey for gopher tortoise burrows will be performed prior to any construction activities to determine whether potentially active burrows are located within areas of potential construction. Based on the analyses and survey conducted, potential adverse effects to State listed threatened or endangered animal species are not anticipated from development of the project site as long as any gopher tortoises and burrow commensals within potentially active burrows located within areas of potential construction are captured and relocated, eastern indigo snake protection measures are employed, and no nesting areas of any listed species are found to be in conflict with proposed construction activities.

c. Please describe how the project will be designed to avoid adverse effects to navigation or the flow of water or cause harmful erosion or shoaling. **There are no proposed impacts to navigation or the flow of water. Harmful erosion is also not anticipated because a staked silt screen barrier will be installed along the upland buffers to wetlands and other surface waters in proximity to construction activities.**

d. Please describe how the project will be designed to avoid adverse effects to the fishing or recreational values or marine productivity in the vicinity of the activity. The Big Bend II Solar Power Plant is proposed to be constructed on TEC-owned property. There are no potential areas for fishing on the project site. Therefore, the proposed project should not significantly affect fishing or

other forms of passive recreation locally or in the region. The proposed location of the project site is inland and thus will not adversely affect fisheries or marine productivity. **The Big Bend III Solar Power Plant is proposed to be constructed on TEC-owned property. There are no potential areas for fishing on the project site. Therefore, the proposed project should not significantly affect fishing or other forms of passive recreation locally or in the region. The proposed location of the project site is inland and thus will not adversely affect fisheries or marine productivity.**

e. Will the project be of a temporary or permanent nature? **Permanent.**

f. Please describe how the project will be designed to avoid adverse impacts to significant historical and archaeological resources, under the provisions of section 267.061, F.S. **Approximately 28.1 acres of the western side of the current project site was recently surveyed in 2018 by Janus Research (Janus) for the proposed Big Bend I Modernization Project and no cultural resources were identified (Florida Master Site File Manuscript [FMSFM] No. 25161). In a letter dated, June 13, 2018, the State Historic Preservation Officer (SHPO) concurred with the determination that no historic properties were identified during the survey. The project site was expanded to approximately 92.7 acres and renamed the Big Bend III Solar Power Plant Project. For the Big Bend III Solar Power Plant Project, TEC requested that ECT again contract the services of Janus to perform a Cultural Resource Assessment Survey (CRAS) addendum that would cover the entire project site. In October 2020, Janus conducted the CRAS addendum for the TEC Big Bend III Solar Power Plant Project to identify cultural resources and assess their significance in terms of eligibility for listing in the *National Register of Historic Places* (NRHP) and determine the likelihood that the proposed action will affect any such site. On December 3, 2020, the CRAS addendum report was submitted to the Florida Division of Historical Resources (FDHR) for review. The CRAS addendum report determined newly or previously recorded archaeological sites or archaeological occurrences were not identified. Six shovel tests were conducted on the project site and no cultural materials were recovered. The pedestrian survey also confirmed the absence of any historic resources. The survey did not identify any newly recorded historic resources and confirmed that the two previously recorded structures formerly located onsite, 8HI11369 and 8HI11370, are no longer extant. Based on the CRAS addendum survey and previous survey efforts overlapping the current project site, no further investigation was recommended. On February 24, 2021, the SHPO confirmed that the CRAS addendum survey report was complete and sufficient in accordance with Chapter 1A-46, F.A. C. In addition, in the highly unlikely event unforeseen archaeological finds are discovered during construction, all activities involving subsurface disturbances will cease in the vicinity of the discovery and the FDHR will be notified. Following a determination of the importance of such finds, TEC will work with FDHR to assess mitigation measures necessary to minimize adverse impacts. A copy of the CRAS addendum report and SHPO response letter are appended to this ERP application (see Appendix F). It is understood that the DEP will be submitting a copy of this application to the FDHR for a determination of effects in accordance with Section 106 of the National Historic Preservation Act (NHPA).**

g. Please describe how the project will be designed to avoid adverse effects to the current condition and relative value of functions being performed by areas affected by the proposed regulated activity. **The proposed activity was designed to keep construction mostly within upland abandoned agricultural areas. Thus, impacts to wetlands were completely avoided. However, it is necessary to cross two of the upland-cut, man-made ditches on the project site with access roads, fences and electrical connections. During construction, sediment controls, including the installation of staked silt fences along upland buffers to wetlands, will be employed in the vicinity of project construction. The proposed stormwater management system will treat water quality in stormwater runoff from pollutant sources associated with the proposed construction prior to entering adjacent wetlands.**

h. Provide a description of how water quality will be maintained in wetlands and other surface waters that will be preserved or will remain undisturbed, both on and offsite. Please address both short-term (such as during construction) and long-term water quality considerations (*Refer to AH I Section 10.2.4*). **During construction, sediment controls, including the installation of staked silt fences along upland buffers to wetlands, will be employed in the vicinity of project construction. The proposed stormwater management system will treat water quality in stormwater runoff from pollutant sources associated with the proposed construction prior to entering adjacent wetlands (see Appendix E).**

5. Water Quality.

   Provide a description of how water quality will be maintained in wetlands and other surface waters that will be preserved or will remain undisturbed, both on and offsite. Please address both short-term (such as during construction) and long-term water quality considerations (*Refer to AH I Section 10.2.4*). **The proposed stormwater management system will provide the required water quality treatment for the new pollutant sources. When the proposed activities occur adjacent to wetlands, appropriate sediment control methods will be used, as required. During construction, sediment controls include the installation of staked silt fences along upland buffers to wetlands in the vicinity of project construction.**

6. Class II Waters; Waters approved for shellfish harvesting *(Refer to AH I Section 10.2.5)*.

   a. Will the project occur in Class II that are NOT approved for shellfish harvesting? If yes, please provide a plan or procedure detailing the measures to be taken to meet the requirements of *AH I Section 10.2.5(a)*. **No**

   b. Is the project located adjacent to or in close proximity to Class II waters? If yes, please provide a plan or procedure detailing the measures to be taken to meet the requirements of *AH I Section 10.2.5(b)*. **No**

   c. Is the project located in Class II or Class III waters that are classified as “approved”, “restricted”, “conditionally approved”, or “conditionally restricted”? If yes, demonstrate that the project meets the requirements of *AH I Section 10.2.5(c)*. **No**

7. Vertical seawalls. Are vertical seawalls proposed in an estuary or lagoon as part of the project? If yes, please describe how the project meets the requirements of *AH I Section 10.2.6*. **No**

8. Secondary Impacts (*AH I Section 10.2.7*).

   a. Will an upland buffer, with a minimum width of 15' and an average width of 25', be provided between the proposed activities and existing wetlands or wetlands to be preserved, enhanced, restored, or created? Provide the location and dimension of all buffers on the plans. If not, demonstrate that secondary impacts will not occur or describe how they will be offset. **Upland buffers of 25 ft. are being provided along the wetlands on the project site (see Appendix A). After construction of the proposed facility, the buffers will be maintained, but shall remain in an undeveloped condition.**

   b. If listed species are present or may be present, then coordination with wildlife agencies is needed. Have you coordinated with the FFWCC and/or USFWS? If so, please provide correspondence from the wildlife agencies indicating concurrence with the species management plan(s). **During the wildlife surveys, no gopher tortoise burrows were identified on the project site. A 100 percent gopher tortoise survey will be conducted prior to initiation of construction to locate all tortoises and their burrows as required under FWC’s Gopher Tortoise Permitting Guidelines (Revised August 2020). If potentially occupied gopher tortoise burrows are found on the project site, appropriate authorizations will be requested from FWC prior to construction to relocate tortoises from the development footprint to an approved recipient site. Burrow commensal species will either be avoided during construction or excavated**

and relocated along with gopher tortoises prior to construction in accordance with FWC Gopher Tortoise Permitting Guidelines.

c. What measures will be taken to avoid impacts to wetland-dependent wildlife and/or listed species that use uplands for nesting or denning? **TEC will comply with all habitat management guidelines for listed species that use uplands for nesting or denning. Based upon wildlife surveys, no wetland dependent wildlife species that use upland habitat for nesting or denning have been found or are expected to use the disturbed agricultural areas on the project site. A 100 percent gopher tortoise survey will be conducted prior to initiation of construction to locate all tortoises and their burrows as required under FWC's Gopher Tortoise Permitting Guidelines (Revised August 2020). If potentially occupied gopher tortoise burrows are found on the project site, appropriate authorizations will be requested from FWC prior to construction to relocate tortoises from the development footprint to an approved recipient site. Burrow commensal species will either be avoided during construction or excavated and relocated along with gopher tortoises prior to construction in accordance with FWC Gopher Tortoise Permitting Guidelines.**

d. Describe whether there are any other relevant activities that are very closely linked and causally related to any proposed dredging or filling in wetlands or other surface waters that have the potential to cause impacts to significant historical and archaeological resources. **Approximately 28.1 acres of the western side of the current project site was recently surveyed in 2018 by Janus for the proposed Big Bend I Modernization Project and no cultural resources were identified (FMSFM No. 25161). In a letter dated, June 13, 2018, the SHPO concurred with the determination that no historic properties were identified during the survey. The project site was expanded to approximately 92.7 acres and renamed the Big Bend III Solar Power Plant Project. For the Big Bend III Solar Power Plant Project, TEC requested that ECT again contract the services of Janus to perform a CRAS addendum that would cover the entire project site. In October 2020, Janus conducted the CRAS addendum for the TEC Big Bend III Solar Power Plant Project to identify cultural resources and assess their significance in terms of eligibility for listing in the NRHP and determine the likelihood that the proposed action will affect any such site. On December 3, 2020, the CRAS addendum report was submitted to the FDHR for review. The CRAS addendum report determined newly or previously recorded archaeological sites or archaeological occurrences were not identified. Six shovel tests were conducted on the project site and no cultural materials were recovered. The pedestrian survey also confirmed the absence of any historic resources. The survey did not identify any newly recorded historic resources and confirmed that the two previously recorded structures formerly located onsite, 8HI11369 and 8HI11370, are no longer extant. Based on the CRAS addendum survey and previous survey efforts overlapping the current project site, no further investigation was recommended. On February 24, 2021, the SHPO confirmed that the CRAS addendum survey report was complete and sufficient in accordance with Chapter 1A-46, F.A. C. In addition, in the highly unlikely event unforeseen archaeological finds are discovered during construction, all activities involving subsurface disturbances will cease in the vicinity of the discovery and the FDHR will be notified. Following a determination of the importance of such finds, TEC will work with FDHR to assess mitigation measures necessary to minimize adverse impacts. A copy of the CRAS addendum report and the SHPO response letter are appended to this ERP application (see Appendix F). It is understood that the DEP will be submitting a copy of this application to the FDHR for a determination of effects in accordance with Section 106 of the NHPA.**

e. Are there additional future phases or extensions of the proposed activities that are not shown? If yes, please describe. **N/A**

9. Cumulative Impacts. Is the proposed mitigation located within the same drainage basin (*Refer to AH I Figures 10.2.8.1 – 10.2.8.5)* as the proposed wetland impacts? **No wetland impacts or mitigation are proposed.** If not, please submit a Cumulative Impact Evaluation in accordance with *AH I Section 10.2.8*.

DEP ERP Wetlands

The construction and operation of the proposed solar power plant was specifically designed to avoid or minimize impacts to wetlands and other surface waters and their associated upland buffers to the extent practicable. A portion of the solar arrays are proposed to be built over an isolated shrubby marsh (i.e., 0.12 acre of W1-6417) and one dead-end ditch (i.e., 0.39 acre of OSW2-514). During construction, no regrading will be necessary for the placement of the solar arrays in this area. The existing woody vegetation, such as Brazilian peppers and a few coastalplain willows, will need to be cut and removed. However, the selective clearing will be conducted in such a way as to not result in wetland fill or impacts to the vegetative root mat/soil profile (i.e., no dredge or fill). The solar panels will be attached to single-axis tracking systems mounted on embedded (pounded) H-frame steel posts. The tracking system will allow the panels to rotate east-to-west throughout the day to track the movement of the sun, maximizing energy yield and almost eliminating any permanent shading at the ground level (i.e., temporary shading only). Each post will be approximately 0.125 square inches in area and spaced every 25 feet. Since there will be no regrading necessary, shading from the panels would be virtually eliminated and only small, widely spaced poles will be embedded during construction, the placement of the arrays over the shrubby marsh and dead-end ditch is not considered to be a permanent fill impact. During construction, temporary matting will be used short-term for the placement of heavy equipment within the shrubby marsh and dead-end ditch, as needed. After construction, TEC will return any inadvertently disturbed soils to the pre-existing grade and seed with grasses. In addition to the installation of the solar arrays, TEC proposes to partially fill approximately 0.035 acre of two drainage ditches (i.e., 0.015 acre of OSW1-514 and 0.02 acre of OSW3-514) for the improvement of existing internal access road crossings. The proposed construction of access roads and improvements at the two existing drainage crossings is also required for the construction, maintenance and operation of the proposed solar arrays. Unlike the solar array construction, the proposed fill in ditches is a permanent impact. However, wetland mitigation is not proposed for the filling of the upland cut ditches pursuant to Subsection 10.2.2.2 of the ERP Applicant's Handbook, Volume 1. Since Wetland W1 is under a half an acre (i.e., 0.12 acre) in size and isolated, wetland mitigation is not proposed for filling or shading impacts pursuant to Subsection 10.2.2.1 of the ERP Applicant's Handbook, Volume 1. If DEP believes that the larger drainage ditches (i.e., OSW1 and OSW3) are functioning as artificial waterways, then the impacts should be in compliance with the DEP General Permit: 62-330.439-General Permit for the Construction or Maintenance of Culverted Driveways or Roadway Crossings, and Bridges of Artificial Waterways. Again, mitigation is not required under this General Permit for the proposed crossings. The completed baseline wetland UMAM worksheets for Wetland W1 are provided in Appendix G. Finally, TEC proposes to install an electrical connection underneath OSW1-514 and OSW3-514 to connect the northern and southern arrays. This electrical connection is to carry internal generated power to the appropriate internal equipment. TEC will install the underground electrical conductor by directional boring, commonly called horizontal directional drilling or HDD (i.e., a steerable trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface launched drilling rig, with minimal impact on the surrounding area). The directional bore will be installed a minimum of 3 ft. under the bottom grade of the ditch channel. The bore holes will be in uplands located approximately 15 ft. landward of the top of banks. The proposed boring will not result in either primary or secondary impacts. A Frac-Out Contingency Plan for the directional bore is also provided in Appendix H.

State Assumed 404 Wetlands

Mitigation for the placement of arrays over OSW2 and W1 is not required under the State 404 Program, as the posts are similar to pilings and will not be spaced so closely that sedimentation rates would be increased or reduce the flow and circulation of this ephemeral wetland. Furthermore, shading is NOT a regulated activity of the State 404 Program (i.e., dredge and fill), as defined under 40 CFR 232.2. In addition, the selective clearing of Brazilian peppers and a few willows is not considered to be dredge nor fill activities. Finally, as stated previously, TEC proposes to partially fill approximately 0.035 acre of two drainage ditches (i.e., 0.015 acre of OSW1-514 and 0.02 acre of OSW3-514) for the improvement of existing internal access road crossings. It is understood that the impacts to these ditches onsite are in compliance with Chapter 62-331.245, F.A.C, General Permit for Land-Based Renewable Energy Generation Facilities (i.e., the proposed WOTUS impacts are less than half an acre and do not require mitigation).

10. Mitigation Plan (*Refer to AH I Section 10.3*). **N/A**

    a. If a mitigation bank is proposed to offset wetland/other surface water impacts, provide: **N/A**

        i. the name of the bank: **N/A**. A letter of reservation from the banker will be required once the application has been evaluated. **N/A**

        ii. If the mitigation bank was assessed using UMAM, provide UMAM worksheets for impact area(s). **The completed baseline wetland UMAM worksheets for Wetland W1 are provided in Appendix G.** If the bank was assessed using a method other than UMAM, then prepare the impact assessment using the same method. **N/A**

    b. If mitigation is proposed to offset wetland/other surface water impacts, please provide a mitigation plan that includes, at a minimum, the following: **N/A**

        i. ☐ Proposed mitigation narrative:

            (1) ☐ Describe the current and proposed condition for each type of mitigation component (restoration, enhancement, creation, preservation), including:

                (a) ☐ Describe current and proposed vegetation

                (b) ☐ Describe current and proposed hydrologic conditions for the proposed mitigation.

                (c) ☐ Describe the soil types from NRCS maps and confirm if actual soil conditions appear to match.

            (2) ☐ Provide details of the proposed construction/mitigation activities including phasing and timing, as appropriate.

            (3) ☐ Identify measures that will be implemented during and after construction to avoid adverse impacts related to the proposed activities.

            (4) ☐ A mitigation implementation and monitoring schedule with dates.

            (5) ☐ Identify the success criteria.

            (6) ☐ Describe the anticipated site conditions in and around the mitigation area after the mitigation plan is successfully implemented.

            (7) ☐ Provide a comparison of current fish and wildlife habitat to expected habitat after the mitigation plan is successfully implemented.

ii. ☐ Provide a Management Plan that includes, as appropriate, aspects of operation and maintenance, including water management practices, vegetation establishment, exotic and nuisance species control, fire management, and control of access.

iii. ☐ Maps:

(1) ☐ Soil map (include soil names/codes, hydrologic soil groups and hydric soil types).

(2) ☐ Topographic map of the mitigation area and adjacent contributing and receiving areas.

(3) ☐ Hydrologic features map of the mitigation area and adjacent contributing and receiving areas.

(4) ☐ Vegetative communities map (using FLUCCS or other appropriate classification system).

(5) ☐ For all maps, identify source.

iv. Provide the necessary supporting information for the application of sections 62-345.400 - .600 (Uniform Mitigation Assessment Method (UMAM)). To meet this requirement, submittal of UMAM worksheets is acceptable for impact and mitigation areas.

v. If onsite and/or offsite applicant-responsible mitigation is proposed, submit a draft Conservation Easement document or other form of restrictive covenant that provides for protection of the mitigation area in perpetuity. Standard forms, as described in subsection 62-330.301(6), F.A.C., are available from the Agency or on its website.

vi. If onsite and/or offsite applicant-responsible mitigation is proposed, submit a cost estimate for completing the mitigation, including monitoring and maintenance.

vii. If onsite and/or offsite applicant-responsible mitigation is proposed and the proposed mitigation exceeds $25,000, please provide a draft financial assurance document. Standard forms, as described in subsection 62-330.301(5), F.A.C., are available from the agency or on its website.

viii. Identify the entity responsible for monitoring, maintenance, and long-term stewardship of the mitigation area (i.e. the landowner or homeowner association, not the consultant or contractor that will do the work).

Note: If your project is in retained waters, it is highly recommended that you coordinate the design of any mitigation plan that also may be required for the Corps permit to meet the requirements of both permits. Pre-application meetings with both the applicable Agency and the Corps can help you to choose a mitigation option that is acceptable to both the applicable Agency and the Corps.

Part 3: Plans

Plans: The information listed in the checklist below represents the typical information required on the submitted project plans. The Plans checklists in each application section are cumulative unless otherwise noted. Separate plans for each application section are not required.

1. ☒ Include the following on the construction plans and cross sections:

   a. ☒ An Existing Conditions sheet showing the entire project and wetland/other surface water boundaries. Include the following: Acreage and type (herbaceous, forested or other surface water) of each wetland/other surface water.

   b. ☒ A Proposed Conditions sheet showing the entire project and wetland/other surface water boundaries with construction plan overlay.

   c. ☒ A Proposed Wetland Impact sheet that includes the following:

      i. ☒ Acreage and type (herbaceous, forested, or other surface water) of each wetland/other surface water to be impacted.

      ii. ☒ Proposed upland buffers with dimensions.

      iii. ☐ Identify the seasonal high water and wetland normal pool elevations on the plans. **N/A**

   d. ☒ Include wetland boundaries on all construction plan sheets.

2. ☐ If onsite and/or offsite applicant-responsible mitigation is proposed, submit mitigation plans and cross sections including, at a minimum: **N/A**

   a. ☐ existing conditions plan sheet identifying upland and wetland communities and acreage of each, topography, drainage patterns, and location of cross-section detail.

   b. ☐ proposed conditions plan sheet identifying proposed improvements by type (restoration, enhancement, creation, preservation), acreage of each, topography, drainage patterns, and location of cross-section detail.

   c. ☐ monitoring plan sheet including proposed improvements, monitoring transects, photostations, and mitigation signage (if applicable).

   d. ☐ cross-section and/or profile detail(s) sheet(s) including representative section of each type of mitigation component. Include existing and proposed conditions and representative elevations.

   e. ☐ planting schedule, plant species including common and scientific names divided into three sections (canopy, shrub, herbaceous) by mitigation component, quantity, spacing, size, and elevation range.

Table 1 - Project Wetland (WL) And Other Surface Water (OSW) And Impact Summary

WL & SW ID	UMAM ASSESSMENT AREA NAME(S)	WL & SW TYPE *	WL & SW SIZE (acres)	WL & SW NOT IMPACTED (acres)	TEMPORARY WL &SW IMPACT SIZE (acres)	TEMPORARY WL & SW IMPACT TYPE	PERMANENT WL &SW IMPACT SIZE (acres)	PERMANENT WL & SW IMPACT TYPE	MITIGATION ID
W1	W1	6417	0.12	0.12	N/A	N/A	N/A	N/A	N/A
OSW1	N/A	514	1.01	0.995	N/A	N/A	0.015	F	N/A
OSW2	N/A	514	0.39	0.39	N/A	N/A	N/A	N/A	N/A
OSW3	N/A	514	0.83	0.81	N/A	N/A	0.02	F	N/A
OSW4	N/A	514	0.32	0.32	N/A	N/A	N/A	N/A	N/A
OSW10	N/A	514	0.15	0.15	N/A	N/A	N/A	N/A	N/A
OSW10A	N/A	514	0.14	0.14	N/A	N/A	N/A	N/A	N/A
OSW11	N/A	514	0.11	0.11	N/A	N/A	N/A	N/A	N/A
OSW11A	N/A	514	0.05	0.05	N/A	N/A	N/A	N/A	N/A
OSW12	N/A	514	0.13	0.13	N/A	N/A	N/A	N/A	N/A
OSW13	N/A	534	0.94	0.94	N/A	N/A	N/A	N/A	N/A
PROJECT TOTALS:			4.19	4.155	0		0.035		

Comments:

- *Land use/cover types were identified for the project area using the Florida Land Use, Cover and Forms Classification System (FLUCFCS)-Level III (FDOT, 1999) and the 2010 Florida Natural Areas Inventory (FNAI) system. The remaining man-made, upland cut drainage ditches (i.e., OSW5 through OSW9) are located just outside of project site boundaries along the roadsides of U.S. Highway 41 and Big Bend Road.

Codes (multiple entries per cell not allowed):

- Wetland & Surface Water ID: Include ID on submitted wetland and surface water impact maps
- Wetland Type: from an established wetland classification system
- Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other

Table 2 - Project On-Site Mitigation Summary N/A

MITIGATION ID	UMAM ASSESSMENT AREA NAME(S)	TARGET TYPE	CREATION AREA (acres)	RESTORATION AREA (acres)	ENHANCEMENT AREA (acres)	WETLANDS PRESERVE AREA (acres)	UPLAND PRESERVE AREA (acres)	OTHER AREA (acres)
PROJECT TOTALS:								

COMMENTS:

Codes (multiple entries per cell not allowed):

- Target Type or Type=target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

Table 3 - Project Off-Site Mitigation Summary N/A

MITIGATION ID	UMAM ASSESSMENT AREA NAME(S)	TARGET TYPE	CREATION AREA (acres)	RESTORATION AREA (acres)	ENHANCEMENT AREA (acres)	WETLANDS PRESERVE AREA (acres)	UPLAND PRESERVE AREA (acres)	OTHER AREA (acres)
PROJECT TOTALS:								

COMMENTS:

Codes (multiple entries per cell not allowed):

- Target Type or Type=target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

Table 4 - Shoreline Stabilization N/A

Stabilization	Linear Ft. New	Linear Ft. Replaced	Linear Ft. Repaired	Linear Ft. Removed	Slope H: V:	Toe Width (Ft.)
Natural Vegetation (living shoreline)					**N/A**	**N/A**
Rip Rap + Vegetation						
Rip Rap						
Seawall + Rip Rap						
Vertical Seawall						
Other Shoreline Stabilization Type						

Size of Rip Rap

Type of Rip Rap

Form 62-330.060(1) 404 Section E

Section E: Supplemental Information Required for Works or Other Activities Involving a Stormwater Management System
(Other Than a Single-Family Project)

Instructions: The information listed in the checklists below represents the level of information that is usually required to evaluate an application. Information can be provided within reports, plans, and documents. The level of information required for a specific project will vary depending on the nature and location of the site and the activity proposed. Conceptual approvals generally do not require the same level of detail as a construction permit. However, providing a greater level of detail will reduce the need to submit additional information at a later date. If an item does not apply to your project, proceed to the next item. The supplemental information required by this section is in addition to the information required by Section A of the application.

Part 1: Stormwater Management System Summary

Provide drainage calculations, signed and sealed by an appropriate registered professional, and supporting documentation demonstrating that the proposed project meets the conditions for issuance under 62-330.301(1)(a),(b),(c),(e), F.A.C. The drainage calculations should include, but not necessarily be limited to, the following:

1. General Site Information:

    a. ☒ Provide pre-development and post-development drainage map(s), as appropriate, that include drainage patterns and basin boundaries with acreage served by each hydraulically separate system, showing the direction of flows, including any off-site runoff being routed through or around the system; topographic information; and connections between wetlands and other surface waters. **See Drainage Report in Appendix E.**

    b. ☒ Provide the results of any percolation tests, where appropriate, and soil borings that are representative of the actual site conditions. Identify the wet season high water table elevations, soil profiles, and hydraulic conductivity. Include dates, datum, and methods used to determine these soil parameters. **See Geotechnical Engineering Report in Appendix C and Drainage Report in Appendix E.**

    c. ☒ Identify the onsite hydrologic soil classification (e.g. Type A, B/D, D). Reference the source, such as the USDA/NRCS Soil Survey, used in estimating the onsite hydrologic soil classification. Provide maps, as appropriate, with the project limits delineated. **See Drainage Report in Appendix E.**

    d. ☒ Identify the seasonal high water or mean high tide elevation for receiving waters/wetlands into which runoff will be discharged. Include dates, datum, and methods used to determine these elevations. **See Drainage Report in Appendix E.**

    e. ☒ Identify the name of each receiving waterbody to which the proposed stormwater management system will discharge. **The proposed system will discharge into unnamed drainage ditches and ultimately into Hillsborough Bay located offsite.**

    f. ☒ Indicate the existing land use and land cover. **A remote construction laydown and staging area with a stormwater pond and associated ditches (to be removed after completion of the work and prior to construction of the proposed solar power generating facility); abandoned upland agricultural fields; remnant native oak woods; exotic vegetation; a shrubby, man-made wetland; and drainage ditches.**

g. ☒ Provide the acreage and percentages of the total project, of the following:
   1. Impervious surfaces (excluding buildings, wetlands, and other surface waters);
   2. Buildings;
   3. Pervious surfaces (green areas not including wetlands);
   4. Lakes, canals, retention areas, other open water areas; and
   5. Wetlands (Please compare to Section C to ensure consistency in wetland acreages).

   See Drainage Report in Appendix E.

h. ☒ Provide the location and description of any nearby existing offsite features (such as wetlands and other surface waters, stormwater management ponds, and buildings or other structures) which might be affected by or affect the proposed construction or development. **See Drainage Report in Appendix E.**

2. Water Quality Analysis:

a. ☒ Provide a description of the proposed stormwater treatment methodology that addresses the type of treatment, pollution abatement volumes, and recovery analysis. **See Drainage Report in Appendix E.**

b. ☒ Is the receiving waterbody known to be impaired and/or have an established Total Maximum Daily Load (TMDL) or Basin Management Action Plan (BMAP)? If so, please provide specific descriptions of all water quality parameters for which the waterbody is known to be impaired. For more information about water quality, impaired waters, and to determine whether a TMDL has been adopted in your project area, refer to: https://floridadep.gov/dear/water-quality-evaluation-tmdl/content/final-tmdl-reports. To determine whether a BMAP exists, or is being developed in your project area, refer to: https://floridadep.gov/dear/water-quality-restoration/content/basin-management-action-plans-bmaps.

   ☐ yes ☒ no ☐ don't know

   If yes, provide calculations demonstrating that the proposed project will not contribute to violations of state water quality standards in accordance with the applicable Applicant's Handbook, Vol. II. **N/A**

c. ☒ Does the project have a direct discharge to Class I or II waters; Outstanding Florida Waters (OFW); or Class III waters, which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting? *To determine whether your project is within or will discharge to an OFW, or for more information about OFWs in general, refer to: https://floridadep.gov/dear/water-quality-standards/content/outstanding-florida-waters.*

   ☐ yes ☒ no ☐ don't know

   If yes, additional treatment in accordance with the applicable Applicant's Handbook, Vol. II, may be required. **N/A**.

d. ☒ Provide construction plans and calculations that address the required treatment volume and recovery, as well as stage-storage and design elevations, which demonstrate compliance with the appropriate water quality treatment criteria in the applicable Applicant's Handbook, Vol. II**. See Drainage Report in Appendix E.**

e. ☒ Provide a description of the engineering methodology, assumptions, and references for the parameters listed above and a copy of all computations, engineering plans, and specifications used to analyze the system. If a computer program is used for the analysis, provide the name of the program, a description of the program, input and output data, and justification for model selection. **See Drainage Report in Appendix E.**

3. Water Quantity Analysis:

Provide calculations and documentations demonstrating that the project, as proposed, meets the applicable design criteria as indicated in the applicable Applicant's Handbook, Vol. II. Typically, the information would include, at a minimum, but not necessarily limited to, the following:

a. ☒ For projects requiring pre-development analysis, provide an analysis of the pre-development peak rate of discharge and/or volume of runoff for all design storm events. Account for all onsite depressional storage and offsite contributing area. Please refer to the applicable Applicant's Handbook, Vol. II for the design storm event(s) that apply to your project. **See Drainage Report in Appendix E**.

b. ☒ Provide an analysis of the post-development peak rate of discharge and/or volume of runoff for all applicable design storm events. Account for all onsite storage and offsite contributing area. Please refer to the applicable Applicant's Handbook, Vol. II for the design storm event(s) and criteria that apply to your project. **See Drainage Report in Appendix E**.

These analyses should include:

1. ☒ Runoff characteristics, including area, runoff curve number or runoff coefficient, and time of concentration for each drainage basin in the pre-development and post-development condition;
2. ☐ Design storms used including rainfall depth, duration, frequency, and distribution; **N/A**
3. ☐ Runoff hydrograph(s) for each drainage basin for all required design storm event(s); **N/A**
4. ☐ Stage-storage computations for any area, such as a reservoir, closed basin, detention area, or channel, used in storage routing; **N/A**
5. ☐ Stage-discharge computations for any storage areas at a selected control point, such as control structure or natural restriction; **N/A**
6. ☐ Flood routings through on-site conveyance and storage areas; **N/A**
7. ☐ Water surface profiles in the primary drainage system for each required design storm event(s); **N/A**
8. ☐ Runoff peak rates and volumes discharged from the site for each required design storm event(s); **N/A**
9. ☒ Design tailwater elevation(s) for each storm event at all points of discharge (include source or method of estimate); and
10. ☐ Pump specifications and operating curves for range of possible operating conditions (if used in system). **N/A**.

c. ☒ Provide a description of the engineering methodology, assumptions, and references for the parameters listed above, and a copy of all such computations, engineering plans, and specifications used to analyze the system. If a computer program is used for the analysis, provide the name of the program, input and output data, justification for model selection, and, if necessary, a description of the program. **See Drainage Report in Appendix E**.

4. Floodplain Analysis (where applicable).

   a. ☒ If the project is in a known floodplain of a stream or other water course, identify the appropriate floodplain boundary and approximate flooding elevations of any lake, stream, or other watercourse located on or adjacent to the site. **See Drainage Report in Appendix E.**

   b. ☐ For traversing works, in accordance with the applicable Applicant's Handbook, Vol. II, provide: **N/A.**

      1. ☐ Hydraulic calculations for all proposed traversing works; and

      2. ☐ Water surface profiles showing upstream impact of traversing works.

   c. ☐ For impacts to regulated floodplains, in accordance with the applicable Applicant's Handbook, Vol. II, provide: **N/A.**

      1. ☐ Location and volume of encroachment within regulated floodplain(s); and

      2. ☐ Plans and calculations for compensating floodplain storage, if necessary, and calculations required for determining minimum building and road flood elevations.

Part 2: Construction Plans

1. Provide clear, construction level detailed plans for the system. The plans must be signed and sealed by an appropriate registered professional as required by law. These plans should include cumulative information from all applicable sections, as well as the following:

   See Construction Plans in Appendix B for items requested below:

   a. ☒ Project area boundary and total land area (as defined in A.H. Vol. I, subsection 2.0(a)(107), including distances and orientation from roads or other landmarks.

   b. ☒ Existing topography extending at least 100 feet off the project area. All topography shall include location and description of benchmarks, reference to NGVD 1929 or NAVD 1988 along with the conversion factor.

   c. ☒ Proposed site plan with acreage, including the following:
      1. ☒ plan view of proposed development, including impervious surfaces and water management areas;
      2. ☒ land cover and natural communities*;
      3. ☒ wetlands and other surface waters*;
      4. ☒ undisturbed uplands*;
      5. ☐ aquatic communities*; **N/A.**
      6. ☒ proposed buffers*;
      7. ☒ proposed impacts to wetlands and other surface waters, and any proposed connections/outfalls to other surface waters or wetlands, (if applicable); and
      8. ☐ onsite wetland mitigation areas*. **N/A.**
      9. ☐ For phased projects, provide a master development plan clearly delineating the limits of each phase of construction. **N/A.**

      *Information should reflect that provided in Section C.

   d. ☒ Paving, Grading, and Drainage Information, which includes, but is not necessarily limited to, the following:
      1. ☒ Existing topography;
      2. ☒ Boundaries of wetlands and other surface waters and upland buffers (see Section C);
      3. ☒ Plan view of proposed development;

4. ☒ Proposed elevations and/or profiles, including:
    a) ☒ roadway, parking, and pavement grades;
    b) ☐ floor slabs, walkways, and other paved surfaces; **N/A.**
    c) ☐ earthwork grades for pervious landscaped areas; **N/A**. and
    d) ☒ perimeter site grading, tying back into existing grades.
5. ☒ Location of all water management areas, including elevations, dimensions, side slopes, and design water depths;
6. ☒ Location, size, and invert elevations of existing and proposed stormwater conveyance systems;
7. ☒ Vegetative cover plan for all on-site and off-site earth surfaces disturbed by construction; and
8. ☒ Rights-of-way and easements for the system, including all on-site and off-site areas to be reserved for water management purposes (including access), and rights-of-way and easements for the existing drainage system, if any.

e. ☒ Stormwater detail information, including but not necessarily limited to, the following:
    1. ☒ Cross section of all stormwater management areas, including elevations, dimensions, side slopes, and proposed stabilization measures (with location of the cross section(s) shown on the corresponding plan view);
    2. ☐ Detail of all proposed control structures, including elevations, dimensions, and skimmer, where applicable; **N/A** and
    3. ☒ Details of proposed stormwater management systems, such as underdrains, exfiltration trenches, vaults, and other proposed Best Management Practices (BMPs).

f. ☒ Location and description of any nearby existing offsite features (such as wetland and other surface waters, stormwater management ponds, and building or other structures) which might be affected by or affect the proposed construction or development.

Part 3: Construction Schedule and Techniques

Provide a construction schedule and a description of construction techniques, sequencing, and equipment. This information should include, as applicable, the following. **See Construction Plans in Appendix B.**

a. ☒ Access and staging of equipment;

b. ☒ Location and details of the erosion, sediment, and turbidity control measures to be implemented during each phase of construction and all permanent control measures to be implemented in post-development conditions.

c. ☒ The location of disposal site(s) for any excavated material, including temporary and permanent disposal sites.

d. ☒ A demolition plan for any existing structures to be removed.

e. ☐ Dewatering plan details. If dewatering is required, detail the dewatering proposal including the methods that are proposed to contain the discharge, methods of isolating dewatering areas, and indicate the period dewatering structures will be in place**. N/A.**

f. ☐ Methods for transporting equipment and materials to and from the work site. If barges are required for access, provide the low water depths and draft of the fully loaded barge; **N/A.**

Part 4: Operation and Maintenance and Legal Documentation:

a. ☒ Describe the overall maintenance and operation schedule for the proposed system. **The stormwater system will be inspected every 6 months and following major storm events.**

b. ☒ Identify the entity (or entities) that will be responsible for operating and maintaining the system (or parts of the system) to demonstrate that the entity (or entities) meet(s) the requirements of section 12.3 of the Applicant's Handbook, Vol. I. **Tampa Electric Company, the landowner, will provide operation and maintenance of the project site and stormwater system.**

1. ☐ If different from the permittee, provide a draft document enumerating the enforceable affirmative obligations on the entity to properly operate and maintain the system for its expected life and documentation of the entity's financial responsibility for long-term maintenance. **N/A**

2. ☐ If the proposed operation and maintenance entity is not a property owner's association, provide proof of the existence of an entity or the future acceptance of the system by an entity which will operate and maintain the system. **N/A**

c. ☐ Provide drafts of all proposed conservation easements, stormwater management system easements, draft property owner's association documents, and plats for the property containing the proposed system. **N/A.**

d. ☐ Provide legal reservations for access to the treatment system for maintenance and operation by future maintenance entities for subdivided projects. **N/A**.

e. ☐ Provide indication of how water and wastewater service will be supplied. **N/A.**

f. ☒ Provide a copy of the boundary survey and/or legal description and acreage of the total land area of contiguous property owned/controlled by the applicant. **See Appendices A and B.**

g. ☐ If any associated land agreements are required to implement the proposed activities, such as flowage easements across lands not owned by the applicant, include such documentation. If negotiations are underway, but not yet concluded, regarding such land use agreements, please indicate that and provide an anticipated date for providing that documentation. A permit cannot be issued for an activity to use lands that are not owned by the applicant or for which the applicant does not hold a sufficient real property interest to use those lands. **N/A.**

5: Water Use

a. ☐ Describe how irrigation will be provided to the project. Will the surface water system be used for water supply, including landscape irrigation, or recreation? **N/A.**

b. ☐ If a Consumptive Use or Water Use permit has been issued for the project, state the permit number: **N/A.**

c. ☒ If a Consumptive Use or Water Use permit has not been issued for the project, indicate if such a permit will be required. ☐ yes ☒ no ☐ don't know
If yes, please indicate when the application for a permit will be submitted: **N/A.**

d. ☒ Indicate how any existing wells located within the project site will be utilized or abandoned. **The existing wells will be capped and abandoned.**

Part 6: Special Basin Information

a. Is your project within a special basin as described in the applicable Applicant's Handbook, Vol. II?

☐ yes ☒ no ☐ don't know

b. If yes, please demonstrate that the project will meet the applicable special basin criteria. **N/A.**

Form 62-330.060(1) 404 Section I

Section I:
Supplemental Information for State 404 Program Permits

State 404 Program authorization is required for activities within state-assumed waters under Chapter 62-331, F.A.C. The following information is necessary to facilitate the State 404 Program review when a project is within state-assumed waters.

1. Identify the project purpose. (*Describe the purpose and need for the proposed project. Why are you proposing the work? How will you use the proposed structure(s); and/or, how will the proposed fill area(s) be used?)* Include a description of any related activities that may be developed as a result of the proposed project. Provide the approximate dates you plan to both begin and complete all work: The basic purpose of the project is to build a new solar power plant to provide an alternate method of producing clean energy and continue to provide the public with sufficient and uninterrupted electrical power service. **The basic purpose of the project is to build a new solar power plant to provide an alternate method of producing clean and reliable energy and continue to provide the public with sufficient and uninterrupted electrical power service. The proposed installation of a permanent roadway across the two man-made, upland cut ditches will allow access for the construction, operation and maintenance of solar arrays on the project site. After construction, Tampa Electric Company (TEC) will resume a normal maintenance and patrolling program on the project site. The intent of this maintenance and patrolling program is to maintain the structural safety of the facility and uninterrupted transmission of electrical power. Construction duration is anticipated to be approximately 4 to 8 months. Initial site preparation activities are scheduled to begin on January 1, 2022, after acquisition of local, State and/or federal authorizations or approvals, and installation and commissioning of the Project is expected to be completed by December 1, 2022.**

2. List all other certificates or approvals/denials received or pending from federal, state, or local agencies for work affecting wetlands and/or other surface waters encompassed by the overall project site: (*You need not have obtained all other permits before applying for a State 404 Program permit.)* **N/A**

Agency	Action Type	ID Number	Date Applied	Date Approved/Denied

4. Identify the specific reason/need for the proposed activity (What will the activity be used for and why? Include activities that are linked to or reasonably related to the proposed activity.) **The specific reason/need for the proposed activity is to build a new solar power plant to provide an alternate method of producing clean, renewable energy and continue to provide the public with sufficient and uninterrupted electrical power service.**

5. Provide an alternatives analysis as described in the 404 Handbook, Appendix C. **TEC has undertaken an initiative to develop, own and operate solar photovoltaic (PV) projects as part of our broader energy resource mix. TEC has been conducting a site selection study to identify potential sites for development of up to 1,200 megawatts (MW) of solar PV electric generating facilities. Based on the assumption that 1 MW of solar generation requires approximately 5 acres of land, the planned facilities would require approximately 6,000 acres of buildable land. TEC focused the siting efforts on lands located within or in proximity to our service territory (i.e., Hillsborough, Pasco and Polk Counties). The study also focused on parcels that had single landowners and**

capable of supporting at least 50 to 75 MW of solar PV electric generation (i.e., a minimum of 250 to 375 acres). Proximity to existing roadways and TEC's existing electrical transmission lines were also considered in evaluating the potential locations. In addition, TEC identified potential environmental constraints such as the presence of wetlands, surface water bodies, and threatened and endangered species based on information from available data sources. Initially, TEC reviewed over 200 potential solar power sites that encompassed a total of over 70,000 acres. Several potential candidate solar power sites were selected for further evaluation. TEC conducted more detailed due diligence analyses on these subject properties including onsite field studies such as environmental site assessments, wetland and other surface water delineations, listed species surveys, cultural resource assessments, and grand tree surveys. After it was determined that the majority of the land surveyed on a subject property was highly altered and therefore potentially available for development of a solar PV project, TEC designed a site plan that specifically avoided or minimized impacts to wetlands and their upland buffers and to other surface waters such as natural and channelized/otherwise altered creeks, upland cut ditches, and man-made ponds to the greatest extent practicable. In addition to our in-house review, TEC also reviewed other potential sites proposed by other solar power plant developers. TEC selected several project sites to permit the development of solar PV electric generating facilities. One of the properties that was already under TEC ownership and was evaluated by TEC for permitting the construction of a new PV renewable energy generating facility is the Big Bend III property located east-southeast of the Big Bend Power Generating Plant in Hillsborough County, Florida. Approximately 30 percent of the western side of the project site is currently being used as a remote construction laydown area for the Big Bend Unit 1 Modernization Project. The remainder of the project site is mostly abandoned, overgrown agricultural land. TEC proposed this project site as an excellent candidate for solar power plant development due to its 1) highly altered condition (upland areas have mostly been previously converted to agriculture and then abandoned or developed as a construction laydown area with intent for removal after the intended use is completed), 2) availability as a large area of open land already owned by TEC, 3) proximity to another existing TEC solar power generating facility (i.e., Big Bend I Solar) and the recently permitted TEC solar power generating facility (i.e., Big Bend II Solar) located approximately 0.75 mile to the south which will be utilized for interconnection to the power grid and 4) potential for direct access from two separate paved roadways that border the project site (i.e., U.S. Highway 41 and Big Bend Road). The alignment of the solar arrays and access roads was specifically selected to avoid or minimize impacts to waters of the U.S. (WOTUS) within the project site to the greatest extent practicable. Unfortunately, TEC proposes to partially fill approximately 0.035 acre of two drainage ditches (i.e., 0.015 acre of OSW1-514 and 0.02 acre of OSW3-514) for the construction of internal access road crossings. The installation of access roads across the two existing drainage ditches is required for the construction, maintenance and operation of the proposed solar arrays and is considered to be a reasonable alternative when the resulting impacts are less than a tenth of an acre to man-made drainage ditches. If TEC were not to install roads across the existing ditches on the project site (i.e., a no-action alternative), the northern and southern portions of the property could not be easily accessed internally, which would result in increased costs for fuel and labor during construction, potential problems in efficiently maintaining the structural integrity of the facility and a potential health and safety hazard during critical operational times such as major storm events and/or power outages. Based upon the exhaustive site selection process, due diligence analyses of candidate sites and the implementation of an environmentally sensitive site plan design aimed at avoiding or minimizing impacts to WOTUS to the greatest extent practicable, a practicable alternative on the project site does not exist that would have less adverse impacts to the aquatic ecosystem. In addition, arrays are proposed to be built over approximately 0.51 acre of a man-made, upland cut dead end ditch (i.e., 0.39 acre of OSW2-514) and an isolated shrubby marsh (i.e., 0.12 acre of W1-6417). The posts are similar to pilings and will not be spaced so closely that sedimentation rates would be increased or reduce the flow and circulation of this dead end ditch or ephemeral wetland. Furthermore, shading is NOT a regulated activity of the State 404 Program (i.e., dredge and fill), as defined under 40 CFR 232.2.

6. Describe any listed species or designated critical habitat that might be affected by, or is in the vicinity of, the proposed activity. Include the name(s) of those listed species or critical habitat areas. Describe any actions proposed to be taken to avoid or minimize adverse effects to listed species. Provide any other available data and information necessary for purposes of reviewing impacts to state and federal listed species. **The project site planned for development consists mostly of abandoned pastureland. Wildlife species in the area that have become adapted to agricultural and industrial operations and regional wildlife populations are not expected to be significantly affected by the proposed actions. The project site is not located on or in the vicinity of any federally designated critical habitat. In addition, no aquatic habitats critical to the continued regional presence of important species will be affected. The use of mostly agricultural land together with existing paths and roads will minimize habitat losses and creation of barriers to animals' movements. Individual small burrowing mammals (e.g., rodents), reptiles, or amphibians may be lost during site clearing. Such individual losses, however, will not affect local or regional populations. No losses of medium-sized or large mammals, birds, or other mobile species due to direct impacts or habitat alterations are expected because of the mobility of these animals. Therefore, no adverse impacts are expected to local or regional populations of game species, species of special concern or commercial importance, or threatened or endangered species occurring or potentially occurring within the project area. Since the solar arrays will be mostly installed on the existing, abandoned agricultural uplands, no significant impacts to resident birds or migratory species are expected. Local disturbance or displacement of wildlife due to construction noise will be minor and short-term since construction activities in any one location will be intermittent and are not expected to last more than a few weeks.**

7. Clearly show location and extent of all wetlands and other surface waters, delineated in accordance with Chapter 62-340, F.A.C. Label all special aquatic sites (e.g., wetlands, sanctuaries and refuges, mudflats, vegetated shallows, and riffle and pool complexes). Each type of boundary (for example, ordinary high water line, mean high water line, wetlands, or other special aquatic sites) must be clearly annotated and/or symbolized to ensure they are differentiable on the map. Unless indicated below, all wetlands and other surface waters on the site, as delineated in accordance with Chapter 62-340, F.A.C., that will be impacted by the proposed activities will be evaluated for permitting purposes under Section 404 of the Clean Water Act. **See Appendix A.**

   ☐ Check this box if you do not accept that all or a portion of the wetlands and other surface waters on the site are jurisdictional under Section 404 of the Clean Water Act, and provide documentation demonstrating which wetlands and other surface waters on the site are not jurisdictional, using reasonable scientific judgement. **N/A**

8. Provide the complete names and full correct mailing address of the owners (public and private) of properties contiguous to the overall project site where the work is proposed. You may also provide email addresses, if available. Use additional sheets as necessary. (*This information may be obtained from your County Property Appraiser Office, which is typically accessible on the Internet; this information is needed so that, if required, the contiguous owners may be notified of the proposed activity (for example, through a public notice.*) **See Appendix I.**

   1. Name:
      Mailing Address:
      City, State, Zip Code:
      Email:

   2. Name:
      Mailing Address:
      City, State, Zip Code:
      Email:

3. Name:
   Mailing Address:
   City, State, Zip Code:
   Email:

4. Name:
   Mailing Address:
   City, State, Zip Code:
   Email:

5. Name:
   Mailing Address:
   City, State, Zip Code:
   Email:

6. Name:
   Mailing Address:
   City, State, Zip Code:
   Email:

TAB 2

FIGURES

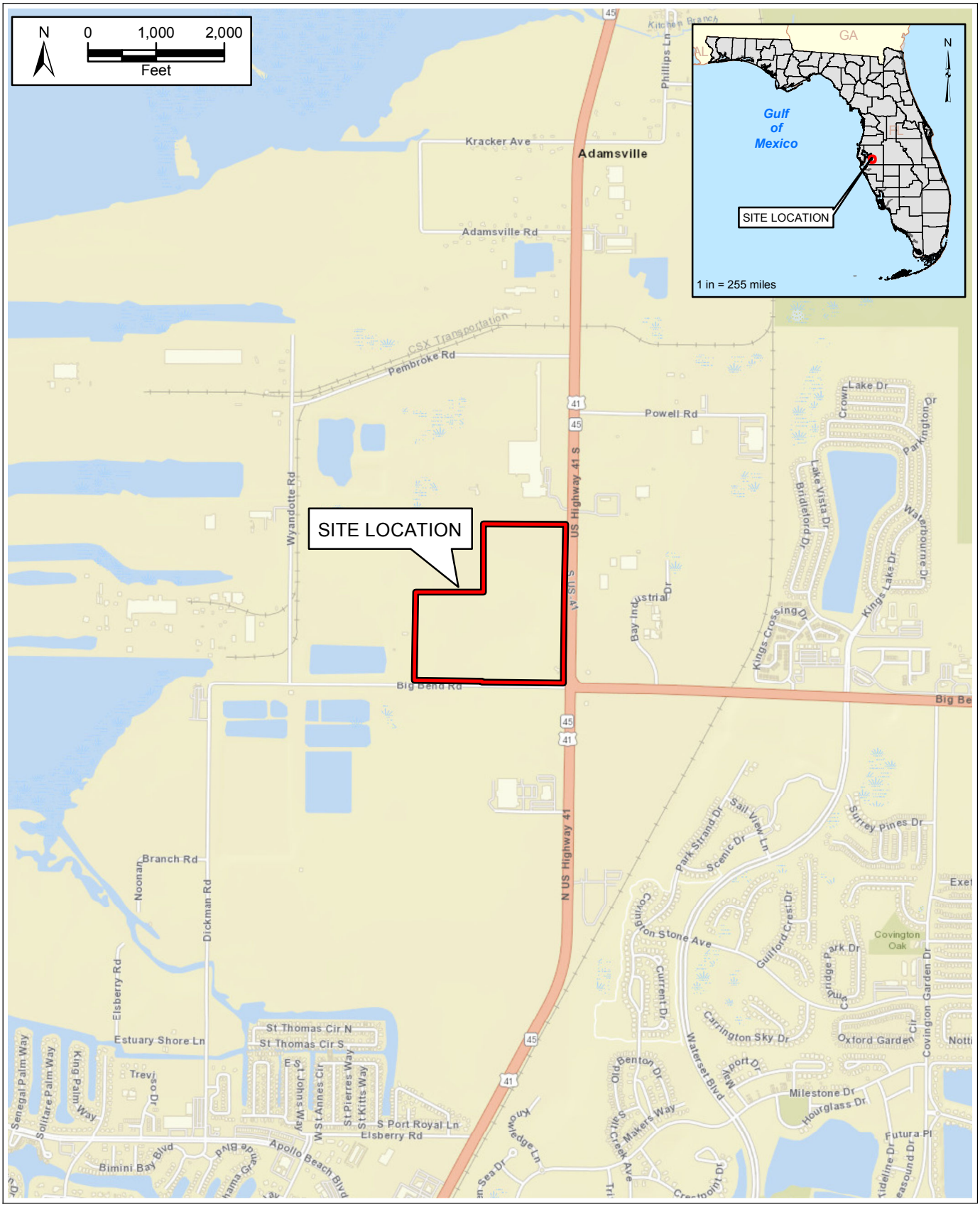


FIGURE 1. SITE LOCATION MAP
BIG BEND III SOLAR POWER PLANT PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: ESRI Street Map, 2017; ECT, 2020.

TECO
TAMPA ELECTRIC
AN EMERA COMPANY

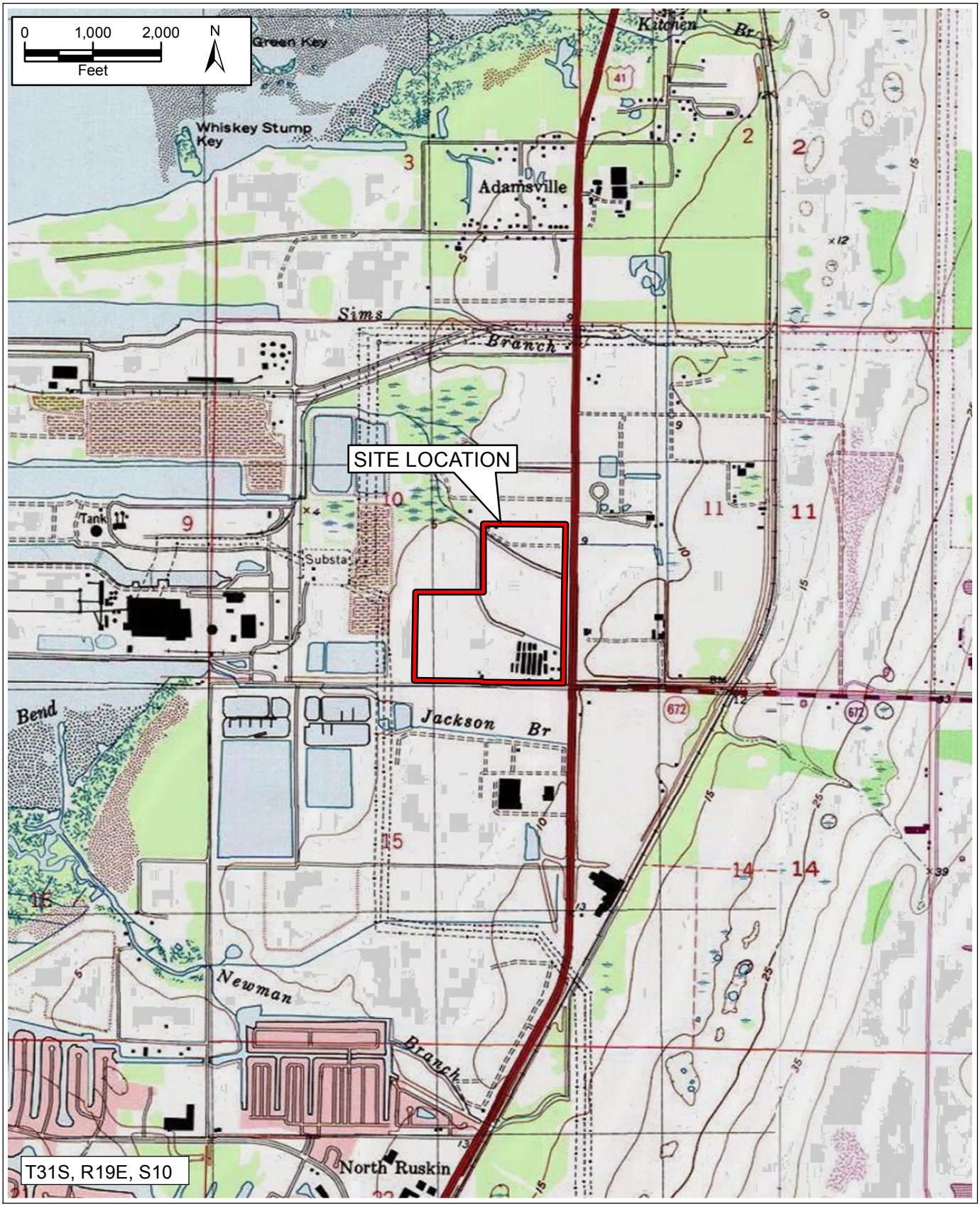


FIGURE 2. USGS TOPOGRAPHIC QUADRANGLE MAP
BIG BEND III SOLAR POWER PLANT PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: USGS Quad: Gibsonton, FL, 1998; ECT, 2020.

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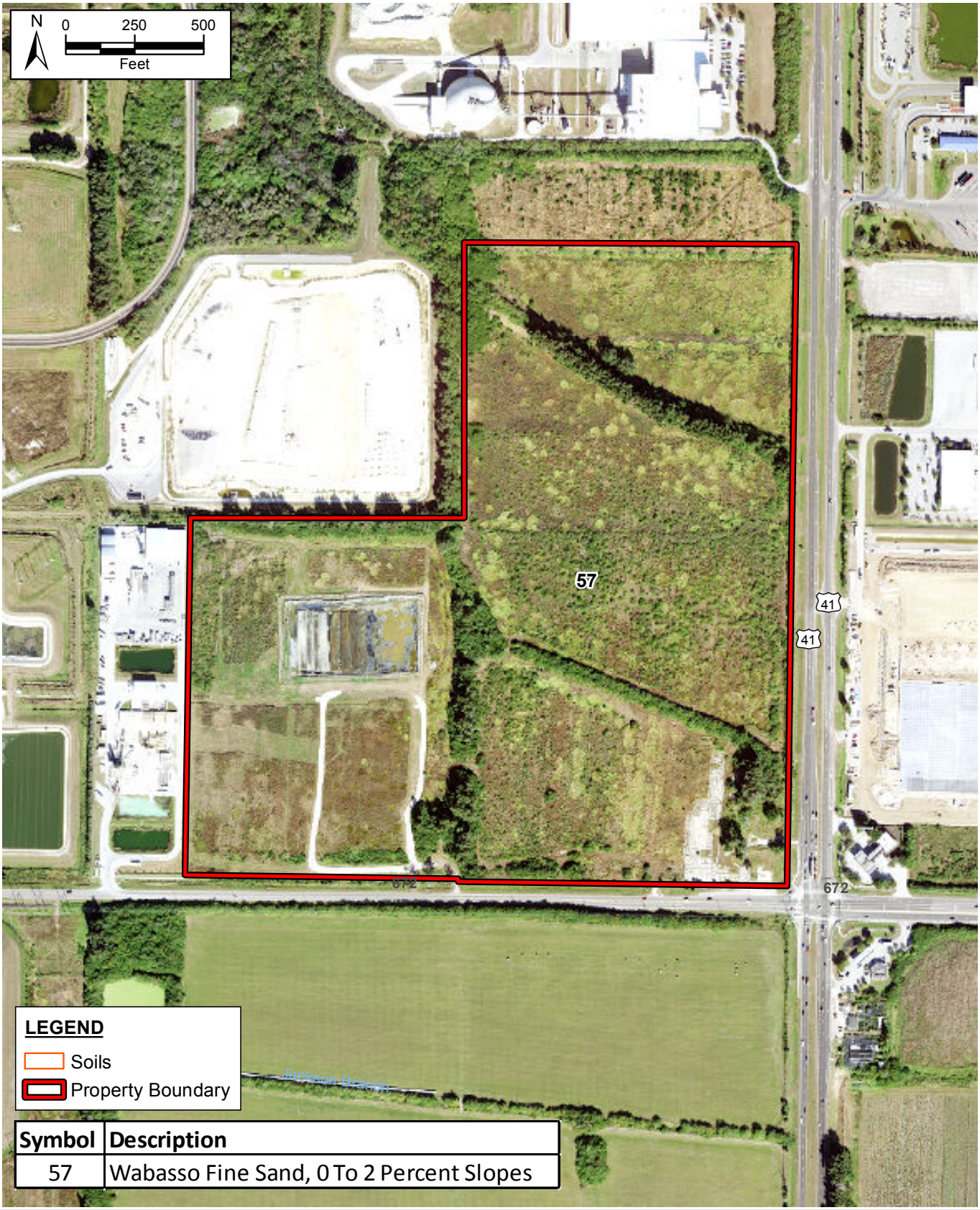
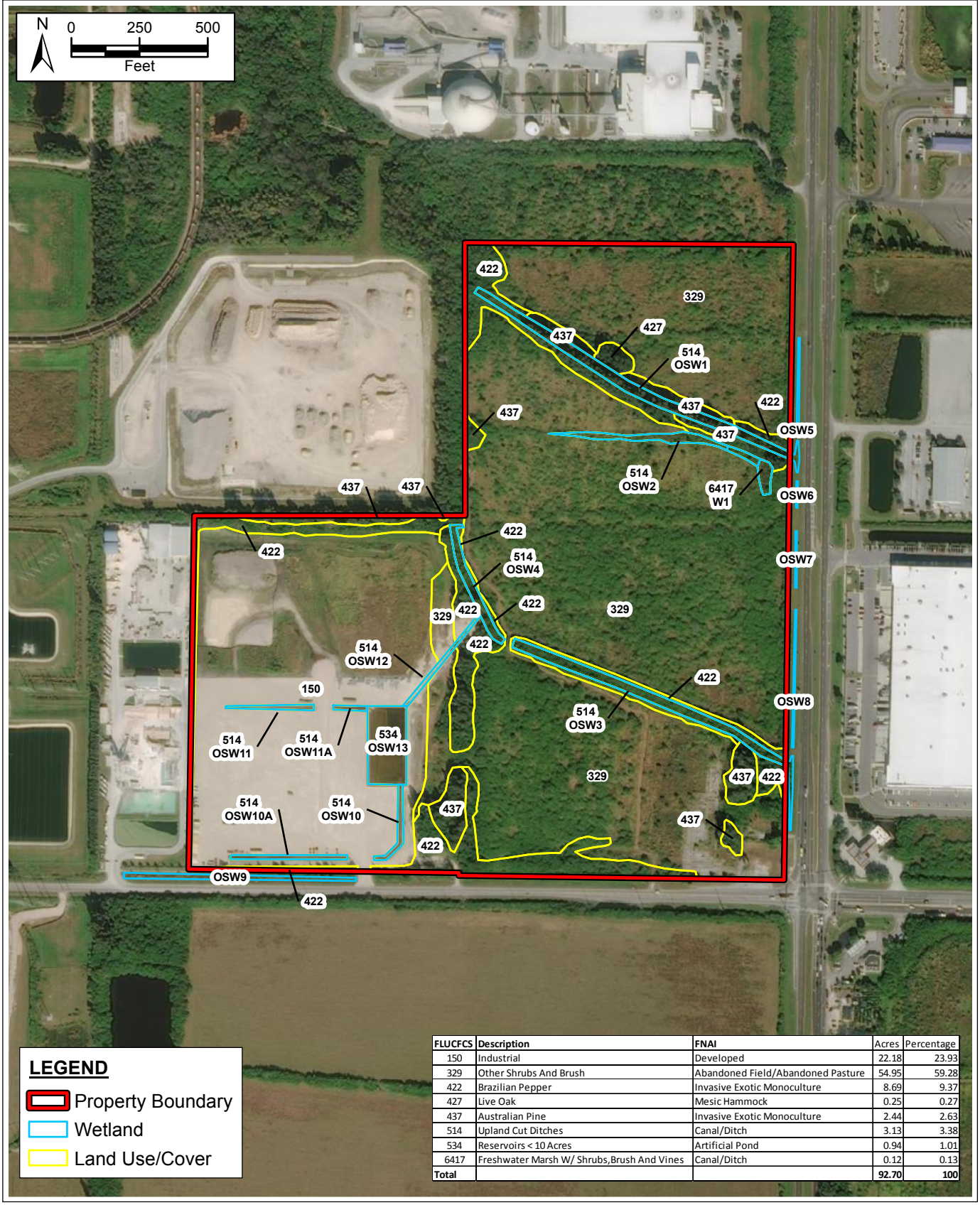


FIGURE 3.
SOILS MAP
BIG BEND III SOLAR POWER PLANT PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Maxar Imagery, 2020; NRCS, 2018; ECT, 2020.

TECO TAMPA ELECTRIC
AN EMERA COMPANY



FLUCFCS	Description	FNAI	Acres	Percentage
150	Industrial	Developed	22.18	23.93
329	Other Shrubs And Brush	Abandoned Field/Abandoned Pasture	54.95	59.28
422	Brazilian Pepper	Invasive Exotic Monoculture	8.69	9.37
427	Live Oak	Mesic Hammock	0.25	0.27
437	Australian Pine	Invasive Exotic Monoculture	2.44	2.63
514	Upland Cut Ditches	Canal/Ditch	3.13	3.38
534	Reservoirs < 10 Acres	Artificial Pond	0.94	1.01
6417	Freshwater Marsh W/ Shrubs,Brush And Vines	Canal/Ditch	0.12	0.13
Total			**92.70**	**100**

FIGURE 4.
LAND USE AND COVER MAP
BIG BEND III SOLAR POWER PLANT PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Maxar Imagery, 2020; ECT, 2020.

TECO
TAMPA ELECTRIC
AN EMERA COMPANY

Q:\projects\TECO\BB_PhaseIII\200637\0200\Land_Use.mxd

jvonborstel 12/15/2020 11:15:31 AM

TAB 3

APPENDIX A
PROPERTY DEEDS AND BOUNDARY/WETLAND SURVEYS

INSTRUMENT#: 2013289148, BK: 22043 PG: 49 PGS: 49 - 56 07/30/2013 at 08:04:48 AM, DOC TAX PD(F.S.201.02) $60200.00 DEPUTY CLERK:SWILLIAMS Pat Frank,Clerk of the Circuit Court Hillsborough County

THIS INSTRUMENT PREPARED BY:
Jackson H. Bowman, Esquire
Moore, Bowman & Rix, P.A.
300 West Platt Street, Suite 100
Tampa, Florida 33606
Telephone: 813-318-9000

Tax Parcel I.D. Nos.: U-10-31-19-ZZZ-000001-73800.0; U-10-31-19-ZZZ-000001-73810.0; U-10-31-19-ZZZ-000001-73820.0; and U-10-31-19-ZZZ-000001-73830.0

SPECIAL WARRANTY DEED

THIS INDENTURE, made this 26th day of July. 2013, between **APOLLO BEACH INVESTMENTS LIMITED PARTNERSHIP**, a Florida limited partnership, whose post office address is Post Office Box 420, Pineland, Florida 33945, Attention: Noel E. Andress (hereinafter called the "Grantor") and **TAMPA ELECTRIC COMPANY**, a Florida corporation, whose business address is 702 N. Franklin Street, Tampa Florida 33602 (hereinafter called the "Grantee").

WITNESSETH, that Grantor, for and in consideration of the sum of Ten and 00/100 Dollars, and other valuable consideration, to it in hand paid by Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, sold and conveyed to Grantee, its successors and assigns forever, all the following described property in Hillsborough County, Florida (hereinafter, the "Property"):

> That certain real property which is more particularly described by legal description in **Exhibit "A"** attached hereto and incorporated herein by this reference, together with all fixtures, improvements and appurtenances thereunto appertaining;

SUBJECT TO the matters set forth in **Exhibit "B"** attached hereto and incorporated herein by the reference;

TO HAVE AND TO HOLD the Property, with the appurtenances, unto Grantee, its successors and assigns, in fee simple forever;

And the Grantor does specially warrant the title to said Property subject to the matters referred to herein, and will defend the same against the lawful claims of all persons claiming by, through, or under Grantor, but against none other.

IN WITNESS WHEREOF, Grantor has executed this Special Warranty Deed effective as of this 26th day of July, 2013.

As to Noel E. Andress
Signed, sealed and delivered
in the presence of:

(Print Name) Sandra H. Bowers

(Print Name) Jessica Sylvia

GRANTOR:

APOLLO BEACH INVESTMENTS LIMITED PARTNERSHIP, a Florida limited partnership

By: Andress Family Florida Limited Partnership, a Florida limited partnership, as a General Partner of Apollo Beach Investments Limited Partnership

By: Capri Holdings Investment Incorporated, a Florida corporation, as General Partner of Andress Family Florida Limited Partnership

By: Noel Andress
Noel E. Andress, President of Capri Holdings Investment Incorporated

As to C. John Kronberg
Signed, sealed and delivered
in the presence of:

(Print Name) Debra L. Mizla

(Print Name) Vicki L. Lyons

And

By:
C. John Kronberg, as a General Partner of Apollo Beach Investments Limited Partnership

STATE OF FLORIDA
COUNTY OF Hillsborough

The foregoing instrument was acknowledged before me this 26th of July, 2013, by Noel E. Andress, President of CAPRI HOLDINGS INVESTMENT INCORPORATED, a Florida Corporation, as General Partner of ANDRESS FAMILY FLORIDA LIMITED PARTNERSHIP, a Florida limited partnership, a General Partner of **APOLLO BEACH INVESTMENTS LIMITED PARTNERSHIP**, a Florida limited partnership, who is (____) personally known to me, or (✓) who has produced a Florida driver's license as identification.

Notary Public State of Florida
Jessica Sylvia
My Commission EE 827491
Expires 06/12/2015

Jessica Sylvia
NOTARY PUBLIC, State of Florida
Print Name: Jessica Sylvia
My Commission Expires: 06/12/2015

(Affix Notary Seal above)

STATE OF OHIO

COUNTY OF Ottawa

The foregoing instrument was acknowledged before me this 25th of July, 2013, by C. John Kronberg, a General Partner of **APOLLO BEACH INVESTMENTS LIMITED PARTNERSHIP**, a Florida limited partnership, who is (____) personally known to me, or (X) who has produced a Ohio driver's license as identification.

NOTARIAL SEAL
STATE OF OHIO

AMY HANNA, NOTARY PUBLIC
State of Ohio
My Commission Expires Nov. 23, 2013

Amy Hanna
NOTARY PUBLIC, State of Ohio
Print Name: Amy Hanna
My Commission Expires: Nov. 23rd. 2013

(Affix Notary Seal above)

Exhibit "A"

LEGAL DESCRIPTION

The Southwest 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Hillsborough County, Florida; Less rights-of-way for public use.

Also less and Except that portion of the above described property conveyed to White's Investments of Hudson, Inc., a Florida corporation, by Special Warranty Deed, recorded November 4, 2008 in Official Records Book 18944, Page 524, of the public records of Hillsborough County, Florida; more particularly described as follows:

The West 337 feet of the Southwest 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Hillsborough County, Florida, Less right-of-way for public use.

AND

The Southeast 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Less existing right-of way for public roads and Less the following property: Commence at the Southeast corner of said Section 10, thence N. 89° 14' 31" W., along the South boundary of Section 10, a distance of 134.79 feet to a point on the Westerly right of way boundary of U.S. Highway #41 (S.R. #45), thence N. 00° 47' 43" E., along said right of way boundary, a distance of 145.39 feet to the Point of Beginning; thence N. 89° 12' 17" W., a distance of 175.00 feet; thence N. 00° 47' 43" E., a distance of 140 feet; thence S. 89° 12' 17" E., a distance of 175 feet to a point on the aforementioned Westerly right of way boundary of U.S. Highway #41 (S.R. 45), thence S. 00° 47' 43" W. along said right of way boundary a distance of 140.00 feet to the Point of Beginning. All lying and being in Hillsborough County, Florida.

AND

The Northeast 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Less that part deeded out to the State of Florida, for road right-of-way in Official Records Book 241, Page 63, of the public records of Hillsborough County, Florida; and Less the North 300 feet thereof.

Exhibit "B"

1. Existing Leases that have been assigned by Grantor to Grantee.

2. Taxes and assessments for 2013 and subsequent years, a lien, which are not yet due and payable.

3. All covenants, limitations, easements, reservations, and easements of record.

4. Applicable zoning restrictions and regulations imposed by governmental authority.

5. All riparian rights and submerged land rights, mineral rights and any rights, dedications, easements, restrictions of record, interests or claims which may exist or arise by reason of rights-of-way, dirt roads, trail roads, paths, power or other utility lines, fences or improvements of any kind located on the property, encroaching from the Property onto adjacent lands, or encroaching from adjacent lands onto the Property.

APOLLO BEACH INVESTMENTS LIMITED PARTNERSHIP
GENERAL PARTNERS' AFFIDAVIT

The undersigned, **NOEL ANDRESS** and **C. JOHN KRONBERG** ("Affiants"), who being by me first duly sworn, state as follows:

1. Andress Family Florida Limited Partnership, a Florida limited partnership in good standing with the Florida Secretary of State, is one of two General Partners of Apollo Beach Investments Limited Partnership. Andress Family Florida Limited Partnership, through its General Partner, Capri Holdings Investment Incorporated, has full authority under both its and Apollo Beach Investments Limited Partnership's Partnership Agreements to have their authorized representative, Noel Andress, execute such documents and to take such actions as may be necessary or desirable to engage in the subject transaction to sell the real property (the "Real Property") described on Exhibit "A" attached hereto (the "Subject Transaction").

2. Noel Andress is President of Capri Holdings Investment Incorporated, a Florida corporation in good standing with the Florida Secretary of State, which is the sole General Partner of Andress Family Florida Limited Partnership. Noel Andress has the authority under the Bylaws of Capri Holdings Investment Incorporated to execute such documents and to take such actions as may be necessary or desirable to engage in the Subject Transaction.

3. C. John Kronberg is the other General Partner of Apollo Beach Investments Limited Partnership, who has full authority under Apollo Beach Investments Limited Partnership's Partnership Agreement to execute such documents and to take such actions as may be necessary or desirable to engage in the Subject Transaction.

4. All requisite actions under the Apollo Beach Investments Limited Partnership, Partnership Agreement confirming and approving the performance of such actions and the execution of such documentation have been duly taken and all of the partners have consented to the above-referenced actions.

5. That none of the parties referenced herein nor any of the partners or officers of the entities referenced herein have been debtors in any bankruptcy proceeding during the existence of the entities.

6. That the referenced entities are in full force and effect; have not been dissolved, revoked or amended so as to preclude or prohibit the subject transaction; and have been in full force and effect at all times during ownership of the Real Property.

AFFIANTS:

Noel Andress

Noel Andress
Date: July 26, 2013

C. John Kronberg

STATE OF FLORIDA
COUNTY OF Hillsborough

Sworn to and subscribed to before me this 26th day of July, 2013, by Noel Andress, who ☐ is personally known to me or who ☑ has produced Driver's License (type of ID) as identification.

Notary Public State of Florida
Jessica Sylvia
My Commission EE 827491
Expires 06/12/2015

Jessica Sylvia
Notary Public, State of Florida

Jessica Sylvia
Printed Name of Notary Public

NOTARY RUBBER STAMP SEAL
OR EMBOSSED SEAL

EE 827 491 — Commission No.
06/12/2015 — Expiration Date

STATE OF OHIO
COUNTY OF Ottawa

Sworn to and subscribed to before me this 25th day of July, 2013, by C. John Kronberg, who ☐ is personally known to me or who ☒ has produced Ohio Driver's License (type of ID) as identification.

NOTARIAL SEAL
STATE OF OHIO
AMY HANNA, NOTARY PUBLIC
State of Ohio
My Commission Expires Nov. 23, 2013

Amy Hanna
Notary Public, State of Ohio

Amy Hanna
Printed Name of Notary Public

NOTARY RUBBER STAMP SEAL
OR EMBOSSED SEAL

_____ — Commission No.
Nov. 23rd. 2013 — Expiration Date

EXHIBIT "A"

The Southwest 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Hillsborough County, Florida; Less rights-of-way for public use.

Also less and Except that portion of the above described property conveyed to White's Investments of Hudson, Inc., a Florida corporation, by Special Warranty Deed, recorded November 4, 2008 in Official Records Book 18944, Page 524, of the public records of Hillsborough County, Florida; more particularly described as follows:

The West 337 feet of the Southwest 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Hillsborough County, Florida, Less right-of-way for public use.

AND

The Southeast 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Less existing right-of way for public roads and Less the following property: Commence at the Southeast corner of said Section 10, thence N. 89° 14' 31" W., along the South boundary of Section 10, a distance of 134.79 feet to a point on the Westerly right of way boundary of U.S. Highway #41 (S.R. #45), thence N. 00° 47' 43" E., along said right of way boundary, a distance of 145.39 feet to the Point of Beginning; thence N. 89° 12' 17" W., a distance of 175.00 feet; thence N. 00° 47' 43" E., a distance of 140 feet; thence S. 89° 12' 17" E., a distance of 175 feet to a point on the aforementioned Westerly right of way boundary of U.S. Highway #41 (S.R. 45), thence S. 00° 47' 43" W. along said right of way boundary a distance of 140.00 feet to the Point of Beginning. All lying and being in Hillsborough County, Florida.

AND

The Northeast 1/4 of the Southeast 1/4 of Section 10, Township 31 South, Range 19 East, Less that part deeded out to the State of Florida, for road right-of-way in Official Records Book 241, Page 63, of the public records of Hillsborough County, Florida; and Less the North 300 feet thereof.

INSTRUMENT#: 2013474855, BK: 22324 PG: 1453 PGS: 1453 - 1455 12/20/2013 at 10:02:17 AM, DEPUTY CLERK:ADUPREE Pat Frank,Clerk of the Circuit Court Hillsborough County

3P

2 of 2

Prepared by and return to:
Stephen H. Reynolds, Esquire
Macfarlane Ferguson & McMullen
201 North Franklin Street, Suite 2000
Tampa, FL 33602

INSTRUMENT#: 2013474416, O BK 22324 PG 3-5 12/19/2013 at 04:24:22 PM, DOC TAX PD(F.S.201.02) $2975.00 DEPUTY CLERK: SLEWIS Pat Frank, Clerk of the Circuit Court Hillsborough County

Folio No: 051485-0000

27.00 rec
2975.00 DS
$3002.00

WARRANTY DEED

THIS INDENTURE, made effective as of the 19th day of December, 2013, between Bruce P. Elsberry and Ross S. Elsberry (**"Grantor"**), whose mailing addresses is 2316 Cypress Walk Way, Ruskin, FL 33570-7546 and Tampa Electric Company (**"Grantee"**), whose mailing address is P.O. Box 111, Tampa, Florida 33601.

W I T N E S S E T H:

Grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00), to him in hand paid, the receipt whereof is hereby acknowledged, has granted, bargained, sold and transferred, and by these presents does grant, bargain, sell and transfer unto Grantee and Grantee's successors and assigns forever, that certain real property in the County of Hillsborough State of Florida, more particularly as follows (the "Property"):

The North 140 feet of the South 285.39 feet of the West 175 feet of the East 309.79 feet of the Southeast 1/4 of the Southeast 1/4, Section 10, Township 31 South, Range 19 East.

Also described as

Commence at the Southeast corner of Section 10, Township 31 South, Range 19 East, Thence North 89°14'31" West, along the South boundary of Section 10 a distance of 134.79 feet to a point on the Westerly right-of-way boundary of U.S. Hwy. 41 (S.R. 45), thence North 00°47'43" East along said right-of-way boundary a distance of 145.39 feet to the point of beginning, thence North 89°12'17" West a distance of 175 feet, thence North 00°14'43" East a distance of 140 feet, thence South 89°12'17" East a distance of 175.00 feet to a point on the aforementioned Westerly right-of-way boundary of U.S. Hwy. 41 (S.R. 45), thence South 00°47'43" West along said right-of-way boundary a distance of 140.00 feet to the P.O.B.

SUBJECT TO taxes for the current and subsequent years, and easements, restrictions and reservations of record.

* This deed is being re-recorded to correct the recording date of this deed from the 19th now recorded in O.R. 22324 Page 6. Consideration has already been paid.

TO HAVE AND TO HOLD the same in fee simple forever.

And Grantor covenants with Grantee that Grantor is lawfully seized of the Property; that Grantor has good right and lawful authority to sell the Property; and that Grantor does hereby fully warrant the title to the Property, and will defend the same, against the lawful claims of all persons whomsoever.

WITNESS the execution hereof as of the date first written above.

Witnesses:

Printed name: Stephen H. Reynolds

Printed name: KATHLEEN E. ROBERTS

Bruce P. Elsberry

STATE OF FLORIDA
COUNTY OF HILLSBOROUGH

The foregoing instrument was acknowledged before me this 18 day of December 2013, by Bruce P. Elsberry, who is _____ personally known to me or ✓ who has produced FL Drivers Licenses, as identification.

Notary Public

Notary Public State of Florida
Kathleen E Roberts
My Commission EE103006
Expires 07/31/2015

KATHLEEN E. ROBERTS
Printed Name
Commission No. EE 163006
My Commission Expires: 7/15/2015

[SIGNATURE PAGE TO WARRANTY DEED]

WITNESS the execution hereof as of the date first written above.

Witnesses:

Printed name: Stephen H. Reynolds

Printed name: KATHLEEN E. ROBERTS

Ross S. Elsberry

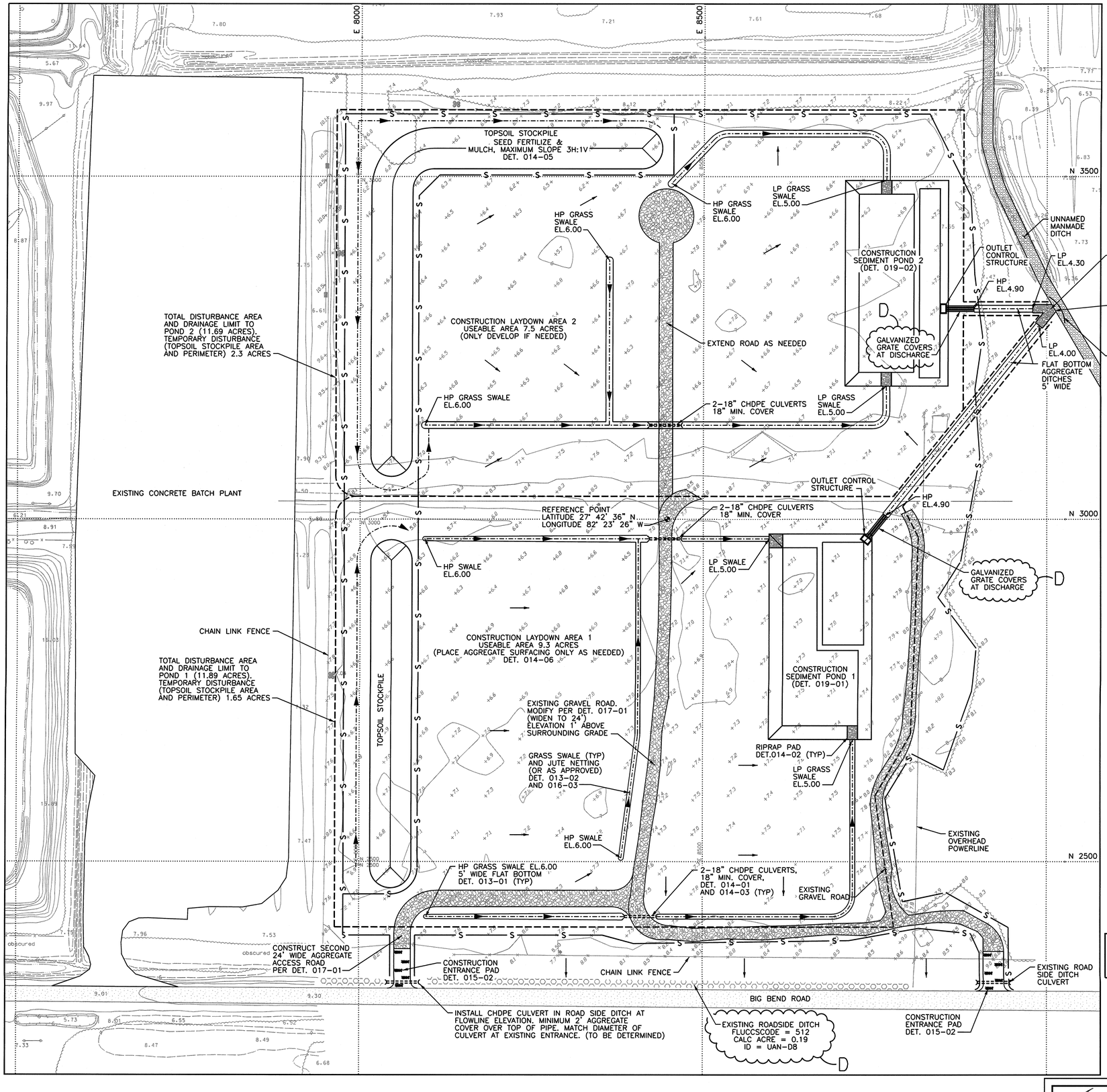
STATE OF FLORIDA
COUNTY OF HILLSBOROUGH

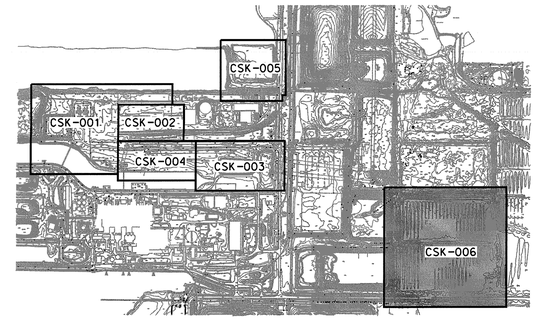
The foregoing instrument was acknowledged before me this 18 day of December, 2013, by Ross S. Elsberry, who is _____ personally known to me or V who has produced FL Drivers License, as identification.

Notary Public State of Florida
Kathleen E Roberts
My Commission EE103006
Expires 07/31/2015

Notary Public
KATHLEEN E. ROBERTS

Printed Name
Commission No. EE 103006
My Commission Expires: 7/15/2015





KEY PLAN

NORTH

60 0 60 120
GRAPHIC SCALE

LEGEND

—S— SILT FENCE (DETAIL 014-04)

SURFACE WATER BODY

NOTES

1. TOPOGRAPHIC BACKGROUND SURVEY MAP FROM SURVTECH SOLUTIONS, INC. DRAWING NAME 20120123_39TA, SHEETS 1-3, 09/26/2017. WITHIN LIMITS SHOWN WITH TOPOGRAPHY BACKGROUND. OUTSIDE THE SURVEY LIMITS OBTAINED FROM WEBSITE.DATAGATEWAY.NRCS.USDA.GOV/.
2. ELEVATIONS ARE IN TECO PLANT DATUM. CONVERSION FROM NAVD 88 TO PLANT DATUM: NAVD 88 + 1.971' = PLANT DATUM.
3. HORIZONTAL GRID SHOWN IS TECO PLANT COORDINATE SYSTEM.
4. THE UNNAMED CREEK RECEIVING STORM WATER RUNOFF IS LOCATED BASED ON THE NATIONAL WETLAND INVENTORY WEBSITE AS A SURFACE WATER BODY.
5. THIS CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE LAYDOWN AREA WILL ONLY BE DEVELOPED ON AN AS NEEDED BASIS. AREA 1 WILL BE PREPARED FIRST. AREA 2 WILL ONLY BE PREPARED IF NEEDED.
6. SANDY SOILS EXCAVATED TO CREATE STORMWATER PONDS AND DITCHES TO BE USED TO CREATE ELEVATED EQUIPMENT STORAGE PAD IN LAYDOWN AREA.

UNDERGROUND OR EMBEDDED UTILITIES MAY BE LOCATED WITHIN OR ADJACENT TO THE AREA IN WHICH EXCAVATION, DEMOLITION, FOUNDATION, OR MODIFICATION WORK IS TO BE PERFORMED.

REFERENCES RELATING TO THE UNDERGROUND OR EMBEDDED UTILITIES ARE PROVIDED TO ASSIST THE CONTRACTOR/INSTALLER IN THE FIELD LOCATING THOSE UTILITIES AND OTHER POSSIBLE UNDERGROUND OR EMBEDDED INTERFERENCES WITH THE WORK.

THE CONTRACTOR/INSTALLER SHALL EXERCISE DUE CAUTION DURING ALL EXCAVATION/FOUNDATION/DEMOLITION WORK.

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK.

PRELIMINARY

NOT FOR CONSTRUCTION

ANJANAL K. PATEL CERTIFICATE NO. 84566 STATE OF FLORIDA PROFESSIONAL ENGINEER
06/11/18

ISSUE	DESCRIPTION	DSGN	DWN	CHKD	APVD	DATE
D	REVISED, FOR PERMIT PER AGENCY COMMENTS	MMK	AGP	DJD	KKP	06/11/18
C	FINAL, FOR PERMIT	DJD	AGP	DJD	--	02/02/18
B	REVISED FOR CLIENT COMMENT	DJD	AGP	DJD	--	01/10/18
A	FOR COMMENT	DJD	AGP	DJD	--	10/16/17

TAMPA ELECTRIC - ENERGY SUPPLY - GENERATION ENGINEERING

BIG BEND UNIT 1 D
MODERNIZATION PROJECT
SITE CERTIFICATION APPLICATION
EROSION & SEDIMENT CONTROL DURING CONSTRUCTION
REMOTE CONSTRUCTION LAYDOWN AREA

Sergeant & Landy... 30 EAST ADAMS STREET JACKSONVILLE, FLORIDA 32202 CERTIFICATION OF AUTHORIZATION NO. 6936

TECO TAMPA ELECTRIC AN EMERA COMPANY

	BY	DATE
APVD	---	---
CHKD	DJD	10/16/17
DWN	AGP	10/16/17
DSGN	DJD	10/16/17

FILE NAME	CSK-006.DGN	DWG. NO.	CSK-006	REV. NO.	D
SCALE	1"=60'				



A SPECIFIC PURPOSE SURVEY OF

JURISDICTIONAL WETLANDS LYING WITHIN AND ADJACENT TO LANDS OWNED BY TAMPA ELECTRIC COMPANY, LYING WITHIN PORTIONS OF THE SOUTHEAST QUARTER OF SECTION 10, TOWNSHIP 31 SOUTH, RANGE 19 EAST.

HILLSBOROUGH COUNTY, FLORIDA.

NOTES

1. This is a Specific Purpose Survey as defined in Chapter 5J-17.050(11) of the Florida Administrative Code.
2. This map is intended to be displayed at a scale of 1" = 150' on Sheet 1, 1" = 50' on Sheets 2 & 3, and 1" = 30' on Sheet 4.
3. The printed dimensions shown on this survey supersede any scaled dimensions; there may be items drawn out of scale to graphically show their location.
4. "Certification" is understood to be an expression of professional opinion by the surveyor and mapper based on the surveyor and mapper's knowledge and information, and that it is not a guarantee or warranty, expressed or implied.
5. This survey has been exclusively prepared for the named entities shown hereon and is not transferable. No other person or entity is entitled to rely upon and/or re-use this survey for any purpose without the expressed, written consent of George F. Young, Inc. and the undersigned professional surveyor and mapper.
6. Unauthorized copies and/or reproductions via any medium of this survey or any portions thereof are expressly prohibited without the written consent of George F. Young, Inc. and the undersigned Professional Surveyor and Mapper.
7. Additions or deletions to survey maps or reports by other than the signing party or parties are prohibited without written consent of the signing party or parties.
8. This survey is valid as to the last date of field survey and not the signature date (if any).
9. This survey map and report (if applicable) or the copies thereof are not valid unless the Adobe PDF containing the electronic signature has been validated to be the original signed and sealed version of a Florida licensed Surveyor and Mapper.
10. Coordinates shown on this map are based on Florida State Plane Coordinate System, West Zone, as referenced to the North American Datum of 1983(2011) adjustment and are shown in U.S. Survey Feet. Control for this survey was established using Real Time Kinematic– Global Positioning System (RTK GPS) observations with correction signals provided by the public Florida Department of Transportation's Florida Permanent Reference Network of fixed base stations.
11. Parcel recording information was obtained from the Hillsborough County Property Appraiser's website. Parcel lines shown hereon derive from recorded deed dimensions, and information from a Boundary Survey of a portion of the lands shown hereon prepared by this office, Job No. 1300410OLS, dated 6/20/2013. This information was related on the ground using common, found monumentation, however the dimensions have not been verified.
12. Underground improvements (if any) were not located, except as shown hereon.
13. Aerial Imagery for this survey was obtained from the Florida Department of Transportation, flight date of 2017.
14. George F. Young, Inc. and the undersigned make no representations or guarantees pertaining to easements, rights-of-way, set back lines, reservations and/or agreements.
15. This survey was prepared for the specific purpose of locating jurisdictional wetland flags, as field designated/identified by Environmental Consulting & Technology, Inc. between the dates of 10/7/20 & 10/15/20, in relation to lands owned by Tampa Electric Company (these lands are shown in bold hereon, for informational purposes only).
16. This survey displays information from outside sources, in regard to (12) twelve wetland locations. (5) Five of which were provided by Environmental Consulting & Technology, Inc., as field located by a handheld GPS receiver. Their collection precisions and accuracies have not been determined but the coordinate precisions are estimated to be within 2-3 meters of field location. More specifically, this applies to wetland flag locations: OSW2-10, OSW9-1, OSW9-2, OSW9-3 and OSW9-4. The remaining (7) seven, OSW4-A through OSW4-G, were determined by changes in direction along the top of bank of an existing ditch, between the designated wetland flags for this survey, as field located by this office on 6/20/2013 (Job No. 1300410OLS). This procedure/determination, of said location, was instructed to be shown on the survey through direction provided by Environmental Consulting & Technology, Inc. on 10/29/2020. This information should be considered when using the data shown hereon.
17. This is not a Boundary Survey.

LEGEND

△△	WETLAND LOCATION (AT TOP OF BANK)
	WETLAND FLAG
WET	JURISDICTIONAL WETLAND LINE

ABBREVIATIONS

LB	LICENSED BUSINESS
LS	LICENSED SURVEYOR
M.O.L.	MORE OR LESS
NO.	NUMBER
O.R.	OFFICIAL RECORDS BOOK
OSW	OTHER SURFACE WATER
PSM	PROFESSIONAL SURVEYOR AND MAPPER
S.R.	STATE ROAD

WETLAND AREA(S)

OSW-1	46,001.4 SQUARE FEET, M.O.L.
OSW-2	(±)22,082.3 SQUARE FEET, M.O.L.
OSW-3	39,568.5 SQUARE FEET, M.O.L.
OSW-4	(±)14,022.7 SQUARE FEET, M.O.L.
OSW-5	2,432.3 SQUARE FEET, M.O.L.
OSW-6	585.1 SQUARE FEET, M.O.L.
OSW-7	1,254.6 SQUARE FEET, M.O.L.
OSW-8	3,017.8 SQUARE FEET, M.O.L.
OSW-9	(±)13,665.6 SQUARE FEET, M.O.L.

WETLAND FLAG COORDINATE TABLE

WETLAND FLAG	NORTHING(Y) NAD83/11	EASTING(X) NAD83/11	WETLAND FLAG	NORTHING(Y) NAD83/11	EASTING(X) NAD83/11
OSW1-1	1259693.4	530658.8	OSW3-16	1257952.0	531809.2
OSW1-2	1259611.6	530786.4	OSW3-1B	1257821.0	531813.8
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OSW1-4	1259329.5	531214.9	OSW3-1D	1257725.0	531818.6
OSW1-5	1259277.4	531335.7	OSW3-1E	1257860.9	531825.1
OSW1-6	1259179.3	531588.8	OSW3-1F	1257997.7	531827.6
OSW1-6A	1259076.1	531852.3	OSW3-1G	1257997.4	531821.8
OSW1-6B	1259034.9	531859.6	OSW3-1H	1257978.1	531851.0
OSW1-6C	1259035.4	531845.0	OSW3-1I	1257980.3	531801.1
OSW1-7	1258978.3	531849.7	OSW3-2	1258021.1	531700.3
OSW1-8	1259092.3	531850.7	OSW3-3	1258301.5	531608.3
OSW1-9	1259151.3	531866.7	OSW3-4	1258387.6	531413.9
OSW1-10	1259151.8	531841.5	OSW3-5	1258383.4	531179.5
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OSW1A-7	1259370.5	531223.6	OSW3-13	1257996.8	531707.8
OSW1A-8	1259305.8	531352.9	OSW3-14	1257964.2	531791.5
OSW1A-9	1259209.3	531604.9	OSW4-1	1258424.9	530770.9
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OSW2A-16	1259157.2	531094.4			
OSW2A-17	1259167.9	531031.0			

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MATTHEW W. SIMPSON, PSM NO. 7251 ON NOVEMBER 5, 2020.

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CREW CHIEF	SP	10/15/20
DRAWN	MWS	11/5/20
CHECKED	MWS	11/5/20
FIELD BOOK		
FIELD DATE		10/15/20

PREPARED FOR:
ECT, INC.
1408 NORTH WESTSHORE BLVD., SUITE 115
TAMPA, FLORIDA 33607
(813) 289-9338

George F. Young, Inc.
Since 1919
299 DR. MARTIN LUTHER KING JR. STREET, N. ST. PETERSBURG, FLORIDA 33701
PHONE (727) 822-4317 FAX (727) 822-2918
BUSINESS ENTITY LB21 WWW.GEORGEFYOUNG.COM
CIVIL & TRANSPORTATION ENGINEERING ECOLOGY LOCAL LANDSCAPE ARCHITECTURE
PLANNING SURVEYING SUBSURFACE UTILITY ENGINEERING
GAINESVILLE•LAKEWOOD RANCH•ORLANDO•ST. PETERSBURG•TAMPA

Digitally signed by Matthew W. Simpson
Date: 2020.11.05 14:58:50 -05'00'
Matthew W Simpson PSM LS 7251
DATE NOVEMBER 5, 2020

TECO BIG BEND III
WETLAND SURVEY–COVER SHEET

SECTION 10, TOWNSHIP 31S., RANGE 19E.

JOB NO. 13004101LS
SHEET NO. 1 OF 4

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SEE SHEET 1 OF 4 FOR SIGNATURE, DATE, AND SEAL

TECO BIG BEND III
WETLAND SURVEY–DETAIL SHEET

SECTION 10, TOWNSHIP 31S., RANGE 19E.

JOB NO. 13004101LS

SHEET NO. 2 OF 4

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FIELD BOOK		
FIELD DATE		10/15/20

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SEE SHEET 1 OF 4 FOR SIGNATURE, DATE, AND SEAL

TECO BIG BEND III
WETLAND SURVEY–DETAIL SHEET

SECTION 10, TOWNSHIP 31S., RANGE 19E.

JOB NO. 13004101LS

SHEET NO. 3 OF 4

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CREW CHIEF	SP	10/15/20
DRAWN	MWS	11/5/20
CHECKED	MWS	11/5/20
FIELD BOOK		
FIELD DATE		10/15/20

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SEE SHEET 1 OF 4 FOR SIGNATURE, DATE, AND SEAL

TECO BIG BEND III
WETLAND SURVEY-DETAIL SHEET

SECTION 10, TOWNSHIP 31S., RANGE 19E.

JOB NO. 13004101LS

SHEET NO. 4 OF 4

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TAB 4

APPENDIX B

SITE CONSTRUCTION PLANS

STORMWATER MANAGEMENT PLANS

FOR

BIG BEND III SOLAR

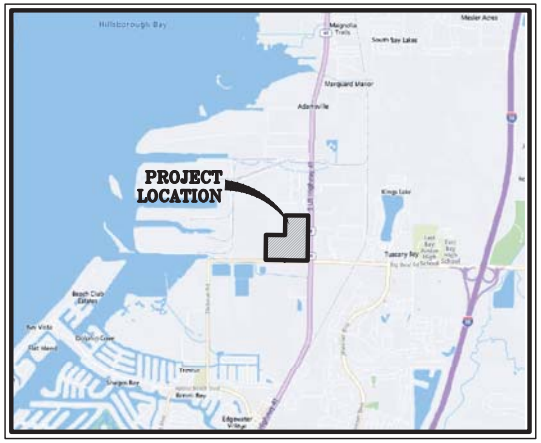
IN

SECTION 10, TOWNSHIP 31 SOUTH, RANGE 19 EAST

HILLSBOROUGH COUNTY, FLORIDA

PREPARED FOR

TAMPA ELECTRIC COMPANY



LOCATION MAP N.T.S.

SECTION 10, TOWNSHIP 31 SOUTH, RANGE 19 EAST



VICINITY MAP N.T.S.

INDEX TO SHEETS	
CE0	COVER SHEET
CE1	GENERAL NOTES
CE2	DEMOLITION PLAN
CE3	DEVELOPMENT PLAN
CE4	DRAINAGE PLAN
CE5	EROSION CONTROL PLAN
CE6-7	EROSION CONTROL DETAILS
CE8	T-LINE PLAN
CE9-12	DETAILS AND TYPICAL SECTIONS

NOTE:
DRAWING PREPARED IN AN 11X17 FORMAT. THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

PERMIT PLANS
JUNE 30, 2021

This item has been digitally signed and sealed by James Parker Terpening, PE on 06/30/2021 using a Digital Signature. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

James P Terpening

JAMES REG. NO. 24276

DATUM:
1. ELEVATIONS SHOWN ON THE PLANS ARE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988).

CULPEPPER & TERPENING INC
2980 SOUTH 25th STREET • FORT PIERCE, FLORIDA 34981
PHONE 772-464-3537 • FAX 772-464-9497 • www.ct-eng.com
STATE OF FLORIDA BOARD OF PROFESSIONAL ENGINEERS AUTHORIZATION NO. 4286

1. GENERAL

A. SOIL TESTING: SOIL TESTING SHALL BE PERFORMED BY A CERTIFIED TESTING LABORATORY.

2. EARTHWORK AND GRADING

A. MATERIALS AND CONSTRUCTION METHODS FOR EARTHWORK, EXCAVATION, EMBANKMENT AND GRADING SHALL MEET THE REQUIREMENTS OF FDOT SECTION 120 AND SHALL BE PERFORMED TO ACHIEVE FINAL GRADES, ELEVATIONS AND TYPICAL SECTIONS AS SHOWN ON THE PLANS FOR PROPOSED WORK.

B. CLEARING AND GRUBBING: CLEARING AND GRUBBING SHALL MEET THE REQUIREMENTS OF FDOT SECTION 110 AND SHALL BE PERFORMED WITHIN THE LIMITS OF THE PROJECT WORK. ALL MATERIAL SHALL BE REMOVED FROM THE SITE OF THE PROJECT AND SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, REGIONAL, STATE AND FEDERAL LAWS, REGULATIONS AND ORDINANCES.

C. ROUGH GRADE: THE CONTRACTOR SHALL GRADE THE SITE TO MEET THE REQUIREMENTS OF FDOT SECTIONS 110 AND 120 AND SHALL CONFORM TO THE LINES, GRADES, AND TYPICAL SECTIONS AS SHOWN ON THE PLANS.

D. SODDING, SEED AND MULCH: SODDING, SEED AND MULCH SHALL MEET THE REQUIREMENTS OF FDOT SECTIONS 570 AND 981 AND SHALL BE PLACED IN ALL DISTURBED AREAS NOT OTHERWISE ADDRESSED IN PLANS.

3. DRAINAGE IMPROVEMENTS

MATERIALS, TRENCH EXCAVATION, PIPE LAYING AND BACKFILLING OPERATIONS FOR DRAINAGE IMPROVEMENTS SHALL MEET THE REQUIREMENTS OF FDOT SECTIONS 125 AND 430. PIPE SHALL BE LAID IN TRUE ALIGNMENT IN A PIPE TRENCH WITH AN ADEQUATE SUPPORTING VALUE AND "BEDDED" TO THE DETAIL SHOWN IN THE PLANS AND FDOT SECTION 430. ALL BACKFILL SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180, UNLESS OTHERWISE SHOWN ON THE PLANS.

THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO COMPLETE THE WORK FOR DRAINAGE IMPROVEMENTS AT THE LOCATIONS, SIZES, AND TYPES SHOWN ON THE PLANS FOR THE FOLLOWING ITEMS:

A. REINFORCED CONCRETE PIPE: REINFORCED CONCRETE PIPE SHALL MEET THE REQUIREMENTS OF CLASS III OF ASTM C-76, WALL THICKNESS "B", LATEST REVISION, AS MODIFIED BY FDOT SECTION 430. GASKETS FOR PIPE JOINTS SHALL BE ROUND RUBBER GASKETS AND SHALL MEET THE REQUIREMENTS OF FDOT SECTION 942.

B. CORRUGATED ALUMINUM PIPE: CORRUGATED ALUMINUM PIPE SHALL MEET THE REQUIREMENTS OF FDOT SECTION 945, AND SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS.

4. MAINTENANCE OF TRAFFIC

MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH FDOT INDICES 600-670.

GENERAL NOTES

1. ALL DISTURBED AREAS TO BE SEEDED AND MULCHED, UNLESS OTHERWISE NOTED IN THE PLAN.
2. THE VEGETATIVE DRAINAGE FEATURES REQUIRE ESTABLISHMENT OF VEGETATIVE COVER PRIOR TO THE REMOVAL OF THE SILT FENCING.
3. ALL SLOPES GREATER THAN 4:1 SHALL BE SODDED.
4. THE LOCATION OF EXISTING UTILITIES SHOWN IS APPROXIMATE ONLY AND MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING WORK.
5. THESE PLANS SHALL NOT BE USED FOR CONSTRUCTION UNLESS THEY ARE MARKED "APPROVED FOR CONSTRUCTION" IN THE TITLE BLOCK.
6. CONTRACTOR TO OBTAIN AND REVIEW ALL PERMITS PRIOR TO STARTING CONSTRUCTION
7. ALL NUISANCE EXOTIC VEGETATION ON-SITE MUST BE REMOVED IN CONJUNCTION WITH SITE DEVELOPMENT.
8. DRAWING SCALE MAY CHANGE DUE TO REPRODUCTION.

THE WORK

EXISTING UTILITIES AND STRUCTURES:

EXISTING UTILITIES, STRUCTURES AND FACILITIES SHOWN ON THE DRAWINGS WERE LOCATED AS ACCURATELY AS POSSIBLE FROM THE RECORDS EXAMINED. NO GUARANTEE IS MADE THAT ALL EXISTING FACILITIES ARE SHOWN OR THAT THOSE SHOWN ARE ENTIRELY ACCURATE. THE CONTRACTOR SHALL ASSURE HIMSELF OF THE ACTUAL LOCATION OF THE UTILITIES, STRUCTURES, OR FACILITIES PRIOR TO PERFORMANCE OF ANY WORK IN THE VICINITY. THE UTILITY COMPANIES OR UTILITY AGENCIES WILL CO-OPERATE WITH THE CONTRACTOR'S OPERATIONS. PRIOR TO START OF THE WORK, THE CONTRACTOR SHALL REQUEST EACH UTILITY AGENCY TO ADVISE HIM OF THE LOCATION OF THEIR FACILITIES IN THE VICINITY. THE OWNER WILL ASSUME NO LIABILITY FOR DAMAGES SUSTAINED OR COST INCURRED BECAUSE OF THE CONTRACTOR'S OPERATION IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES, OR TO THE TEMPORARY BRACING AND SHORING OF SAME. IN THE EVENT THAT IT IS NECESSARY TO SHORE, BRAVE, OR SWING A UTILITY, THE UTILITY COMPANY OR DEPARTMENT AFFECTED SHOULD BE CONTACTED AND THEIR PERMISSION SECURED AS TO THE METHOD USED FOR ANY SUCH WORK.

RESTORATION OF DAMAGED STRUCTURES OR UTILITIES:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR, REBUILD OR RESTORE TO ITS FORMER CONDITION, ANY AND ALL PORTIONS OF EXISTING UTILITIES, STRUCTURES, EQUIPMENT, APPURTENANCES OR FACILITIES, WHICH MAY BE DISTURBED OR DAMAGED DUE TO THIS CONSTRUCTION OPERATION.

ABANDONMENT OF SEPTIC TANKS:
ABANDONMENT OF SEPTIC TANKS SHALL BE IN ACCORDANCE WITH THE HEALTH DEPARTMENT POLICY UNDER FLORIDA ADMINISTRATIVE CODE 64E-6.001.

FINAL CLEANUP:
UPON COMPLETION OF THE WORK, BUT BEFORE FINAL PAYMENT WILL BE MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE PROJECT AREA, ALL FALSEWORK, EQUIPMENT, SURPLUS AND DISCARDED MATERIALS, RUBBISH AND TEMPORARY STRUCTURES WHICH RESULT FROM THE WORK UNDER THIS AGREEMENT, AND SHALL RESTORE IN AN ACCEPTABLE MANNER, ALL PROPERTY WHICH HAS BEEN DAMAGED DURING THE PROSECUTION OF THE WORK.

RECORD INFORMATION:
UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL OBTAIN AND SUBMIT RECORD INFORMATION TO THE OWNER. THIS INFORMATION SHALL INCLUDE THE FOLLOWING:

1. DRAINAGE SYSTEM:
   A. HIGH POINTS AND LOW POINTS OF SITE;
   B. LOCATION, SIZE, TYPE, LENGTH AND INVERT OF ALL CULVERTS.

2. PATHWAYS AND GRADING:
THE RECORD INFORMATION SHALL BE CERTIFIED BY A FLORIDA PROFESSIONAL LAND SURVEYOR. LOCATIONS SHALL BE MADE BY REFERENCE TO CENTERLINE STATIONING AND OFFSET OR BY OTHER MEANS ACCEPTABLE TO THE OWNER. ELEVATIONS SHALL BE ACCORDING TO THE NORTH AMERICAN VERTICAL DATUM (NAVD).

3. GEOTECHNICAL TESTING :
INCLUDES ALL PROCTORS, LBR AND DENSITIES.



JAMES P. TERPENING JR., P.E.
FL. REG. NO. 24276

REVISIONS						
DATE	BY		DESCRIPTION	DATE	BY	DESCRIPTION

C&T JOB NO. 20-215

DESIGNED BY	DRAWN BY
JPT 06/16/2021	AND 06/16/2021
CHECKED BY	CHECKED BY
JPT 06/24/2021	TG 06/24/2021

ENGINEER OF RECORD:
JAMES P. TERPENING JR., P.E. NO. 24276

CULPEPPER & TERPENING INC
2980 SOUTH 25th STREET • FORT PIERCE, FLORIDA 34981
PHONE 772-464-3537 • FAX 772-464-3497 • www.ct-eng.com
STATE OF FLORIDA BOARD OF PROFESSIONAL ENGINEERS AUTHORIZATION NO. 4286

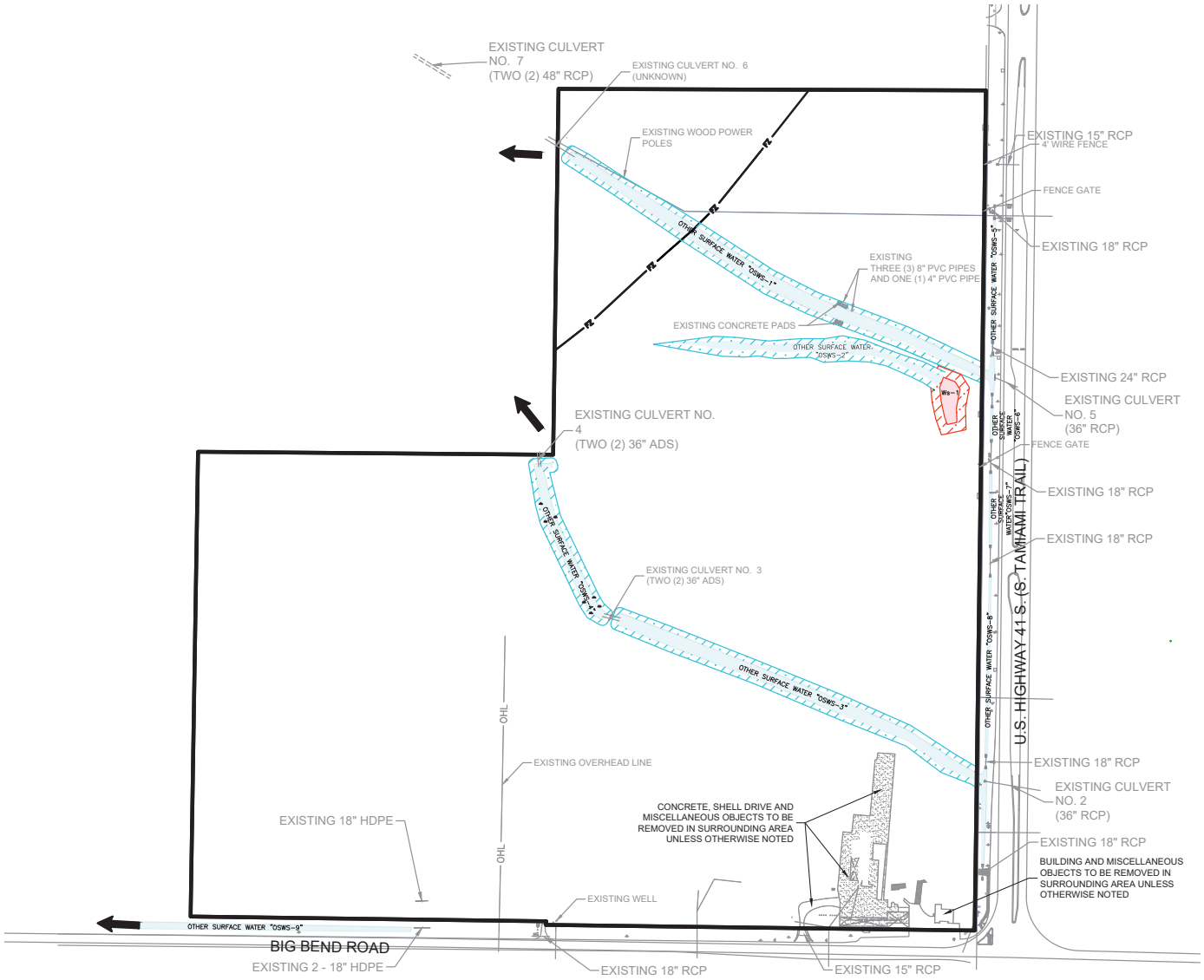
TECO

BIG BEND III SOLAR

GENERAL NOTES

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FEET

LEGEND

- PROPERTY BOUNDARY
- FZ — FEMA FLOOD ZONE LIMITS
- OTHER SURFACE WATER (OSWS)
- WETLAND (Ws)
- OSWS SETBACK REQUIRE 15' BUFFER
- WETLAND (Ws) REQUIRE 25' BUFFER
- BASIN OUTFALL

Notes:

1. All miscellaneous structures within the Project limits are to be removed, unless otherwise noted.
2. All existing pavement and slabs within the Project limits are to be removed, unless otherwise noted.
3. All existing drainage culverts located within the Project fencing shall be removed unless noted otherwise.

JAMES PARKER TERPENING JR. LICENSE No 24276 STATE OF FLORIDA PROFESSIONAL ENGINEER

JAMES P. TERPENING JR., P.E.
FL. REG. NO. 24276

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

C&T JOB NO. 20-215

DESIGNED BY	DRAWN BY
JPT 06/16/2021	AND 06/16/2021
CHECKED BY	CHECKED BY
JPT 06/24/2021	TG 06/24/2021

ENGINEER OF RECORD: JAMES P. TERPENING JR., P.E. NO. 24276

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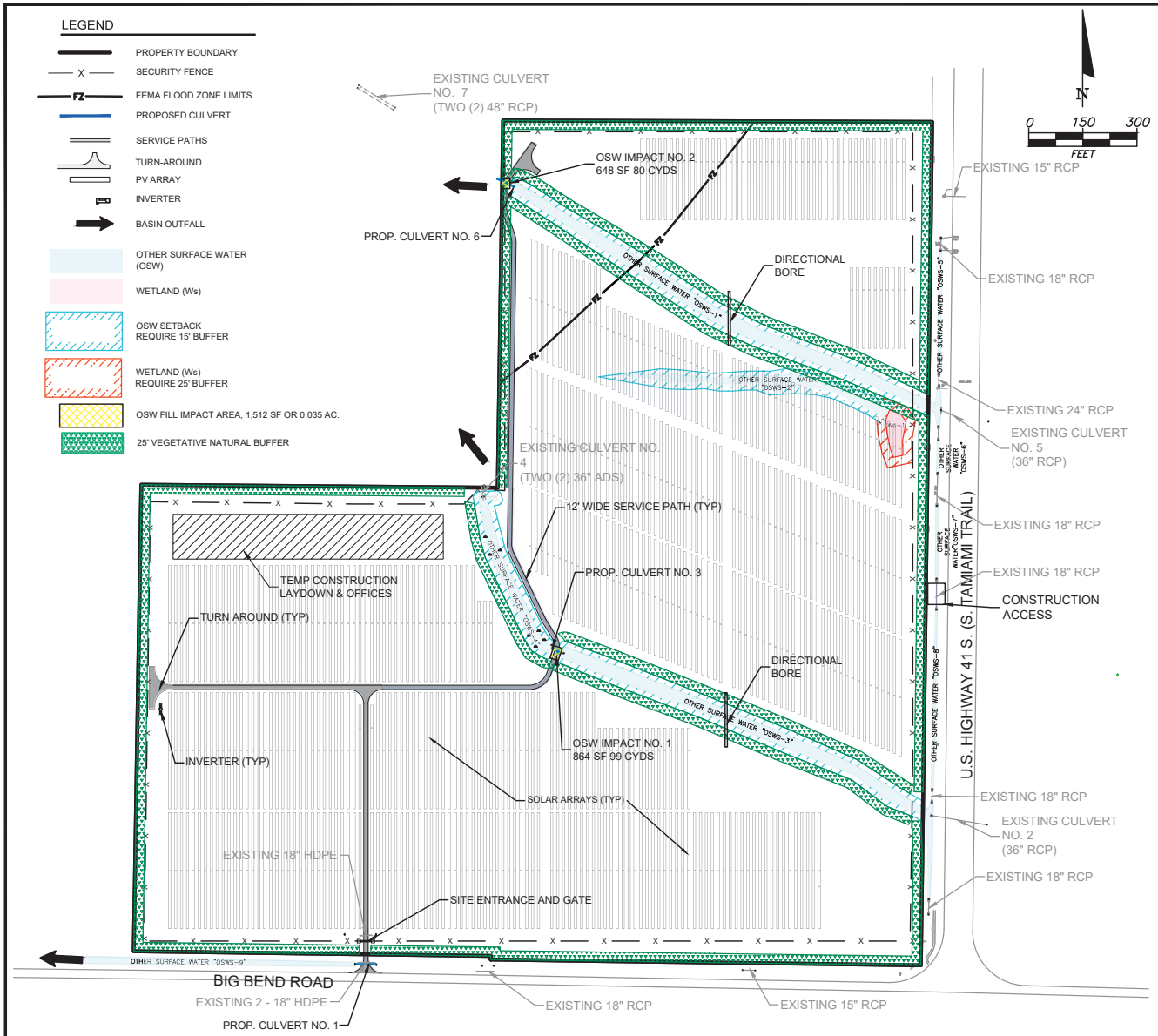
TECO

BIG BEND III SOLAR

DEMOLITION PLAN

SHEET NO. CE2

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BIG BEND III SOLAR

OWNER
TAMPA ELECTRIC COMPANY
702 N. FRANKLIN STREET
PLAZA 8
TAMPA, FLORIDA 33602

APPLICANTS:
TAMPA ELECTRIC COMPANY
702 N. FRANKLIN STREET
PLAZA 8
TAMPA, FLORIDA 33602

ENGINEER
JAMES P. TERPENING JR, P.E.
CULPEPPER & TERPENING, INC.
2980 SOUTH 25TH. STREET
FORT PIERCE, FL 34981
PHONE: (772) 464-3537
FAX: (772) 464-9497
BTERPENING@CT-ENG.COM

SURVEYOR:
THOMAS P. KIERNAN
CULPEPPER & TERPENING, INC.
2980 SOUTH 25TH. STREET
FORT PIERCE, FL 34981
PHONE: (772) 464-3537
FAX: (772) 464-9497
TKIERNAN@CT-ENG.COM

1.) **PROJECT NAME:** BIG BEND III SOLAR

2.) **LOCATION:** PROJECT IS LOCATED NORTHWEST CORNOR OF BIG BEND ROAD & U.S. HIGHWAY 41.

3.) **LAND USES:** EXISTING LAND USES: AGRICULTURAL AG
PROPOSED LAND USE: SOLAR ENERGY CENTER

4.) **PROJECT DESCRIPTION:** 15.52 MW (AC) SOLAR ENERGY FACILITY

5.) **SEC/TOWN/RANGE:** SECTION 10, TOWNSHIP 31 SOUTH, RANGE 19 EAST

6.) **PARCEL ID NUMBER:** U-10-31-19-ZZZ-000001-73810.0

7.) **SITE AREA:** 93.27 ACRES

8.) **ZONING:** PD

9.) **LAND USE:** UTILITY

10.) **FLOOD ZONE:** ZONE AE
MAP ID: 12057C0492H
DATED: AUG. 28, 2008

11.) **EXISTING : IMPERVIOUS AND PERVIOUS DATA**

IMPERVIOUS COVERAGE	ACREAGE	SF	PERCENT OF SITE
BUILDINGS	0.00	0	0.0%
PADS AND MISCELLANEOUS AREAS	1.07	46,795	1.2%
TOTAL IMPERVIOUS COVERAGE	1.07	46,795	1.2%
PERVIOUS COVERAGE	**ACREAGE**	**SF**	**PERCENT OF SITE**
OPEN SPACE (INCLUDING OSW)	92.20	4,016,047	98.8%
TOTALS	**93.27**	**4,062,841**	**100%**

12.) **PROPOSED : IMPERVIOUS AND PERVIOUS DATA**

IMPERVIOUS COVERAGE	ACREAGE	SF	PERCENT OF SITE
INVERTER PADS	0.04	1,584	0.0%
STABILIZED ACCESS PATHS	1.44	62,550	1.5%
TOTAL IMPERVIOUS COVERAGE	1.47	64,134	1.6%
PERVIOUS COVERAGE	**ACREAGE**	**SF**	**PERCENT OF SITE**
OPEN SPACE (INCLUDING OSW)	91.80	3,998,707	98.4%
TOTALS	**93.27**	**4,062,841**	**100%**

Note: Proposed Impervious Paths are based on 16 foot widths.

13.) **CONSTRUCTION SCHEDULE**
START: JANUARY 2022 COMPLETE: DECEMBER 2022

14.) **UTILITY SERVICE**
WATER SERVICE NONE
SEWAGE SERVICE NONE
SOLID WASTE NONE

15.) **PARKING:**
THE SOLAR ENERGY FACILITY IS AN UNMANNED AND REMOTELY MONITORED RESTRICTED ACCESS FACILITY. EMPLOYEES DO NOT REPORT TO THIS FACILITY ON A DAILY BASIS AND ROUTINE MAINTENANCE CREWS WILL PARK INSIDE THE FENCED AREA. THEREFORE, NO PARKING SPACES WILL BE PROVIDED.

16.) **SECURITY FENCING**
A.) PERIMETER FENCE SHALL BE 6'-0" CHAIN LINK WITH 3 STRANDS OF BARBED WIRE ON EXTENSION ARMS TO MAKE AN OVERALL TOTAL HEIGHT OF 7'-0"

17.) **PROPERTY SET BACK**
A MINIMUM OF 50 FOOT SETBACK FROM PROPERTY LINE TO THE SOLAR ARRAY

18.) THE MAXIMUM HEIGHT OF THE PV PANELS SHALL BE 15 FEET AS MEASURED WHEN THE PANELS ARE TILTED TO THE DESIGN DEGREE THAT CREATES THE GREATEST OVERALL HEIGHT

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JAMES P. TERPENING JR., P.E.
FL. REG. NO. 24276

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

C&T JOB NO. 20-215
DESIGNED BY JPT 06/16/2021 | DRAWN BY AND 06/16/2021
CHECKED BY JPT 06/24/2021 | CHECKED BY TG 06/24/2021
ENGINEER OF RECORD: JAMES P. TERPENING JR., P.E. NO. 24276

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TECO

BIG BEND III SOLAR

DEVELOPMENT PLAN

SHEET NO. CE3

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Table No. 1

Big Bend III Solar Culvert Chart

Existing Culvert Data					Proposed Culvert Data					
Culvert No.	Material Type	Size (in)	In. Inv.	Out Inv.	Status	Size (in)	Material Type	Length (ft)	In. Inv.	Out Inv.
1	ADS	2-18	5.70	6.01	PROPOSE	18	RCP	64	5.60	5.70
2	RCP	36	4.41	4.27	REMAIN	NA	NA	155	NA	NA
3	ADS	2-36	5.68	5.62	REPLACE	2-36"	RCP	64	5.68	5.62
4	ADS	2-36	5.04	4.79	REMAIN *	NA	NA	30	NA	NA
5	RCP	36	3.10	2.96	REMAIN	NA	NA	136	NA	NA
6	Unknow	Unknow	Unknow	Unknow	REPLACE	2-48	RCP	64	2.90	2.80
7	RCP	2-48	3.76	3.21	REMAIN *	NA	NA	120	NA	NA

*CLEAN EXISTING CULVERTS WITHIN PROJECT LIMITS THAT HAVE ANY DEBRIS OR OBSTRUCTIONS BLOCKING THE INLETS.

LEGEND

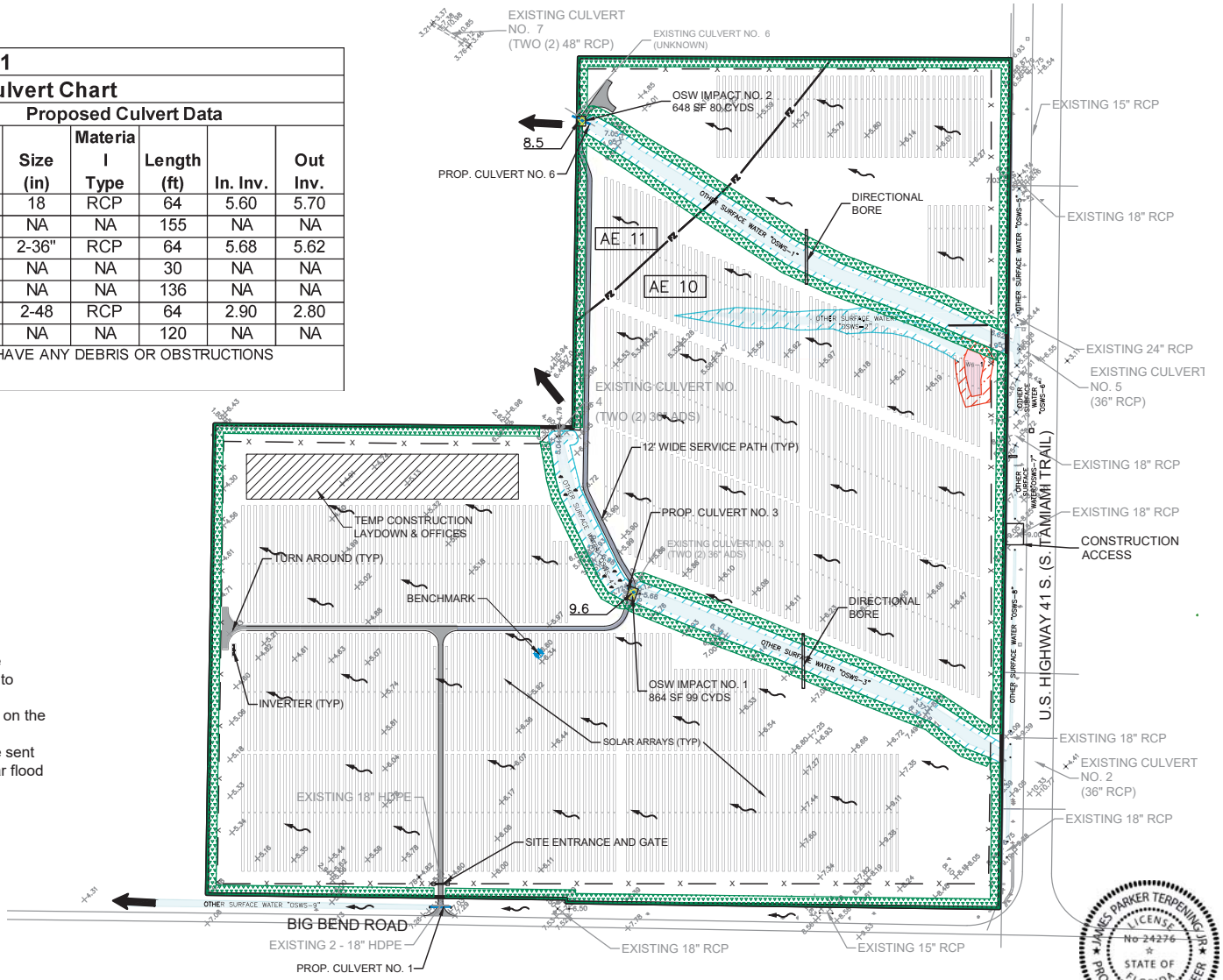
- PROPERTY BOUNDARY
- SHEET FLOW ARROW
- BASIN OUTFALL
- SECURITY FENCE
- FEMA FLOOD ZONE LIMITS
- PROPOSED CULVERT
- SERVICE PATHS
- TURN-AROUND
- PV ARRAY
- INVERTER
- OTHER SURFACE WATER (OSW)
- WETLAND (Ws)
- OSW SETBACK REQUIRE 15' BUFFER
- WETLAND (Ws) REQUIRE 25' BUFFER
- OSW FILL IMPACT AREA, 1,512 SF OR 0.035 AC.
- 25' VEGETATIVE NATURAL BUFFER

N

0 150 300

FEET

Note:
1. PV filed shall be leveled and grade to maintain grading patterns as shown on the plans.
2. Inverter shall be sent above the 200 year flood plain.



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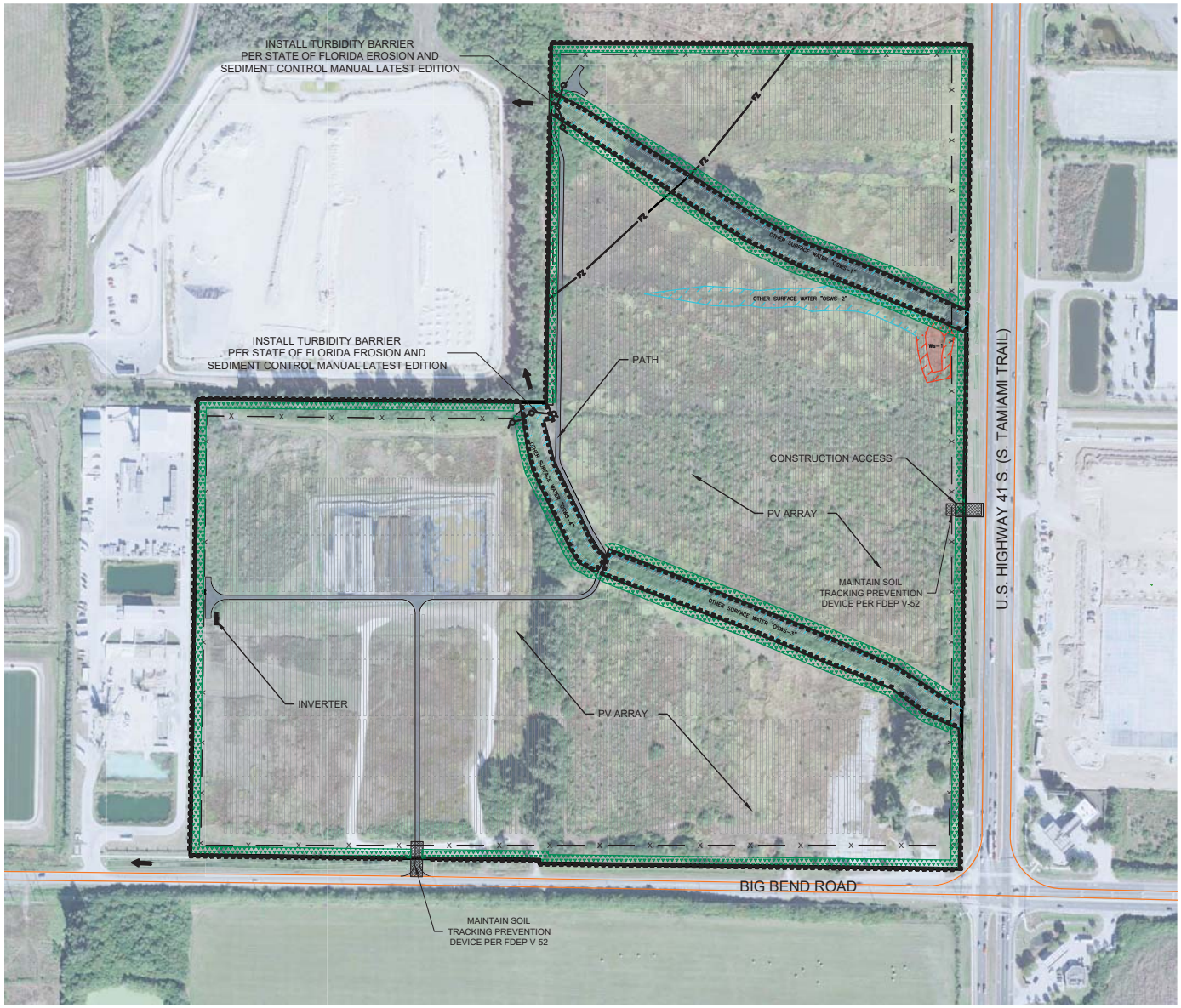
TECO

BIG BEND III SOLAR

DRAINAGE AND GRADING PLAN

SHEET NO. CE4

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N

0 150 300

FEET

LEGEND

- PROPERTY BOUNDARY
- SHEET FLOW ARROW
- BASIN OUTFALL
- SECURITY FENCE
- FEMA FLOOD ZONE LIMITS
- SERVICE PATHS
- TURN-AROUND
- PV ARRAY
- INVERTER
- SOIL TRACKING DEVICE
- SILT FENCE
- TURBIDITY BARRIER
- OTHER SURFACE WATER (OSW)
- WETLAND (Ws)
- OSW SETBACK REQUIRE 15' BUFFER
- WETLAND (Ws) REQUIRE 25' BUFFER
- OSW FILL IMPACT AREA, 1,512 SF OR 0.035 AC.
- 25' VEGETATIVE NATURAL BUFFER

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BIG BEND III SOLAR

EROSION CONTROL PLAN

SHEET NO.

CE5

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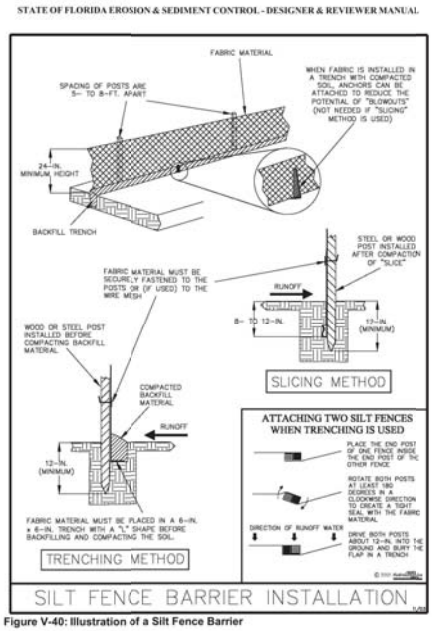


Figure V-40: Illustration of a Silt Fence Barrier

V-7

SILT FENCE BARRIER INSTALLATION
NOT TO SCALE

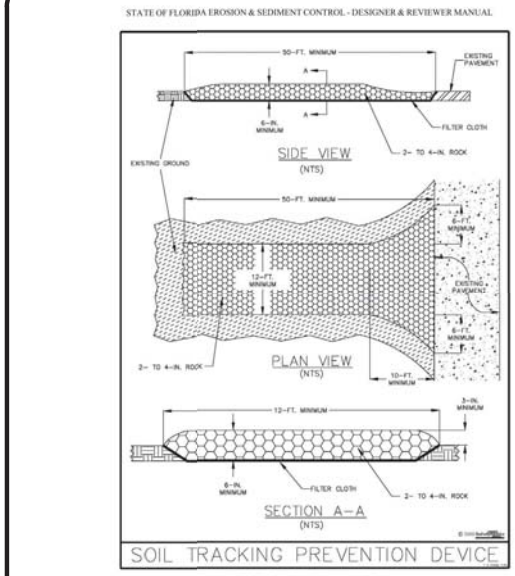


Figure V-14: Illustration of a Soil Tracking Prevention Device

V-31

SOIL TRACKING PREVENTION DEVICE
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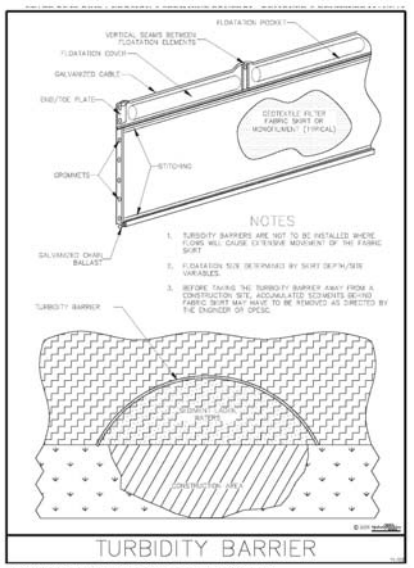
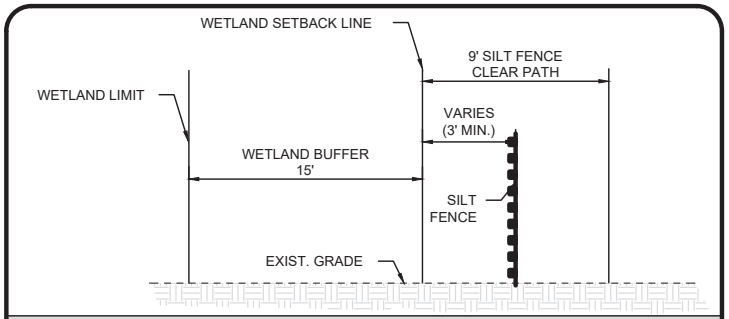


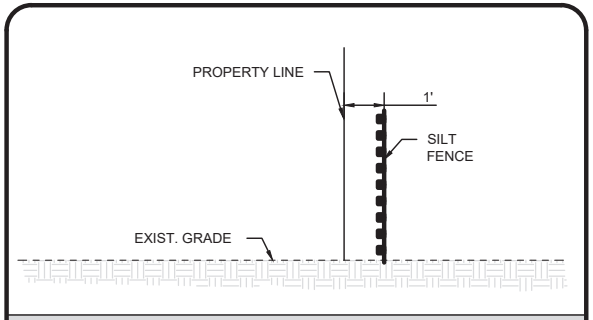
Figure V-44: Illustration of a Turbidity Barrier Curtain

V-15

TURBIDITY BARRIER
NOT TO SCALE



CLEAR PATH DETAIL
NOT TO SCALE



PROPERTY LINE DETAIL
NOT TO SCALE

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TECO

BIG BEND III SOLAR

EROSION CONTROL PLAN DETAILS

SHEET NO. CE6

P:\Proj-2020\20-215 TECO - Big Bend III - Solar Facility\Eng\20-215 Erosion Control Plan and Details.dwg Plotted: 6/30/2021 4:23 PM By: TAO GAO

Section 1	Project Name and location information:	TECO - Big Bend III - Solar Facility Section 10, Township 31 South, Range 19 East Hillsborough County, FL
Section 2	Describe the nature of the construction activity:	Solar Energy Center - PV Array
Section 3	Describe the intended sequence of major soil disturbing activities:	0-2 days; install perimeter sediment and erosion controls 3-10 days; clearing and site prep 11-40 days; earthwork - filling & grading 41-120 days; roadway and underground construction 121-128 Site Stabilization
Section 4	Total area of the site:	93 Acres
Section 5	Total area of the site to be disturbed:	78 Acres
Section 6	Existing data describing the soil or quality of any stormwater discharge from the site:	Soil types: • Wabasso Fine Sand, 0 to 2 percent slopes • Water
Section 7	Estimate the drainage area size for each discharge point:	93 Acres
Section 8	Latitude and longitude of each discharge point and identify the receiving water or MS4 for each discharge point:	LAT: 27.7986° LONG: -82.3881°
Section 9	Give a detailed description of all controls, Best Management Practices (BMPs) and measures that will be implemented at the construction site for each activity identified in the intended sequence of major soil disturbing activities section. Provide time frames in which the controls will be implemented. NOTE: All controls shall be consistent with performance standards for erosion and sediment control and stormwater treatment set forth in s. 62-40.432, F.A.C., the applicable Stormwater or Environmental Resource Permitting requirements of the Department or a Water Management District, and the guidelines contained in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual, FDOT, FDEP, and any subsequent amendments.	
	• Prior to clearing, a silt fence (trenched 6 inches deep and backfilled on the uphill side), may be installed as required. Floating turbidity barrier will be installed to the limits of soil disturbance along the shoreline. • Disturbed portions of the site where construction activities have permanently ceased shall be stabilized with sod or other permanent stabilization methods no later than 60 days after the last construction activity. • All installation shall be commenced as depicted on the attached site map and installation "typical".	
Section 10	Describe all temporary and permanent stabilization practices. Stabilization practices include temporary seeding, mulching, permanent seeding, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, vegetative preservations, etc.	
	• Grassing or mulch shall be used to stabilize all disturbed areas.	
Section 11	Describe all structural controls to be implemented to divert stormwater flow from exposed soils and structural practices to store flows, retain sediment on-site or in any other way limit stormwater runoff. These controls include silt fences, earth dikes, diversions, swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, coagulating agents and temporary or permanent sediment basins.	
	• Silt fence (with the same installation as indicated under the Best Management Practices heading) shall be installed as indicated on sheet CE 6. • Soil Tracking device (with the same installation as indicated under the Best Management Practices heading) shall be installed as indicated on sheet CE 6.	
Section 12	Describe all sediment basins to be implemented for areas that will disturb 10 or more acres at one time. The sediment basins (or an equivalent alternative) should be able to provide 3,600 cubic feet of storage for each acre drained. Temporary sediment basins (or an equivalent alternative) are recommended for drainage areas under 10 acres.	
	• No temporary sedimentation basins are proposed as runoff will be directed to permanent surface water management system.	

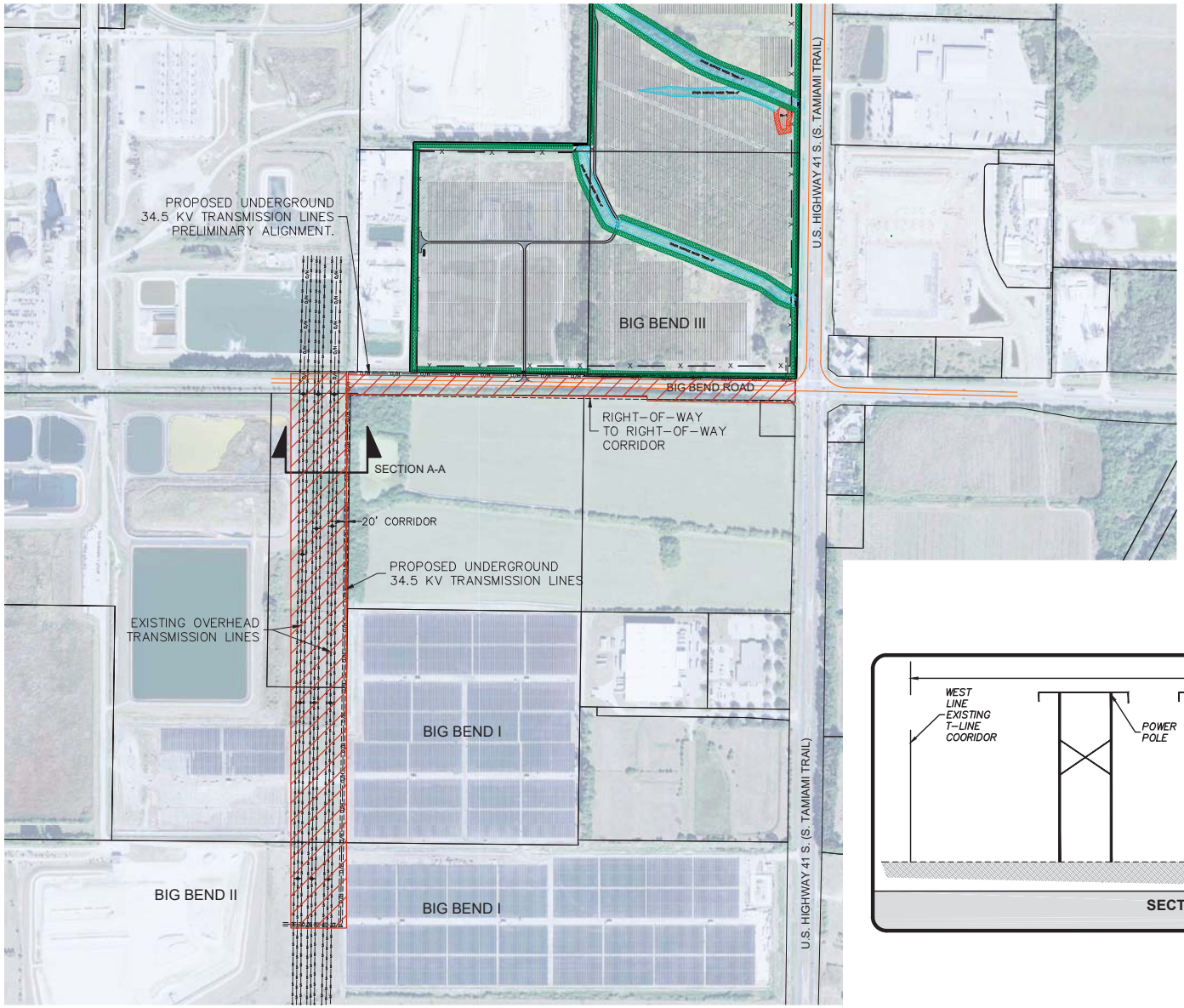
Section 13	Describe all permanent stormwater management controls such as, but not limited to, detention or retention systems or vegetated swales that will be installed during the construction process.	
	• The Project stormwater system that will accept any runoff from the disturbed areas is completed and operational.	
Section 14	Waste disposal, this may include construction debris, chemicals, litter, and sanitary wastes:	All construction materials and debris will be placed in a dumpster and hauled off site to a landfill or other proper disposal site. No materials will be buried on site.
Section 15	Offsite vehicle tracking from construction entrances/exits:	Off site vehicle tracking of sediments and dust generation will be minimized via a rock construction entrance, street sweeping and the use of water to keep dust down.
Section 16	The proper application rates of all fertilizers, herbicides and pesticides used at the construction site:	Florida-friendly fertilizers and pesticides will be used at a minimum and in accordance with the manufacturer's suggested application rates.
Section 17	The storage, application, generation and migration of all toxic substances:	All paints and other chemicals will be stored in a locked covered shed.
Section 18	Other:	Port-o-lets will be placed away from storm sewer systems, storm inlet(s), surface waters and wetlands. No vehicle maintenance shall be conducted on-site. A washdown area shall be designated at all times and will not be located in any area that will allow for the discharge of polluted runoff.
Section 19	Provide a detailed description of the maintenance plan for all structural and non-structural controls to assure that they remain in good and effective operating condition.	
	Contractor shall provide routine maintenance of permanent and temporary sediment and erosion control features in accordance with the technical specifications or as follows, whichever is more stringent: • Silt fence shall be inspected at least weekly. Any required repairs shall be made immediately. Sediment deposits shall be removed when they reach approximately one-half the height of the barrier. • Maintenance shall be performed on the rock entrance when any void spaces are full of sediment. • Inlet(s)/outfalls shall be inspected immediately after each rain event and any required repairs to the filter inlets, silt fence, or filter fabric shall be performed immediately. • Bare areas of the site that were previously seeded shall be reseeded per manufactures' instructions. • Mulch and sod that has been washed out shall be replaced immediately. • Maintain all other areas of the site with proper controls as necessary.	
Section 20	Inspections: Describe the inspection and inspection documentation procedures, as required by the FDEP NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities.	
	Qualified personnel will inspect all points of discharges, all disturbed areas of construction that have not been stabilized, constructed areas and locations where vehicles enter and exit the site, and all BMPs at least once every 7 calendar days and within 24 hours of the end of a rainfall event that is 0.5 inches or greater. Where sites have been finally stabilized, said inspections shall be conducted at least once every month until the Notice of Termination is filed.	
Section 21	Identify and describe all sources of non-stormwater discharges as allowed by the FDEP NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities.	
	It is expected that no non-stormwater discharges will occur from the site during construction period.	
Section 22	All contractor(s) and subcontractor(s) identified in the SWPPP must sign the following certification:	
	"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities and this Stormwater Pollution Prevention Plan prepared thereunder."	

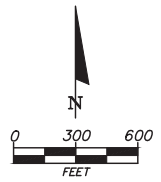
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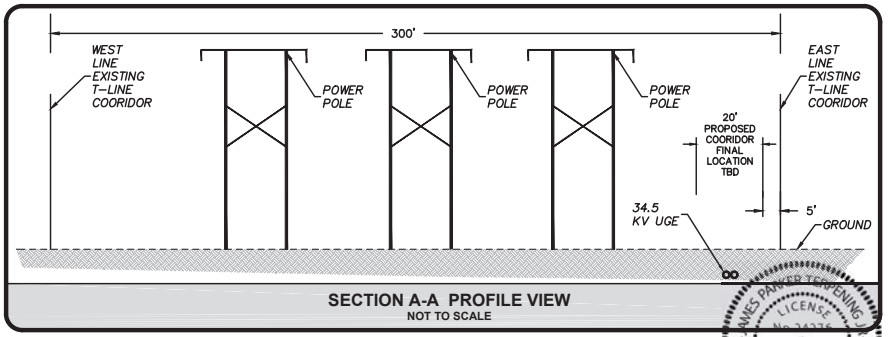
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REVISIONS						C&T JOB NO. 20-215		CULPEPPER & TERPENING INC	TECO	EROSION CONTROL PLAN DETAILS	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DESIGNED BY JPT 06/16/2021	DRAWN BY AND 06/16/2021	2980 SOUTH 25th STREET • FORT PIERCE, FLORIDA 34981 PHONE 772-464-3537 • FAX 772-464-3497 • www.ct-eng.com STATE OF FLORIDA BOARD OF PROFESSIONAL ENGINEERS AUTHORIZATION NO. 4286	BIG BEND III SOLAR		CE7
						CHECKED BY JPT 06/24/2021	CHECKED BY TG 06/24/2021				
						ENGINEER OF RECORD: JAMES P. TERPENING JR., P.E. NO. 24276					

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SECTION A-A PROFILE VIEW
NOT TO SCALE

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TK	TK

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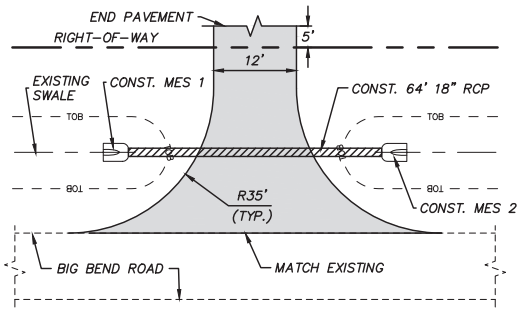
TECO

BIG BEND III SOLAR

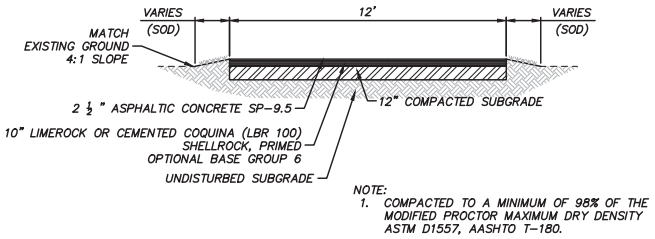
T-LINE PLAN

SHEET NO.
CE8

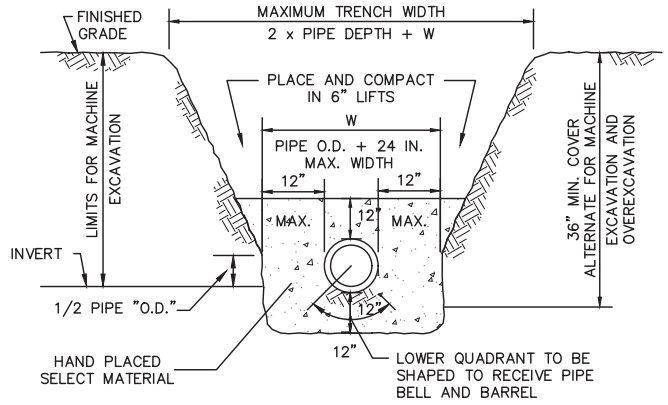
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BIG BEND ROAD PLAN VIEW
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BIG BEND ROAD DRIVEWAY SECTION
NOT TO SCALE



PIPE TRENCH - DETAIL 1 OF 2
NOT TO SCALE

NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE FLORIDA TRENCH SAFETY ACT.

2. INITIAL BACKFILL SHALL BE HAND PLACED TO 12" ABOVE THE PIPE. BACKFILL SHALL BE MECHANICALLY TAMPED TO A MINIMUM OF 100% OF MAX. DENSITY AS DETERMINED BY AASHTO METHOD T-99.

THE FOLLOWING SHALL BE REQUIRED WHERE TRENCH EXCAVATION EXCEEDS 4 FEET DEPTH, SEE LAWS OF FLORIDA, CHAPTER 90-96

1. INCLUDE OSHA STANDARD 29 CFR, SECTION 1926.650 SUBPART P.

2. THE CONTRACTOR SHALL PROVIDE WRITTEN ASSURANCE OF COMPLIANCE WITH THIS LAW.

3. A SEPARATE COST ITEM IDENTIFYING THE COST OF COMPLIANCE.

4. A TRENCH SAFETY SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR.

PIPE TRENCH - DETAIL 2 OF 2
NOT TO SCALE

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FL. REG. NO. 24276

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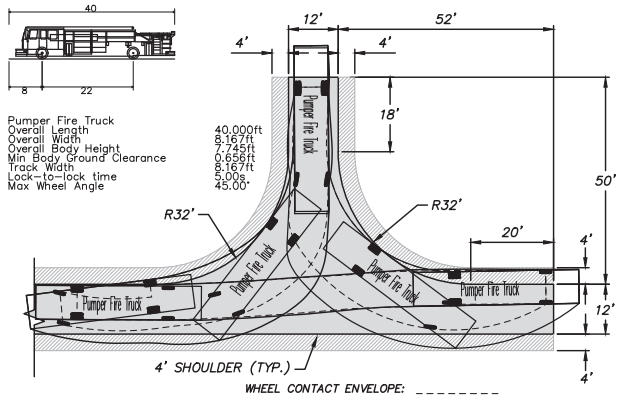
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BIG BEND III SOLAR

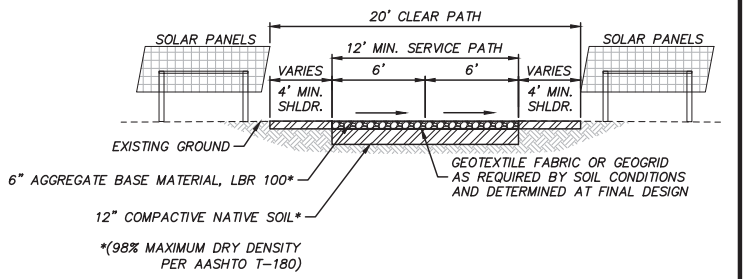
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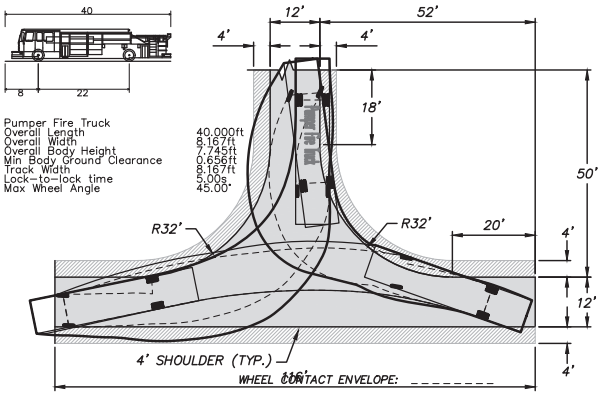
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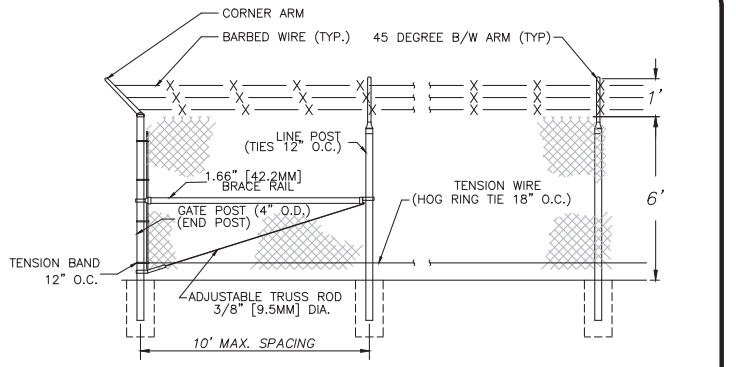
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TEE TURN-AROUND
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SECURITY FENCE DETAIL
NOT TO SCALE

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REVISIONS						
DATE	BY		DESCRIPTION	DATE	BY	DESCRIPTION

C&T JOB NO. 20-215

DESIGNED BY	DRAWN BY
JPT 06/16/2021	AND 06/16/2021
CHECKED BY	CHECKED BY
JPT 06/24/2021	TG 06/24/2021

ENGINEER OF RECORD: JAMES P. TERPENING JR., P.E. NO. 24276

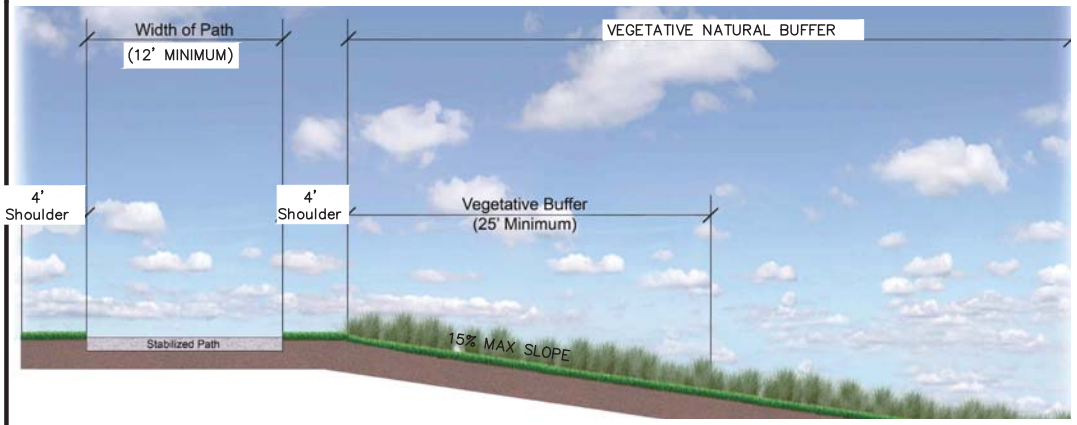
CULPEPPER & TERPENING INC
2980 SOUTH 25th STREET • FORT PIERCE, FLORIDA 34981
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TECO

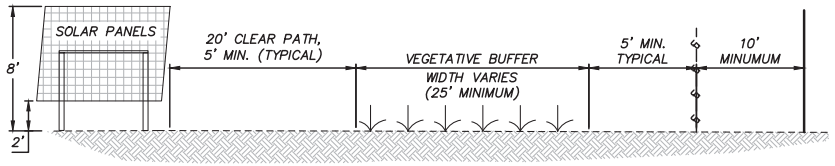
BIG BEND III SOLAR

DETAILS AND TYPICAL SECTIONS

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VEGETATED NATURAL BUFFER GRAPHIC
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VEGETATED NATURAL BUFFER
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JAMES P. TERPENING JR., P.E.
FL. REG. NO. 24276

REVISIONS						
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C&T JOB NO. 20-215

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CHECKED BY	CHECKED BY
JPT 06/24/2021	TG 06/24/2021

ENGINEER OF RECORD:
JAMES P. TERPENING JR., P.E. NO. 24276

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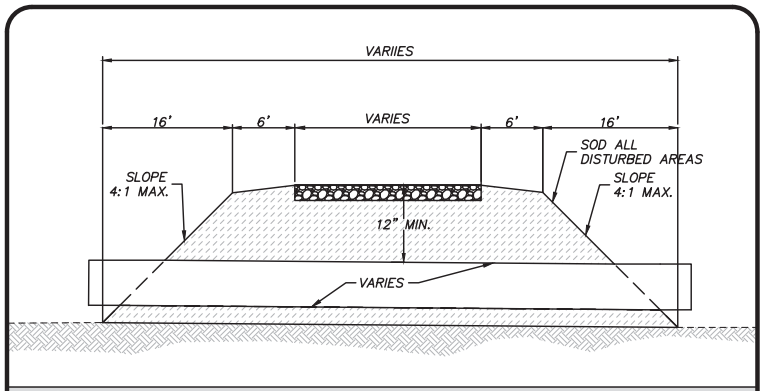
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BIG BEND III SOLAR

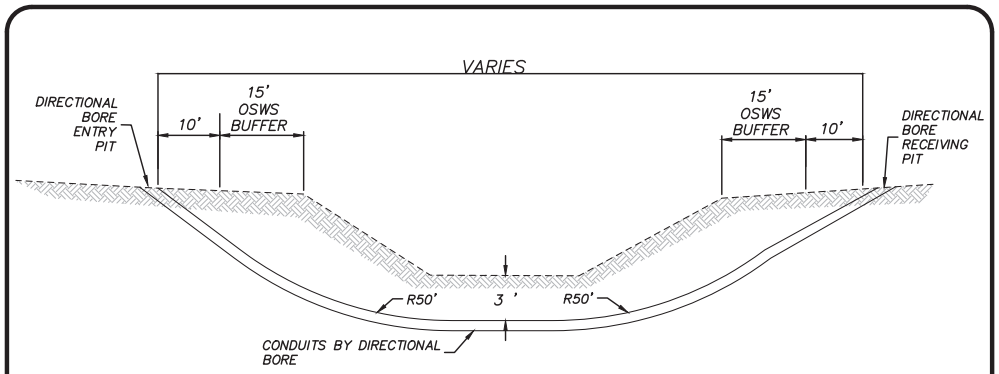
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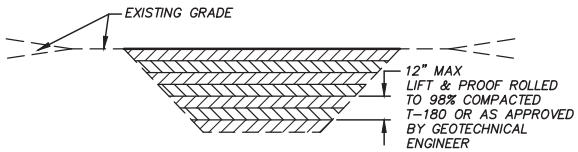
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TYPICAL PATHWAY CROSSING
NOT TO SCALE



DITCH DIRECTIONAL BORE
NOT TO SCALE



TYPICAL FILL PLACEMENT & COMPACTION DETAIL
NOT TO SCALE

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JAMES P. TERPENING JR., P.E.
FL. REG. NO. 24276

REVISIONS						
DATE	BY		DESCRIPTION	DATE	BY	DESCRIPTION

C&T JOB NO. 20-215

DESIGNED BY	DRAWN BY
JPT 06/16/2021	AND 06/16/2021
CHECKED BY	CHECKED BY
JPT 06/24/2021	TG 06/24/2021

ENGINEER OF RECORD: JAMES P. TERPENING JR., P.E. NO. 24276

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TECO

BIG BEND III SOLAR

DETAILS AND TYPICAL SECTIONS

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CE12

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TAB 5

APPENDIX C
GEOTECHNICAL ENGINEERING REPORT

Report of Geotechnical Services
Big Bend 3 Solar Project
Apollo Beach, Florida
S&ME Project No. 210810

PREPARED FOR:

DEPCOM Power
9185 E. Pima Center Parkway, Suite 100
Scottsdale, Arizona 85258

PREPARED BY:

S&ME, Inc.
111 Kelsey Lane, Suite E
Tampa, Florida 33619

April 20, 2021

April 20, 2021

DEPCOM Power
9185 E. Pima Center Parkway, Suite 100
Scottsdale, Arizona 85258

Attention: Mr. Jose Amorin, P.E.

Reference: **Report of Geotechnical Services**
Big Bend Power Station – Big Bend 3 Solar Project
Apollo Beach, Florida
S&ME Project No. 210810
Florida Certificate of Authorization No. 6712

Dear Mr. Amorin:

S&ME, Inc. (S&ME) has completed our geotechnical engineering services for the proposed solar field expansion in Apollo Beach, Florida. Our services were performed pursuant to S&ME Proposal No. 210810, Rev 4. dated February 4, 2021 and authorized by the signing of Exhibit A-15, Scope of Work, by Mr. Sam Machler on February 24, 2021 as well as subsequent amendments.

The purposes of our services were to obtain subsurface data from widely spaced borings to help identify potential geotechnical issues that might affect design and construction of the planned solar facility. This report presents design information for use by others to develop design alternatives and cost estimates.

S&ME appreciates the opportunity to be of service to DEPCOM Power. Please contact us if you have any questions.

Sincerely,

S&ME, Inc.

Philip J. Erbland, P.E.
Principal Engineer
Florida License No. 52621

Victor M. Steck, P.E.
Staff Engineer
Florida License No. 90788

This item has been digitally signed and sealed by Philip J. Erbland, P.E. on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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Appendix

Appendix I – Figures and Soil Boring Logs
Appendix II – Laboratory Test Results
Appendix III – Engineering Soil Parameters
Appendix IV – Field and Laboratory Testing Procedures

Attachments

1) Electrical Resistivity and Thermal Conductivity Survey
2) Thermal Resistivity Laboratory Reports

1.0 Purpose

The purposes of our services were to obtain subsurface data from widely spaced borings to help identify potential geotechnical issues that might affect design and construction of the planned solar facility. This report presents design information for use by others to develop design alternatives and cost estimates. This report only addresses the Big Bend 3 Solar Project. A separate report was previously issued for the Big Bend 2 Solar Project.

2.0 Project Information

We understand planned development will consist of two expansions of the existing solar field on sites adjacent to TECO's Big Bend Generating Station (identified as Big Bend 2 and Big Bend 3). Site development is anticipated to consist of installation of PV modules which will likely be supported on driven posts (assumed to be eight-inch wide flange sections) installed to depths of up to about 13 to 15 feet below final grade.

Small, lightly-loaded ancillary structures and equipment pads associated with the PV system and underground cables will be included in the development. We also assume that a combination of paved and unpaved roadways is planned.

We understand the panels will be supported by a driven pile foundation system designed primarily to resist axial uplift (tension) loading and lateral loads. Existing topographic information and planned grade elevation was not provided. We have assumed that the solar arrays will generally be arranged along the existing grade contours. Therefore, planned cuts and fills in the PV field are assumed to be minimal (i.e. less than 2 feet). Traffic loading conditions (other than design vehicles) were not provided at the time of this report.

The project information and assumptions detailed above should be reviewed and confirmed by the appropriate team members. Modifications to our proposed scope of services may be required if the actual conditions vary from the project information and assumptions described herein.

2.1 Scope of Services and Report Format

Our scope of services included a site reconnaissance, field exploration, laboratory testing, and geotechnical engineering analysis. The following sections of this report present a discussion of the details surrounding the field exploration, laboratory testing program, site conditions, and our corresponding conclusions and recommendations. Figures and boring logs are provided in Appendix I, laboratory test results are presented in Appendix II, engineering soil parameters are presented in Appendix III, and the field and laboratory testing procedures are presented in Appendix IV. Additional reports (geophysical and thermal resistivity testing) are presented as attachments.

3.0 Exploration and Testing Procedures

3.1 Underground Utility Location/Permitting

Sunshine 811 was contacted for a public utility locate prior to mobilization to the site. In addition, S&ME subcontracted with a private utility locator, ECHO Utility Engineering & Survey (ECHO). ECHO performed Ground Penetrating Radar (GPR) and Electromagnetic (EM) scans within the vicinity of the boring locations. The field sketches of identified utilities near the boring locations are presented in Appendix I.

3.2 Field Exploration

Our field exploration consisted of the following:

- Three (3) Standard Penetration Test (SPT) borings to depths of 20 feet to evaluate the soils across the PV field area.
- Two (2) Bulk Samples obtained for laboratory testing obtained across the PV field area.
- Two (2) Double-Ring Infiltrometer (DRI) tests across the PV field area.
- Three (3) Test Pits to a depth of 3 feet with in-situ nuclear density testing at a depth of 2 feet and field thermal resistivity testing from 1 to 3 feet across the PV field area.
- Three (3) Field Soil Resistivity Tests with spacings of 2.5, 5, 10, and 15 feet in the PV field area.

The initial test locations and depths were selected by DEPCOM Power. Actual test locations were selected by S&ME based on the DEPCOM locations and site access constraints with the acceptance of DEPCOM. The approximate field test locations are shown on the Field Test Location Plan (Figure 2) in Appendix I. The test locations were located in the field by S&ME personnel using handheld GSP devices and should be considered approximate. Site clearing was necessary to access some of the locations on the eastern portion of the Big Bend 3 site.

The SPT sampling was performed using a truck mounted-mounted CME-45B drill rig using a combination of continuous split-spoon soil sampling and mud-rotary drilling methods. Split-spoon samples of subsurface soils were then taken at continuous 24 inch intervals to approximately 10 feet and then at 5-foot intervals thereafter until the depth of termination. The boreholes were backfilled upon completion using bentonite chips in accordance with Water Management District requirements.

The field resistivity testing was conducted using the Wenner four-pin method in general accordance with ASTM G57, the *Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner-Four-Electrode Method*. In this method, four equally-spaced electrodes are inserted into the ground along a linear array. A current is applied across the two outermost electrodes and the voltage drop across the two innermost electrodes is measured. The voltage drop can be used to determine the apparent resistivity of the soil. The complete resistivity and thermal conductivity survey report is included as Attachment 1 to this report.

The DRI tests were performed in general accordance with the procedures outlined in ASTM D3385 at a depth of 1 foot for a total duration of 4 hours.

3.3 Laboratory Testing Services

Representative soil samples obtained during our field exploration were packaged and transferred to our office for evaluation by a geotechnical engineer in order to confirm the field descriptions of the various soil strata. Laboratory testing was performed on selected samples as deemed necessary to aid in soil classification and to further define the engineering properties of the soils. The bulk and test pit soil samples were subjected to laboratory testing consisting of modified proctor test, sieve analyses, thermal resistivity tests, moisture content, and corrosion series tests (pH, sulfates, sulfides, chlorides, and resistivity). Additionally, the SPT soil samples were subjected to moisture content and percent fines analysis. The complete test results are presented in Appendix II and on the SPT logs at their corresponding depths. The laboratory Thermal Resistivity results are presented as an attachment to this report.

4.0 Site, Geologic, and Subsurface Conditions

4.1 Site Conditions

At the time of our exploration, the eastern portion of the site consisted of a previously farmed field that was overgrown with dense vegetation. The eastern portion of the site additionally contained two drainage canals crossing the site from east to west and multiple abandoned concrete pad foundations in the southeast corner. The south western portion of the site consisted of a limerock surfaced area being utilized by TECO as a laydown yard and parking lot and a cleared grass field. The site was generally level and surrounded by fencing on all sides. The site was bordered by US Highway 41 to the east, Big Bend Road to the south, a concrete batch plan to the west, and the TECO gypsum storage area and other industrial areas to the north and west. Overhead utilities were noted running along US Highway 41 to the east and crossing the northeastern portion of the site.

4.2 Site History

Based on a review of historical aerial photography dating back to 1995, the site was utilized as a sod farm prior to 1995 until sometime between 2010 and 2012. Use of the land ceased after 2012 and the farm structures in the southeast corner of the site were removed in 2013, leaving the concrete foundations. The field to the northwest of the site was cleared by TECO and used to store gypsum in 2013 and the concrete batch plant facility on the western edge of the site was constructed in 2014. The western portion of the site was cleared in 2017 and the existing limerock surface was placed in 2019. The 2019 aerials show the site in general agreement with the configurations seen today.

4.3 Geologic Conditions

4.3.1 Soil Survey Information

Based on the Soil Survey of Hillsborough County, Florida, prepared by the U.S. Department of Agriculture Natural Resource Conservation Service (NRCS, formerly the Soil Conservation Service), the subject property is identified as having the mapped soil unit as presented below:

Table 4-1: NRCS Data

Soil Name	Soil Number	Seasonal High Groundwater Depth (feet)	Typical Soil Profile
Wabasso fine sand, 0 to 2 percent slopes	57	½ - 1½	Fine sand to a depth of 32 inches, fine sandy loam to a depth of 48 inches, loamy fine sand to a depth of 80 inches, poorly drained

4.3.2 Gulf Coastal Lowland Material

According to the Florida Geologic Survey, the site is in Florida's Gulf Coastal Lowlands Physiographic province which runs down the western coast of the state. The surficial soils of the Gulf Coast Lowland province are characterized as fluvial deposits consisting of quartz sand mixed with layers of silt and clay. These surficial soils in the area of the site generally extend from 0 to 50 feet in depth and are underlain by the Tampa Member Arcadia Formation which generally consists of sandy or clayey, phosphatic dolomites and limestones to depths of up to 150 feet and then Suwannee Limestone extending several hundred feet.

4.3.3 *Solution Hazards in Areas Underlain by Soluble Rocks*

Limestone is a carbonate rock and is subject to solutioning in the presence of groundwater. Solutioning may cause cavities to form in the upper portion of the rock and along joints in the rock. If the limestone is shallow enough and if solutioning is extensive, the soil above voids or cavities in limestone can collapse into the solutioned features, causing a drop in the ground surface (a sinkhole). While this can be a gradual occurrence, it can also be quite sudden. Sinkholes can cause damage to pavements, utilities, buildings, or other structures built above where a sinkhole occurs.

Sinkhole formation and soil dropouts are time dependent, and ground surface subsidence could occur leading up to, during, or after completion of on-site construction. For construction on a site underlain by soluble rocks, the owner must assume the risk of future damage which could result from previously undetected or future solution-related conditions.

4.3.4 Karst Features

The U.S.G.S map entitled "Sinkhole Type, Development, and Distribution in Florida" was reviewed. This map shows four broad areas, labeled as Area I, Area II, Area III, and Area IV. Each area has varying probabilities for sinkhole development based on geologic conditions. The subject property is located in a part of Florida mapped as Area IV, which was identified as "an area where sinkholes are very few but several large diameter, deep sinkholes occur".

Based on examination of "Hillsborough County Sinkholes" map available from the Florida Center for Instructional Technology (FCIT), there is one sinkhole in the vicinity of the site in Hillsborough County that was identified in 1987. In general, the risk of sinkhole formation is not considered to be any greater than similar sites in the

general area. Please note that our exploration did not investigate the deep subsurface conditions underlying the site for the presence of karst features.

Based on our experience, the site is not located in an area of elevated sinkhole risk. No indications of sinkhole activity were encountered in the borings and the site area has a relatively thick clay layer over the limestone, reducing the risk of the upper sands raveling into the limestone.

4.3.5 Expansive, Dispersive, or Collapsing Conditions

No expansive, dispersive, or collapsing soils were encountered or are typically encountered in the site area.

4.4 Subsurface Conditions

The SPT borings generally encountered alternating layers of very loose to medium dense fine sand (SP), sand with clay (SP-SC) and clayey sand (SC) from the surface to the depths of about 17 feet. This was underlain by medium dense to dense fine sand (SP) in borings B301 and B302 and by stiff clay (CL) in boring B303 extending to the depths of termination at 20 feet.

Boring B302 encountered a layer of very loose sand (N values between 1 to 4 blows per foot) that extended from the surface to a depth of approximately 12 feet.

The above subsurface description is of a highly generalized nature to highlight the major subsurface stratification features and material characteristics. The logs included in Appendix I should be reviewed for specific information. The transition between materials will be more or less gradual than indicated and may be abrupt. Information on actual subsurface conditions exists only at the specific test locations and is relevant to the time the exploration was performed. Variations may occur and should be expected between boring locations. The samples that were not altered by laboratory testing will be retained for 60 days from the date of this report and then will be discarded.

4.4.1 Groundwater

Subsurface water was encountered in the borings from depths of approximately 3 to 6½ feet below the ground surface at the time of our exploration. Water also was observed in the drainage canals crossing the site and some standing water was noted in the grassed area north of the laydown area. Surface water and subsurface water levels will fluctuate due to seasonal changes in precipitation amounts and with development and construction activity in the area. The site water levels will also be tidally influenced by the bay and adjacent canals. The water levels presented in this report were measured at the time of our exploration.

4.5 Laboratory Test Results

The corrosion bulk samples (C301, C302, and C303) collected were subjected to a number of laboratory tests. The range of test values along with averages are listed below. Individual test results are included in Appendix II. The complete Thermal Resistivity results are presented in Attachment 2 of this report.

- In-situ nuclear density testing showed dry densities ranging from 100.1 pcf to 106.2 pcf at moisture contents ranging from 17.0% to 17.9%.
- The thermal resistivity tests yielded results ranging from 38 ^{0}C cm W^{-1} to 42 ^{0}C cm W^{-1} (average of about 40 cm W^{-1}) in fully saturated conditions and from 137 ^{0}C cm W^{-1} to 199 ^{0}C cm W^{-1} (average of about 164 cm W^{-1}) in dry conditions.
- pH values ranged from 7.9 to 8.0 (average of about 7.9).
- Sulfate contents ranged from less than 10 parts per million (ppm) to 904 ppm.
- Sulfide contents ranged from 100 parts per billion (ppb) to 350 ppb (average of about 205 ppb).
- Chloride contents ranged from 66 ppm to 114 ppm (average of 82 ppm).
- The laboratory resistivities on the soil samples ranged from 1427 Ω-cm to 5607 Ω-cm (average of about 3400 Ω-cm).
- Particle size distribution testing yielded % finer than a No. 200 (0.075 mm) sieve ranging from 5.2% to 8.3% (average of about 7%)

The remaining bulk samples were used for modified Proctor and classification testing. Laboratory testing summary sheets and individual test reports are included in Appendix II for reference.

4.6 DRI Test Results

The DRI tests were performed at approximately 12 inches below the existing grade adjacent to boring B302 and test pit C303. The following table summarizes the DRI test results:

Table 4-2: DRI Test Result Summary

Test Name and Location	Test Depth (inches)	Measured Vertical Infiltration Rate (in/hour)	Estimated Horizontal Infiltration Rate (in/hour)
DRI3-1/B302	12	2.6	3.9
DRI3-2/C303	12	0.4	0.6

It is important to note that a suitable factor of safety should be used with the above values for design purposes. The field test results are presented Appendix I and the field testing procedure is summarized in Appendix IV.

5.0 Conclusions and Recommendations

5.1 General

The conclusions and recommendations presented in this report are based on the preceding project information and the results of this exploration. Actual subsurface conditions may vary between or away from the test locations. If it becomes apparent during construction that the conditions encountered vary substantially from those presented herein, this office should be notified at once. At that time, the conditions can be evaluated and the recommendations of this report modified, in written form, if necessary.

During review of these recommendations, it should be kept in mind that, as with any previously developed site, unexpected subsurface conditions may be encountered. These conditions could include such things as undiscovered fill deposits, previous development remnants, or buried debris. These variable conditions can normally be handled during construction by field engineering evaluation. Because of natural variations in depth, composition and consistency of soils, unsuitable materials and other soil types not encountered by the borings will likely exist between boring locations and should be anticipated.

5.2 Site Geotechnical Considerations

Our exploration indicates the site soils will be capable of supporting the anticipated ancillary equipment structural loads on a conventional shallow foundation system after the completion of the recommended site preparation program presented herein. The recommended site preparation program involves the densification of the subgrade foundation surfaces to compress loose surface soils, as well as subgrade soils disturbed by other site preparation procedures, thereby creating a more uniform and less yielding soil mass. The above-created conditions will promote uniform settlement of the structures, thereby reducing the incidence and magnitude of differential settlement.

For design purposes, the groundwater level should be assumed at the existing ground surface.

5.3 Foundation Recommendations

5.3.1 Solar Panel Arrays

5.3.1.1 Deep Foundations

The ultimate skin friction capacities for driven piles were calculated for the individual soil layers at each of the boring locations. The ultimate skin friction values are presented in Tables C-1 to C-3 in Appendix III. The pile skin friction can be used to resist axial and uplift loads.

Due to the loose sands and lack of a competent bearing stratum within the upper 20 feet across the PV field area as well as the assumed use of H-pile foundations, we recommend assuming that no end bearing capacity will be mobilized at the pile tip when calculating the piles' allowable bearing capacity.

No soil conditions were encountered within the upper 20 feet across the site that would limit the installation of the proposed H-pile foundations. Based on our previous exploration of the Big Bend 2 PV field area, foundations extending to depths greater than 20 feet will likely encounter hard clayey material similar to that encountered in borings SS-1, SS-2, and SS-3 which are detailed in the previously submitted "Big Bend Power Station – Big Bend 2 Solar Project" report. This harder material may restrict pile driving operations. The limerock fill in the laydown yard may present installation issues as well and may require predrilling.

A pile load test program will be performed at the site. The results of the program will be used to develop refined recommendations.

5.3.1.2 Shallow Foundations

Based on our boring data and experience with similar structures, the small, lightly loaded ancillary structures and equipment pads associated with the solar arrays may be supported on shallow foundations. Footings may be designed for maximum allowable soil bearing pressures up to 1,500 psf. Total, post-construction settlements based on this bearing pressure and the assumed loads are anticipated to be 1 inch or less. Even though computed footing dimensions may be less, footings should be at least 24 inches wide. These dimensions facilitate reinforcing steel placement and hand cleaning of footing subgrades disturbed by the excavation process. They also reduce the potential for localized punching shear failure.

Foundations should bear at least 18 inches below the finished exterior grade to develop the design bearing pressure. Continuous wall footings should be a minimum of 18 inches wide regardless of the resulting contact pressure. This recommendation is made to help prevent a "localized" or "punching" shear failure condition, which could exist with very narrow footings. It is important that the structural elements be centered on the footings such that the load is transferred evenly, in accordance with Florida Building Code requirements, unless the footings are proportioned for eccentric loads.

The soils in the foundation excavation bottoms should be compacted or re-compacted to densities of at least 95 percent of the modified Proctor (ASTM D1557) maximum dry density to a depth of 2 feet below the bottom of the footing. Due to limited access in smaller individual excavations, compaction of sandy bearing level soils (if loosened by the excavation process) can probably be best achieved by making several passes with a relatively lightweight, walk-behind vibratory sled or roller.

Foundation excavation bottoms should be evaluated by a representative of the Geotechnical Engineer prior to backfilling and prior to steel and concrete placement. This evaluation will help determine if individual footings are directly underlain by suitable bearing material. Any loose material should be properly compacted or undercut and replaced with well-compacted structural fill. If practical, concrete placement should be completed the same day as the footing excavation.

A modulus of subgrade reaction (k_{30}) of 15 pounds per square inch per inch (psi/inch) is appropriate for design of mat foundations. This modulus value is based on a 12-inch-square plate load test. This value should be appropriately reduced when designing the foundation thickness to accommodate wide area loads

5.4 Corrosion Potential

The laboratory test results performed on the 3 bulk samples of near surface (1 – 3 feet) were summarized above and individual test reports are included in Appendix II for reference. The laboratory resistivity test results were between 1427 and 5607 Ω-cm (average of about 3400 Ω-cm). The measured pH levels were between 7.9 and 8.0 (average of about 7.9). The sulfate content test results ranged from less than 10 to 904 parts per million (PPM) and the chloride contents were 66 to 114 ppm. The Federal Highway Administration's (FHWA) *Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes* (Publication No. FHWA-NHI-09-087, dated November 2009) provides the following table on the effect of resistivity on corrosion:

Table 5-1: Effects of Resistivity on Corrosion

Aggressiveness Potential	Resistivity (Ω-cm)
Very Corrosive	<700
Corrosive	700 – 2,000
Moderately Corrosive	2,000 – 5,000
Mildly Corrosive	5,000 – 10,000
Non-corrosive	>10,000

Additionally, the FHWA publication recommends an allowable pH range of about 5 to 10 and maximum allowable sulfate and chloride contents of 200 ppm and 100 ppm, respectively. Based on these references relative to our laboratory and field testing, the site soils are considered mildly corrosive to corrosive.

Based on ACI 318 and the results of the soluble sulfate testing, the soils samples tested are classified as exposure class S0 and Type I/II cement may be used.

5.5 Seismic Considerations

We have used the USGS-developed U.S. Seismic Design Maps[1] tool to determine the seismic hazard for the site. The tool consists of a web application that generates seismic design parameters S_s and S_1 (spectral accelerations at 0.2 and 1.0 seconds respectively, with 5% damping) for a specified location (i.e., latitude and longitude) derived from 2008 USGS seismic hazard data. Based on our interpretation of Chapter 20 of ASCE 7, the site may be considered to be a Site Class D. Seismic design parameters are presented in Table 5-2.

Table 5-2 Seismic Design Parameters

Site Class	S_s	S_1	S_{DS}	S_{D1}	PGA
D	0.053g	0.029g	0.056g	0.047g	0.025g

Based on Section 1613.3.1 of the Florida Building Code, where $S_1 \leq 0.04g$ and $S_s \leq 0.15g$, the structure is permitted to be assigned to Seismic Design Category A. As such, the site has low seismic risk and no recommendations for liquefaction or lateral earth pressures are required.

[1] https://seismicmaps.org/

6.0 Site Preparation Recommendations

6.1 Demolition/Stripping

Site preparation should begin with the removal of all unsuitable surface materials. This will include removing existing structures (including their foundations), clearing and grubbing all vegetation and undercutting any unsuitable materials, such as loose sands, from proposed construction areas. As a minimum, it is recommended that the clearing operations extend at least 5 feet beyond the perimeter of development areas. Strippings, debris, and organic soils should be disposed in accordance with the owner's instructions. The contractor should expect large roots where trees were present. Similarly, there may be organic deposits in the existing ditches.

All stumps, and taproots should be completely removed from beneath proposed structure and pavement areas, and voids created should be cleaned and backfilled with well-compacted structural fill as defined in Section 6.5. Any holes larger than 3 feet in diameter, resulting from the removal of any object or material, should be ramped to allow compaction of the bottom and sides with mechanical equipment prior to filling. Provisions should then be made to remove or relocate any interfering utility lines within the construction area to appropriate locations. In this regard, it should be noted that if abandoned underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion, which may subsequently result in excessive settlements.

In conjunction with demolition and backfilling operations, it may be necessary to establish positive temporary groundwater and surface water control measures to improve construction trafficability and facilitate drying of the surface soils to allow acceptable compaction. The groundwater level should be lowered at least 2 feet beneath the surface of any excavations made during construction and at least 2 feet below the surface of any vibratory compaction operations.

6.2 Evaluation of Exposed Subgrade Soils

Following demolition, stripping, and grubbing operations, the exposed subgrade soils in any structure and pavement areas should be evaluated by the geotechnical engineer by proofrolling with a heavily-loaded, tandem-axle dump truck or similar rubber-tired equipment. Areas of unstable soils should be undercut and backfilled with compacted structural fill, as recommended by the geotechnical engineer, or scarified and densified in place (after adjusting moisture content to near optimum). In general, the extent and depth of any undercutting will depend upon final grades, weather conditions during construction, the aggressiveness of the earthwork schedule, site drainage, and the grading contractor’s experience, equipment, means, and methods.

6.3 Surface Soil Compaction

After stripping and proofrolling and prior to fill placement, exposed soils should be uniformly compacted to at least 95 percent of the modified Proctor (ASTM D1557) maximum dry density to a depth of at least 12 inches below the compacted surface. Regardless of the degree of compaction achieved, a minimum of eight (8) complete overlapping coverages should be made in the structure and pavement areas with the compaction equipment to help increase the density and improve the uniformity of the underlying sandy soils. The roller coverage should be divided evenly into two (2) perpendicular directions.

During the compaction process, the moisture content of the soils may need to be adjusted in order to facilitate proper compaction. If additional moisture is needed to achieve compaction, then water should be applied evenly and in such a way that it will not cause erosion or removal of subgrade soils. In the event that applied water does not penetrate sufficiently deep into natural soils to act as a lubricant in the compaction process, it will be necessary to disk or otherwise break up the soils before and during the application of water. In the event that the moisture content is too high, it may be necessary to disk the soil and allow it to dry prior to compaction. A moisture content within two percent of the optimum indicated by the modified Proctor test is recommended prior to compaction of the natural ground and structural fill.

Vibratory compaction equipment should not be allowed to operate within 75 feet of any existing buildings or critical underground utilities. Within this range, compaction of the exposed subgrade soils and any structural fill should be conducted with lightweight walk-behind vibratory equipment or with rollers in static mode.

6.4 Excavations

Based on the results of the borings and the anticipated grades, excavations are expected to extend through very loose to medium dense sands and clayey sands. All excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29CFR Part 1926) excavation trench safety standards. The contractor is solely responsible for site safety. This information is provided only as a service and under no circumstances should S&ME be assumed to be responsible for construction site safety. The site soils should be considered Type C as defined in OSHA.

Excavations and below-grade construction should be conducted "in the dry." Prior to excavation, the groundwater level, if encountered, should be lowered and maintained at least two feet below the bottom of the excavation to limit the potential for instability. Normally, groundwater can be controlled with sumps and pumps but deeper excavations may require wellpoints. The contractor is responsible for verifying groundwater levels during construction. The contractor is also responsible for the design, installation, and maintenance of a properly functioning dewatering system. The design of the dewatering system should be in conjunction with the design of any excavation support system.

Exposed subgrade soils at the bottoms of excavations should be evaluated by the geotechnical engineer or their designated representative prior to backfilling and prior to steel and concrete placement. If unsuitable soils or soils that cannot be readily moisture conditioned and compacted are encountered at the bottoms of excavations, then these soils should be over-excavated at least two feet beneath the bottom of the foundation and replaced with compacted structural fill.

Continuous wall footing trenches and individual footing pits should be excavated to footing line and bottom grade. Exposed bearing soils at the bottoms of footing excavations should be compacted to at least 95 percent of the modified Proctor maximum dry density to a depth of at least two feet below the bottom of the footing. If necessary, the bottom of footing excavations should be recompacted, or it should be overexcavated, refilled with structural fill, and compacted to achieve the minimum field density to the required depth. A thin layer of non-structural concrete (a "mud mat") can be placed on the compacted subgrade soils after testing to protect the soils

and provide a durable working surface for construction. Excavations should be backfilled with suitable compacted soils as discussed in the "Structural Fill" section of this report.

6.5 Structural Fill

Structural fill should consist of cohesionless sands containing no more than 12 percent fines (Unified Soil Classification SP, SP-SM, or SP-SC) that are free of organics, debris, roots, deleterious matter, and elongated or flat particles susceptible to degradation. All material being used as fill and backfill should be tested and approved by the geotechnical engineer before placement.

Structural fill should be placed and compacted in loose lift thicknesses appropriate for the compaction equipment being used. For drum rollers at least 30 inches in diameter, the maximum lift thickness should be no more than 12 inches. For smaller, walk-behind compaction equipment, the lift thickness should be 6 inches or less. Each lift should be compacted to a density of at least 95 percent of the modified Proctor maximum dry density. The upper 12 inches of fill in the building floor slab areas should be compacted until densities of at least 95 percent of the modified Proctor maximum dry density are uniformly obtained. Soil moisture content should be adjusted as needed to facilitate placement and compaction.

6.6 Use of On-Site Materials as Structural Fill

Soils meeting the requirements for structural fill as discussed above are preferred beneath foundation elements. Based on the soils encountered in our borings, it is our opinion that the on-site fine sand (SP) and sand with clay (SP-SC) are suitable for reuse as structural fill with proper moisture control. The shallow clayey sands (SC) encountered in boring B302 will be difficult to place and compact and as such they should not be reused as structural fill. Soils with more than 5 percent organics cannot be used as backfill and should be used in landscape and other non-structural areas. The limerock material in the laydown yard may be used as fill and stabilization but should not be re-used as base material.

7.0 Access Road Recommendations

We have not been provided with detailed traffic loading information at this time and minimum pavement section layer thicknesses have been provided in the following sections based on our experience with similar facilities. If the facility will be subject to significant truck vehicle traffic, then it will be necessary to perform a detailed pavement design considering the desired pavement design life, terminal serviceability, and expected traffic loading. While it is planned for the expansion area to be unpaved, we have provided flexible pavement design recommendations as well.

7.1.1 Flexible Pavement Recommendations

We recommend using a layered pavement section consisting of a compacted soil subgrade, a graded aggregate base course (compacted Florida Limerock, crushed concrete, or engineer-approved equivalent), and an asphaltic concrete surface course. The asphaltic concrete surface course should consist of Superpave mix (such as SP-9.5).

The asphaltic concrete mix should be a current FDOT-approved design. Samples of the materials delivered to the project should be tested to verify that the aggregate gradation and asphalt content satisfies the mix design requirements. The asphalt should be compacted to FDOT specifications. After placement and field compaction, the wearing surface should be cored to evaluate material thickness and to perform laboratory density tests. Cores should be obtained at a frequency of at least one (1) core per 3,000 square feet of placed pavement or a minimum of two (2) cores per day's production.

Because detailed traffic loading information is currently unavailable, we have generalized our pavement recommendations into two groups. The group descriptions and the recommended component thicknesses are presented in the following table. The component layer thicknesses below are based on a structural number analysis with the following estimated daily traffic volume for a 15-year pavement design life.

- **Light duty:** Auto parking areas; light panel and pickup trucks; 10,000 18-kip equivalent axle loads for a 15-year design life.
- **Heavy duty:** Driveways; delivery vehicles and semi-trucks; 50,000 18-kip equivalent axle loads for a 15-year design life.

Table 7-1: Flexible Pavement Component Recommendations

Layer	Minimum Thickness – Light Duty	Minimum Thickness – Heavy Duty
Asphaltic Concrete (SP-9.5)	1.5 inches	2 inches
Limerock or Crushed Concrete base course compacted to at least 98 percent of the modified Proctor (ASTM D1557) and have a min. LBR = 100	6 inches	8 inches
Sub-base compacted to at least 98 percent of the modified Proctor (ASTM D1557) and have a min. LBR = 40	12 inches	12 inches

If the site soils do not yield a Limerock Bearing Ratio (LBR) value of 40, they should be stabilized to obtain a minimum LBR value of 40. In the areas receiving high traffic loads from delivery and service trucks, we recommend increasing the asphaltic concrete thickness to a minimum of 2 inches and the base course to 8 inches. A minimum of 18 to 24 inches should be maintained between the bottom of the base course and the seasonal high water level.

7.1.2 Unpaved Roadway Recommendations

In areas of the site that will support an unpaved section, we recommend using a layered section consisting of a compacted soil subgrade and a graded aggregate base course (compacted Florida Limerock, crushed concrete, or engineer-approved equivalent),

Table 7-2: Unpaved Roadway Component Recommendations

Layer	Minimum Thickness
Limerock or Crushed Concrete base course compacted to at least 98 percent of the modified Proctor (ASTM D1557) and have a min. LBR = 100	12 inches
Sub-base compacted to at least 98 percent of the modified Proctor (ASTM D1557) and have a min. LBR = 40	12 inches

If the site soils do not yield a Limerock Bearing Ratio (LBR) value of 40, they should be stabilized to obtain a minimum LBR value of 40. A minimum of 18 to 24 inches should be maintained between the bottom of the base course and the seasonal high water level.

7.1.3 Pavement Drainage Considerations

One of the most critical influences on the pavement performance in Florida is the relationship between the pavement subgrade and the seasonal high groundwater level. Many roadways and parking areas have been destroyed as a result of deterioration of the base and the base/surface course bond. Regardless of the type of base selected, we recommend that the seasonal high groundwater level and the bottom of the base course be separated by at least 18 to 24 inches, depending on base type. Limerock base should have a minimum separation of 24 inches from the seasonal high ground water table while crushed concrete should have a minimum separation of 18 inches.

8.0 Retaining Wall Considerations

Lateral earth pressure parameters for the soils encountered at the site are summarized in Table 8-1. The pressure coefficients do not include any surcharge effects for structural, point, or area loads and assume that adequate drainage provisions have been incorporated. Any applicable hydrostatic and seepage forces must be considered in the design. Lateral earth pressures acting on below-grade foundations will be resisted by the sliding resistance forces along the base of the foundation and passive resistance resulting from foundation embedment. Passive resistance could be neglected for a safer design (due to possible excavation or erosion).

Table 8-1: Retaining Wall Design Parameters

Lateral Earth Pressure Condition	Coefficient	Equivalent Fluid Pressure
At-Rest Condition (K_O)	0.50	55 psf/ft
Active Condition (K_A)	0.33	36.3 psf/ft
Passive Condition (K_P)	3.00	330.0 psf/ft
Unit Weight of Soil (Moist)	110 pcf	
Friction Factor for Foundations and Bearing Soils	0.4	

The recommended lateral earth pressure coefficients do not consider the development of hydrostatic pressure behind the earth retaining wall structures. As such, positive wall drainage must be provided for all earth retaining structures. These drainage systems can be constructed of open-graded washed stone (such as No. 57 stone) isolated from the soil backfill with a geosynthetic filter fabric and drained by perforated pipe, or several wall drainage products are made specifically for this application. Lateral earth pressures arising from any slopes above the walls should be added to the above earth pressures to determine the total lateral pressure.

The soil backfill placed behind retaining walls should be compacted to at least 95 percent of the soil's modified Proctor maximum dry density. We caution that operating compaction equipment directly behind retaining structures can create lateral earth pressures far in excess of those recommended for design. Therefore, bracing of the walls may be needed during backfilling operations.

In order to avoid wall damage due to excessive compaction, hand-operated mechanical tampers should be used to compact the granular material; heavy compaction equipment should not be allowed within 5 feet of the walls. The compaction behind these walls should achieve a minimum of 95 percent of the modified Proctor maximum dry density.

9.0 Limitations of Conclusions and Recommendations

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based on applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty, either express or implied, is made.

We relied on project information given to us to develop scope of services and our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site. Soil samples that were not altered by laboratory testing will be retained for 60 days from the date of this report and then will be discarded.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants, or the presence of any biological materials (mold, fungi, and bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services, if requested. S&ME should be provided the opportunity to review the final plans and specifications to confirm that earthwork, foundation, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME's review of final plans and specifications followed by observation and monitoring of earthwork and foundation construction activities.

Appendices

Appendix I– Figures and Soil Boring Logs

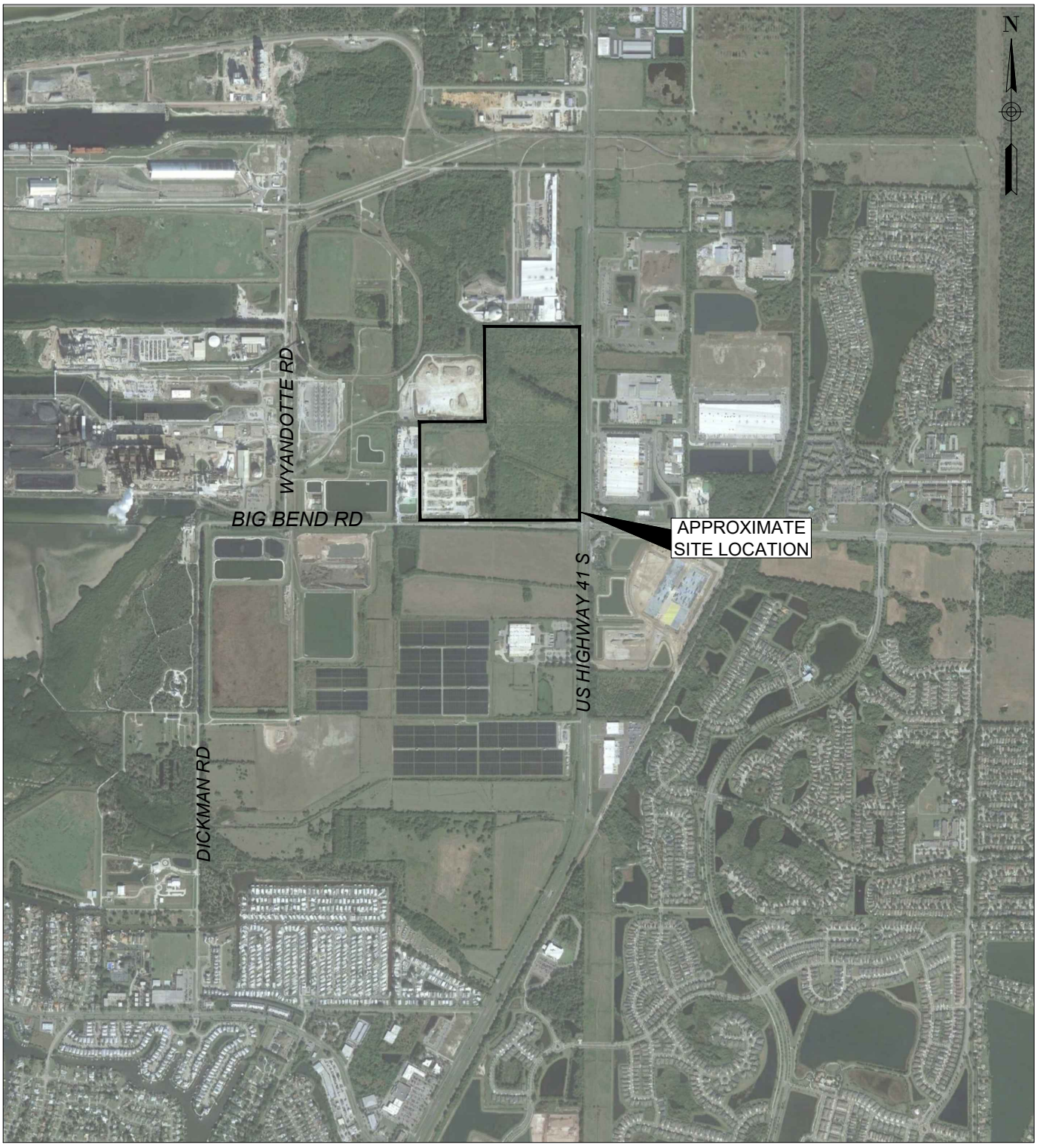
Figure 1 - Site Location Plan

Figure 2 - Field Test Location Plan

Figures 3 and 4 - Double-Ring Infiltrometer Test Results

ECHO Field Sketches

Boring Logs



SCALE
0 2000 FT.

Drawing Path: Z:\Shared\SME\Ops\GEO\Projects\2021\210810 DEPCOM Power_Big Bend 2 and 3_Apollo Beach FL\CAD\210810-BIG BEND 3.dwg

	SITE LOCATION PLAN	SCALE: AS SHOWN	FIGURE NO. 1
	BIG BEND POWER STATION BIG BEND 3 SOLAR PROJECT APOLLO BEACH, FLORIDA	DATE: 3/22/21 PROJECT NUMBER 210810	



N

LEGEND

- APPROXIMATE SPT BORING LOCATION
- APPROXIMATE FIELD RESISTIVITY, THERMAL, AND CORROSION TEST LOCATION
- APPROXIMATE DRI TEST LOCATION
- APPROXIMATE BULK SAMPLE LOCATION

0 300 600

GRAPHIC SCALE (IN FEET)

FIELD TEST LOCATION PLAN

BIG BEND POWER STATION
BIG BEND 3 SOLAR PROJECT
APOLLO BEACH, FLORIDA

SCALE: AS SHOWN

DATE: 4/20/21

PROJECT NUMBER 210810

FIGURE NO. 2

Drawing path: Z:\Shared\SME\Ops\GEO\Projects\2021\210810 DEPCOM Power_Big Bend 2 and 3_Apollo Beach FL\CAD\210810-BIG BEND 3.dwg

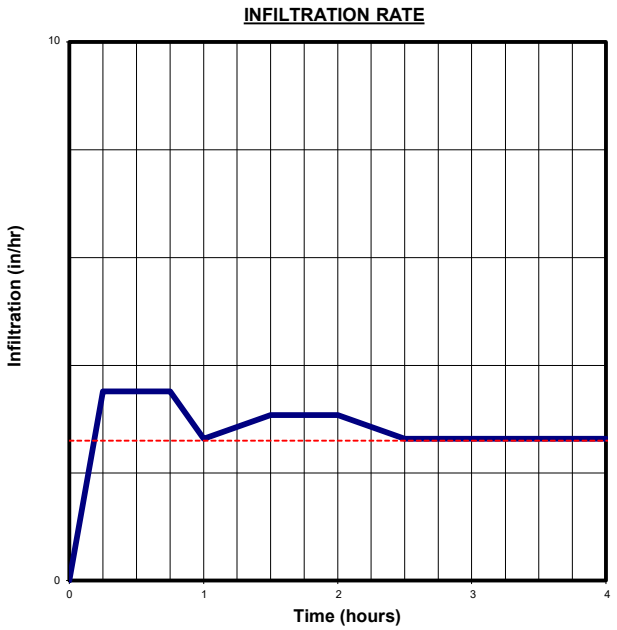
DOUBLE-RING INFILTROMETER TEST RESULTS

(ASTM STANDARD D3385)

Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	**Test Date:**	3/17/2021
Project Location:	Apollo Beach, Florida	**Test Location:**	DRI3-1
Project Number:	210810	**Test Depth (in.)**	12
Outer Ring Diameter (in.):	24	**Test Duration:**	4 hours
Inner Ring Diameter (in.):	12	**Test Head (in.)**	12

INFILTRATION RATE: 2.6 inches per hour

Time Increment (minutes)	Infiltration Rate (inches/hour)
15	3.5
15	3.5
15	3.5
15	2.6
30	3.1
30	3.1
30	2.6
30	2.6
30	2.6
30	2.6



SUBSURFACE SOIL DATA

Depth (ft.) From	-	To	BORING DATA (B302)
0	-	2	fine sand (SP)
2	-	12	clayey sand (SC)
12	-	17	sand with clay (SP-SC)
17	-	20	fine sand (SP)
	-		
	-		

Groundwater level encountered at 4 feet below existing ground surface.

SOIL SURVEY OF HILLSBOROUGH COUNTY DATA

Soil ID & Soil Name	Hydrologic Group	SHWL (feet bls)	Drainage	Soil Location
57 - Wabasso fine sand, 0 to 2 percent slopes	A/D	0.5 - 1.5	Poorly drained	Flatwoods on marine terraces

TEST PROCEDURES:

The double-ring infiltrometer test was performed in general accordance with procedures outlined in the ASTM Standard D3385. Two 18-inch high concentric rings were placed on a prepared test surface at a given depth and driven into the ground 4 to 6-inches. The inner ring used in the test had an inside diameter of approximately 12-inches, while the outer ring had an inside diameter of approximately 24-inches. The test was performed by filling both rings with water to a height of 12 inches. The water level is allowed to drop over a discrete time interval and the volume of water required to maintain the head in the inner ring was recorded for the test duration.

Figure 3

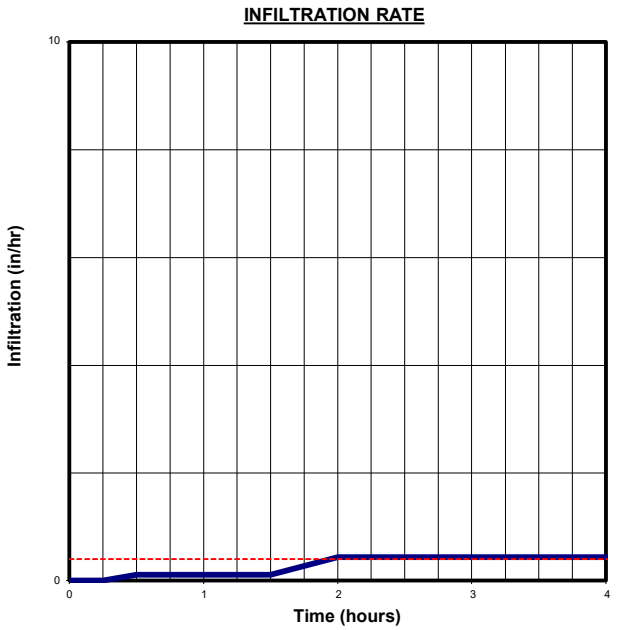
DOUBLE-RING INFILTROMETER TEST RESULTS

(ASTM STANDARD D3385)

Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	**Test Date:**	3/16/2021
Project Location:	Apollo Beach, Florida	**Test Location:**	DRI3-2
Project Number:	210810	**Test Depth (in.)**	12
Outer Ring Diameter (in.):	24	**Test Duration:**	4 hours
Inner Ring Diameter (in.):	12	**Test Head (in.)**	12

INFILTRATION RATE: 0.4 inches per hour

Time Increment (minutes)	Infiltration Rate (inches/hour)
15	0.0
15	0.1
15	0.1
15	0.1
30	0.1
30	0.4
30	0.4
30	0.4
30	0.4
30	0.4



SUBSURFACE SOIL DATA

Depth (ft.) From	-	To	BORING DATA (HA DRI3-2)
0	-	0.5	silty sand (SM)
0.5	-	1	fine sand (SP)
1	-	2	clayey sand (SC)
2	-	3.5	fine sand (SP)
	-		
	-		

Groundwater level encountered at 3 feet below existing ground surface.

SOIL SURVEY OF HILLSBOROUGH COUNTY DATA

Soil ID & Soil Name	Hydrologic Group	SHWL (feet bls)	Drainage	Soil Location
57 - Wabasso fine sand, 0 to 2 percent slopes	A/D	0.5 - 1.5	Poorly drained	Flatwoods on marine terraces

TEST PROCEDURES:

The double-ring infiltrometer test was performed in general accordance with procedures outlined in the ASTM Standard D3385. Two 18-inch high concentric rings were placed on a prepared test surface at a given depth and driven into the ground 4 to 6-inches. The inner ring used in the test had an inside diameter of approximately 12-inches, while the outer ring had an inside diameter of approximately 24-inches. The test was performed by filling both rings with water to a height of 12 inches. The water level is allowed to drop over a discrete time interval and the volume of water required to maintain the head in the inner ring was recorded for the test duration.

Figure 4



NOT TO SCALE

ECHO PROJECT NO: 21-079
CLIENT: S&ME
PROJECT DESCRIPTION: TECO BIG BEND SOLAR
UNDERGROUND UTILITY INVESTIGATION SERVICES
APOLLO BEACH, FLORIDA

NOTES:

THE EXACT LOCATION OF ANY UNDERGROUND UTILITY IS NOT GUARANTEED UNLESS CLEARLY EXPOSED AND VISUALLY VERIFIED AT A SPECIFIC LOCATION. UTILITY CHARACTERISTICS, METHODS OF INSTALLATION, SOIL CONDITIONS AND THE SURROUNDING ENVIRONMENT ALL MAY ADVERSELY IMPACT THE RESULTS OF ANY UTILITY INVESTIGATION WITH SURFACE GEOPHYSICAL INSTRUMENTS AND TECHNOLOGY. NO GUARANTEE IS MADE THAT ALL UTILITIES WILL BE FOUND AND IDENTIFIED.

"LOST SIGNAL" INDICATES THE UTILITY COULD NO LONGER BE DETECTED BY STANDARD GEOPHYSICAL PROSPECTING TECHNIQUES INCLUDING ELECTROMAGNETIC DEVICES OR GROUND PENETRATING RADAR. ECHO UES CANNOT GUARANTEE THE POSITION OF THE UTILITY BEYOND THIS POINT AND CAUTIONS THAT UTILITY MAY CONTINUE. FURTHER INVESTIGATION (VACUUM EXCAVATION) WILL BE REQUIRED IF ADDITIONAL INFORMATION IS NECESSARY.

THE AERIAL IMAGERY SHOWN WAS OBTAINED USING AUTODESK CIVIL 3D'S BUILT-IN AERIAL MAP FEATURE OR THE FLORIDA DEPARTMENT OF TRANSPORTATION'S AERIAL PHOTO LOOK-UP SYSTEM AND IS MEANT FOR REFERENCE PURPOSES ONLY. THE ACTUAL GROUND SURFACE MAY DIFFER FROM WHAT IS DEPICTED HEREON.

ABBREVIATIONS

AL	AMMONIA LINE
BE	BURIED ELECTRIC
BT	BURIED TELEPHONE
CATV	CABLE TELEVISION
COMM	COMMUNICATION LINES
FM	FORCE MAIN
FOBT	FIBER OPTIC / BURIED TELEPHONE
FOC	FIBER OPTIC CABLE
FOTV	FIBER OPTIC / CABLE TELEVISION
G	GAS MAIN
GPR	GROUND PENETRATING RADAR
GW	GROUND WIRE
GYP	GYPSUM LINE
IRR	IRRIGATION
NPW	NON-POTABLE WATER/RECLAIMED WATER
OD	OIL DRAIN
PET	FUEL LINE
PW	POND WATER
PWL	POND WATER LINE
SAN	SANITARY SEWER
SL	STREET LIGHT
STM	STORM DRAINAGE
TS	TRAFFIC SIGNAL
UNK	UNKNOWN
W	WATER MAIN

LEGEND

BE	BURIED ELECTRIC
BFO	BURIED FIBER OPTIC
BT	BURIED TELEPHONE
CHW	CHILLED WATER
COMM	COMMUNICATION LINE
S	FORCE MAIN / SANITARY
G	GAS MAIN
GW	GROUND WIRE
IRR	IRRIGATION
STM	STEAM PIPE
STORM	DRAIN
SL	STREET LIGHT
W	WATER MAIN
UNK	UNKNOWN
FUEL	FUEL LINE
OXY	OXYGEN LINE
NIT	NITROGEN LINE
N2O	NITROUS OXIDE LINE
	BORE LOCATION
	PROJECT LIMITS

FOR EXHIBIT PURPOSES ONLY
THIS IS NOT A SURVEY

ECHO
UTILITY ENGINEERING & SURVEY

ECHO UES, INC.
CERTIFICATION OF AUTHORIZATION 8184
4803 GEORGE ROAD, STE. 350
TAMPA, FL 33634
888.778.ECHO | www.echoues.com

SHEET:	KEY SHEET
FIELD:	ER
OFFICE:	CM
CHECKED BY:	MA, JS



NOT TO SCALE

ECHO PROJECT NO: 21-079

CLIENT: S&ME

PROJECT DESCRIPTION: TECO BIG BEND SOLAR
UNDERGROUND UTILITY INVESTIGATION SERVICES
APOLLO BEACH, FLORIDA

NOTES:

THE EXACT LOCATION OF ANY UNDERGROUND UTILITY IS NOT GUARANTEED UNLESS CLEARLY EXPOSED AND VISUALLY VERIFIED AT A SPECIFIC LOCATION. UTILITY CHARACTERISTICS, METHODS OF INSTALLATION, SOIL CONDITIONS AND THE SURROUNDING ENVIRONMENT ALL MAY ADVERSELY IMPACT THE RESULTS OF ANY UTILITY INVESTIGATION WITH SURFACE GEOPHYSICAL INSTRUMENTS AND TECHNOLOGY. NO GUARANTEE IS MADE THAT ALL UTILITIES WILL BE FOUND AND IDENTIFIED.

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THE AERIAL IMAGERY SHOWN WAS OBTAINED USING AUTODESK CIVIL 3D'S BUILT-IN AERIAL MAP FEATURE OR THE FLORIDA DEPARTMENT OF TRANSPORTATION'S AERIAL PHOTO LOOK-UP SYSTEM AND IS MEANT FOR REFERENCE PURPOSES ONLY. THE ACTUAL GROUND SURFACE MAY DIFFER FROM WHAT IS DEPICTED HEREON.

ABBREVIATIONS

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BT	BURIED TELEPHONE
CATV	CABLE TELEVISION
COMM	COMMUNICATION LINES
FM	FORCE MAIN
FOBT	FIBER OPTIC / BURIED TELEPHONE
FOC	FIBER OPTIC CABLE
FOTV	FIBER OPTIC / CABLE TELEVISION
G	GAS MAIN
GPR	GROUND PENETRATING RADAR
GW	GROUND WIRE
GYP	GYPSUM LINE
IRR	IRRIGATION
NPW	NON-POTABLE WATER/RECLAIMED WATER
OD	OIL DRAIN
PET	FUEL LINE
PW	POND WATER
PWL	POND WATER LINE
SAN	SANITARY SEWER
SL	STREET LIGHT
STM	STORM DRAINAGE
TS	TRAFFIC SIGNAL
UNK	UNKNOWN
W	WATER MAIN

LEGEND

BE	BURIED ELECTRIC
BFO	BURIED FIBER OPTIC
BT	BURIED TELEPHONE
CHW	CHILLED WATER
COMM	COMMUNICATION LINE
S	FORCE MAIN / SANITARY
G	GAS MAIN
GW	GROUND WIRE
IRR	IRRIGATION
STM	STEAM PIPE
STORM	DRAIN
SL	STREET LIGHT
W	WATER MAIN
UNK	UNKNOWN
FUEL	FUEL LINE
OXY	OXYGEN LINE
NIT	NITROGEN LINE
N2O	NITROUS OXIDE LINE
	BORE LOCATION
	PROJECT LIMITS

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UTILITY ENGINEERING & SURVEY

ECHO UES, INC.
CERTIFICATION OF AUTHORIZATION 8184
4803 GEORGE ROAD, STE. 350
TAMPA, FL 33634
888.778.ECHO | www.echoues.com

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FIELD:	ER
OFFICE:	CM
CHECKED BY:	MA, JS



NOT TO SCALE

ECHO PROJECT NO: 21-079

CLIENT: S&ME

PROJECT DESCRIPTION: TECO BIG BEND SOLAR
UNDERGROUND UTILITY INVESTIGATION SERVICES
APOLLO BEACH, FLORIDA

NOTES:

THE EXACT LOCATION OF ANY UNDERGROUND UTILITY IS NOT GUARANTEED UNLESS CLEARLY EXPOSED AND VISUALLY VERIFIED AT A SPECIFIC LOCATION. UTILITY CHARACTERISTICS, METHODS OF INSTALLATION, SOIL CONDITIONS AND THE SURROUNDING ENVIRONMENT ALL MAY ADVERSELY IMPACT THE RESULTS OF ANY UTILITY INVESTIGATION WITH SURFACE GEOPHYSICAL INSTRUMENTS AND TECHNOLOGY. NO GUARANTEE IS MADE THAT ALL UTILITIES WILL BE FOUND AND IDENTIFIED.

"LOST SIGNAL" INDICATES THE UTILITY COULD NO LONGER BE DETECTED BY STANDARD GEOPHYSICAL PROSPECTING TECHNIQUES INCLUDING ELECTROMAGNETIC DEVICES OR GROUND PENETRATING RADAR. ECHO UES CANNOT GUARANTEE THE POSITION OF THE UTILITY BEYOND THIS POINT AND CAUTIONS THAT UTILITY MAY CONTINUE. FURTHER INVESTIGATION (VACUUM EXCAVATION) WILL BE REQUIRED IF ADDITIONAL INFORMATION IS NECESSARY.

THE AERIAL IMAGERY SHOWN WAS OBTAINED USING AUTODESK CIVIL 3D'S BUILT-IN AERIAL MAP FEATURE OR THE FLORIDA DEPARTMENT OF TRANSPORTATION'S AERIAL PHOTO LOOK-UP SYSTEM AND IS MEANT FOR REFERENCE PURPOSES ONLY. THE ACTUAL GROUND SURFACE MAY DIFFER FROM WHAT IS DEPICTED HEREON.

ABBREVIATIONS

AL	AMMONIA LINE
BE	BURIED ELECTRIC
BT	BURIED TELEPHONE
CATV	CABLE TELEVISION
COMM	COMMUNICATION LINES
FM	FORCE MAIN
FOBT	FIBER OPTIC / BURIED TELEPHONE
FOC	FIBER OPTIC CABLE
FOTV	FIBER OPTIC / CABLE TELEVISION
G	GAS MAIN
GPR	GROUND PENETRATING RADAR
GW	GROUND WIRE
GYP	GYPSUM LINE
IRR	IRRIGATION
NPW	NON-POTABLE WATER/RECLAIMED WATER
OD	OIL DRAIN
PET	FUEL LINE
PW	POND WATER
PWL	POND WATER LINE
SAN	SANITARY SEWER
SL	STREET LIGHT
STM	STORM DRAINAGE
TS	TRAFFIC SIGNAL
UNK	UNKNOWN
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LEGEND

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G	GAS MAIN
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CHECKED BY:	MA, JS



NOT TO SCALE

ECHO PROJECT NO: 21-079

CLIENT: S&ME

PROJECT DESCRIPTION: TECO BIG BEND SOLAR
UNDERGROUND UTILITY INVESTIGATION SERVICES
APOLLO BEACH, FLORIDA

NOTES:

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ABBREVIATIONS

AL	AMMONIA LINE
BE	BURIED ELECTRIC
BT	BURIED TELEPHONE
CATV	CABLE TELEVISION
COMM	COMMUNICATION LINES
FM	FORCE MAIN
FOBT	FIBER OPTIC / BURIED TELEPHONE
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FOTV	FIBER OPTIC / CABLE TELEVISION
G	GAS MAIN
GPR	GROUND PENETRATING RADAR
GW	GROUND WIRE
GYP	GYPSUM LINE
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BE	BURIED ELECTRIC
BFO	BURIED FIBER OPTIC
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FUEL	FUEL LINE
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N2O	NITROUS OXIDE LINE
	BORE LOCATION
	PROJECT LIMITS

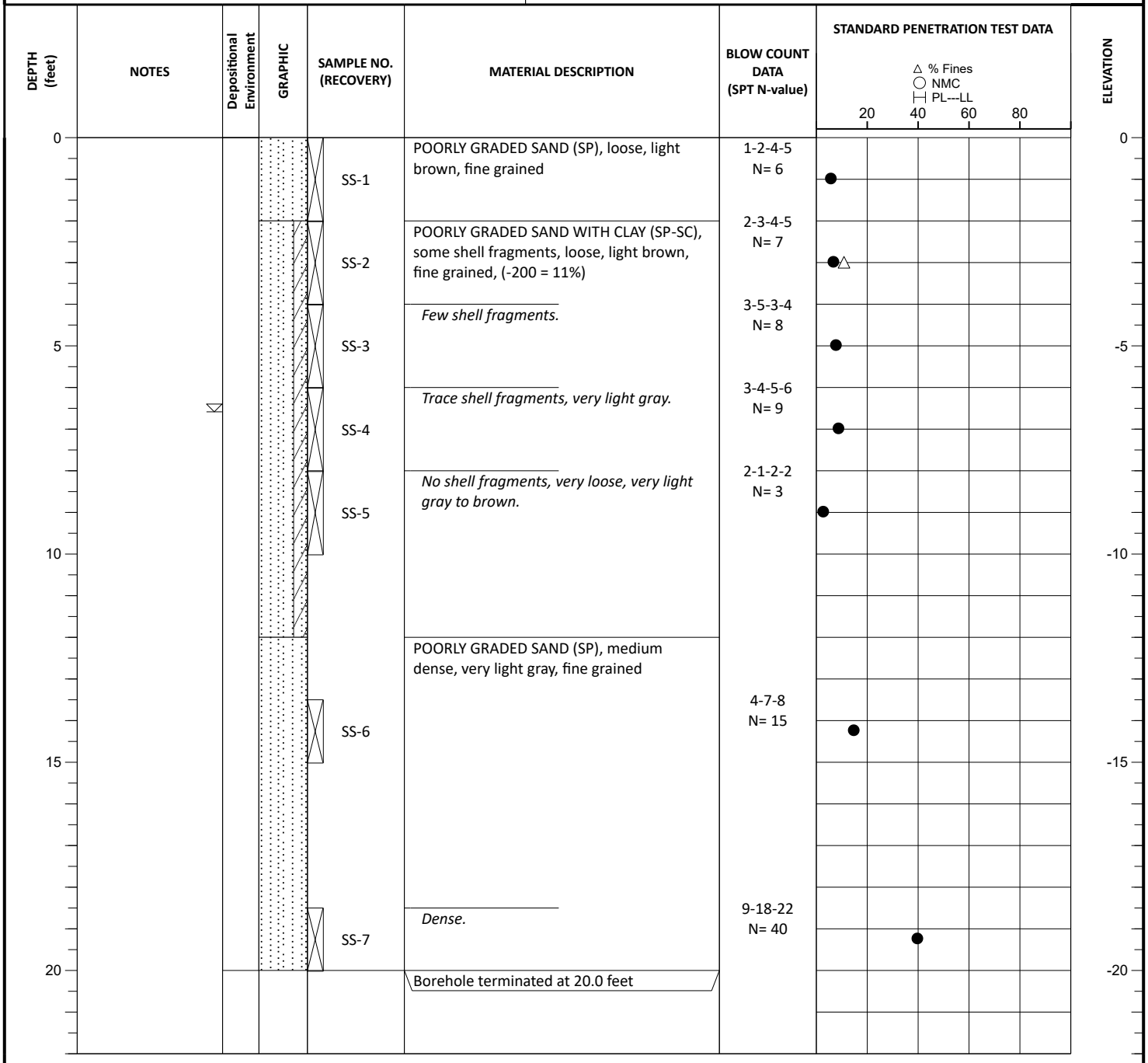
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SHEET:	3
FIELD:	ER
OFFICE:	CM
CHECKED BY:	MA, JS

Project:	Big Bend Power Station - Big Bend 3 Solar Project Apollo Beach, Florida 210810	BORING LOG: B301 *Sheet 1 of 1*
DATE DRILLED: 03/16/2021	**ELEVATION:** N/A	**NOTES:**
DRILL RIG: CME-45B (Truck)	**DATUM:** NAVD88	
DRILLER: Swint Drilling	**BORING DEPTH:** 20.0 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Bentonite on completion	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** Victor Steck	**Northing:** 1257900.3 **Easting:** 531303.2
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Florida West FIPS 0902 Feet	



GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
DURING ADVANCE	▽	03/16/2021	6.5	
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED.
LL=Liquid Limit, PL = Plastic Limit, NM = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

Project:	Big Bend Power Station - Big Bend 3 Solar Project Apollo Beach, Florida 210810	BORING LOG: B302 *Sheet 1 of 1*
DATE DRILLED: 03/16/2021	**ELEVATION:** N/A	**NOTES:**
DRILL RIG: CME-45B (Truck)	**DATUM:** NAVD88	
DRILLER: Swint Drilling	**BORING DEPTH:** 20.0 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Bentonite Chips	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** Victor Steck	**Northing:** 1259658.6 **Easting:** 531248.6
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Florida West FIPS 0902 Feet	

DEPTH (feet)	NOTES	Depositional Environment	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (△ % Fines, ○ NMC, ⊢ PL---LL; 20, 40, 60, 80)	ELEVATION
0				SS-1	POORLY GRADED SAND (SP), very loose, light brown, fine grained	1-1-2-2 N= 3		0
				SS-2	CLAYEY SAND (SC), trace roots, very loose, brown, fine grained	1-2-1-2 N= 3		
5				SS-3	*No roots, gray, (NMC = 27%, -200 = 30%).*	0-0-1-2 N= 1		-5
				SS-4	*Gray, few shell fragments.*	3-2-1-1 N= 3		
				SS-5	*No shell fragments.*	2-2-2-2 N= 4		
10								-10
				SS-6	POORLY GRADED SAND WITH CLAY (SP-SC), loose, gray, fine grained	3-3-3 N= 6		
15								-15
				SS-7	POORLY GRADED SAND (SP), medium dense, very light gray, fine grained	5-11-18 N= 29		
20					Borehole terminated at 20.0 feet			-20

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
DURING ADVANCE	▽	03/16/2021	4.0	
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED.
LL=Liquid Limit, PL = Plastic Limit, NM = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

Project:	Big Bend Power Station - Big Bend 3 Solar Project Apollo Beach, Florida 210810	BORING LOG: B303 *Sheet 1 of 1*
DATE DRILLED: 03/16/2021	**ELEVATION:** N/A	**NOTES:**
DRILL RIG: CME-45B (Truck)	**DATUM:** NAVD88	
DRILLER: Swint Drilling	**BORING DEPTH:** 20.0 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Bentonite Chips	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** Victor Steck	**Northing:** 1258141.3 **Easting:** 530039.2
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Florida West FIPS 0902 Feet	

DEPTH (feet)	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)
0	SS-1	POORLY GRADED SAND (SP), medium dense, light brown gray, fine grained	5-4-8-8 N= 12
	SS-2	POORLY GRADED SAND WITH CLAY (SP-SC), few shell fragments, medium dense, light gray, fine grained	7-7-8-9 N= 15
5	SS-3	*Loose, light orange gray.*	4-4-4-4 N= 8
	SS-4	*Very loose.*	2-1-1-1 N= 2
	SS-5	POORLY GRADED SAND (SP), medium dense, light gray to light brown, fine grained	4-6-12-20 N= 18
10			
	SS-6	POORLY GRADED SAND WITH CLAY (SP-SC), loose, brown gray, fine grained	2-2-3 N= 5
15			
	SS-7	LEAN CLAY (CL), stiff, light gray *(NMC = 24%, -200 = 90%).*	5-5-4 N= 9
20		Borehole terminated at 20.0 feet	

STANDARD PENETRATION TEST DATA: △ % Fines, ○ NMC, ⊢ PL---LL; 20, 40, 60, 80

ELEVATION: 0, -5, -10, -15, -20

GROUNDWATER		DATE/TIME	DEPTH (FT)	REMARKS
DURING ADVANCE	▽	03/16/2021	4.0	
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED.
LL=Liquid Limit, PL = Plastic Limit, NM = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf)

Appendix II – Laboratory Test Results

TABLE II-1 - LABORATORY TESTING SUMMARY

Big Bend Power Station - Big Bend 3 Solar Project
Apollo Beach, Florida
S&ME PROJECT NO. 210810

BORING NUMBER	SAMPLE NUMBER	SAMPLE DEPTH	USCS GROUP	NATURAL MOISTURE CONTENT	IN-SITU DRY DENSITY	ORGANIC CONTENT	SIEVE ANALYSIS - PERCENT PASSING														Chemical Analyses						Modified Proctor Test Data	
		ft					3"	2"	1.5"	1"	3/4"	3/8"	#4	#10	#20	#40	#60	#100	#140	#200	pH	Resistivity	Chlorides	Sulfides	Oxidation-Reduction	Sulfates	Max. Dry Density	Optimum Moisture Content
				(%)	(pcf)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)		ohm-cm	ppm	ppb		ppm	(pcf)	(%)
C301	-	1 - 3	SP-SM	17.0	105.9	-	100.0	100.0	100.0	100.0	100.0	100.0	96.9	93.1	92.0	88.3	75.3	43.5	18.4	5.2	7.9	3160	67	170	149.7 @ 18.8°C	<10	-	-
C302	-	1 - 3	SP-SM	17.9	100.1	-	100.0	100.0	100.0	100.0	100.0	100.0	97.3	94.6	92.4	88.8	77.7	47.0	26.2	8.3	7.9	5607	66	350	150.4 @ 19.1°C	<10	-	-
C303	-	1 - 3	SP-SM	17.8	106.2	-	99.5	96.6	94.6	90.5	84.7	79.9	66.5	55.0	51.8	48.9	42.1	33.0	14.8	6.5	8.0	1427	114	100	165.8 @ 19.0°C	904	-	-
Bulk 3-1	-	0 - 1	SP	-	-	-	100.0	100.0	100.0	100.0	100.0	99.5	98.9	98.8	98.5	95.3	83.3	57.4	28.5	4.4	-	-	-	-	-	-	107.8	13.3
Bulk 3-2	-	0 - 1	SM	-	-	-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.6	99.0	95.7	82.8	58.6	32.0	12.2	-	-	-	-	-	-	109.5	14.8
B301	SS-2	2 - 4	SP-SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.6	-	-	-	-	-	-	-	-
B302	SS-3	4 - 6	SC	27.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.9	-	-	-	-	-	-	-	-
B303	SS-7	18.5 - 20	CL	23.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90.1	-	-	-	-	-	-	-	-

(1) Soil classifications based on visual observation using USCS unless sieve and Atterberg limits reported.

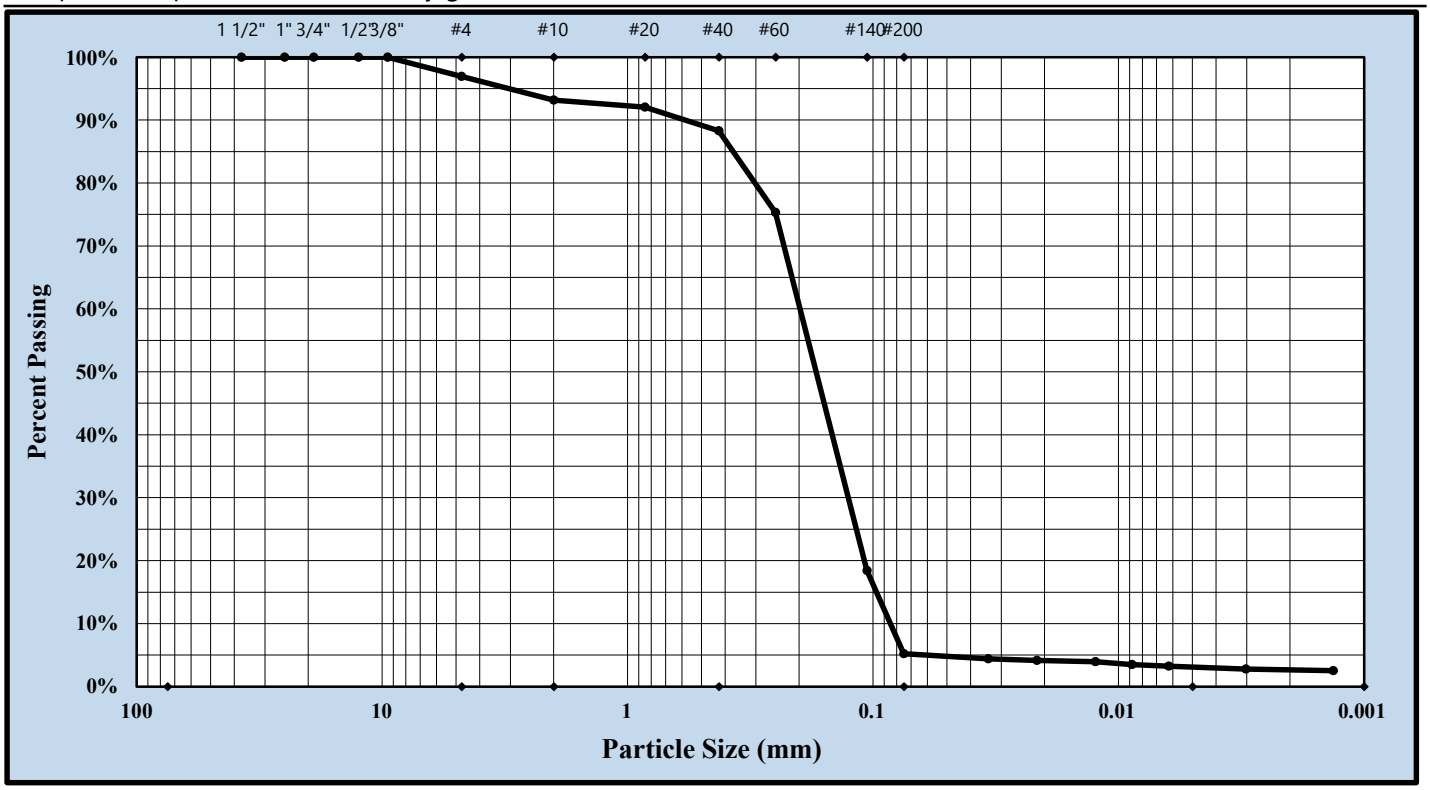
Form No. TR-D422-2
Revision No. 2LEXa
Revision Date: 09/02/20

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

Project #:	210810	Report Date:	04/13/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	04/07/21 - 04/09-21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		
Type:	Bulk	Sample Date:	03/11/21
Location:	C301	Depth (ft.):	1 - 3
Sample Description:	Brown Poorly graded sand with silt with shells		SP-SM



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	3/8 in.	Gravel:	3.1%	Silt Size:	2.1%
Silt & Clay (% Passing #200):	5.2%	Total Sand:	91.7%	Clay Size:	3.1%
Apparent Relative Density:	2.684	Moisture Content:	16.2%		
Liquid Limit:	NP	Plastic Limit:	NP	Plastic Index:	NP
Coarse Sand:	3.8%	Medium Sand:	4.9%	Fine Sand:	83.1%

Description of Sand and Gravel: Rounded ☐ Angular ☒ Hard & Durable ☐ Soft ☒ Weathered & Friable ☐

Mechanical Stirring Apparatus A — Dispersion Period: 1 min. — Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References / Comments / Deviations: D10: 0.085 mm, D30: 0.13 mm, D60: 0.2 mm

Cc: 1, Cu: 2.4

Jacob Folsom		Associate Project Manager	4/13/2021
Technical Responsibility	*Signature*	*Position*	*Date*

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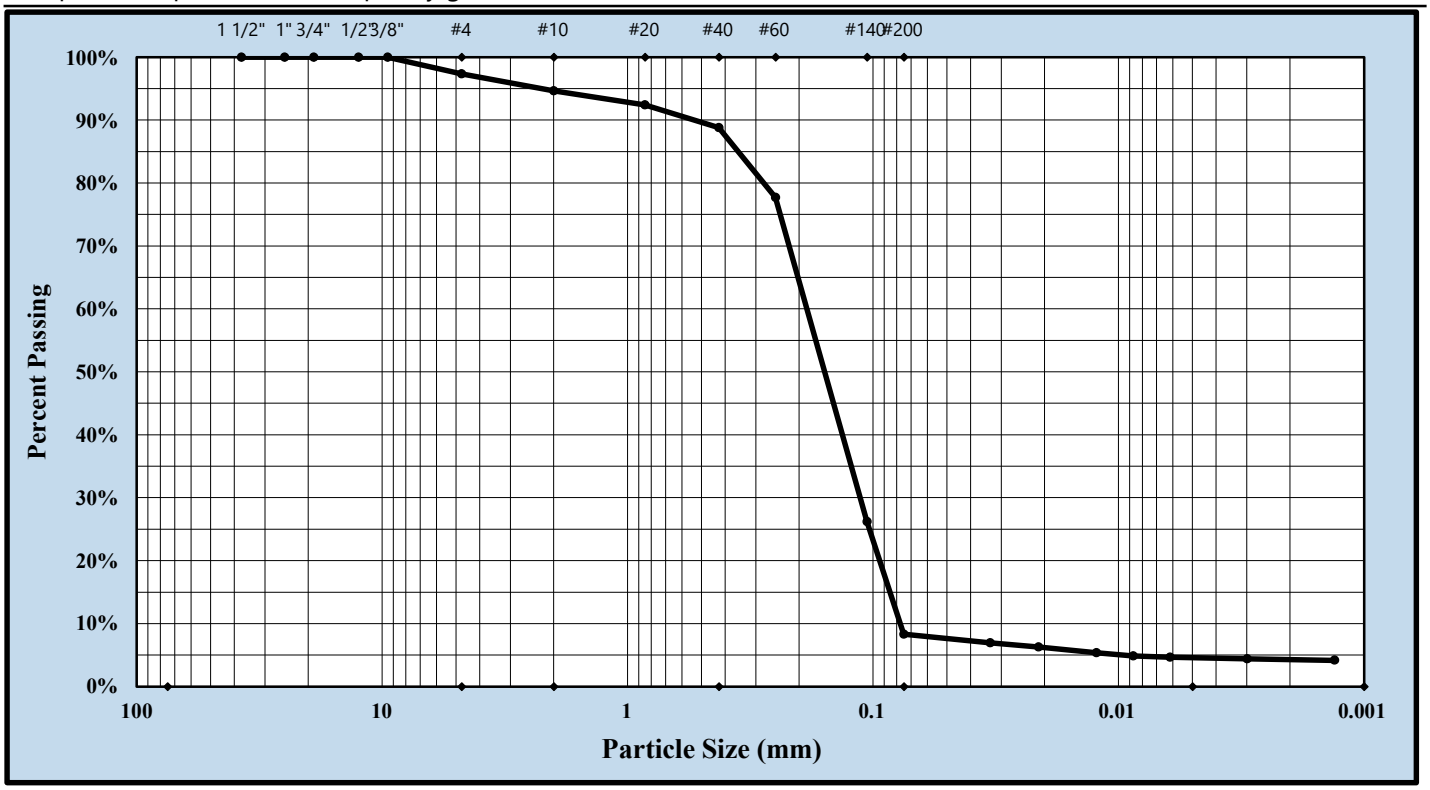
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Revision Date: 09/02/20

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

Project #:	210810	Report Date:	04/13/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	04/07/21 - 04/09-21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		
Type:	Bulk	Sample Date:	03/11/21
Location:	C302	Depth (ft.):	1 - 3
Sample Description:	Brown poorly graded sand with silt		SP-SM



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	3/8 in.	Gravel:	2.7%	Silt Size:	3.7%
Silt & Clay (% Passing #200):	8.3%	Total Sand:	89.0%	Clay Size:	4.6%
Apparent Relative Density:	2.692	Moisture Content:	19.8%		
Liquid Limit:	NP	Plastic Limit:	NP	Plastic Index:	NP
Coarse Sand:	2.7%	Medium Sand:	5.8%	Fine Sand:	80.5%

Description of Sand and Gravel: Rounded ☐ Angular ☒ Hard & Durable ☐ Soft ☒ Weathered & Friable ☐

Mechanical Stirring Apparatus A — Dispersion Period: 1 min. — Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References / Comments / Deviations: D10: 0.078 mm, D30: 0.11 mm, D60: 0.175 mm

Cc: 0.9, Cu: 2.2

Jacob Folsom		Associate Project Manager	4/13/2021
Technical Responsibility	*Signature*	*Position*	*Date*

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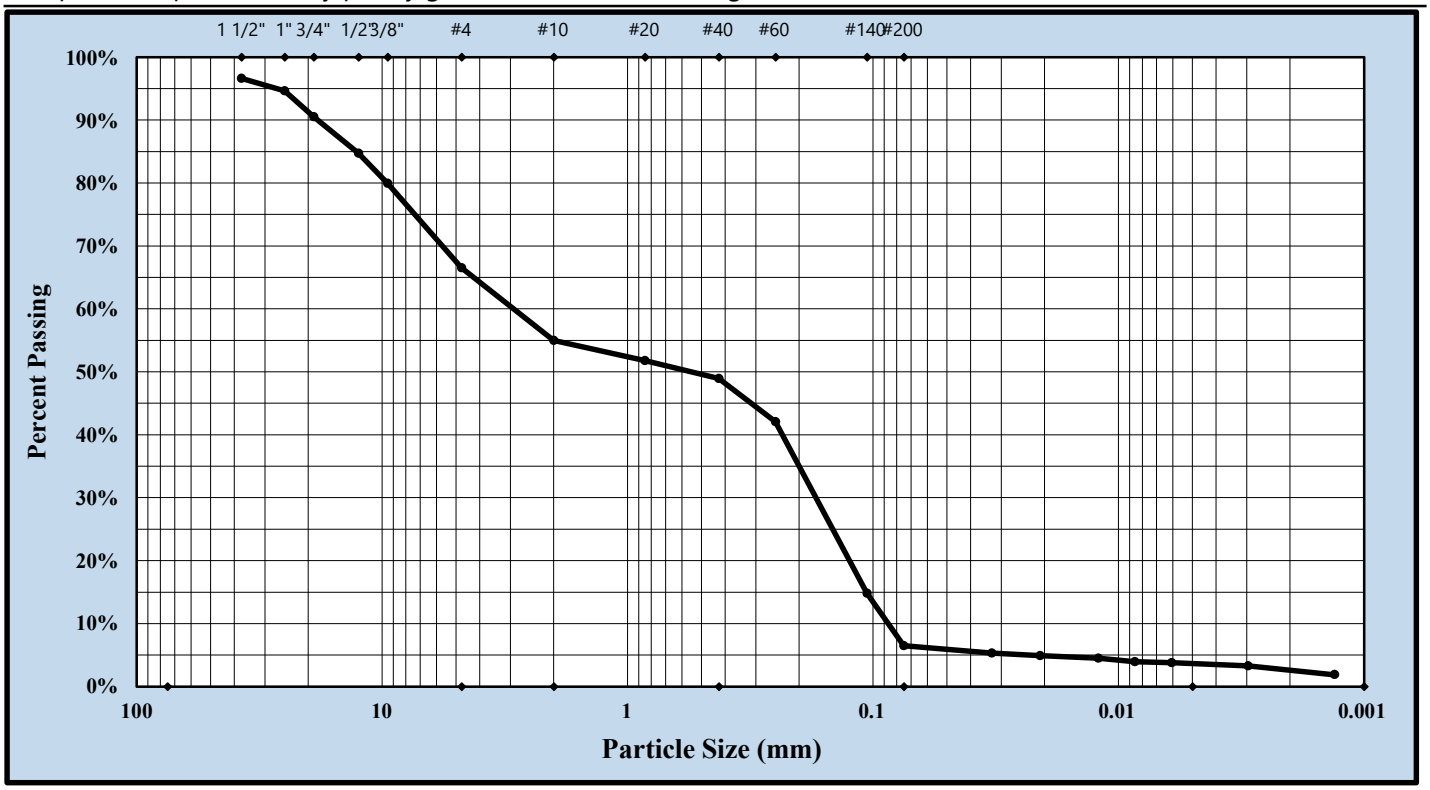
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Revision No. 2LEXa
Revision Date: 09/02/20

PARTICLE SIZE ANALYSIS OF SOIL

ASTM D422

S&ME, Inc. - Lexington: 2020 Liberty Road, Suite 105, Lexington, KY 40505

Project #:	210810	Report Date:	04/13/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	04/07/21 - 04/09-21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		
Type:	Bulk	Sample Date:	03/11/21
Location:	C303	Depth (ft.):	1 - 3
Sample Description:	Gray poorly graded sand with silt and gravel (shells)		SP-SM



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt Size	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay Size	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Nom. Maximum Particle Size:	3 in.	Gravel:	33.5%	Silt Size:	2.8%
Silt & Clay (% Passing #200):	6.5%	Total Sand:	60.0%	Clay Size:	3.7%
Apparent Relative Density:	2.702	Moisture Content:	15.9%		
Liquid Limit:	NP	Plastic Limit:	NP	Plastic Index:	NP
Coarse Sand:	11.6%	Medium Sand:	6.0%	Fine Sand:	42.4%

Description of Sand and Gravel: Rounded ☐ Angular ☒ Hard & Durable ☐ Soft ☐ Weathered & Friable ☒

Mechanical Stirring Apparatus A — Dispersion Period: 1 min. — Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References / Comments / Deviations: D10: 0.088 mm, D30: 0.17 mm, D60: 2.9 mm

Coarse fraction composed of shells — Cc: 0.1, Cu: 33

Jacob Folsom		Associate Project Manager	4/13/2021
Technical Responsibility	*Signature*	*Position*	*Date*

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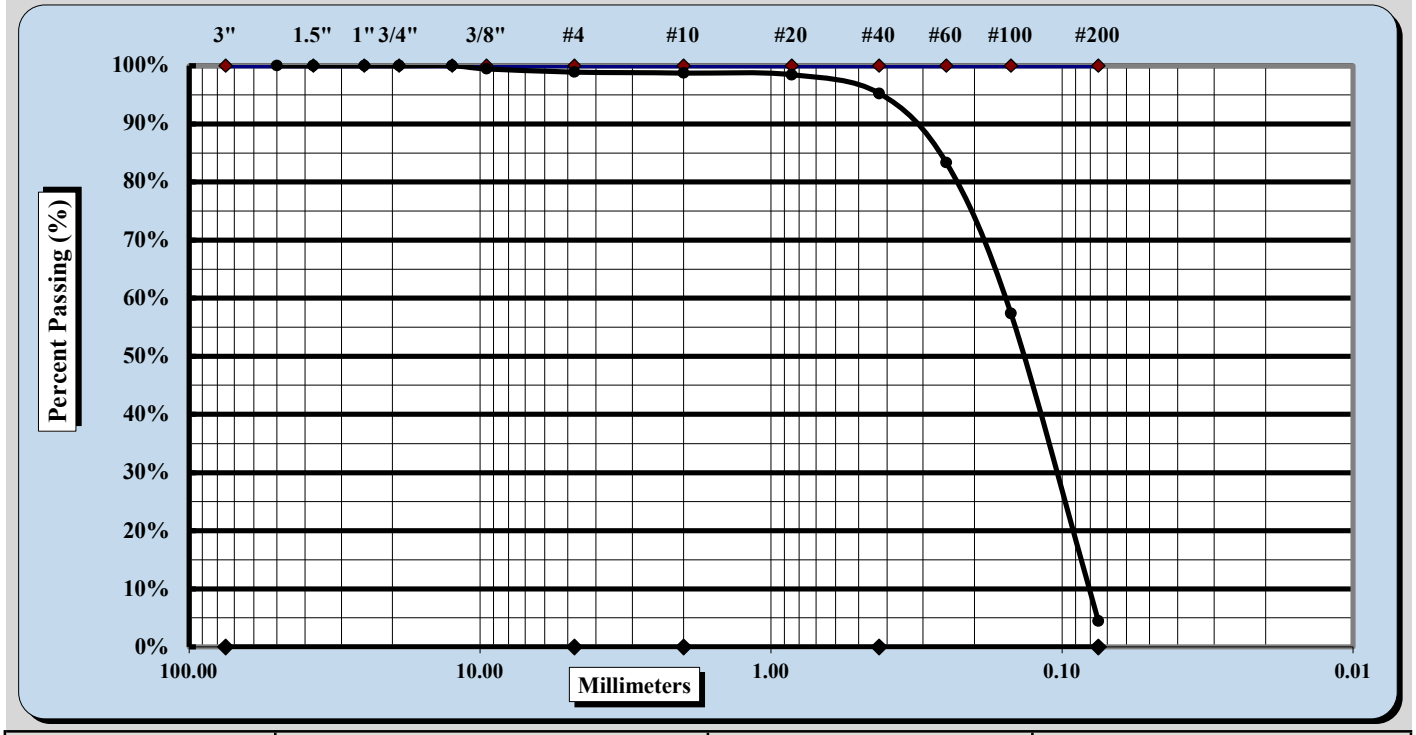
Form No: TR-C136-1Ga
Revision No. 1
Revision Date: 7/27/17

SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES

ASTM C 136, C 117

S&ME, Inc. - Tampa: 111 Kelsey Lane, Suite E, Tampa, FL 33619

Project #:	210810	Report Date:	3/25/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	3/23/21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		
Sample Id. 3-1	Type: Bulk	Sample Date:	3/11/21
Location: Existing grade	Sample: 3-1	Elevation:	N.A.
Sample Description:	Gray Fine Sand with Roots, trace Shell Fragments		SP



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	9.5 mm	Coarse Sand	0.2%	Fine Sand	90.8%
Gravel	1.1%	Medium Sand	3.5%	Silt & Clay	4.4%
Liquid Limit	N.A.	Plastic Limit	N.A.	Plastic Index	N.A.
Specific Gravity (SSD)	N.A.	% Absorption	N.A.	Moisture Content	N.A.
Fineness Modulus		$Cc = D_{30}^2/(D_{10} \times D_{60})$	0.945	$Cu = D_{60}/D_{10}$	2

Notes / Deviations / References:

F. Sasso	F. Sasso	Group Leader	3/25/2021
Technical Responsibility	*Signature*	*Position*	*Date*

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Form No. TR-D698-2
Revision No. : 0
Revision Date: 11/21/07

Moisture - Density Report

Quality Assurance

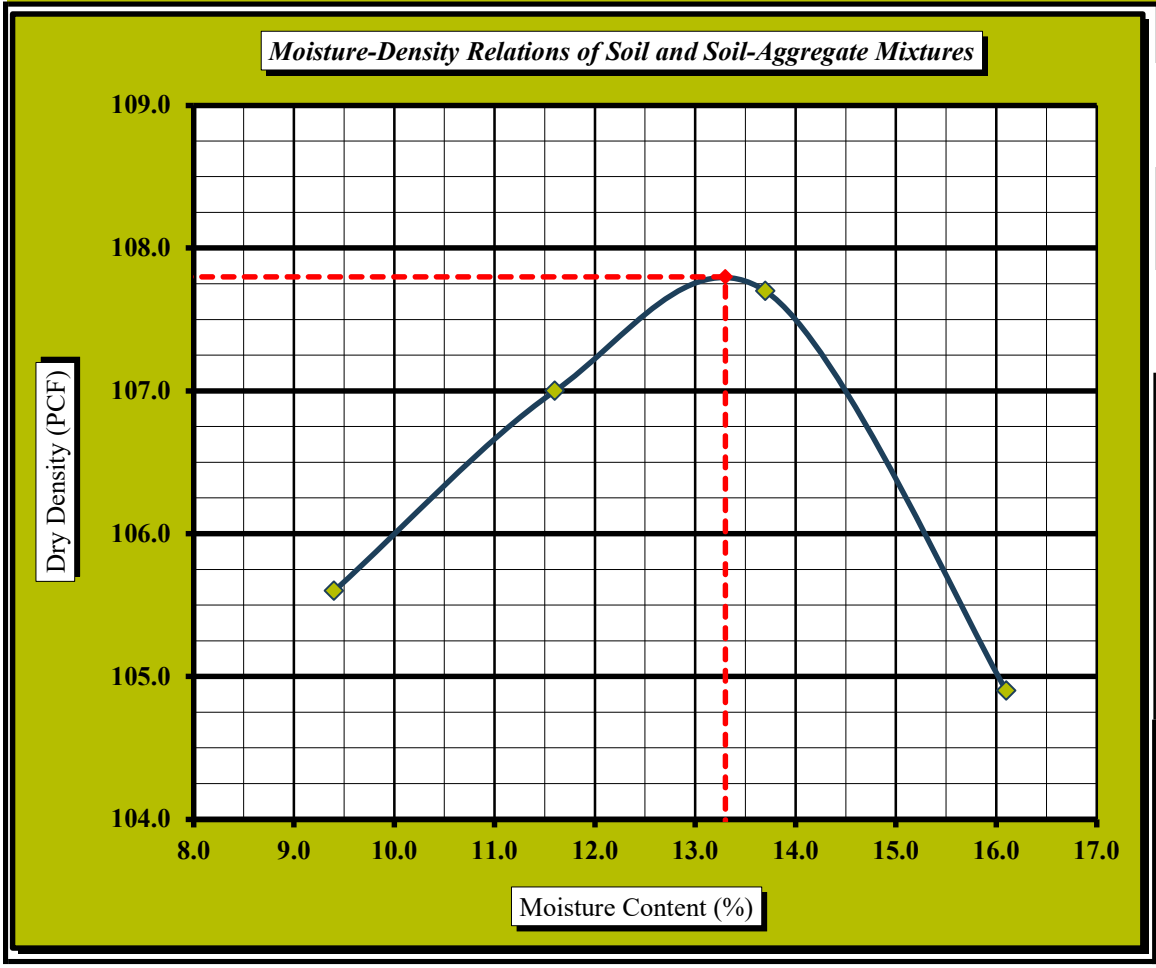
S&ME, Inc.Tampa, 111 Kelsey Lane, Suite E / Florida 33619 / 813-623-6646 fax 813-623-3795

S&ME Project #:	**210810**	Report Date:	3/18/2021
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	3/16/21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		

Boring #:	N.A.	Sample #:	3-1	Sample Date:	3/11/2021
Location:	Existing Grade	Offset:	N.A.	Depth:	N.A.
Sample Description:	Gray Fine Sand with Roots, trace Shell Fragments				SP

Maximum Dry Density **107.8** **PCF.** **Optimum Moisture Content** **13.3%**

ASTM D1557 -- Method A



Soil Properties	
Natural Moisture Content	
Specific Gravity of Soil	**N.A.**
Liquid Limit	**N.A.**
Plastic Limit	**N.A.**
Plastic Index	**N.A.**
% Passing	
3/4"	
3/8"	
#4	
#10	
#40	
#60	
#200	4.4%
Soil Class	SP
Oversize Fraction	
Bulk Gravity	2.700
% Moisture	N.A.
% Oversize	0.0%
MDD	**N.A.**
Opt. MC	**N.A.**

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

Florida License No. *Signature* *Position*

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Form No: TR-C136-1Ga
Revision No. 1
Revision Date: 7/27/17

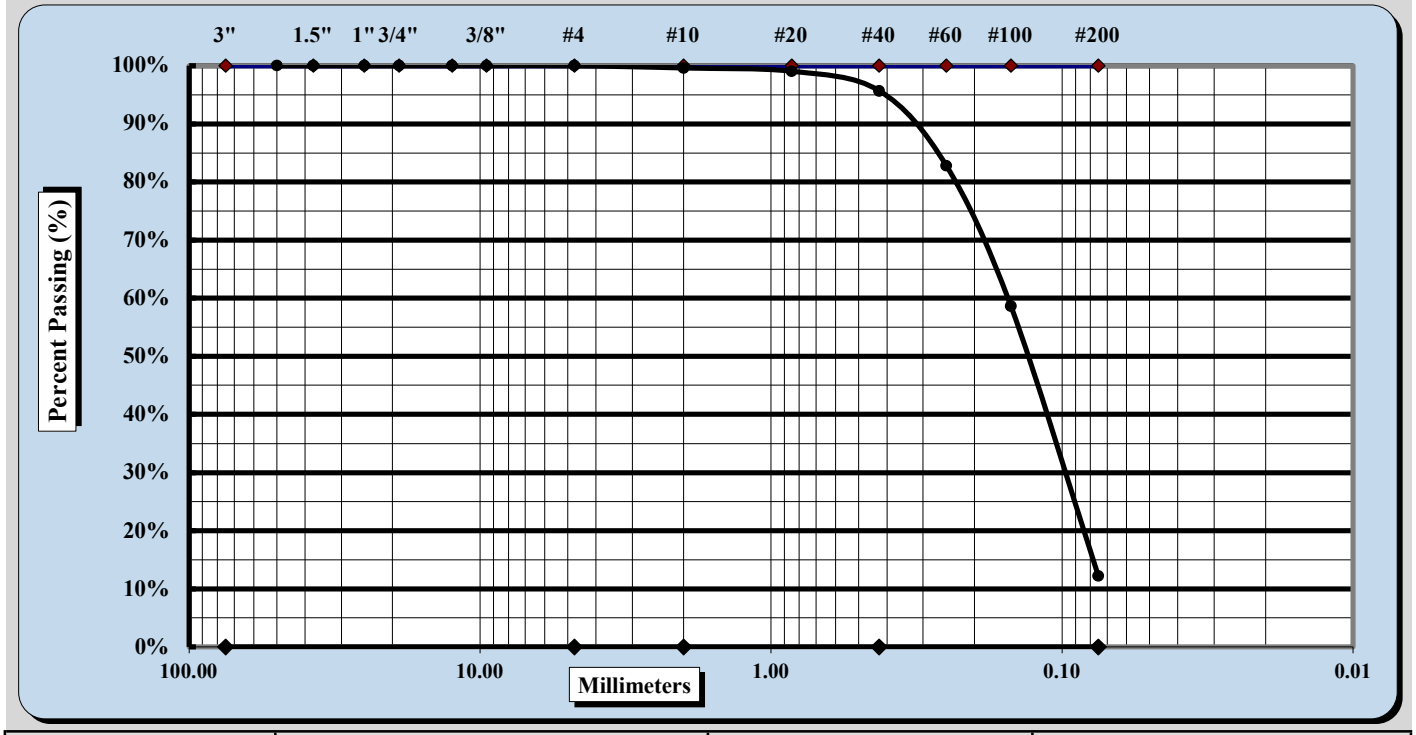
SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES

ASTM C 136, C 117

S&ME, Inc. - Tampa: 111 Kelsey Lane, Suite E, Tampa, FL 33619

Project #:	210810	Report Date:	3/25/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	3/23/21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		

Sample Id.	3-2	Type:	Bulk	Sample Date:	3/11/21
Location:	Exisiting grade	Sample:	3-2	Elevation:	N.A.
Sample Description:	Gray Silty Fine Sand with Roots				SM



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	2 mm	Coarse Sand	0.4%	Fine Sand	83.5%
Gravel	0.0%	Medium Sand	3.9%	Silt & Clay	12.2%
Liquid Limit	N.A.	Plastic Limit	N.A.	Plastic Index	N.A.
Specific Gravity (SSD)	N.A.	% Absorption	N.A.	Moisture Content	N.A.
Fineness Modulus		$Cc = D_{30}^2/(D_{10} \times D_{60})$	0.723	$Cu = D_{60}/D_{10}$	2.23

Notes / Deviations / References:

F. Sasso	F. Sasso	Group Leader	3/25/2021
Technical Responsibility	*Signature*	*Position*	*Date*

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Moisture - Density Report

Quality Assurance

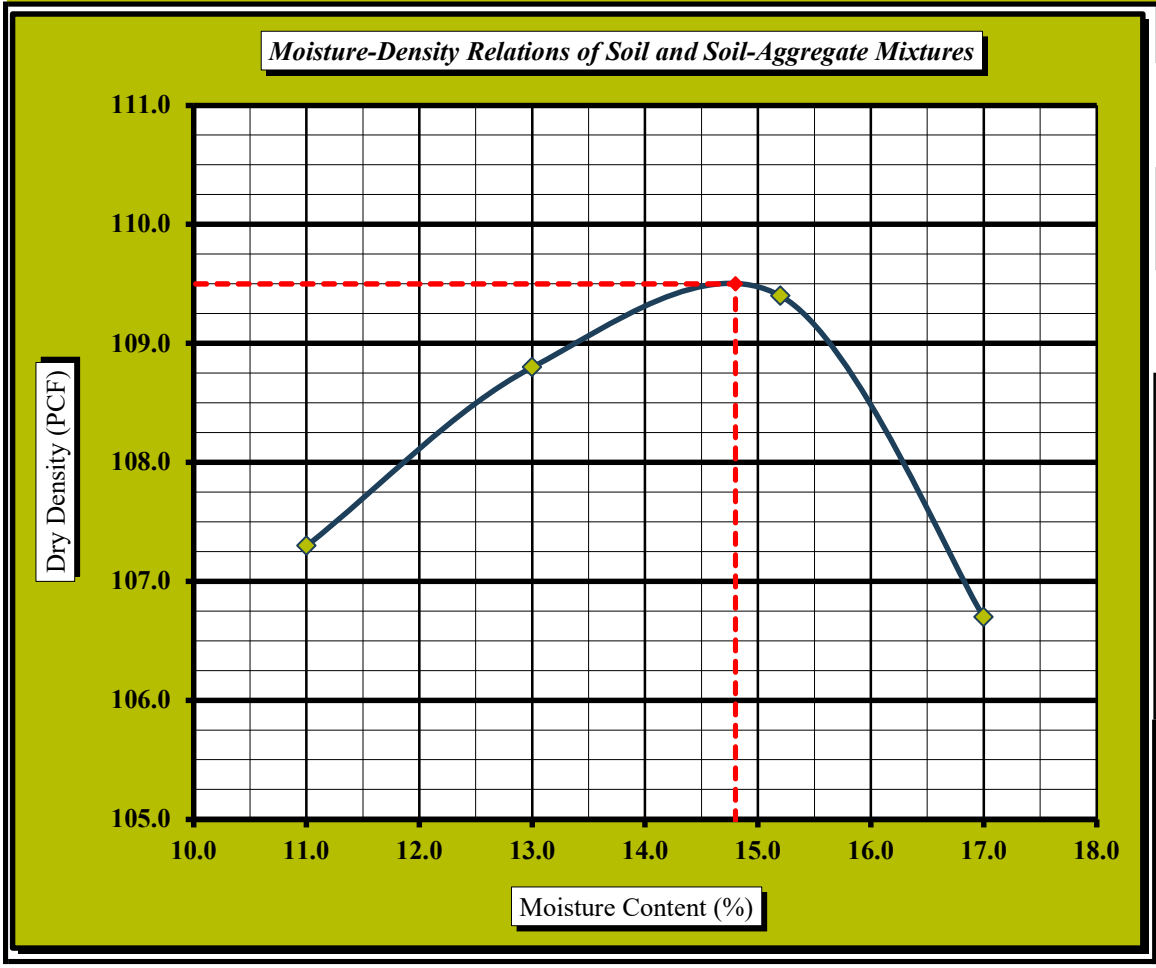
S&ME, Inc.Tampa, 111 Kelsey Lane, Suite E / Florida 33619 / 813-623-6646 fax 813-623-3795

S&ME Project #:	**210810**	Report Date:	3/22/2021
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project	Test Date(s):	3/19/21
Client Name:	DEPCOM Power		
Client Address:	9185 E. Pima Center Parkway, Suite 100, Scottsdale, AZ		

Boring #:	N.A.	Sample #:	3-2	Sample Date:	3/11/2021
Location:	Existing Grade	Offset:	N.A.	Depth:	N.A.
Sample Description:	Gray Silty Fine Sand with Roots				SM

Maximum Dry Density **109.5** **PCF.** **Optimum Moisture Content** **14.8%**

ASTM D1557 -- Method A



Soil Properties	
Natural Moisture Content	
Specific Gravity of Soil	**N.A.**
Liquid Limit	**N.A.**
Plastic Limit	**N.A.**
Plastic Index	**N.A.**
% Passing	
3/4"	
3/8"	
#4	
#10	
#40	
#60	
#200	12.2%
Soil Class	SM
Oversize Fraction	
Bulk Gravity	2.700
% Moisture	N.A.
% Oversize	0.0%
MDD	**N.A.**
Opt. MC	**N.A.**

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☒ Manual Rammer ☐ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

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Appendix III– Engineering Soil Parameters

TABLE A-1

SHAFT v.2012 ™ AXIAL CAPACITY ANALYSES

SOIL / ROCK PARAMETERS

Boring: B301

Soil / Rock Layer Number	Average Uncorrected Blow Count (N)	Shaft 6tm Soil / Rock Type	Depth to Bottom of Soil/Rock Layer (ft)	Undrained Shear Strength (psf)	Soil/Rock Density (psf)	Adhesion Factor	Friction Angle (degrees)	Horizontal Stress Coefficient (-)	Bearing Capacity Factor N_c	Bearing Capacity Factor N_q	Bearing Capacity Factor N_γ
1	7	Sand	8	-	110	-	31	Default	20.63	25.99	32.67
2	3	Sand	12	-	105	-	29	Default	16.44	19.34	27.86
3	15	Sand	17	-	120	-	33	Default	26.09	35.19	38.64
4	40	Sand	20	-	135	-	40	Default	64.20	109.41	75.31

Notes:

1. Design depth to groundwater is 0 feet.
2. For structural uplift conditions, the computed skin friction should be multiplied by 0.75 for clays and soft rock and 0.75 for sands.

TABLE B-1

LPILE v2016™ LATERAL CAPACITY ANALYSES

SOIL / ROCK PARAMETERS

Boring: B301

Layer Number	Soil/Rock Type	Depth to Top of Soil/Rock Layer (ft)	Depth to Bottom of Soil/Rock Layer (ft)	Soil/Rock Modulus K/Er (pci)	Effective Unit Weight (pcf)	Soil/Rock Undrained Shear Strength / Uniaxial Compressive Strength (psf)	Internal Friction Angle (degrees)	RQD (%)	LPILE Soil/Rock Strain Factor ε_{50} or k_{rm}
1	Sand (Reese)	0	8	19	47.6	-	31	-	-
2	Sand (Reese)	8	12	8	42.6	-	29	-	-
3	Sand (Reese)	12	17	42	57.6	-	33	-	-
4	Sand (Reese)	17	20	111	72.6	-	40	-	-

Notes:

1. Design depth to groundwater is 0 feet.
2. A soil layer shall be created at the 24-hour water level if the water is encountered. If no 24-hour water level is available a soil layer shall be created at the water level encountered during soil boring.

TABLE C-1

MFAD 5.1™ / HFAD 5.1™ ANALYSES

SOIL / ROCK PARAMETERS

Boring: B301

Layer Number	Layer Type	Depth to Bottom of Layer (feet)	Total Unit Weight (pcf)	Deformation Modulus (ksi)	Effective Friction Angle (degrees)	Undrained Soil Shear Strength or Rock Effective Cohesion (ksf)	Allowable Rock/Concrete Bond Strength (ksf)	Ultimate Unit Skin Friction Steel H-Pile (psf)
1	Soil	8	110	1.00	31	-	-	160
2	Soil	12	105	0.40	29	-	-	70
3	Soil	17	120	2.10	33	-	-	345
4	Soil	20	135	5.70	40	-	-	925

1. Design depth to groundwater is 0 feet.

TABLE A-2

SHAFT v.2012 ™ AXIAL CAPACITY ANALYSES

SOIL / ROCK PARAMETERS

Boring: B302

Soil / Rock Layer Number	Average Uncorrected Blow Count (N)	Shaft 6tm Soil / Rock Type	Depth to Bottom of Soil/Rock Layer (ft)	Undrained Shear Strength (psf)	Soil/Rock Density (psf)	Adhesion Factor	Friction Angle (degrees)	Horizontal Stress Coefficient (-)	Bearing Capacity Factor N_c	Bearing Capacity Factor N_q	Bearing Capacity Factor N_γ
1	2	Sand	12	-	105	-	29	Default	16.44	19.34	27.86
2	6	Sand	17	-	110	-	30	Default	18.40	22.40	30.14
3	29	Sand	20	-	130	-	38	Default	48.93	78.02	61.35

Notes:

1. Design depth to groundwater is 0 feet.
2. For structural uplift conditions, the computed skin friction should be multiplied by 0.75 for clays and soft rock and 0.75 for sands.

TABLE B-2

LPILE v2016™ LATERAL CAPACITY ANALYSES

SOIL / ROCK PARAMETERS

Boring: B302

Layer Number	Soil/Rock Type	Depth to Top of Soil/Rock Layer (ft)	Depth to Bottom of Soil/Rock Layer (ft)	Soil/Rock Modulus K/Er (pci)	Effective Unit Weight (pcf)	Soil/Rock Undrained Shear Strength / Uniaxial Compressive Strength (psf)	Internal Friction Angle (degrees)	RQD (%)	LPILE Soil/Rock Strain Factor ε_{50} or k_{rm}
1	Sand (Reese)	0	12	6	42.6	-	29	-	-
2	Sand (Reese)	12	17	17	47.6	-	30	-	-
3	Sand (Reese)	17	20	81	67.6	-	38	-	-

Notes:

1. Design depth to groundwater is 0 feet.
2. A soil layer shall be created at the 24-hour water level if the water is encountered. If no 24-hour water level is available a soil layer shall be created at the water level encountered during soil boring.

TABLE C-2

MFAD 5.1™ / HFAD 5.1™ ANALYSES

SOIL / ROCK PARAMETERS

Boring: B302

Layer Number	Layer Type	Depth to Bottom of Layer (feet)	Total Unit Weight (pcf)	Deformation Modulus (ksi)	Effective Friction Angle (degrees)	Undrained Soil Shear Strength or Rock Effective Cohesion (ksf)	Allowable Rock/Concrete Bond Strength (ksf)	Ultimate Unit Skin Friction Steel H-Pile (psf)
1	Soil	12	105	0.20	29	-	-	45
2	Soil	17	110	0.80	30	-	-	135
3	Soil	20	130	4.10	38	-	-	670

1. Design depth to groundwater is 0 feet.

TABLE A-3

SHAFT v.2012 ™ AXIAL CAPACITY ANALYSES

SOIL / ROCK PARAMETERS

Boring: B303

Soil / Rock Layer Number	Average Uncorrected Blow Count (N)	Shaft 6tm Soil / Rock Type	Depth to Bottom of Soil/Rock Layer (ft)	Undrained Shear Strength (psf)	Soil/Rock Density (psf)	Adhesion Factor	Friction Angle (degrees)	Horizontal Stress Coefficient (-)	Bearing Capacity Factor N_c	Bearing Capacity Factor N_q	Bearing Capacity Factor N_γ
1	13	Sand	4	-	120	-	33	Default	26.09	35.19	38.64
2	8	Sand	6	-	115	-	31	Default	20.63	25.99	32.67
3	2	Sand	8	-	105	-	29	Default	16.44	19.34	27.86
4	18	Sand	12	-	125	-	34	Default	29.44	41.06	42.16
5	5	Sand	17	-	110	-	30	Default	18.40	22.40	30.14
6	9	Clay	20	1125	105	0.75	-	Default	7.00	1.00	0.00

Notes:

1. Design depth to groundwater is 0 feet.
2. For structural uplift conditions, the computed skin friction should be multiplied by 0.75 for clays and soft rock and 0.75 for sands.

TABLE B-3

LPILE v2016™ LATERAL CAPACITY ANALYSES

SOIL / ROCK PARAMETERS

Boring: B303

Layer Number	Soil/Rock Type	Depth to Top of Soil/Rock Layer (ft)	Depth to Bottom of Soil/Rock Layer (ft)	Soil/Rock Modulus K/Er (pci)	Effective Unit Weight (pcf)	Soil/Rock Undrained Shear Strength / Uniaxial Compressive Strength (psf)	Internal Friction Angle (degrees)	RQD (%)	LPILE Soil/Rock Strain Factor ε_{50} or k_{rm}
1	Sand (Reese)	0	4	36	57.6	-	33	-	-
2	Sand (Reese)	4	6	22	52.6	-	31	-	-
3	Sand (Reese)	6	8	6	42.6	-	29	-	-
4	Sand (Reese)	8	12	50	62.6	-	34	-	-
5	Sand (Reese)	12	17	14	47.6	-	30	-	-
6	Clay (Stiff<Water)	17	20	280	42.6	1125	-	-	-

Notes:

1. Design depth to groundwater is 0 feet.
2. A soil layer shall be created at the 24-hour water level if the water is encountered. If no 24-hour water level is available a soil layer shall be created at the water level encountered during soil boring.

TABLE C-3

MFAD 5.1™ / HFAD 5.1™ ANALYSES

SOIL / ROCK PARAMETERS

Boring: B303

Layer Number	Layer Type	Depth to Bottom of Layer (feet)	Total Unit Weight (pcf)	Deformation Modulus (ksi)	Effective Friction Angle (degrees)	Undrained Soil Shear Strength or Rock Effective Cohesion (ksf)	Allowable Rock/Concrete Bond Strength (ksf)	Ultimate Unit Skin Friction Steel H-Pile (psf)
1	Soil	4	120	1.80	33	-	-	300
2	Soil	6	115	1.10	31	-	-	185
3	Soil	8	105	0.20	29	-	-	45
4	Soil	12	125	2.50	34	-	-	415
5	Soil	17	110	0.70	30	-	-	115
6	Soil	20	105	0.90	-	1.125	-	680

1. Design depth to groundwater is 0 feet.

Appendix IV– Field and Laboratory Testing Procedures

FIELD AND LABORATORY TESTING PROCEDURES

Soil Test Boring Procedures (ASTM D1586)

The borings were advanced by a rotary drilling process which utilized a viscous bentonite drilling fluid to flush the cuttings and stabilize the hole. At regular intervals, the drilling tools were withdrawn and soil samples obtained with a standard 1⅜-inch inside diameter, 2-inch outside diameter, split tube sampler in general accordance with ASTM D1586 "Standard Test Method for Penetration Test and Split Barrel Sampling of Soils".

The sampler was initially seated 6 inches to penetrate any loose cuttings then driven an additional foot to 1½ feet with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the foot increment after the 6-inch seating blows was recorded and is designated as the standard penetration resistance, N-value. Penetration resistance is an index to the soil's strength and density.

The samples were classified in the field by an engineering technician as they were obtained. Representative portions of each soil sample were then sealed in containers and transported to our laboratory. The samples were examined by a geotechnical engineer to visually check the field classification. Boring data, including sampling intervals, penetration resistance N-values, soil classifications, and groundwater level are presented on the Soil Profiles.

Double-Ring Infiltrometer Test

The double-ring infiltrometer test was performed in general accordance with procedures outlined in the ASTM D3385. Two 18-inch high concentric rings were placed on a prepared test surface at a given depth and driven into the ground 4 to 6 inches. The inner ring used in the test had an inside diameter of approximately 12inches, while the outer ring had an inside diameter of approximately 24 inches. The test is performed by filling both rings with water to a height of 10 inches. The water level is allowed to drop over a discrete time interval and the volume of water required to maintain the head in the inner ring was recorded for the test duration.

Determination of Soils Finer than No. 200 Sieve (ASTM D1140)

The clay and silt content of granular soils affects their physical properties such as strength, compressibility, and permeability. Selected samples were tested to determine the percent, by weight, of soil particles finer than the No. 200 sieve (silt and clay size particles) in general accordance with procedures outlined in the ASTM D1140. Soil particles finer than 75 microns were flushed through a No. 200 sieve using water. The coarse materials retained on the No. 200 sieve were dried to obtain their dry weight. The dry weight of materials retained on the No. 200 sieve was compared to the dry weight of the total test specimen. The difference in weight, expressed as a percentage of the pre wash weight, is designated as the percentage of "fines" (silt and clay size particles).

Determination of Natural Moisture Content (ASTM D2216)

The natural moisture content was determined using the test procedures outlined in ASTM D2216. The moisture content is defined as the ratio, expressed as a percentage, of the weight of water in a given amount of soil to the weight of the solid particles.

Sieve Analyses (ASTM D6913)

The clay and silt content of granular soils affects their physical properties such as strength, compressibility, and permeability. Selected granular soil (sand or gravel) samples were tested to determine the percent, by weight, of soil particles finer than a series of sieves including the No. 200 sieve (silt and clay size particles) in general accordance

with procedures outlined in the ASTM D6913. Soil particles finer than 75 microns were flushed through a No. 200 sieve using water. The coarse materials retained on the No. 200 sieve were dried to obtain their dry weight. The dry weight of materials retained on the No. 200 sieve was compared to the dry weight of the total test specimen. The difference in weight, expressed as a percentage of the pre wash weight, is designated as the percentage of "fines" (silt and clay size particles

Attachments

April 07, 2021

Mr. Philip J. Erbland, PE
S&ME
111 Kelsey Lane Suite E
Tampa, FL 34428

Subject: Electrical Resistivity and Thermal Conductivity Survey
Big Bend 3 Site
Apollo Beach, Florida
GeoView Project Number 32,921

Mr. Erbland,

GeoView, Inc. is pleased to submit the final report which summarizes and presents the results of the electrical resistivity and thermal conductivity survey conducted at the subject site. GeoView appreciates the opportunity to have assisted you on this project. If you have any questions or comments about the report, please contact us.

Sincerely,

GEOVIEW, INC.

Chris Taylor, P.G.
Vice President
Florida Professional Geologist Number 2256

1.0 Introduction

Electrical Resistivity (ER) testing and in-situ thermal conductivity testing were conducted at Big Bend 2 Site located at 6855 Tamiami Trail in Apollo Beach, Florida. The purpose of survey was to determine electrical resistivity and thermal conductivity of the soils and rock at specific areas of the project. The locations of the electrical resistivity and thermal conductivity measurements are shown on Figure 1 as C301 through C303. The investigation was conducted on March 17, 2021.

2.0 Description of Geophysical Investigation

Electrical Resistivity

The investigation was conducted using electrical resistivity equipment to determine the electrical resistance of the soils and rock underlying the project site. The in-situ values of ground electrical resistivity were determined using a Wenner four-point electrical resistivity array. In such an array, the spacing between the electrodes (a-spacing) are equal. The investigation was conducted at three locations. with a-spacings of 2.5, 5, 10 and 15 feet. The survey was performed in general accordance with ASTM Standards G57-95a entitled "Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method". A R8 Super Sting resistivity system, manufactured by Advanced Geosciences, Inc. was used for the investigation. A description of the geophysical methods is provided as Appendix 2.

Thermal Conductivity

The investigation was conducted using in-situ thermal conductivity equipment to determine the thermal conductivity (in W/m^oK) of soils. The test was performed using the Hukseflux FTN01 Field Thermal Conductivity System. The test was performed using the transient heat method in accordance with IEEE Standard 442-2017 and ASTM D5334-08. The investigation was conducted at three locations at depths of 1, 3 and 3 feet. A second test was done to the north of C303 due to shallow rock at C303. The locations of the thermal conductivity test locations are shown on Figure 1. A description of the conductivity method is provided as Appendix 2.

3.0 Survey Results

The tabulated results of the electrical resistivity survey and thermal conductivity are presented in Appendix 1. Notes about site conditions, possible interference sources and line orientations are provided for each location.

4.0 Limitations

The results of this resistivity survey are based on our professional evaluation of the data and our experience with such investigations. The survey was performed in general accordance with ASTM Standards G57-95a entitled “Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Electrode Method”. The results provided in this report meet the standards of care for our profession. No other warranty or representation, either expressed or implied, is included or intended.

APPENDIX 1
FIGURE, SITE PHOTOGRAPHS AND TEST RESULTS

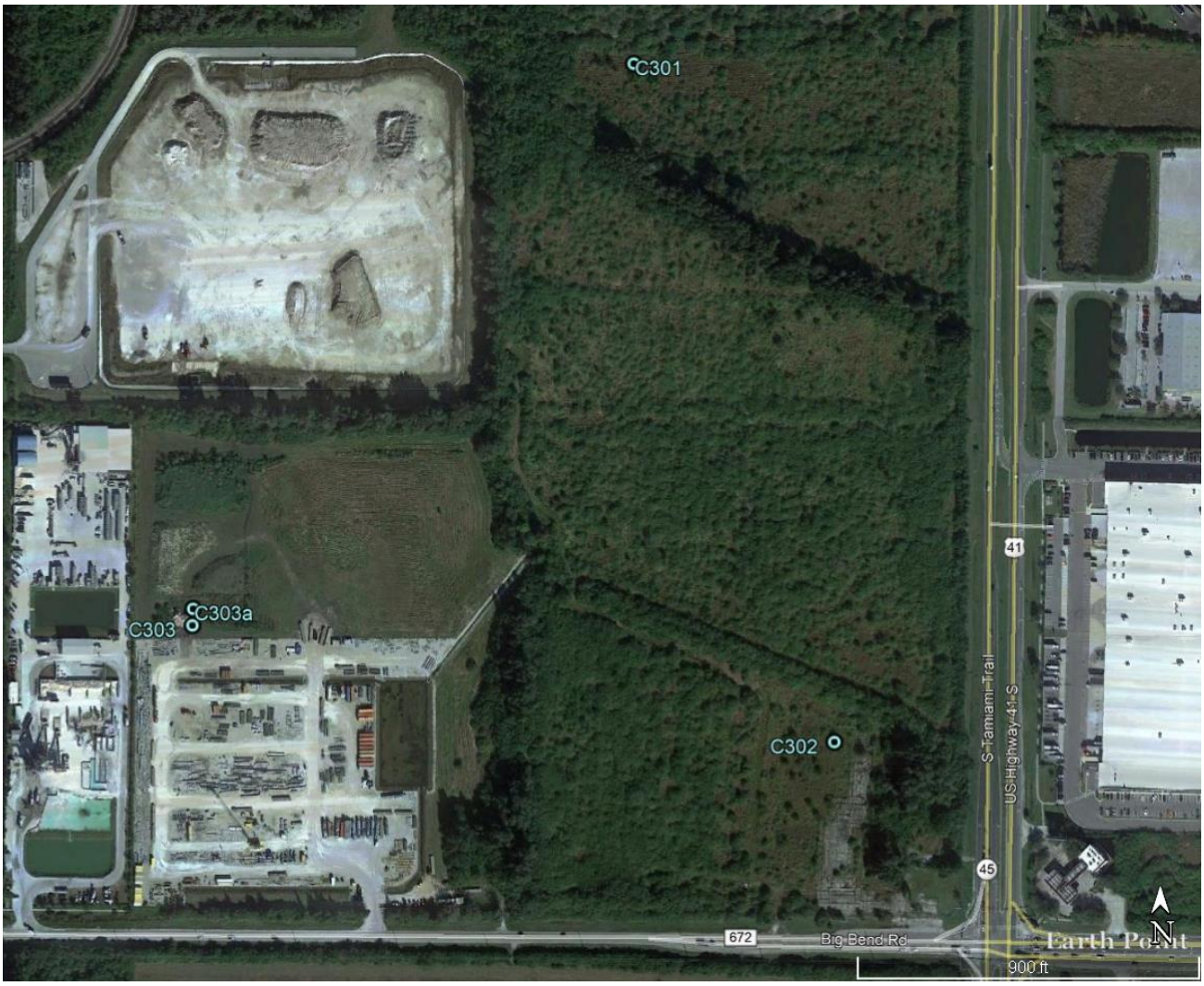


FIGURE 1 – LOCATIONS OF TESTS

Point	Latitude	Longitude
C301	27.798895	-82.387333
C302	27.794022	-82.385703
C303	27.794859	-82.390923
C303a	27.794978	-82.390918

COORDINATES OF TEST LOCATIONS



SITE PHOTOGRAPH1 – C301



SITE PHOTOGRAPH 2 – C302



SITE PHOTOGRAPH 3 – C303

ELECTRICAL RESISTIVITY

In Situ Electrical Soil Resistivity Measurement Data Form

Revision 0

Wenner Array

Project Name:	Big Bend 2 Project
Project Location:	Hillsborough County, Florida
Company:	GeoView, Inc. Project No. 32921
Personnel:	W. Wade
Date:	3/17/2021
Measurement No. & Orientation:	C-301 North to South
Coordinates:	27.798895, -82.387333
Ground Conditions:	Low Grass (mowed)
Weather (Present and Recent):	75, sunny
Meter Model Type:	AGI Supersting R8
Test Calibration Date:	3/17/2021

Notes:

Electrode "a" Spacing (ft)	Preferred Electrode Depth (in)	Actual Electrode Depth (in)	Electrode Configuration					Apparent Resistance (Ohm)	Apparent Resistivity (Ohm-ft)	Apparent Resistivity (Ohm-m)
			A (ft)	M (ft)	0	N (ft)	B (ft)			
2.5	3	3	3.75	1.25		1.25	3.75	14.6	229.3	69.9
5	4	4	7.5	2.5		2.5	7.5	4.501	141.4	43.1
10	6	6	15	5		5	15	1.512	95.0	29.0
15	8	8	22.5	7.5		7.5	22.5	0.8629	81.3	24.8

In Situ Electrical Soil Resistivity Measurement Data Form

Revision 0

Wenner Array

Project Name:	Big Bend 2 Project
Project Location:	Hillsborough County, Florida
Company:	GeoView, Inc. Project No. 32921
Personnel:	W. Wade
Date:	3/17/2021
Measurement No. & Orientation:	C-301 East to West
Coordinates:	27.798895, -82.387333
Ground Conditions:	Low Grass (mowed)
Weather (Present and Recent):	75, sunny
Meter Model Type:	AGI Supersting R8
Test Calibration Date:	3/17/2021

Notes:

Electrode "a" Spacing (ft)	Preferred Electrode Depth (in)	Actual Electrode Depth (in)	Electrode Configuration					Apparent Resistance (Ohm)	Apparent Resistivity (Ohm-ft)	Apparent Resistivity (Ohm-m)
			A (ft)	M (ft)	0	N (ft)	B (ft)			
2.5	3	3	3.75	1.25		1.25	3.75	19.24	302.3	92.1
5	4	4	7.5	2.5		2.5	7.5	5.45	171.2	52.2
10	6	6	15	5		5	15	1.566	98.4	30.0
15	8	8	22.5	7.5		7.5	22.5	0.8385	79.0	24.1

In Situ Electrical Soil Resistivity Measurement Data Form

Revision 0

Wenner Array

Project Name:	Big Bend 2 Project	Notes:
Project Location:	Hillsborough County, Florida	
Company:	GeoView, Inc. Project No. 32921	
Personnel:	W. Wade	
Date:	3/17/2021	
Measurement No. & Orientation:	C-302 NE/SW	
Coordinates:	27.794022, -82.385703	
Ground Conditions:	Low Grass (mowed)	
Weather (Present and Recent):	75, sunny	
Meter Model Type:	AGI Supersting R8	
Test Calibration Date:	3/17/2021	

Electrode "a" Spacing (ft)	Preferred Electrode Depth (in)	Actual Electrode Depth (in)	Electrode Configuration					Apparent Resistance (Ohm)	Apparent Resistivity (Ohm-ft)	Apparent Resistivity (Ohm-m)
			A (ft)	M (ft)	0	N (ft)	B (ft)			
2.5	3	3	3.75	1.25		1.25	3.75	20.66	324.6	98.9
5	4	4	7.5	2.5		2.5	7.5	7.027	220.8	67.3
10	6	6	15	5		5	15	2.264	142.3	43.4
15	8	8	22.5	7.5		7.5	22.5	1.294	122.0	37.2

In Situ Electrical Soil Resistivity Measurement Data Form

Revision 0

Wenner Array

Project Name:	Big Bend 2 Project	Notes:
Project Location:	Hillsborough County, Florida	
Company:	GeoView, Inc. Project No. 32921	
Personnel:	W. Wade	
Date:	3/17/2021	
Measurement No. & Orientation:	C-302 NW/SE	
Coordinates:	27.794022, -82.385703	
Ground Conditions:	Low Grass (mowed)	
Weather (Present and Recent):	75, sunny	
Meter Model Type:	AGI Supersting R8	
Test Calibration Date:	3/17/2021	

Electrode "a" Spacing (ft)	Preferred Electrode Depth (in)	Actual Electrode Depth (in)	Electrode Configuration					Apparent Resistance (Ohm)	Apparent Resistivity (Ohm-ft)	Apparent Resistivity (Ohm-m)
			A (ft)	M (ft)	0	N (ft)	B (ft)			
2.5	3	3	3.75	1.25		1.25	3.75	15.55	244.2	74.4
5	4	4	7.5	2.5		2.5	7.5	6.152	193.3	58.9
10	6	6	15	5		5	15	2.287	143.7	43.8
15	8	8	22.5	7.5		7.5	22.5	1.258	118.6	36.1

In Situ Electrical Soil Resistivity Measurement Data Form

Revision 0

Wenner Array

Project Name:	Big Bend 2 Project	Notes:
Project Location:	Hillsborough County, Florida	
Company:	GeoView, Inc. Project No. 32921	
Personnel:	W. Wade	
Date:	3/17/2021	
Measurement No. & Orientation:	C-303 North to South	
Coordinates:	27.794859, -82.390923	
Ground Conditions:	Recently churned up soil.	
Weather (Present and Recent):	75, sunny	
Meter Model Type:	AGI Supersting R8	
Test Calibration Date:	3/17/2021	

Electrode "a" Spacing (ft)	Preferred Electrode Depth (in)	Actual Electrode Depth (in)	Electrode Configuration					Apparent Resistance (Ohm)	Apparent Resistivity (Ohm-ft)	Apparent Resistivity (Ohm-m)
			A (ft)	M (ft)	0	N (ft)	B (ft)			
2.5	3	3	3.75	1.25		1.25	3.75	3.01	47.3	14.4
5	4	4	7.5	2.5		2.5	7.5	1.469	46.1	14.1
10	6	6	15	5		5	15	0.6905	43.4	13.2
15	8	8	22.5	7.5		7.5	22.5	0.4597	43.3	13.2

In Situ Electrical Soil Resistivity Measurement Data Form

Revision 0

Wenner Array

Project Name:	Big Bend 2 Project
Project Location:	Hillsborough County, Florida
Company:	GeoView, Inc. Project No. 32921
Personnel:	W. Wade
Date:	3/17/2021
Measurement No. & Orientation:	C-303 East to West
Coordinates:	27.794859, -82.390923
Ground Conditions:	Recently churned up soil.
Weather (Present and Recent):	75, sunny
Meter Model Type:	AGI Supersting R8
Test Calibration Date:	3/17/2021

Notes:

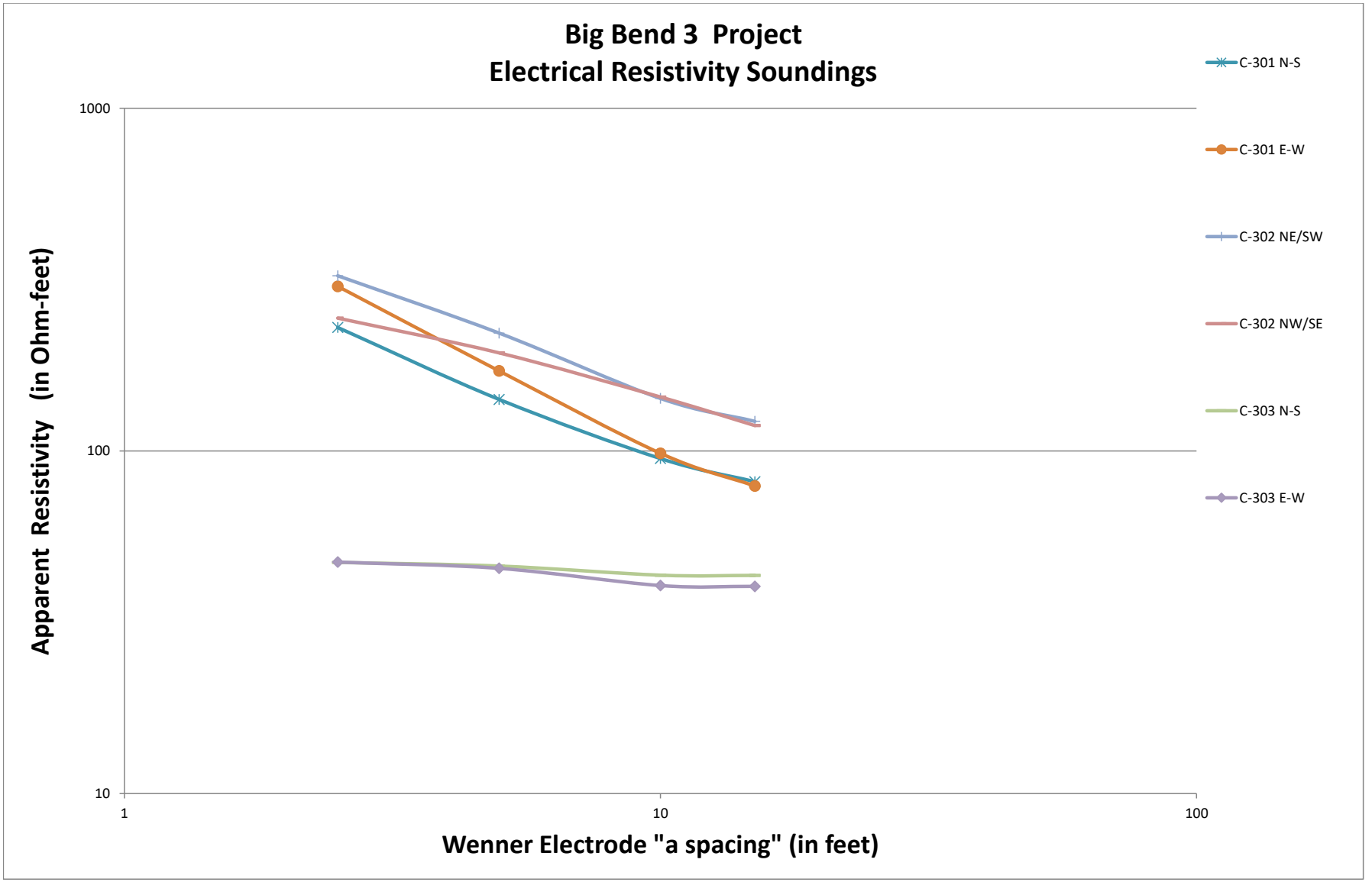
Electrode "a" Spacing (ft)	Preferred Electrode Depth (in)	Actual Electrode Depth (in)	Electrode Configuration					Apparent Resistance (Ohm)	Apparent Resistivity (Ohm-ft)	Apparent Resistivity (Ohm-m)
			A (ft)	M (ft)	0	N (ft)	B (ft)			
2.5	3	3	3.75	1.25		1.25	3.75	3.017	47.4	14.4
5	4	4	7.5	2.5		2.5	7.5	1.446	45.4	13.8
10	6	6	15	5		5	15	0.6441	40.5	12.3
15	8	8	22.5	7.5		7.5	22.5	0.4272	40.3	12.3

Project: Big Bend 3
GeoView Project 32921
Location: Hillsborough County, Florida
Date: 4/7/2021

Electrode "a" spacing (ft)	Apparent Resistance (ohm)					
	C-301	**C-301**	**C-302**	**C-302**	**C-303**	**C-303**
	N-S	E-W	NE/SW	NW/SE	N-S	E-W
2.5	*14.600*	*19.240*	*20.660*	*15.550*	*3.010*	*3.017*
5	*4.501*	*5.450*	*7.027*	*6.152*	*1.469*	*1.446*
10	*1.512*	*1.566*	*2.264*	*2.287*	*0.691*	*0.644*
15	*0.863*	*0.839*	*1.294*	*1.258*	*0.460*	*0.427*

Electrode "a" spacing (ft)	Apparent Resistivity (ohm-ft)					
	C-301	**C-301**	**C-302**	**C-302**	**C-303**	**C-303**
	N-S	E-W	NE/SW	NW/SE	N-S	E-W
2.5	*229.30*	*302.30*	*324.60*	*244.20*	*47.28*	*47.39*
5	*141.40*	*171.20*	*220.80*	*193.30*	*46.14*	*45.43*
10	*95.02*	*98.41*	*142.30*	*143.70*	*43.39*	*40.47*
15	*81.33*	*79.02*	*122.00*	*118.60*	*43.33*	*40.26*

Electrode "a" spacing (ft)	Apparent Resistivity (ohm-m)					
	C-301	**C-301**	**C-302**	**C-302**	**C-303**	**C-303**
	N-S	E-W	NE/SW	NW/SE	N-S	E-W
2.5	*69.89*	*92.14*	*98.94*	*74.43*	*14.41*	*14.44*
5	*43.10*	*52.18*	*67.30*	*58.92*	*14.06*	*13.85*
10	*28.96*	*30.00*	*43.37*	*43.80*	*13.23*	*12.34*
15	*24.79*	*24.09*	*37.19*	*36.15*	*13.21*	*12.27*


Big Bend 3 Project
Electrical Resistivity Soundings
Apparent Resistivity (in Ohm-feet)
1000
100
10
1
10
100
Wenner Electrode "a spacing" (in feet)
C-301 N-S
C-301 E-W
C-302 NE/SW
C-302 NW/SE
C-303 N-S
C-303 E-W

THERMAL CONDUCTIVITY

In Situ Thermal Conductivity Measurement Data Form

Project Name: Big Bend 3 Project
Project Location: Hillsborough County, Florida
Company: GeoView Project # 32921
Date: 4/7/2021
Meter Model Type: Hukseflux FTN01

Test Location	Depth (feet)	Testing Type	Standard Devation (%)	Thermal Conductivity (W/mK)	Notes
C301	1	in-situ	0.06	4.46	0 to 2 feet - Sand 2 to 2.4 feet - Sandy Clay 2.4 to 2.7 feet - Sandy Clay with Rock (27.798895, -82.387333)
	2	in-situ	0.15	2.58	
	3	in-situ	0.08	2.58	
C302	1	in-situ	0.18	2.77	0 to 1.5 feet - Sand 2 to 2.4 feet - Sandy Clay 2.2 to 2.7 feet - Clayey Sand with Rock (27.794022, -82.385703)
	2	in-situ	0.10	2.13	
	3	in-situ	0.04	2.15	
C303	1	in-situ	0.14	3.07	0 to 1.5 feet - Sand 1.5 feet - Rock (refusal) (27.794859, -82.390923)
	2	in-situ	-	-	
	3	in-situ	-	-	
C303a	1	in-situ	-	-	(moved 38 feet north) 0 to 2.4 feet - Sand 2.4-2.7 feet - Clayey Sand with Rock (27.794978, -82.390918)
	2	in-situ	0.08	2.03	
	3	in-situ	0.02	0.37	

Appendix 2
Description of Geophysical Methods

Electrical Resistivity

Electrical resistivity surveying is a geophysical technique in which an electrical current is injected into the earth, the subsequent response (potential) is measured at the ground surface to determine the resistance of the underlying earth materials. The resistivity survey is conducted by applying electrical current into the earth from two implanted electrodes (current electrodes C_1 and C_2) and measuring the associated potential between a second set of implanted electrodes (potential electrodes P_1 and P_2). Field readings are in volts. Field readings are then converted to resistivity values using Ohm's Law and a geometric correction factor for the spacing and configuration of the electrodes. The calculated resistivity values are known as "apparent" resistivity values. The values are referred to as "apparent" because the calculations for the values assume that the volume of earth material being measured is electrically homogeneous. Such field conditions are rarely present.

Resistivity of earth materials is controlled by several properties including composition, water content, pore fluid resistivity and effective permeability. In Florida, the typical properties that influence the measurements the most are soil material (e.g.; sand vs. clay), degree of saturation and pore fluid conductivity (e.g.; fresh vs. brackish or salt water).

Resistivity surveys are designed to delineate either vertical (with depth) or horizontal (lateral) changes in resistivity. Surveys designed for vertical changes in resistivity are referred as vertical electrical soundings (VES). Surveys designed for lateral changes in resistivity are referred to as horizontal electrical profiling (HEP). For this survey vertical changes in earth resistivity were of concern.

In a VES survey, the spacing between the electrodes is increased to provide a progressively deeper measurement of earth resistance. A common center between the electrodes is maintained for a VES survey. For this survey a "Wenner" array electrode configuration was used. In such a configuration, the spacing between the electrodes is kept constant and is referred to as the "a spacing". Current is applied to the outside electrodes and voltage measurements are collected across the two inner electrodes. Apparent resistivity values are calculated using the following formula: $\gamma_a = 2\pi a \nabla V / I$:

Where:

γ_a= apparent resistivity

π= 3.14

a= “a spacing”

∇V= voltage between the two potential electrodes

I= current (in amps)

Thermal Conductivity Testing

The purpose of the thermal conductivity testing is to provide the thermal conductivity (in W/m ^oK) or thermal resistivity (in ^oK cm/W) of soils to a selected depth. The tests can be performed either in-situ or samples that are collected in the field and analyzed by a laboratory. Both tests are performed using the transient heat method and are conducted in accordance with IEEE Standard 442-1996 and ASTM D5334-08.

The thermal conductivity is determined by a variation of the line source test method using a needle probe which has a large length to diameter ratio. This is done to simulate an infinitely long heating source. The instrument probe consists of a heating element and a temperature measuring element which is inserted in the specimen. This can be done either with a lab sample or in-situ with a specifically designed probe system. GeoView uses the Hukseflux FTN01 Field Thermal Conductivity System for in-situ field testing.

During the test a known current and voltage is applied to the heating element of the probe and the temperature rise in the measurement element is measured over a specific period of time. The thermal conductivity is obtained from an analysis of the time-series temperature data during the heating cycle. Temperature decay can also be measured during the cooling cycle in order to minimize the effects of temperature drift during measurement

Form No. TR-2370-LEX-D5334R
Revision No. 0a
Revision Date: 12/02/20
Quality Assurance

THERMAL CONDUCTIVITY AND RESISTIVITY OF SOIL

ASTM D5334

S&ME, Inc. - Lexington 2020 Liberty Rd. Suite 105 Lexington, KY 40505

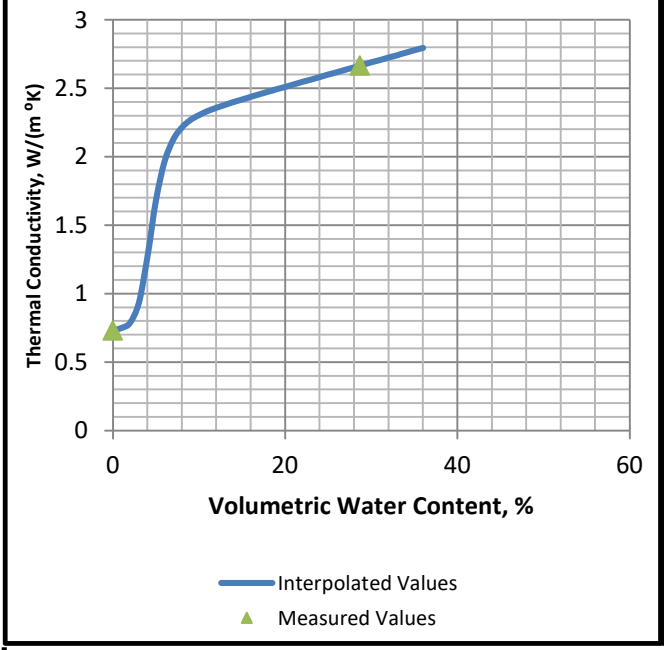
Project No.:	210810		Report Date: 04/13/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project		Test Date(s): 04/02/21
Boring #:	C301		Sample Date: 03/11/21
			Depth (ft): 1 - 3

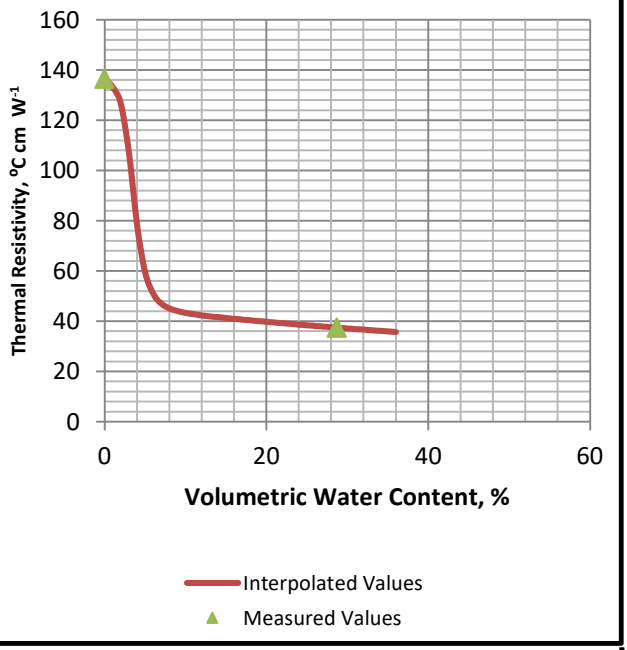
Soil Information

Sample Description:	Brown Poorly graded sand with silt with shells		SP-SM
Min. Electrical Resist., Ω-cm:	ND	Liquid Limit: NP	% Fines: 5.2
Target Dry Density, pcf.:	105.9	Plastic Index: NP	% Clay size: 4.1
Target MC, % grav:	17.0	Intact Specimen	pH: ND

Test Information

Specimen Diameter, in.:	4.00	Probe: TR-3	Ambient Temperature, °C: 24
Specimen Height, in:	8.00	Meter: Tempos	
Specimen Dry Density, pcf:	106.3	Specimen Gravimetric Water Content, %: 16.9	





		Thermal Conductivity	Thermal Resistivity
0.0%	volumetric water content:	**0.73** W/(m-K)	**137** °C cm W^{-1}
28.7%	volumetric water content:	**2.67** W/(m-K)	**38** °C cm W^{-1}

Interpolated values based on two points and a model for the shape of curves for thermal conductivity of soil, reference Decagon Application Note at: http://www.decagon.com/assets/Uploads/13994-01-AN-Producing-Thermal-Dryout-Curves-for-Buried-Cable-Applications.pdf

Notes / Deviations:

Jacob Folsom		Associate Project Manager	4/13/2021
Technical Responsibilty	*Signature*	*Position*	*Date*

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THERMAL CONDUCTIVITY AND RESISTIVITY OF SOIL

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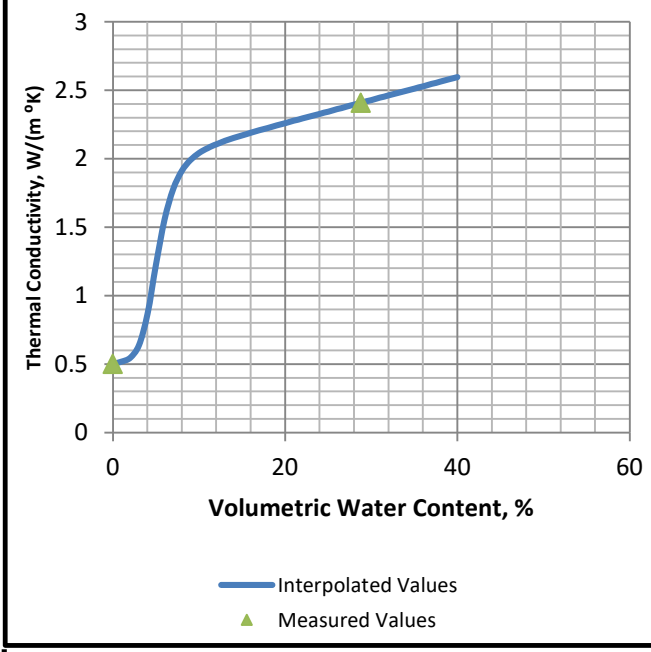
Project No.:	210810		Report Date: 04/13/21
Project Name:	Big Bend Power Station - Big Bend 3 Solar Project		Test Date(s): 04/02/21
Boring #:	C302		Sample Date: 03/11/21
			Depth (ft): 1 - 3

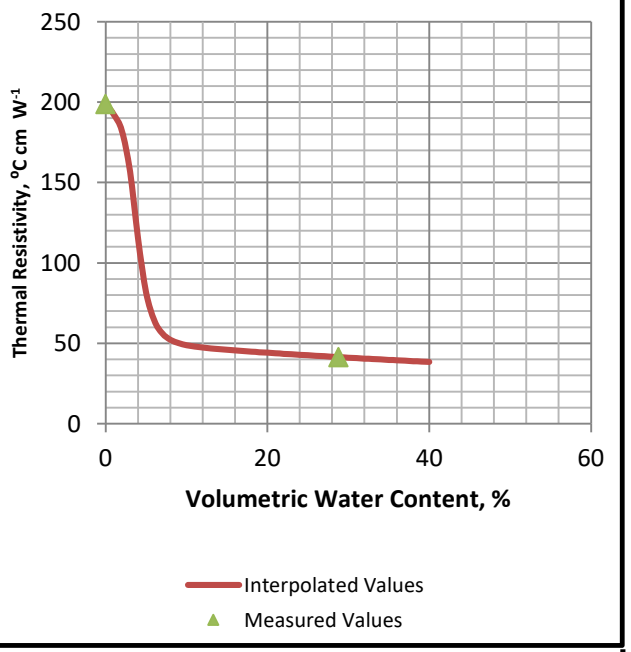
Soil Information

Sample Description:	Brown Poorly graded sand with silt		SP-SM
Min. Electrical Resist., Ω-cm:	ND	Liquid Limit: NP	% Fines: 8.3
Target Dry Density, pcf.:	100.1	Plastic Index: NP	% Clay size: 6.1
Target MC, % grav:	17.9	Intact Specimen	pH: ND

Test Information

Specimen Diameter, in.:	4.00	Probe: TR-3	Ambient Temperature, °C: 24
Specimen Height, in:	8.00	Meter: Tempos	
Specimen Dry Density, pcf:	100.4	Specimen Gravimetric Water Content, %: 17.9	





		Thermal Conductivity	Thermal Resistivity
0.0%	volumetric water content:	**0.50** W/(m-K)	**199** °C cm W^{-1}
28.8%	volumetric water content:	**2.41** W/(m-K)	**42** °C cm W^{-1}

Interpolated values based on two points and a model for the shape of curves for thermal conductivity of soil, reference Decagon Application Note at: http://www.decagon.com/assets/Uploads/13994-01-AN-Producing-Thermal-Dryout-Curves-for-Buried-Cable-Applications.pdf

Notes / Deviations:

Jacob Folsom		Associate Project Manager	4/13/2021
Technical Responsibilty	*Signature*	*Position*	*Date*

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THERMAL CONDUCTIVITY AND RESISTIVITY OF SOIL

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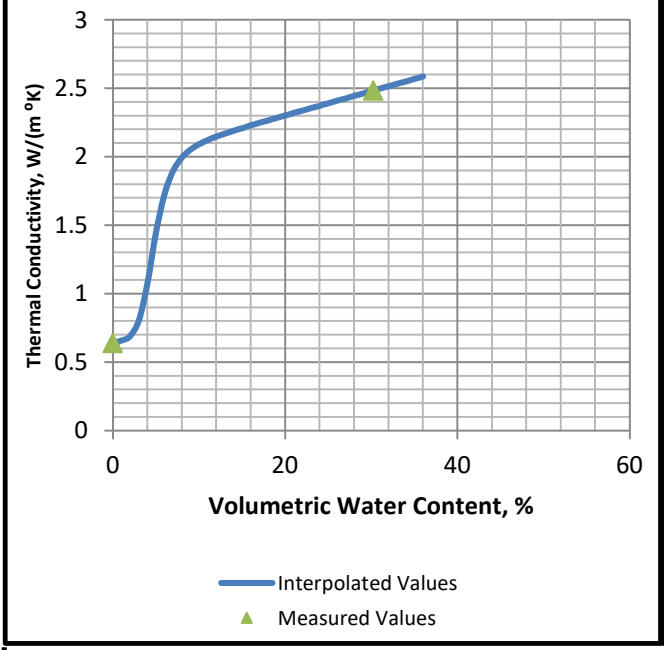
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Project Name:	Big Bend Power Station - Big Bend 3 Solar Project		Test Date(s): 04/02/21
Boring #:	C303		Sample Date: 03/11/21
			Depth (ft): 1 - 3

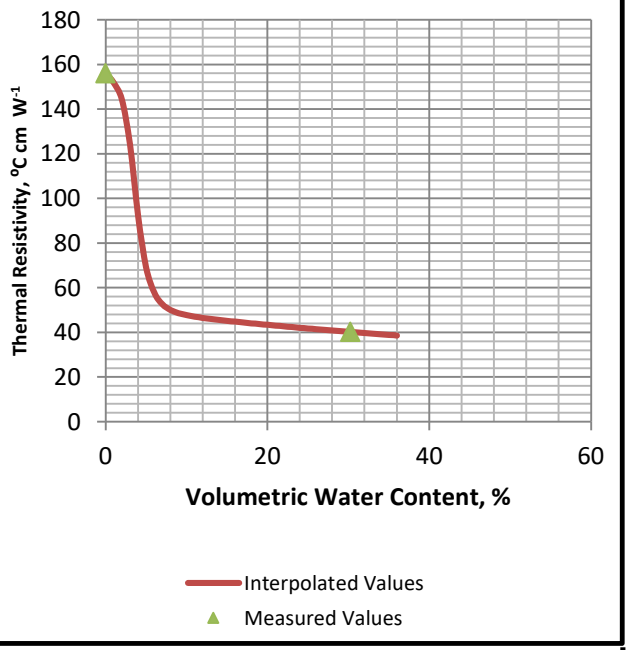
Soil Information

Sample Description:	Gray Poorly graded sand with silt and gravel (shells)				SP-SM
Min. Electrical Resist., Ω-cm:	ND	Liquid Limit:	NP	% Fines:	6.5
Target Dry Density, pcf.:	106.2	Plastic Index:	NP	% Clay size:	4.8
Opt. MC, % grav:	17.8	Intact Specimen		pH:	ND

Test Information

Specimen Diameter, in.:	4.00	Probe:	TR-3	Ambient Temperature, °C:	24
Specimen Height, in:	8.00	Meter:	Tempos		
Specimen Dry Density, pcf:	106.7			Specimen Gravimetric Water Content, %:	17.7





		Thermal Conductivity	Thermal Resistivity
0.0%	volumetric water content:	**0.64** W/(m-K)	**156** °C cm W^{-1}
30.2%	volumetric water content:	**2.48** W/(m-K)	**40** °C cm W^{-1}

Interpolated values based on two points and a model for the shape of curves for thermal conductivity of soil, reference Decagon Application Note at: http://www.decagon.com/assets/Uploads/13994-01-AN-Producing-Thermal-Dryout-Curves-for-Buried-Cable-Applications.pdf

Notes / Deviations:

Jacob Folsom		Associate Project Manager	4/13/2021
Technical Responsibilty	*Signature*	*Position*	*Date*

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TAB 6

APPENDIX D
GROUND PHOTOGRAPHS



Photograph No. 1. View of W1 facing west.



Photograph No. 2. View of OSW1 facing south along roadside.



Photograph No. 3. View of OSW1 (middle of system) facing west.



Photograph No. 4. View of OSW1 at western terminus.



Photograph No. 5. View of OSW2 facing west.



Photograph No. 6. View of OSW3 facing south along roadside.



Photograph No. 7. View of OSW3 facing northwest.



Photograph No. 8. View of OSW4 facing northwest.



Photograph No. 9. View of OSW4 at north headwall.



Photograph No. 10. View of OSW5 facing south along roadside.



Photograph No. 11. View of OSW6 facing south along roadside.



Photograph No. 12. View of OSW7 facing south along roadside.



Photograph No. 13. View of OSW8 facing south along roadside.



Photograph No. 14. View of OSW9 facing east along roadside.

TAB 7

APPENDIX E
DRAINAGE REPORT

CULPEPPER & TERPENING INC

CULPEPPER & TERPENING, INC.

CONSULTING ENGINEERS, LAND SURVEYORS



BIG BEND III
SOLAR ENERGY CENTER

HILLSBOROUGH COUNTY, FLORIDA

DRAINAGE CALCULATIONS

June 2021
C&T Project No. 20-215
Certificate of Authorization No. 4286

PREPARED BY
Culpepper & Terpening, Inc.
2980 South 25th Street
Fort Pierce, Florida 34982
Tel. (772) 464-3537
www.ct-eng.com

PREPARED FOR
Tampa Electric Company
702 N. Franklin Street
Plaza 8
Tampa, Florida 33602

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SECTION 1 – GENERAL INFORMATION

1.1. Facility Information

Tampa Electric Company is proposing a Solar Power Generation Facility (the "Facility") known as "Big Bend III Solar". The Facility is located within Section 10, Township 31S, Range 19E of Hillsborough County.

The Facility is generally located north of Big Bend Road, east of Wyandotte Road, and west of N. U.S. Highway 41 (State Road 45) in Hillsborough County, Florida. A general location map is shown in Figure 1 "Location Map" on page 3.

The facility is located on an approximately 93.27 acre site. The facility will generate 15.52 MW of power generation and will include the following features: solar array panels, 0.04 acres of associated inverters, and 1.44 acres of semi pervious gravel pathways. An existing 1.07 acres of impervious area historically exists. Therefore, there is a net increase of 0.40 acres of impervious area.

The site is historically old farmland, but has been fallow for an extended period of time. The existing drainage system consists of sheet overflow. Minimal site grading will be undertaken as part of the solar development.

In review of FEMA Flood Maps No. 12057C0492H for Hillsborough County, dated August 28, 2008, the full site is located within FEMA Flood Zone Designation of Zone AE. Figure 2 "FEMA Flood Map" on page 4 displays this data. Further, this data was used for purpose of analysis for the 100 Year, 24 Hour Storm Event. However, as the site lies within a tidal area, no adverse impacts to the floodplain will occur. Further, inverters and PV solar arrays are elevated above the 200 Year stage on piles to minimize the earthwork within the floodplain.

The site study area is divided into one (1) onsite Drainage Basin. The site ultimately discharges northwest to the Tampa Bay. The site development plan has considered the historical drainage patterns and no alterations to them are proposed as part of this project. The Pre-Development Basin Map is included on page 5 and the Post-Development Basin Map is included on page 6.

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Figure 1 – Location Map

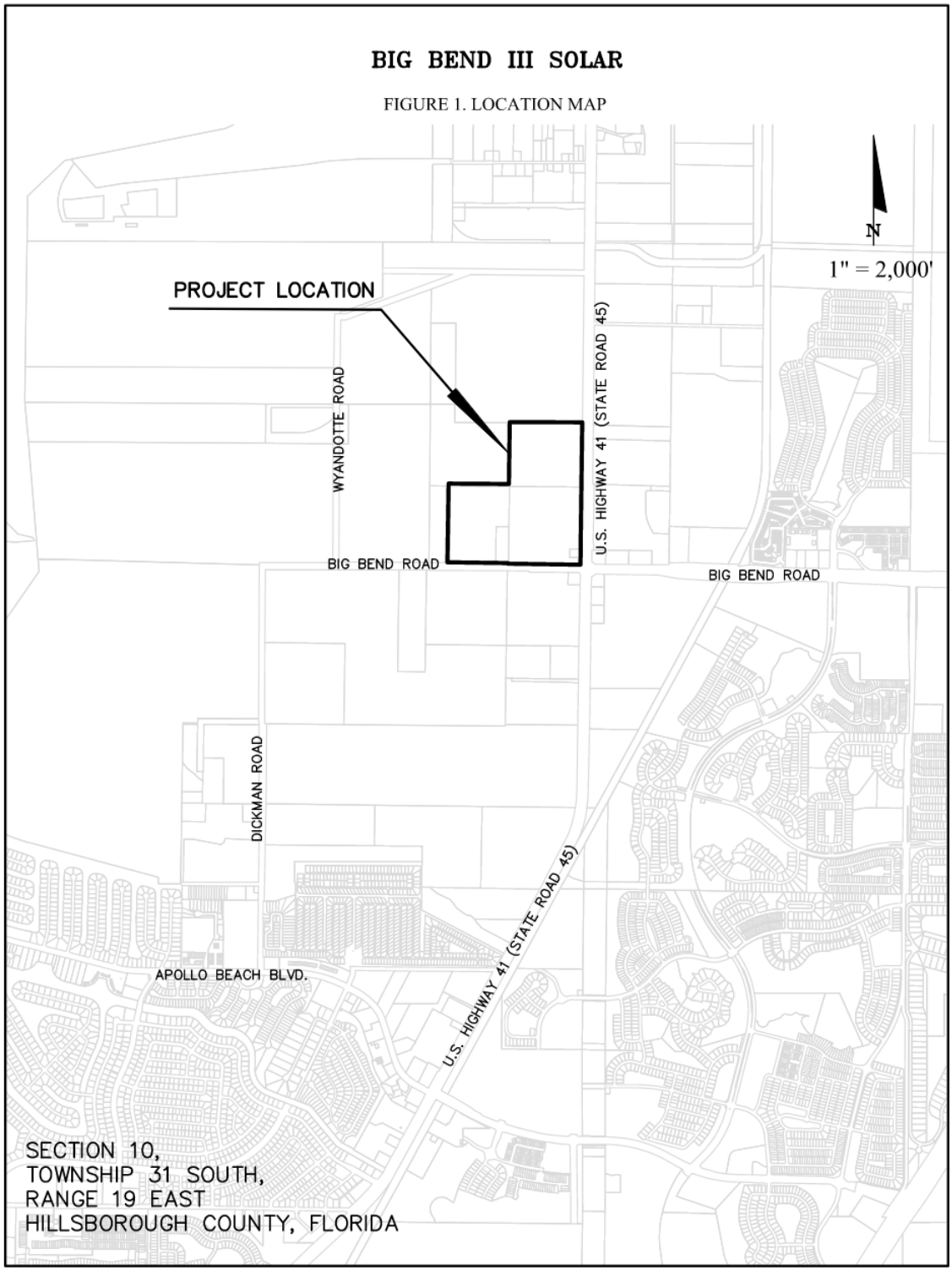


Figure 2 – FEMA Flood Map

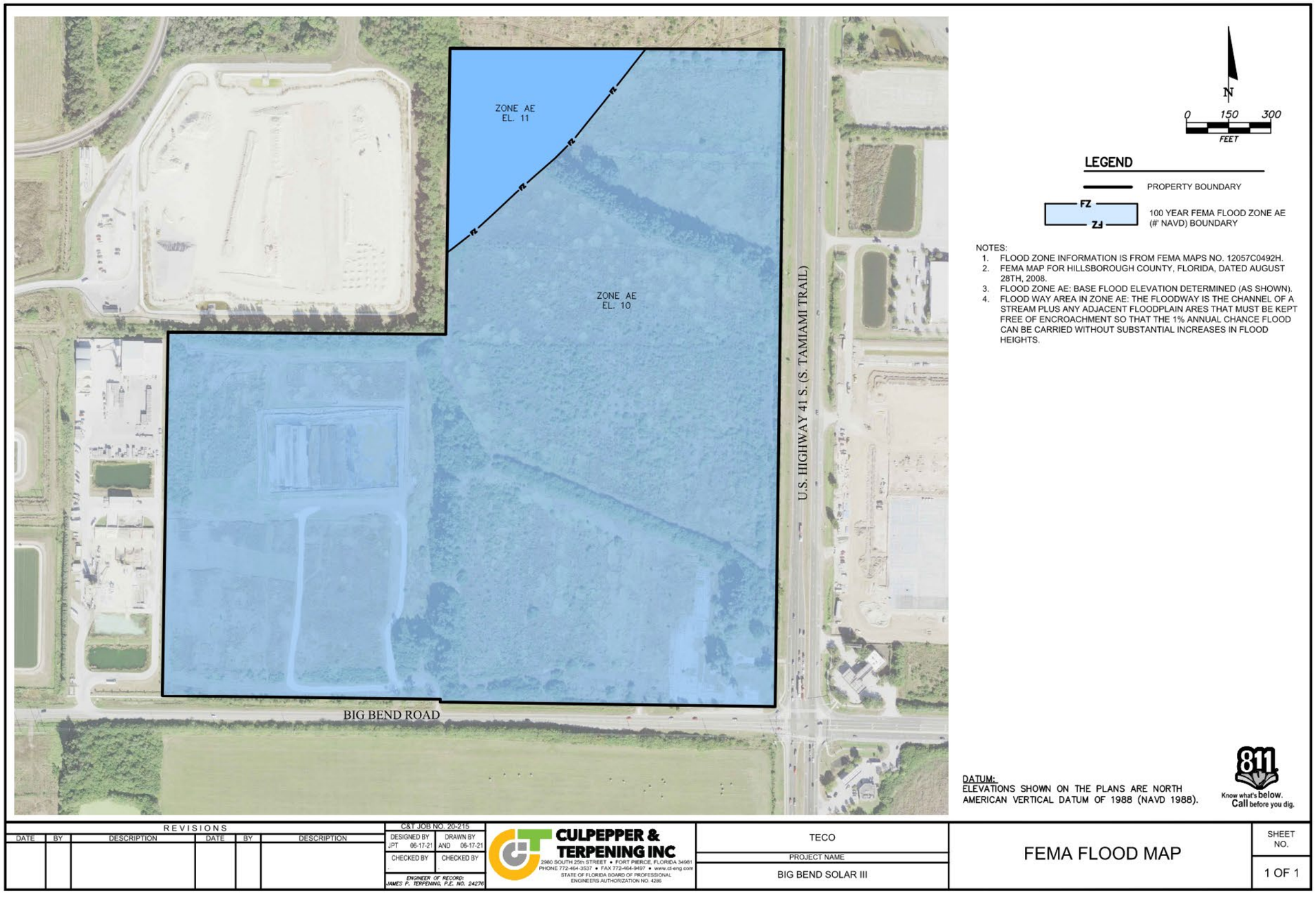


Figure 3 – Pre-Development Basin Map

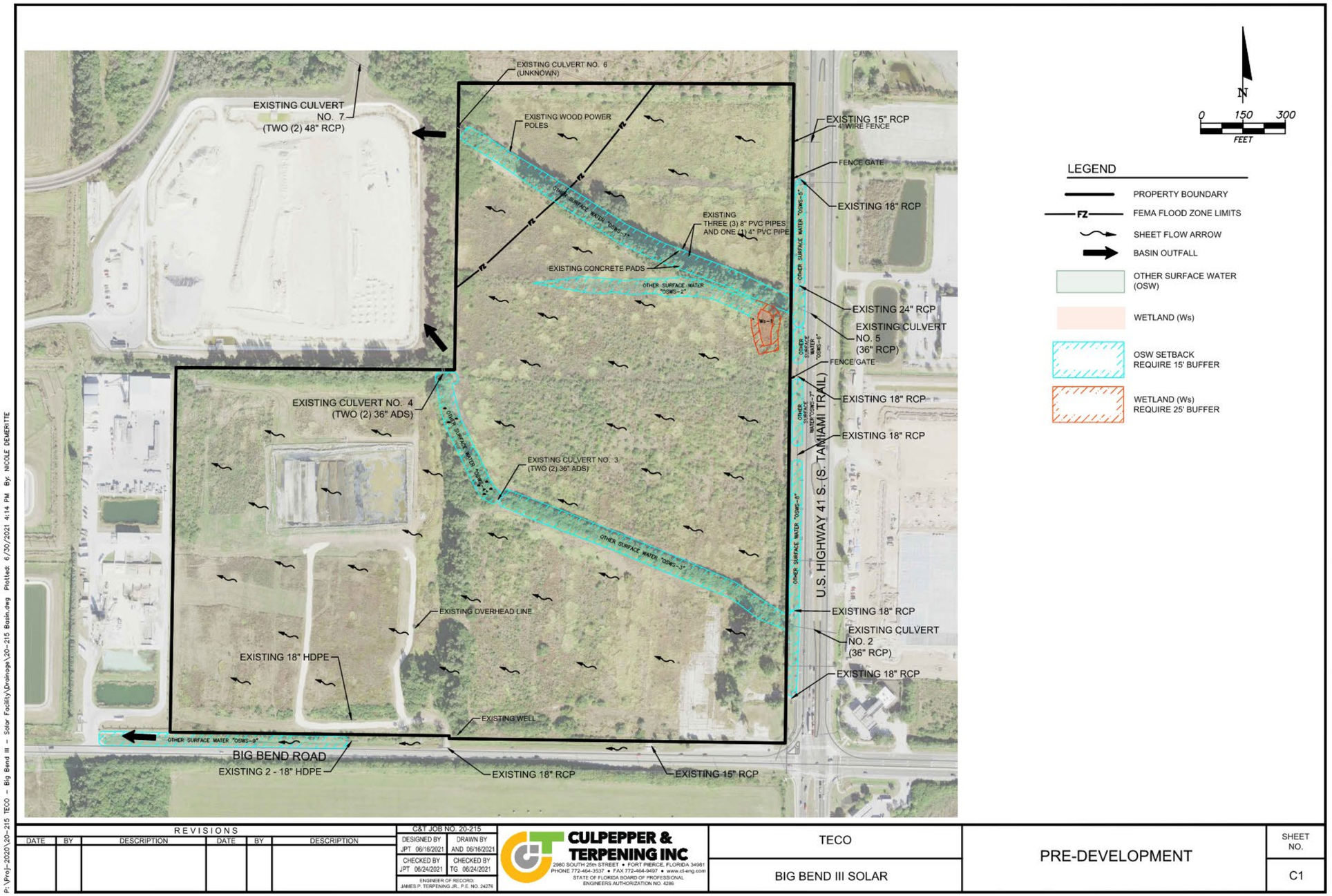
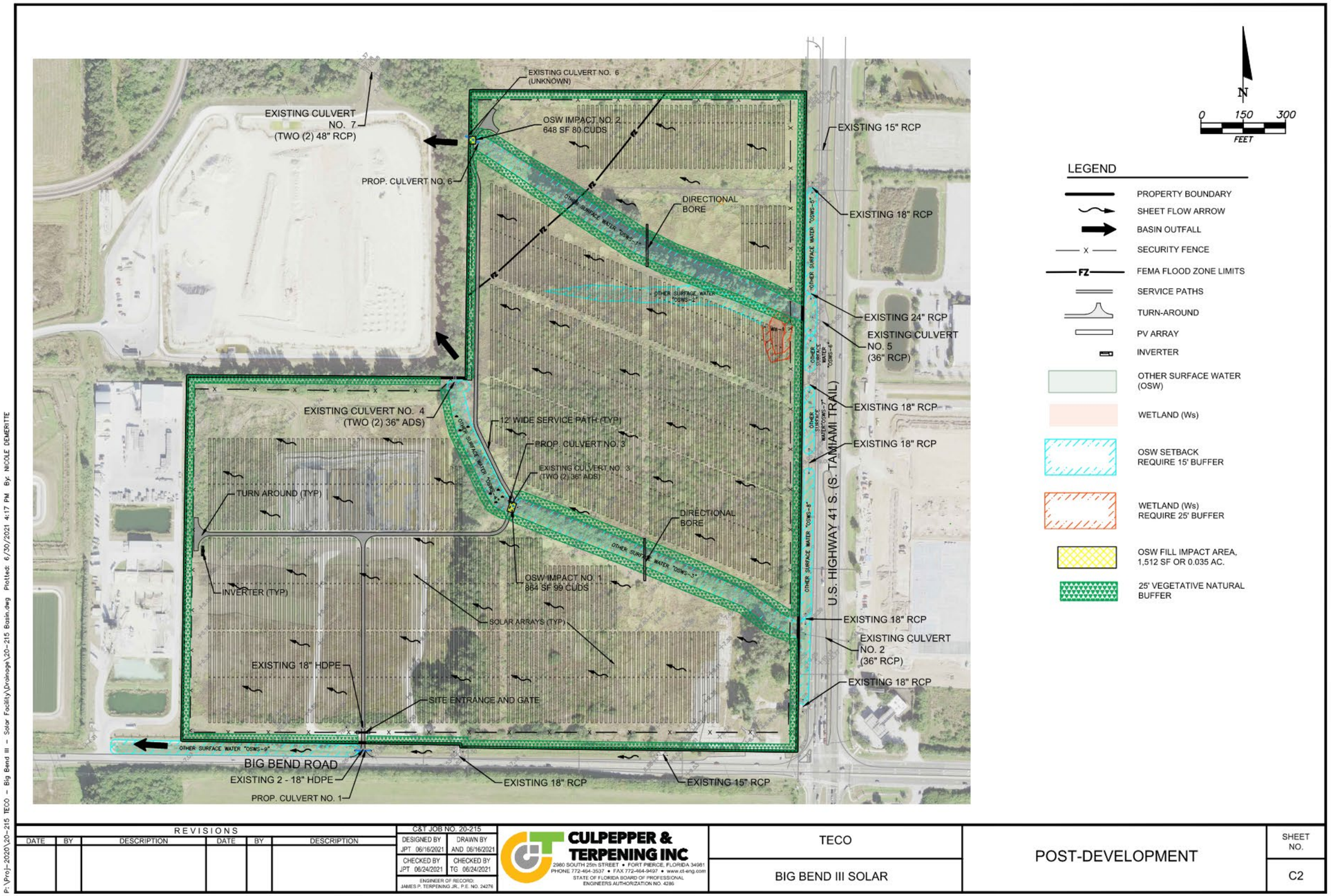


Figure 4 – Post-Development Basin Map



SECTION 2 – DESIGN APPROACH

The Facility will be designed such that no adverse water quantity or quality to the receiving waters will occur as a result of the development of the Facility, as required by the Southwest Florida Water Management District (the "SWFWMD") regulations and under Section 62-330.304 of the Florida Administrate Code. The facility will be designed in accordance with a "Civil Light" approach.

2.1. Civil Light Design Elements

The Civil Light Design Elements include:

- Minimize grading by utilizing existing historical drainage patterns;
- Minimize grading by using sheet flow conveyance at or near existing grade;
- Grassing of site (less semi-impervious areas);
- Minimize the introduction of impervious area by using semi-impervious materials i.e.: (rocked) pathways and (rocked) inverter pads;
- Inverters and PV solar arrays are elevated above the 200 year stage on piles to minimize the earthwork within the floodplain;
- Preservation of pre-development water quantity;
- Preservation of historical offsite drainage;
- In Basin compensation for any proposed fill located within the 100 year floodplain; and
- Vegetated Natural Buffers to provide water quality treatment of added semi-impervious area.

2.2. Design Requirements and Methodology

The design requirements and methodology is as follows:

2.2.1 Water Quantity

- Site will be analyzed on a pre-development versus post-development for water quantity.

2.2.2 Water Quality

- The Site will be analyzed as a singular drainage basin for water quality analysis;
- The project will be analyzed for water quality for the added impervious areas;
- In accordance with SWFWMD Applicant's Handbook Vol. II, Section 4.0 and per direction from FDEP during the pre-application meeting, the stormwater treatment volume shall be the runoff volume generated from the first 1.00 inch for the added impervious areas; and,
- All semi-impervious areas were considered full impervious for the purpose of the analysis.

2.2.3 Floodplain

- A review of the FEMA Flood Zone Maps will be completed. However, as the site lies within a tidal area, no adverse impacts to the floodplain will occur.

SECTION 3 – STORMWATER ANALYSIS

3.1. Pre-Development

3.1.1. Water Quantity

- The site ultimately discharge into Tampa Bay and the tailwater conditions are based on oceanic tidal conditions.

3.1.2. Water Quality

- The Pre-Development site was analyzed in accordance with the Harper Report 2007 Methodology for annual nutrient runoff volumes for both nitrogen and phosphorus;
- The Pre-Development nutrient loadings were determined based on the Harper Report 2007 tabular data; and
- A Pre-Development Land Use of Pasture was utilized for each basin, with a typical runoff concentration of nitrogen and phosphorus of 3.47 mg/l and 0.616 mg/l, respectively.

3.1.3. Floodplain Analysis

- The is located within FEMA Flood Map No. 12057C0492H for Hillsborough County, dated August 28, 2008;
- The full site is located within a Floodplain having a FEMA Flood Zone designation of AE; and
- A copy of the FEMA Flood Map is included as Figure 2 on page 4.
- County modeling data was obtained for the 100 year, 24 hour storm event in SWMM 5. The specific Hillsborough County SWMM 5 Hydrologic add-on was also obtained. Once properly installed, the 100 year, 24 hour storm event was run to ensure accuracy of the data. The 200 year, 24 hour storm event was then run with the information acquired to determine the results.

3.2. Post-Development

3.2.1. Water Quantity

- The existing drainage patterns are preserved in the Post-Development Condition;
- There is no proposed mass grading of the site, the hydraulic connectivity and outfalls are all preserved in the Post-Development Condition;
- The site ultimately discharges into Tampa Bay;
- Tailwater conditions are based on oceanic tidal conditions; and,
- Thus, a pre-development versus post-development analysis is not necessary as the post-development conditions will not have a negative impact on the downstream waterbody, the Gulf of Mexico/the Atlantic Ocean.

3.2.2. Water Quality

- The site was analyzed for Water Quality Volume based on 1 inch of runoff generated from the added impervious areas.

3.2.2.1. Vegetated Natural Buffers

- The stormwater runoff from the added impervious areas will be treated with Vegetated Natural Buffers (the "VNB");
- Vegetated Natural Buffers (the "VNB") are defined in the Florida Department of Environmental Protection (the "FDEP) and Water Management Districts Environmental Resource Permit Stormwater Quality Applicant's Handbook Design Requirements for Stormwater Treatment Systems in Florida, March 2001 Draft (the "Handbook"), as "Areas with vegetation suitable for nutrient uptake and soil stabilization that are set aside between developed areas and receiving water or wetland for stormwater treatment purposes."
- VNBs are further explained in the Handbook to serve as an effective best management (the "BMP") for the control of nonpoint source pollutants in overland flow systems. The VNB serves as an effective BMP by provided opportunities for the runoff from the developed areas to infiltrate and percolate into and through the soils.
- Additionally stated in the Handbook, VNBs are most commonly utilized as an alternative to swale/berm systems installed between the developed area and the receiving waters".
- Due the extremely low intensity of a Solar Project, the small contributing area of semi-impervious surfaces and large runs of grassed areas between the developed areas and the receiving waters, the Solar Projects lend themselves to be the perfect candidate for the VNB BMP treatment system.
- Furthermore, by restoration of the existing agricultural use to a natural grassland condition will greatly improve the site's ability to effectively utilize the VNB for maximum water quality benefits.
- The design of the Big Bend III Solar Project, incorporates the design criteria for Vegetative Natural Buffers, in accordance with the 2001 FDEP Handbook. The site was designed based on the VNB Design Criteria, and the project includes these VNB design features:
    - A minimum width of 25 feet;
    - Ground slopes less than a 6:1 slope;
    - Infiltration rate is greater than 1" per hour;
    - Length of the VNB, measured perpendicular to the runoff flow direction is at least as long as the contributing areas;
    - Runoff from the contributing area is evenly distributed across the buffer, so that short-circuiting does not occur;

- The VNBs will be placed in downstream areas within the basins so that runoff may be intercepted by the vegetative buffer prior to discharge.
- The VNB contains existing or planted vegetation suitable for infiltrating stormwater and soil stabilization; and,
- The site will be owned and operated by a single responsible entity.

3.2.2.2. Nutrient Analysis

- The Post-Development site was analyzed in accordance with the Harper Report 2007 Methodology for annual nutrient runoff volumes for both nitrogen and phosphorus;
- The Post-Development nutrient loadings were determined based on the Harper Report 2007 tabular data; and
- A Post-Development Land Use of Rangeland was utilized for each basin, with a typical runoff concentration of nitrogen and phosphorus of 1.15 mg/l and 0.055 mg/l, respectively.

3.2.3. Floodplain Analysis

- There are no anticipated negative impacts to Floodplain as a result of the at-grade proposed development.
- Inverters and PV solar arrays are elevated above the 200 Year stage on piles to minimize the earthwork within the floodplain.

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SECTION 4 – RESULTS

4.1. Water Quantity

There is no proposed mass grading of the site, the hydraulic connectivity and outfalls are all preserved in the Post-Development Condition. Restoration of the site to a natural grassland sheet flow condition, which had previously been agricultural pasture in the Pre-Development state results in increased time of concentration, decrease in the runoff Curve Number, and increased soil storage.

The site ultimately discharges into Tampa Bay and tailwater conditions are based on oceanic tidal conditions. Thus, a pre-development versus post-development analysis is not necessary as the post-development conditions will not have a negative impact on the downstream waterbody.

4.2. Water Quality

The Facility has been designed to utilize VNBs as the primary water quality treatment for the volume of runoff generated from 1 inch over the added impervious areas.

4.2.1. Vegetated Natural Buffers

The Vegetated Natural Buffers will be located along the perimeter of the project site, downstream of the proposed construction features of the site. Further, the VNBs will enhance the water quality of the runoff by promoting natural deposition, infiltration, and absorption;

A summary of the Water Quality Analysis is shown in Table No. 1 “Water Quality Analysis Summary,” below and the full Water Quality Analysis can be found in Appendix 2.

Table No. 1

Water Quality Analysis Summary

Basin	Required Water Quality Volume (ac-ft.)	Provided Water Quality Volume (ac-ft.)
1	0.12	6.21
Total	**0.12**	**6.21**

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4.2.2. Nutrient Analysis

The site's water will improve by the following parameters:

- Decrease in Nutrient Loadings:
  - Net Reduction in Annual Nitrogen Load of 16.23 kg/yr. (71.6% reduction)
  - Net Reduction in Annual Phosphorus Load of 3.72 kg/yr. (92.3% reduction)
- The site is an unmanned facility and will only require minor traffic for minimal maintenance needs;
- Grasses will be planted below the solar panels;
- No fertilizers will be utilized on site; and
- The equipment and solar panels will be naturally cleaned by rainwater.

A summary of the Nutrient Analysis is shown in Table No. 2 "Nutrient Analysis Summary," below and the full Nutrient Analysis can be found in Appendix 2.

Table No. 1

Pre vs Post Water Quality Improvements

Basin	CN		Soil Storage (in.)		Nitrogen (kg/yr)		Phosphorus (kg/yr)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	50	40	10.18	15.04	22.67	6.44	4.02	0.31
Total	**NA**	**NA**	**NA**	**NA**	**22.67**	**6.44**	**4.02**	**0.31**

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SECTION 5 – CONCLUSIONS

- All requirements of FDEP, SWFWMD and Hillsborough County addressing stormwater attenuation, water quantity and quality have been addressed and satisfied with this report;

- All State, Local and Federal flood protection requirements have been satisfied;

- The facility is located on an approximately 93.27 acre site;

- The site's Post-Development total impervious area is approximately 2% of the 93.27 acre site;
    - Impervious Area:
        - Proposed Access Path = 1.44 acres
        - Inverter Pads = 0.04 acres
        - Total Impervious = 1.47 acres
    - Historically the site contains 1.07 acres of impervious area. Therefore, there is only a net increase of 0.40 acres of impervious.

- The site is hydrologically analyzed as (1) drainage basin and ultimately discharges to Tampa Bay;

- The 100 year Design Flood Elevation (DFE), based on the FEMA Flood Map is Elevation 10'-11' NAVD.

- The 200 year Design Flood Elevation (DFE), based on the Hillsborough County's flood model is Elevation 11.41' NAVD.

- Tailwater conditions are based on oceanic tidal conditions. Thus, a pre-development versus post-development analysis is not necessary as the post-development conditions will not have a negative impact on the downstream waterbody;

- The sites water quality volume provided by Vegetated Natural Buffers exceeds the required water quality volume;
    - Total Site Required Water Quality Volume = 0.12 ac-ft.
    - Total Site Provided Water Quality Volume = 6.21 ac-ft.

- The Restoration of the existing agricultural use to a natural grassland condition has greatly decrease the site annual nutrient runoff;
    - Net Reduction in Annual Nitrogen Load of 16.23 kg/yr. (71.6% reduction)
    - Net Reduction in Annual Phosphorus Load of 3.72 kg/yr. (92.3% reduction)

- Best Management Practices have been utilized in preparing an Erosion Sediment Control Plan to comply with the NPDES. Further, since the site does not require extensive earthwork, much of the existing pastureland will be maintained during the construction of the site.

I, James P. Terpening, PE, do certify that the application for Big Bend III Solar has been designed in full compliance with the requirements of the Southwest Florida Water Management District, Hillsborough County and the Florida Department of Environmental Protection. All plans, calculations, reports, or other documents that have been submitted in support of the application bearing my signature and seal have been prepared in full recognition of and compliance with these requirements.

Submitted by:

This item has been digitally signed and sealed by James Parker Terpening, PE on 06/30/2021 using a Digital Signature. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

_____

James P. Terpening, PE Date
Florida Registration #24276
EOR Responsibility – 100% Pages 1-26

Appendix 1 – Pre/Post Development Analysis

Big Bend III
Solar Energy Center
Pre-Development
Basin 1

Land Use Summary	
Description	**Acres**
Impervious	
Existing Impervious	1.07
Total Impervious	**1.07**
Pervious	
Open Space	92.20
Total Pervious	**92.20**
Total Area	**93.27**
Basin Area	**93.27**
Percent Impervious	**1%**
Percent Pervious	**99%**

Big Bend III
Solar Energy Center
Post-Development
Basin 1

Land Use Summary	
Description	**Acres**
Impervious	
Access Path	1.44
Inverters	0.04
Total Impervious	**1.47**
Pervious	
Open Space	91.80
Total Pervious	**91.80**
Total Area	**93.27**
Basin Area	**93.27**
Percent Impervious	**2%**
Percent Pervious	**98%**

Big Bend II Energy Center Energy Center
Basin 1

SCS Curve Number, Soil Storage, & Tc Derivation:

1) Natural Condition:

a) Drainage Area = 93.27 acre
b) Impervious Area = 1.07 acre
c) % Impervious = 1% 98 CN
d) %Pervious = 99% 49 CN
e) Soil Type:

	Percentag	Num.	Name	Soil Group	Curve Number
1)	100%	57	Wabasso Fine Sand	A/D	49

Soil Group from USDA Hillsborough County Soil Survey
Curve numbers from TR 55 Table 2-2b Cultivated Agricultural Lands - Pasture, grassland, or range - continuous fora
Due to existing onsite drainge improvements the first letter of the Dual Hyrologic Soil Group was utilized.

f) Weighted Calculation:
CN = 50

g) Soil Storage: (S)
S = (1000/CN) - 10 = 10.18 in

2) Post-Development Condition:

Pervious Curve numbers from TR 55 Table 2-2c Other Agricultural Lands - Grassland (good condition)

	Percentag	Num.	Name	Soil Group	Curve Number
1)	100%	57	Wabasso Fine Sand	A/D	39

a) Drainage Area = 93.27 acre
b) Impervious Area = 1.47 acre
c) % Impervious = 2% 98 CN
d) Pervious Area = 91.80 acre 39 CN
e) Weighted Calculation:
CN = 40

f) Soil Storage: (S)
S = (1000/CN) - 10 = 15.04 in

Big Bend III Solar Energy Center

WATER QUALITY ANALYSIS

Basin 1

1 FDEP/SFWMD Water Quality Criteria:

a. As per an agreement with FDEP, water quality treatment will be provided for the added impervious areas, i.e. pathways, inverter pads and substation yard. Per the SWFWMD AHB V.II Section 3.5 a water quality treatment volume must be provided for one-inch of runoff from the contributing area.

2 Required Water Quality Treatment Volume:

a. Rainfall, P = 1.00 in
Rainfall, P = 0.08 ft

b. WQ Added Impervious Area	=	Inverters	+	Access Paths	+	Substation	=	Ac.
WQ Added Impervious Area	=	0.04	+	1.44	+	0.00	=	1.48 Ac.

c. WQ Required Volume Ac-ft)	=	P (ft)	x	WQ Area	x	1.00	=	
WQ Required Volume Ac-ft)	=	0.08	x	1.48	x	1.00	=	0.12

Required WQ Volume = 0.12 ac-ft

3 Provided Water Quality Treatment Volume:

a. Soil Storage (ft)	=	(1000/CN) - 10	/	12					
Soil Storage (ft)	=	(1000/41)-10	/	12					
Soil Storage (ft)	=	1.25	ft						
b. Available Soil Storage (ft)	=	Soil Storage (ft)	-	(Rainfall) (ft)					
Available Soil Storage (ft)	=	1.25	-	0.08					
Available Soil Storage (ft)	=	1.17	ft						
c. Vegetated Natural Buffer Area (Ac)	=	WQ Required Volume Ac-ft)	/	Available Soil Storage (ft)					
Vegetated Natural Buffer Area (Ac)	=	0.12	/	1.17					
Vegetated Natural Buffer Area (Ac)	=	0.11	Ac						
d. VNB Required Width (ft)	=	VNB Area*43560	/	Length (ft)					
VNB Required Width (ft)	=	4591	/	9000					
VNB Required Width (ft)	=	0.5	ft						
e. Provided WQ Volume (ac-ft)	=	Provided VNB Width (ft)	*	Length (ft)	*	Available Soil Storage (ft)	/	43560	
Provided WQ Volume (ac-ft)	=	25		9248	*	1.17			
Provided WQ Volume (ac-ft)	**=**	**6.21**	**ac-ft**						

Big Bend III Solar Energy Center
Basin 1

Stormwater Treatment to Meet the Post-Less Than or Equal to Pre-Pollution Reduction Target Goal.

Methodology based on Evaluation of Current Stormwater Design Criteria within the State of Florida Final Report, dated June 2007

Based on Design Example 3 (Page 7-29)
Calculate Pre and Post-Development Conditions

Per the Harper Report Table 4-23, Hillsborough County is located in Meteorological Zone 4

Pre-Development Conditions:

1 **Land Use:** Pasture

Pre development Use Area = Total Area (ac.) - Wetlands (ac.) - Wetland Uplands (ac.) - OSW (ac.)
Pre development Use Area 93.27 90.82 ac.

Use	Pervious	Impervious	Area (ac)
Pasture	89.75	1.07	90.82
Totals*	89.75	1.07	**90.82**

**Jurisdictional Areas, Jurisdictional Area buffers/upland preserves, Lakes and Ditches are excluded from the total area since the area will have the same loading characteristics under pre and post conditions.*

2 **Ground Cover/Soil Types:**

	% of Site	Num.	Name	Soil Group	CN
1)	100%	57	Wabasso Fine Sand	A/D	49

Soil Group from NRCS/USDA Hillsborough County Soil Survey
Curve numbers from TR 55 Table 2-2b Cultivated Agricultural Lands - Pasture, grassland, or range - continuous forage for grazing - Fair C

3 **Impervious Areas:**

Percent Impervious 1%
Percent DCIA 1%

4 **Curve Number:**

Use Area	90.82	acre
Impervious Area	1.07	acre
% NDCIA	0%	
%Pervious	100%	
Impervious CN	98	
Pervious CN	49	
Weighted CN	49	

Annual C Value	0.014

The Mean annual runoff coefficient (C-value) was determined by using the Harper Report Appendix C for a CN of 49 and 1% DCIA

5 Estimation of Pre-Development Loadings

A. Pre-Development Runoff Volume

Use	Hydraulic Group[1]	NDCIA Curve Number[2]	Annual Runoff Coefficient[3]	Annual Rainfall Depths[4] (in/yr)	Annual Runoff[5] (ac-ft/yr)
Woods	A/D	49	0.014	50	5.30

1. Soils based on USDA Soil Survey Hillsborough County
2. NDCIA Pre-Development Curve number
3. Appendix C Harper Report
4. Appendix A.3 Harper Report
5. Annual Runoff = (Area x Rainfall Depth x Annual Runoff Coeff.)/12
   Annual Runoff = (90.82 * 50.00 * 0.014)/12 = 5.30 ac-ft/yr

B. Total Nitrogen & Phosphorus

Use	Typical Runoff Concentration[1] (mg/l) Nitrogen	Phosphorus
Woods	3.47	0.616

1. Harper Report Table 4-17: Typical Runoff Concentration for Pasture

**Nitrogen

5.30 ac-ft	43,560 ft^2	7.48 *gal*	3.785 *liter*	3.47 mg	l *kg*
yr	*ac*	ft^3	*gal*	*liter*	10^6 *mg*

**Phosphorus

5.30 ac-ft	43,560 ft^2	7.48 *gal*	3.785 *liter*	0.62 mg	l *kg*
yr	*ac*	ft^3	*gal*	*liter*	10^6 *mg*

Annual Load (kg/yr)**	
Nitrogen	Phosphorus
22.67	4.02

Post-Development Conditions:

1 **Land Use:**

Impervious		
Access Path	1.44	acres
Inverters	0.04	acres
Pervious		
OSW	2.45	acres
Open Space	89.35	acres
Total	**93.28**	**acres**

Post Development Use Area*	**90.83**

*Post development Use Area = Total Area (ac.) - Wetlands (ac.) - Wetland Uplands (ac) - OSW (ac.)

Use	Pervious	Impervious	Area (ac)
Undeveloped/Rangeland/Forest	89.35	1.48	90.83
Totals*	**89.35**	**1.48**	**90.83**

**Stormwater management systems are not included in estimates of post-development loadings since incidental mass inputs of pollutants to these systems are included in the estimation of removal effectiveness. Additionally Jurisdictional Areas and Jurisdictional Area buffer/upland preserves are not included since the area has the same loadings under pre and post conditions.*

2 **Ground Cover/Soil Types**

Use	Hydraulic Group
Undeveloped/Rangeland/Forest	A/D

3 **Impervious/DCIA Areas**

Impervious Area	1.48 acre
% DCIA	2%

4 **Calculate composite non-DCIA curve number from TR-55:**

Non DCIA	0.00	98 CN
Pervious Area	89.35	39 CN
Non DCIA CN	**39**	

Pervious Curve numbers from TR 55 Table 2-2c Other Agricultural Lands - Pature, grassland, or range- good condition.

Annual C Value	0.012

The Mean annual runoff coefficient (C-value) was determined by using a CN of 39 and 2% DCIA

5 **Calculate annual runoff volume for developed area:**

Use	Annual Runoff Coefficient[1]	Annual Rainfall Depths[2] (in/yr)	Annual Runoff[3] (ac-ft/yr)
Undeveloped/Rangeland/Forest	0.012	50	4.54

1. Appendix C Harper Report
2. Appendix A.3 Harper Report
3. Annual Runoff = (Use Area x Rainfall Depth x Annual Runoff Coeff.)/12
   Annual Runoff = (90.83 * 50.00 * 0.012)/12 = 4.54 ac-ft/yr

6 **Calculate post-development loading prior to stormwater treatment**

Use	Typical Runoff Concentration (mg/l)[1] Nitrogen	Phosphorus
Undeveloped/Rangeland/Forest	1.15	0.055

1. Harper Report Table 4-17: Typical Runoff Concentration for Undeveloped/Rangeland/Forest

**Nitrogen

4.54 ac-ft	43,560 ft^2	7.48 *gal*	3.785 *liter*	1.15 mg	l *kg*
yr	*ac*	ft^3	*gal*	*liter*	10^6 *mg*

**Phosphorus

4.54 ac-ft	43,560 ft^2	7.48 *gal*	3.785 *liter*	0.06 mg	l *kg*
yr	*ac*	ft^3	*gal*	*liter*	10^6 *mg*

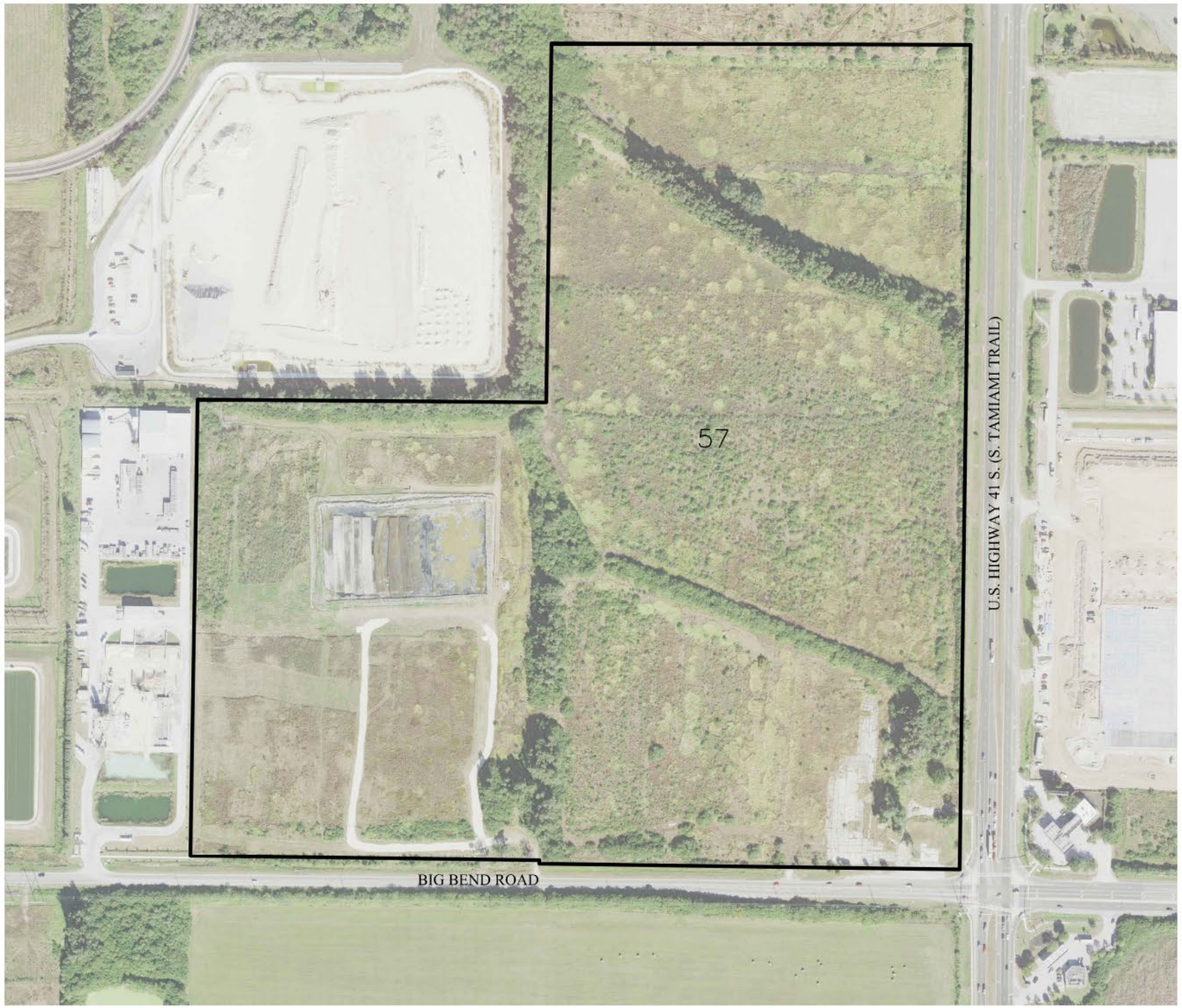
Annual Load (kg/yr)**	
Nitrogen	Phosphorus
6.44	0.31

7 **Conclusion**

The Post-Development Nutrient Loadings are less than the Pre-Development Nutrient Loadings, therefore no additional treatment is required.

Nutrient Loadings	Pre	Post	Criteria Met
Nitrogen (kg/yr)	22.67	6.44	yes
Phosphorus (kg/yr)	4.02	0.31	yes

Appendix 2 – Soils Exhibit



N

0 150 300
FEET

LEGEND

PROPERTY BOUNDARY

SOIL BOUNDARY LINE

57 SOIL NUMBER

USDA SOILS CLASSIFICATION:

SOIL NUMBER	SOIL TYPE
57	WABASSO FINE SAND, 0–2% SLOPES

DATUM:
ELEVATIONS SHOWN ON THE PLANS ARE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988).

811 Know what's **below.** **Call** before you dig.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

C&T JOB NO: 20-215

DESIGNED BY	DRAWN BY
JPT 06-18-21	AND 06-18-21
CHECKED BY	CHECKED BY

ENGINEER OF RECORD:
JAMES P. TERPENING, P.E. NO. 24276

CULPEPPER & TERPENING INC
2980 SOUTH 25th STREET • FORT PIERCE, FLORIDA 34981
PHONE 772-464-3537 • FAX 772-464-9497 • www.ct-eng.com
STATE OF FLORIDA BOARD OF PROFESSIONAL ENGINEERS AUTHORIZATION NO. 4286

TECO

PROJECT NAME
BIG BEND SOLAR III

SOILS MAP

SHEET NO.
1 OF 1

TAB 8

APPENDIX F

CULTURAL RESOURCES ASSESSMENT SURVEY REPORT

FLORIDA DEPARTMENT of STATE

RON DESANTIS
Governor

LAUREL M. LEE
Secretary of State

Adam Schieffer
Janus Research, Inc.
1107 N. Ward Street
Tampa, Florida 33607

February 24, 2021

RE: DHR Project File No.: 2016-1484-K Received by DHR: December 3, 2020
Cultural Resources Assessment Survey Addendum for the TECO Big Bend Solar III Project Area Hillsborough County, Florida

Dear Mr. Schieffer:

We note that in October of 2020, Janus Research (Janus) conducted the above referenced Phase I cultural resource assessment survey (CRAS) on behalf of Environmental Consulting and Technology, Inc. (ECT) and Tampa Electric Company (TECO), as due diligence in anticipation of further permitting. Our office proceeded to review this report with the expectation that ECT and TECO will be engaging in permitting processes that will require this office to comment on possible adverse impacts to cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP), or otherwise of historical, architectural, or archaeological significance. We recommend at the time such actions are taken, a copy of this letter be forwarded to the permitting agency(ies) with the application. This letter does not constitute a review under Section 106 of the National Historic Preservation Act.

An adjacent parcel was previously surveyed, and reviewed by this office (DHR correspondence 2016-1484-G, sent on May 11, 2018. The above report is an addendum to this previous work. No cultural resources were identified within the 62.1-acre survey area. The survey confirmed that two previously recorded structures formerly located within the current APE, 8HI11369 and 8HI11370, are no longer extant. Janus proposes that this 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, and recommends no additional work in the APE.

We find the report complete and sufficient in accordance with Chapter 1A-46, Florida Administrative Code. Because this project is not yet subject to permitting requirements from a state or federal agency, our office abstains from supplying a determination of effects until such time that permitting agencies (and associated permit requirements) are identified for this project. If I can be of any further help, or if you have any questions about this letter, please feel free to contact Clete Rooney at *Cletus.Rooney@dos.myflorida.com*.

Sincerely,

Jason Aldridge
For

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

CULTURAL RESOURCES ASSESSMENT SURVEY ADDENDUM FOR THE TECO BIG BEND SOLAR III PROJECT AREA HILLSBOROUGH COUNTY, FLORIDA

Prepared for:

Environmental Consulting and Technology, Inc.
1408 N. Westshore Boulevard, Suite 115
Tampa, Florida 33607

Prepared by:

Janus Research
1107 N. Ward Street
Tampa, Florida 33607

December 2020

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INTRODUCTION

The survey work for the cultural resource assessment survey (CRAS) addendum for the Tampa Electric Company (TECO) Big Bend Solar III Project Area in southwestern Hillsborough County was conducted in October 2020. The objective of the archaeological and historic resources survey was to identify cultural resources located within the project area of potential effect (APE) and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places* (National Register) according to the criteria set forth in 36 CFR Section 60.4.

This CRAS was conducted in anticipation of United States Army Corps of Engineers (USACE) and Florida Department of Environmental Protection (FDEP) permits. This assessment complies with Section 106 of the *National Historic Preservation Act (NHPA) of 1966* (Public Law 89-665, as amended), as implemented by 36 CFR 800 -- *Protection of Historic Properties* (incorporating amendments effective August 5, 2004); the revised Chapter 267, *Florida Statutes* (*F.S.*); and standards embodied in the Florida Division of Historical Resources' (FDHR's) *Cultural Resource Management Standards and Operational Manual* (February 2003), and Chapter 1A-46 (*Archaeological and Historical Report Standards and Guidelines*), *Florida Administrative Code*. All work also conforms to professional guidelines set forth in the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716, as amended and annotated). Principal Investigators meet the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) for archaeology, history, architecture, architectural history, or historic architecture.

The Big Bend Solar III project area (project area) covers 90.2 acres located in Section 10 of Township 31 South, Range 19 East, on the Gibsonton (1956 Photorevised [PR] 1971) United States Geological Survey (USGS) quadrangle map (Figures 1 and 2). Approximately 28.1 acres of the current project area were recently surveyed in 2018 and no cultural resources were identified within the current APE as a result of that work (Janus Research 2018; Florida Master Site File Manuscript No. 25161) (see Figures 1 and 2). In a letter dated June 13, 2018, the State Historic Preservation Office (SHPO)/FDHR concurred with the determination that no historic properties were identified during the survey (Appendix A). Due to the association and overlap with the previous survey, and because the current project area shares the same environmental and cultural contexts, the reader is referred to the 2018 report for more detailed environmental, archaeological, and historical overviews.

Project Description

The project consists of a new solar photovoltaic (PV) facility that will be constructed upon a portion of a TECO-owned site in Hillsborough County, Florida that was historically agricultural land. The project will consist of solar photovoltaic panels, inverters, transformers, and a substation.

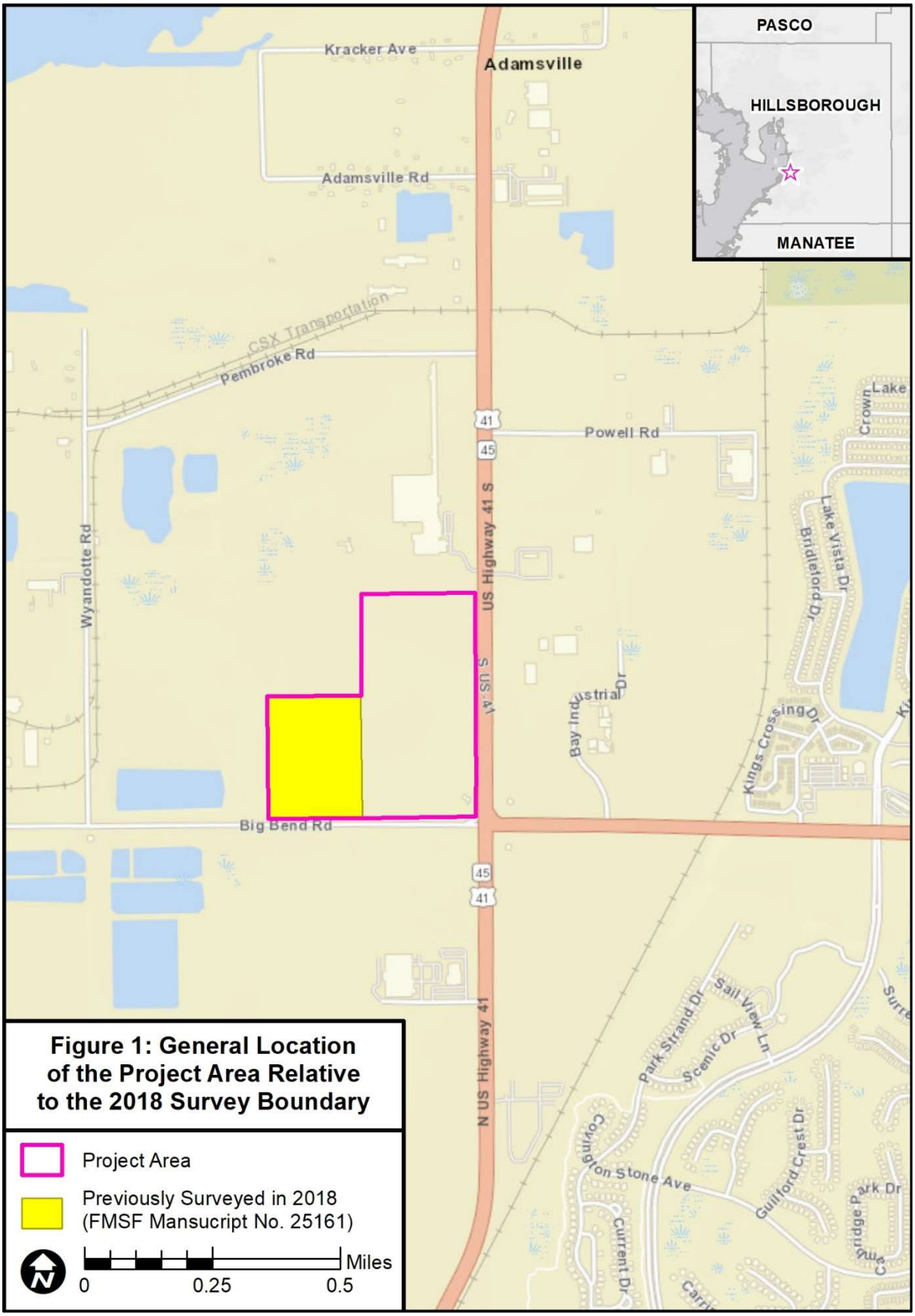


Figure 1: General Location of the Project Area Relative to the 2018 Survey Boundary

Project Area

Previously Surveyed in 2018 (FMSF Mansucript No. 25161)

0 0.25 0.5 Miles

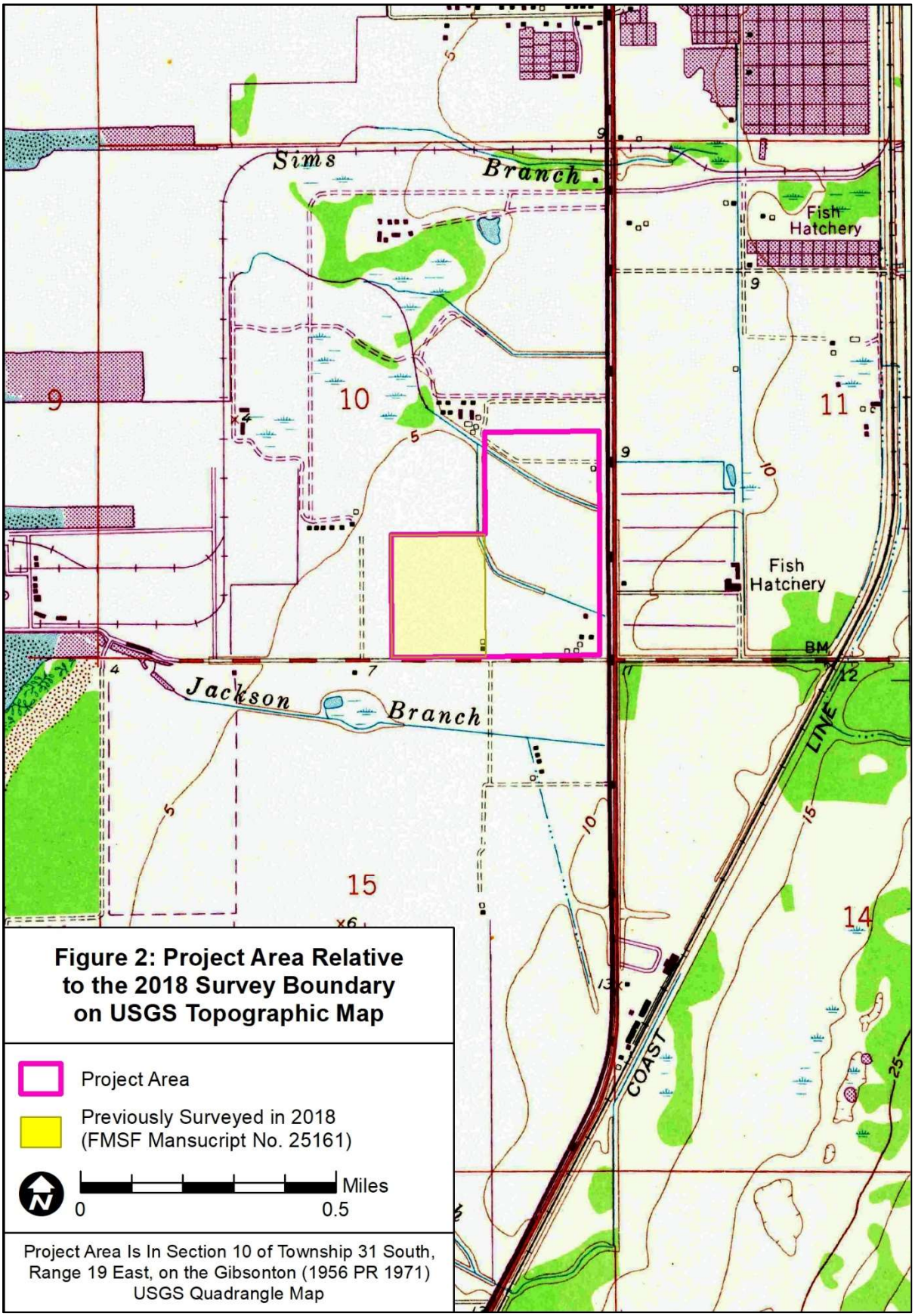


Figure 2: Project Area Relative to the 2018 Survey Boundary on USGS Topographic Map

AREA OF POTENTIAL EFFECT

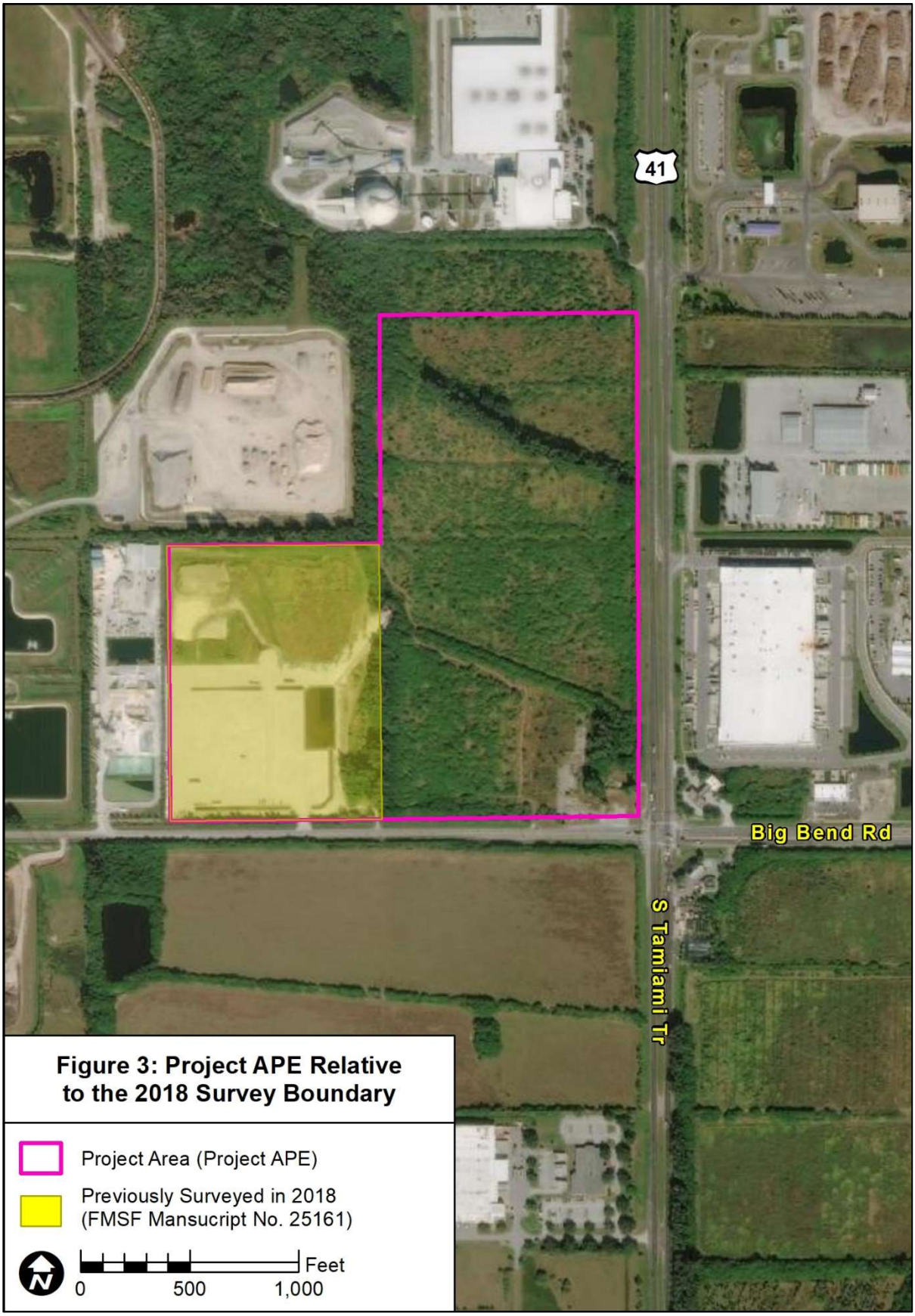
According to 36 CFR 800.16(d), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking as well as its geographical setting and must include measures to identify and evaluate archaeological resources. The project APE, therefore, considers the improvements that will be implemented as part of the proposed project and the extent of potential ground disturbance as well as the setting and character of the project area. The survey for archaeological sites typically focuses on identifying and evaluating cultural resources within the geographic limits of the proposed action and its associated ground disturbing activities.

The project area is located within an area of Hillsborough County consisting of marine terraces containing sandy soils on flats of mesic or hydric lowlands (USDA 1989). The project area has been used for agricultural purposes since the mid-20th century and is currently undeveloped. Most of the surrounding area is part of the TECO Big Bend Power Station and includes solar fields and other TECO related facilities. Farmland and non-historic commercial or industrial areas are to the immediate east of the APE. Based on the nature of the proposed project, the setting, and character of the area, the historic and archaeological APE for the project (project APE) consists of the footprint of the project area (Figure 3).

PHYSICAL ENVIRONMENT OF THE PROJECT APE

A review of the General Land Office (GLO) historic plat map and surveyor's field notes (Florida Department of Environmental Protection [FDEP] 1847a, 1847b) was conducted to examine past environmental conditions within the vicinity of the archaeological APE. In the surveyor's notes, the APE was described as 3rd rate pine land. No landscape features, such as earthen mounds trails, roads or structures are shown on the map or described in the surveyor's notes (Figure 4).

A review of aerial photographs from 1938, 1950, 1957, and 1980 (FDOT, Surveying and Mapping Office 1996–2019; University of Florida, George A. Smathers Libraries 1999–2016) was conducted to examine land use changes through time. In 1938 (Figure 5), the northern portion of the APE was in cultivation while the majority of the southern part was unimproved flatwoods with very few trees; the extreme southeastern corner of the property was cleared and included at least one structure. There were two ditches running northwest to southeast across the width of the property. No hammocks or ponds are visible. In 1950, all of the northern study area was in cultivation, while the southeastern corner included some cultivation and one or more buildings (Figure 6). Additional ditches oriented east to west have been added to increase drainage and compartmentalize the fields. The APE remained relatively unchanged through the late-1950s (Figures 7). By 1980, additional development occurred in the southern end of the property and several agricultural greenhouses are present. By 2015, no structures remained in the APE and agricultural activity stopped.


41
Big Bend Rd
S Tamiami Tr
Figure 3: Project APE Relative to the 2018 Survey Boundary
Project Area (Project APE)
Previously Surveyed in 2018
(FMSF Mansucript No. 25161)
N
0
500
1,000
Feet

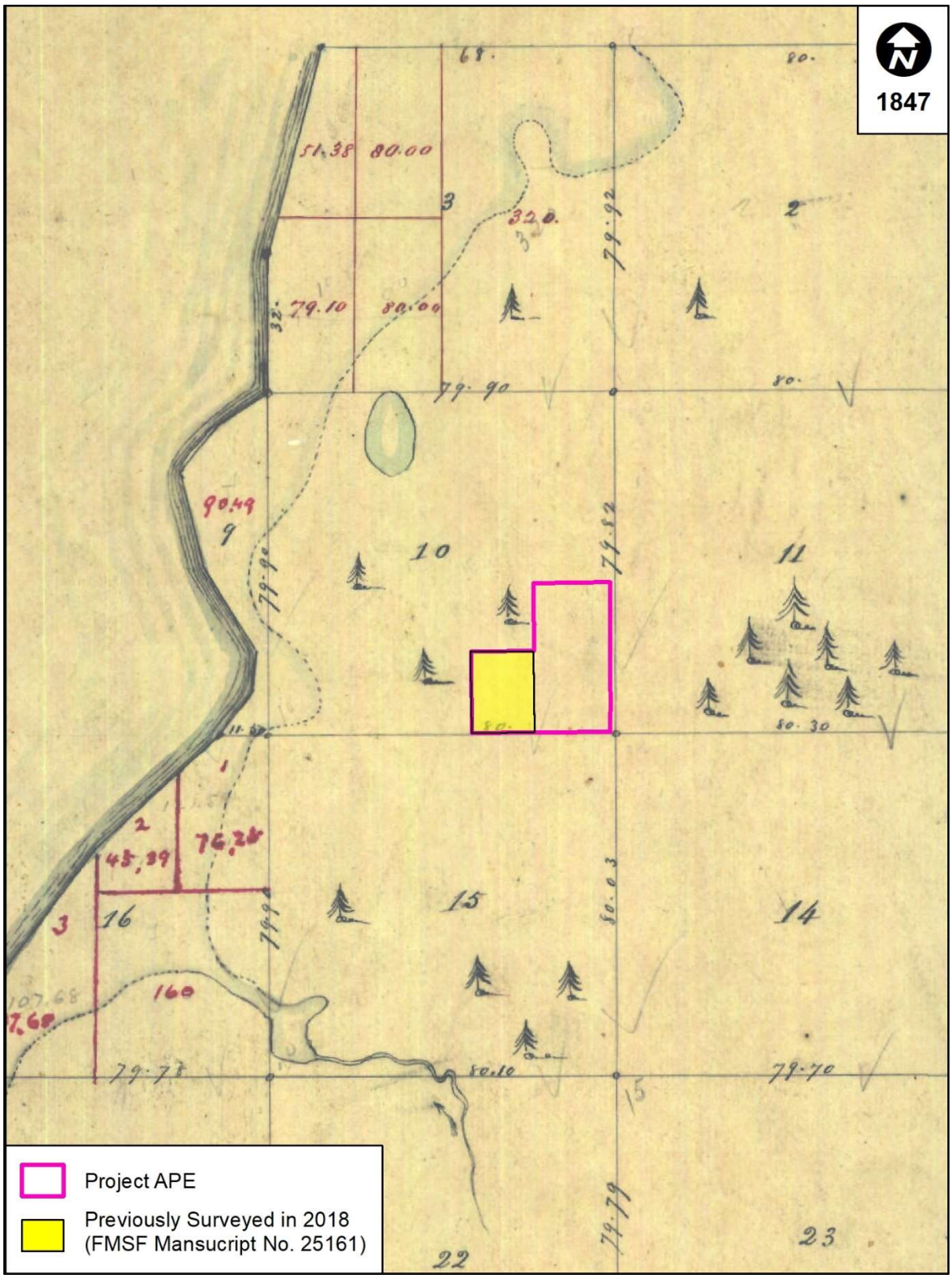


Figure 4: Project APE Illustrated on 1847 Historic Plat Map

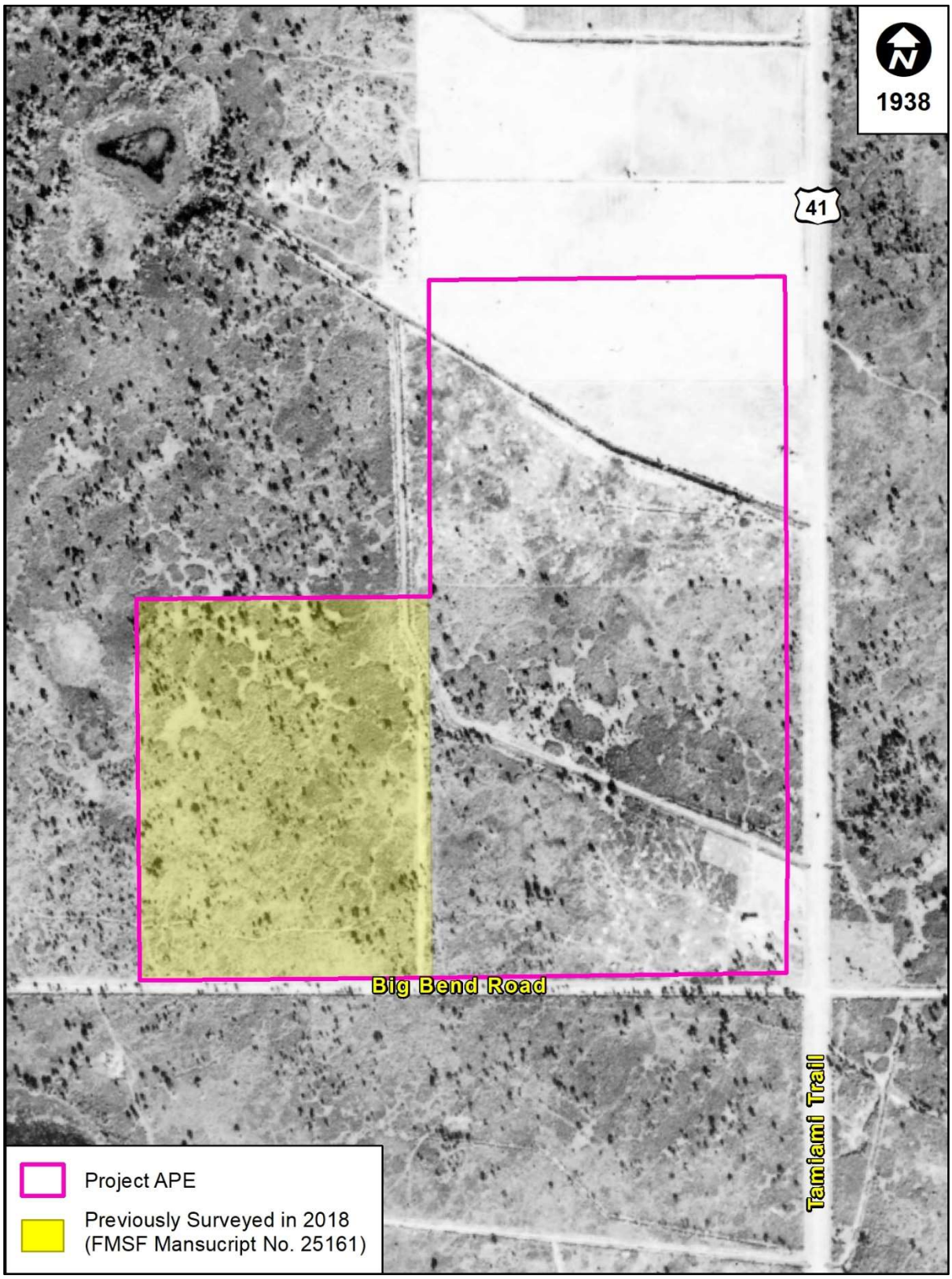


Figure 5: Project APE Illustrated on 1938 Aerial Photograph

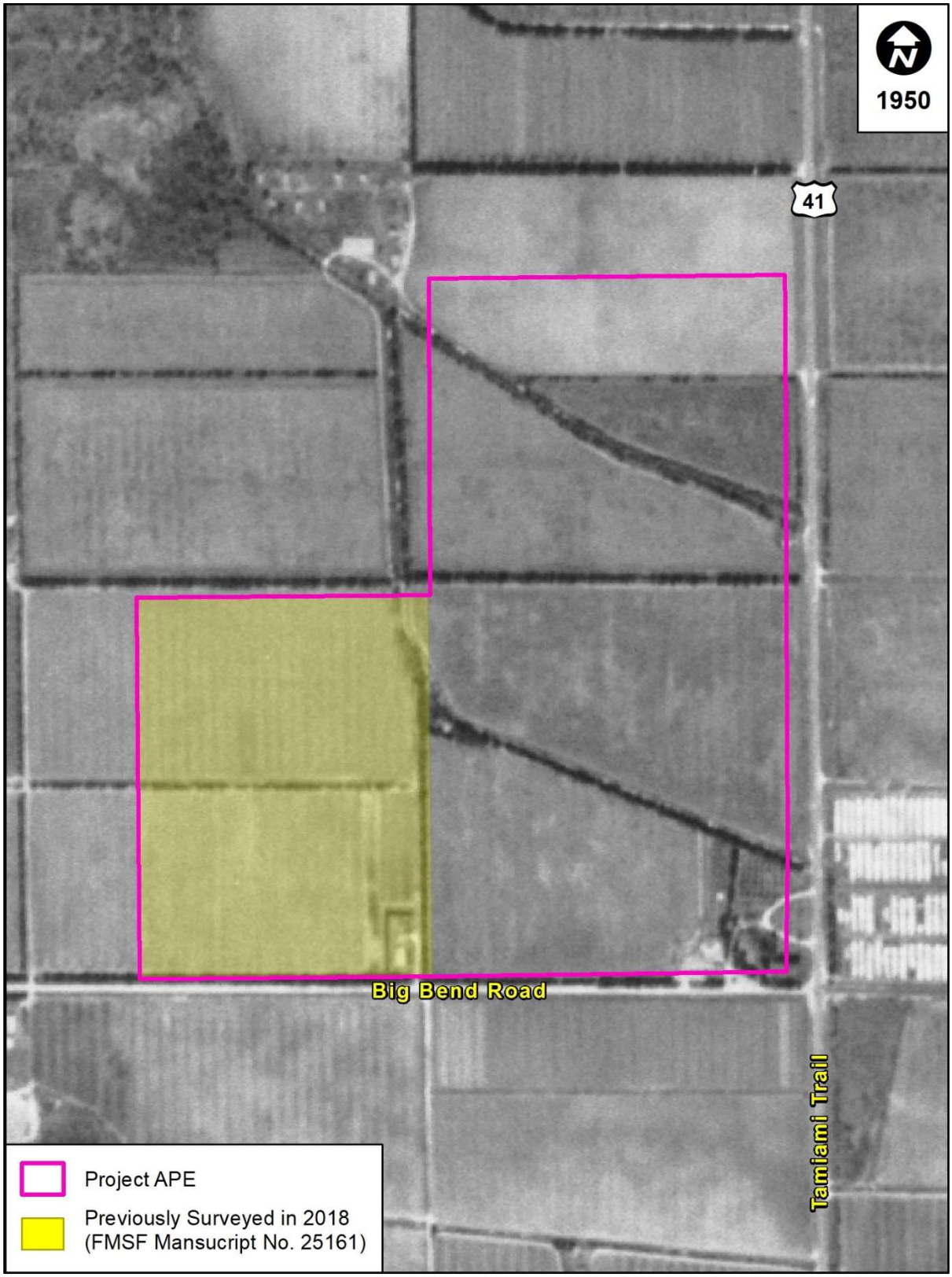


Figure 6: Project APE Illustrated on 1950 Aerial Photograph



Figure 7: Project APE Illustrated on 1957 Aerial Photograph

Three Hillsborough County soil surveys were reviewed to better understand the local environment and help assess the potential for archaeological sites. The 1958 soil survey identified the soil within the APE as poorly drained Ruskin fine sand and noted a high seasonal water table. Associated vegetation includes pines with an occasional cabbage palm as well as saw palmetto and grasses (USDA 1958:34). The 1989 and 2020 soil surveys also identified only one detailed soil type within the APE, Wabasso fine sand, 0 to 2 percent slopes. This poorly drained soil is associated with the seasonally inundated flatwoods. Associated vegetation consists of longleaf and slash pine (USDA 1989:48, 49, USDA 2020:13–15).

FLORIDA MASTER SITE FILE SEARCH AND LITERATURE REVIEW

An updated archaeological and historical literature and background information search of the FMSF pertinent to the project APE was conducted to determine the types, chronological placement, and location of cultural resources within the APE. A review of FMSF data, previous surveys, property appraiser records, and historical research material was conducted to determine the potential for cultural resources within the project APE that are listed, eligible, or considered eligible for listing in the National Register, or that have potential or confirmed human remains. The FMSF is an important planning tool that assists in identifying potential cultural resources issues, as well as resources that may warrant further investigation and protection. It can be used as a guide but should not be used to determine the official position of the FDHR/SHPO regarding the significance of a resource.

Previously Conducted Cultural Resource Surveys

The FMSF GIS data show that four previous surveys have been conducted in close proximity to the project APE (Table 1). As noted previously, FMSF Manuscript No. 25161 (Janus Research 2018) covered the western portion of the current APE. No cultural resources were encountered and SHPO concurred with the results of the survey (Appendix A).

Table 1. Previous Surveys Conducted Proximate to the Project Area

FMSF Survey No.	Report Title	Author(s)	Publication Date
6116	CRAS of the Proposed Hillsborough County Water Department's Falkenburg to South County Water Main, Hillsborough County, Florida	Southeastern Archaeological Research (SEARCH)	2000
15804	CRAS Big Bend Distribution Center, Hillsborough County, Florida	Archaeological Consultants, Inc. (ACI)	2008
15978	CRAS US 41 from 12th Street to Kracker Avenue PD &E Study, Hillsborough County, Florida	ACI	2008
25161	CRAS of the TECO Big Bend 1 Modernization, Hillsborough County, Florida	Janus Research	2018

The second survey (ACI 2008b; FMSF Manuscript No. 15978) was conducted within and adjacent to the east side of the APE and focused on US 41 from 12th Street to Kracker Avenue. No archaeological sites were identified in the vicinity of the current APE. Two historic structures, 8HI11369 and 8HI11370, were identified within the current APE in 2008, on the west side of US 41. Both structures were determined National Register–ineligible by the SHPO as a result of the 2008 survey. Background research and the current fieldwork confirmed that these structures are no longer extant.

In 2000, SEARCH conducted a survey of a 27-mile long by a 7-feet wide corridor to the west of the APE. The resultant report, *CRAS of the Proposed Hillsborough County Water Department's Falkenburg to South County Water Main, Hillsborough County, Florida* (SEARCH 2000; FMSF Manuscript No. 6116), reported no archaeological or historical resources proximate to the current APE.

The fourth survey was conducted outside of the current APE and to the east of US 41. In 2008, ACI conducted an archaeological and pedestrian survey of 120 acres for Duke Realty Corporation LLC (ACI 2008a; FMSF Manuscript No. 15804). No cultural resources were located in the portions of the project area closest to the current APE. The 2008 report documented four newly recorded historic archaeological sites (structural remains) located approximately 0.5 miles to the east of the TECO Big Bend Solar III APE. The SHPO determined all four were National Register–ineligible.

Previously Recorded Resources

The search of the FMSF data identified seven previously recorded archaeological sites within one mile of the APE, but none of these sites are near the APE (Table 2; Figure 8). The search of the FMSF data also noted two previously recorded historic resources within the APE, a c. 1935 Frame Vernacular building formerly located at 101 Big Bend Road (8HI11369) and a c. 1950 Masonry Vernacular building formerly located at 103 Big Bend Road (8HI11370). These resource were both determined National Register–ineligible by SHPO in 2009, and as noted previously, are no longer extant within the APE.

Table 2. Previously Recorded Archaeological Sites within One Mile of the Project Area

FMSF No.	Site Name	Site Type	SHPO National Register Evaluation *
8HI65	Big Bend	Shell midden	Not Evaluated
8HI101	Elsberry	Shell midden	Not Evaluated
8HI102**	Cooley Site	Shell midden	Not Evaluated
8HI11455	Big Bend 1	1950s/60s structural ruins	Ineligible
8HI11456	Big Bend 2	1950s/60s structural ruins	Ineligible
8HI11457	Big Bend 3	1950s/60s structural ruins	Ineligible
8HI11458	Big Bend 4	1950s/60s structural ruins	Ineligible

* As recorded in the FMSF; may require re-evaluation

** FMSF database indicates that human remains are or may be present at this site

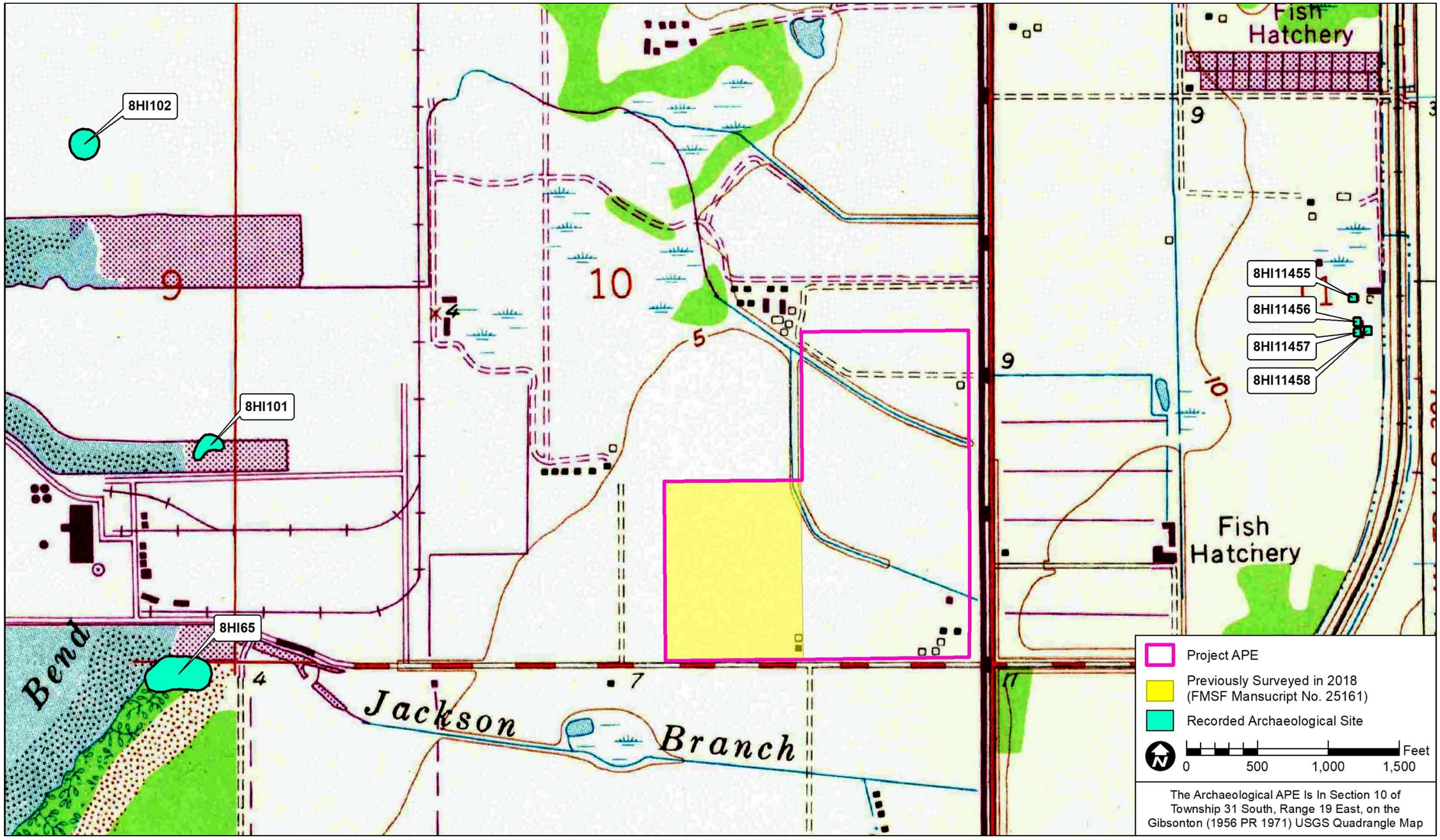


Figure 8: Previously Recorded Archaeological Sites within One Mile of the Project APE Illustrated on a Topographic Map

PROJECT RESEARCH DESIGN AND SITE LOCATION MODEL

The background research and literature review, in conjunction with pertinent environmental variables, contributed to the formulation of project-specific field methods designed to locate and evaluate previously unrecorded archaeological sites within the archaeological APE. Four environmental factors are typically used to help predict site locations: distance to fresh (potable) water, distance to hardwood hammocks, topography, and soil type (soil drainage). The updated site potential analysis focused on the portion of the APE that was not previously surveyed for archaeological resources in 2018.

Archaeological Site Location Model

Freshwater is an important resource, as the need for water is universal. This variable would have been of greater importance during the Paleoindian and Early Archaic periods (12,000–5000 BC) when the perched water system was more restricted. Before modern drainage, the archaeological APE was within flatwoods, which was likely seasonally wet. No major sources of permanent freshwater are near the project APE. The closest freshwater sources are the small, channelized drainages that run through the project area. Sims Branch, an intermittent stream, and a wetland pond are over 400 meters to the north of the project area and Jackson Branch, also an intermittent stream, is over 200 meters to the south.

Hardwood hammocks (hydric, mesic, or xeric) provide a variety of resources that would have been available to early inhabitants of the region. Often, areas of higher relative elevation correspond with better-drained soils or the presence of hardwood hammocks (xeric and mesic). No hammocks were identified within the APE during the review of historic plat maps or historic aerial photographs. Historically, the APE consisted of low-lying flatwoods that were cleared and under cultivation by 1950. The elevations of the APE ranges from 5 to 10-feet above mean sea level and no knolls or hammocks were identified within the APE during the review of historic plat maps or historic aerial photographs.

The characteristics of soils have been used successfully by several researchers in the formulation of predictive models for precontact site location. As mentioned previously, the soil within the archaeological APE is poorly drained and consists of sandy soil on flats of mesic or hydric lowlands. Based on the background research and analysis of environmental variables, the archaeological APE was determined to have a low potential for containing archaeological sites.

METHODS

The field survey consisted of a pedestrian survey and subsurface testing. A visual inspection of exposed ground was conducted to look for evidence of archaeological sites or environmental features indicative of increased archaeological potential. The pedestrian survey also considered the presence of any historic resources. Subsurface testing employed conventional shovel testing throughout the investigation. Shovel tests were circular and approximately 20 inches (50 centimeters) in diameter. They were excavated to a minimum depth of 39 inches (1 meter)

unless excavation was inhibited by bedrock or pit slumping due to the influx of water. All excavated soil was dry screened through ¼-inch (0.64-centimeter) hardware cloth suspended from portable wooden frames.

As noted, the archaeological APE consists of poorly drained soils and was determined to have low archaeological potential. No hammocks were noted on the historic maps or aerials and drainage ditches were present within the APE. Based on this, the number of shovel tests needed to test 10 percent of the testable low probability zone at 100-meter intervals was calculated. This number of tests was excavated within the low probability zone judgmentally or systematically, as appropriate, based on topographical and environmental features.

Standard archaeological methods for recording field data were followed throughout the project. Current conditions were marked aerial field maps of the project area and photographs taken to document the existing conditions. The identification number, location, stratigraphic profile, and soil descriptions were recorded for every shovel test excavated. The locations of all tests were plotted on field maps of the archaeological APE and recorded with WAAS-enabled hand-held Global Positioning System (GPS) units (UTM-NAD83). The location of the excavated shovel tests, as well as the current conditions of the archaeological APE, are illustrated relative to the archaeological APE on aerial imagery in Appendix B.

RESULTS

The APE consists primarily of grassy pasture/scrub with two ditches that cross the property from northwest to southeast. The ditches may formerly have been unnamed drainages that were improved prior to 1938, as they appear on the aerial photograph from that year. The pasture contains hip-high cogon grass, Brazilian pepper, salt bush, wax myrtle, Australian pine, and some secondary growth. Six (6) shovel tests were excavated (Appendix B) and no cultural material was recovered. Representative photographs of the project area and three of the shovel tests are included in Figures 9–15.

All of the shovel tests encountered water at depths ranging from 50 centimeters below surface (cmbs) to 80 cmbs. Four of the six tests encountered bedrock at 55–80 cmbs. The soils in the tests were fairly consistent. The strata in Shovel Test (ST) 1 consisted of dark gray sandy loam from 0–18 cmbs, light gray sand from 18–33 cmbs, dark brown sandy clay from 33–39 cmbs, orange brown clay with phosphate inclusions from 39-70 cmbs, and water at 70 cmbs. No cultural material was recovered in any of the shovel tests, and none was noted during the pedestrian inspection. The pedestrian survey also confirmed the absence of historic resources within the historic resources APE.

CONCLUSIONS

No newly or previously recorded archaeological sites or archaeological occurrences were identified within the archaeological APE. The survey did not identify any newly recorded historic resources and confirmed that the two previously recorded structures formerly located within the current APE, 8HI11369 and 8HI11370, are no longer extant. Based on the results of the CRAS, no further work is recommended.



Figure 9: View of Project Area Near ST 1, Facing West



Figure 10: Project Overview Near ST 2, Facing North



Figure 11: View of Northern Ditch Near ST 3, Facing East



Figure 12: View of Project Area Near ST 3, Facing East



Figure 13: ST 1 with Water at 70 cmbs, Facing North



Figure 14: ST 2 with Water and Bedrock at 70 cmbs, Facing South



Figure 15: ST 3 with Water at 80 cmbs, Facing West

Unanticipated Finds

Should construction activities uncover archaeological remains, it is recommended that activity in the immediate area of the remains be stopped while a professional archaeologist evaluates the remains. If human remains are found during construction or maintenance activities, the provisions of Chapter 872.05, *F.S.* will apply. Chapter 872.05 states that, when human remains are encountered, all activity that might disturb the remains shall cease and may not resume until authorized by the District Medical Examiner or the State Archaeologist. The District Medical Examiner has jurisdiction if the remains are less than 75 years old or if the remains are involved in a criminal investigation. The State Archaeologist may assume jurisdiction if the remains are 75 years of age or older.

Curation

The Survey Log (Appendix C) and a copy of this report are curated at the FMSF in Tallahassee. Field notes and other pertinent project records are temporarily stored at Janus Research and returned to the client, as appropriate.

REFERENCES CITED

Archaeological Consultants, Inc.
2008a CRAS Big Bend Distribution Center, Hillsborough County, Florida. Manuscript on file, DHR, Tallahassee.
2008b CRAS US 41 from 12th Street to Kracker Avenue PD &E Study, Hillsborough County, Florida. Manuscript on file, DHR, Tallahassee.

Florida Department of Environmental Protection (FDEP)
1847a Plat Map for Township 31 South, Range 19 East. Division of State Lands, Board of Trustees Land Document System. Electronic document, http://labins.org/survey_data/landrecords/landrecords.cfm, accessed October 5, 2020.
1847b Surveyor's Notes for Township 31 South, Range 19 East. Electronic document, http://labins.org/survey_data/landrecords/landrecords.cfm, accessed October 5, 2020.

Florida Department of Transportation (FDOT), Surveying and Mapping Office
1996–2019 Aerial Photography Archive. Electronic documents, https://fdotewp1.dot.state.fl.us/AerialPhotoLookUpSystem/, accessed October 2, 2020.

Florida Division of Historical Resources
2003 Cultural Resource Management Standards and Operational Manual. Module Three: Guidelines for use by Historic Preservation Professionals. Electronic document, https://dos.myflorida.com/media/31394/module3.pdf, accessed August 31, 2020.

Janus Research
2018 *CRAS of the TECO Big Bend 1 Modernization, Hillsborough County, Florida.* Manuscript on file, Janus Research, Tampa.

Southeastern Archaeological Research, Inc.
2000 CRAS of the Proposed Hillsborough County Water Department's Falkenburg to South County Water Main, Hillsborough County, Florida. Manuscript on file, DHR, Tallahassee.

United States Department of Agriculture (USDA)
1958 *Soil Survey of Hillsborough County Area, Florida.* United States Department of Agriculture/Natural Resources Conservation Service.
1989 *Soil Survey of Hillsborough County Area, Florida.* United States Department of Agriculture/Natural Resources Conservation Service.
2020 *Custom Soil Resource Report for Hillsborough County, Florida*. USDA/NRCS Soil Conservation Service.

University of Florida, George A. Smathers Libraries
1999–2019 Aerial Photography: Florida Collection. University of Florida Digital Collections. Electronic documents, http://ufdc.ufl.edu/aerials, accessed October 2, 2020.

APPENDIX A:

2018 SHPO CONCURRENCE LETTER FOR FMSF MANUSCRIPT NO. 25161

25161

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Lawrence N. Curtin
Holland & Knight, LLP
315 South Calhoun Street, Suite 600
Tallahassee, Florida 32301

June 13, 2018

RE: DHR Project File No.: 2016-1484-G, Received by DHR: May 11, 2018
Cultural Resources Assessment Survey of the Tampa Electric Company (Tampa Electric) Big Bend 1 Modernization, Hillsborough County, Florida

Dear Mr. Curtin,

Our office reviewed the referenced project in accordance with Chapters 267 and 403, *Florida Statutes*, and implementing state regulations, for possible effects on historic properties listed, or eligible for listing, in the *National Register of Historic Places* (NRHP), or otherwise of historical, architectural or archaeological value.

In April 2018, Janus Research (Janus) conducted the above referenced cultural resource assessment survey (CRAS) as on behalf of Tampa Electric Company (TEC) and Environmental Consulting & Technology, Inc. (ECT). Janus encountered no cultural resources within the area of potential effect (APE) during their investigation and recommends no additional work in the APE.

Based on the information provided, our office concurs with the results of the survey and determined that the proposed project will likely have no effect on historic properties listed, or eligible for listing, in the NRHP, or otherwise of historical, architectural or archaeological value. Our office finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.*

If I can be of any further help, or if you have any questions about this letter, please feel free to contact Lindsay Rothrock at *Lindsay.Rothrock@dos.myflorida.com.*

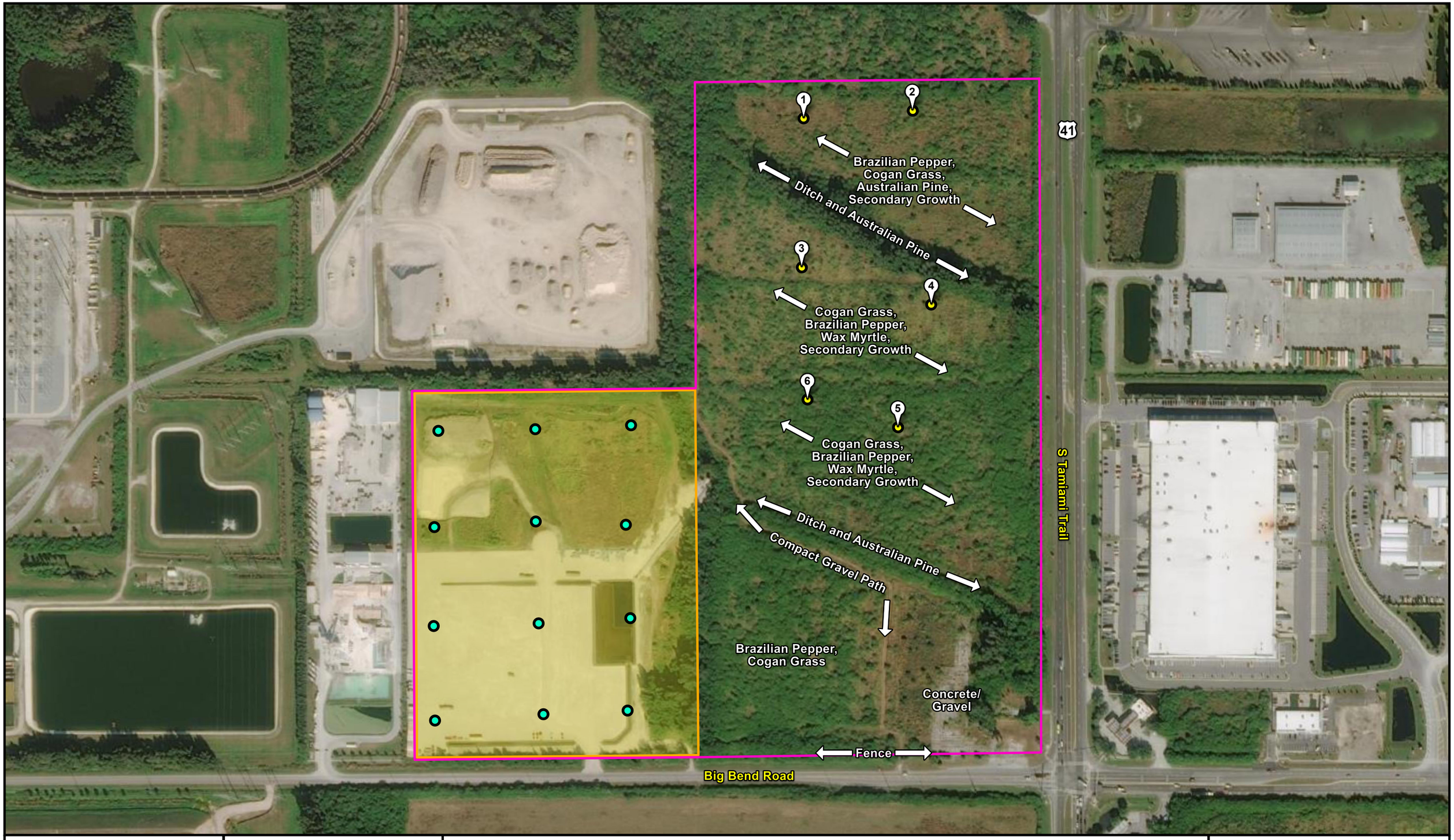
Sincerely,

For

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources
and State Historic Preservation Officer

APPENDIX B:

LOCATIONS OF SHOVEL TESTS AND CURRENT CONDITIONS ON AN AERIAL PHOTOGRAPH



Locations of Shovel Tests and Current Conditions On An Aerial Photograph

TECO Big Bend Solar III Project

Archaeological APE

2020 Negative Shovel Test (Current Survey)

Previously Surveyed for Archaeological Resources in 2018 (FMSF Manuscript No. 25161)

2018 Negative Shovel Test (FMSF Manuscript No. 25161)

CDP of Gibsonton, Hillsborough County

N

0 50 100 150 Meters

APPENDIX C:

SURVEY LOG

Ent D (FMSF only) _____

Survey Log Sheet

Florida Master Site File
Version 5.0 3/19

Survey # (FMSF only) _____

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Manuscript Information

Survey Project (name and project phase)
Big Bend Solar III Addendum Survey

Report Title (exactly as on title page)
CRAS ADDENDUM FOR THE TECO BIG BEND SOLAR III PROJECT AREA, HILLSBOROUGH COUNTY, FLORIDA

Report Authors (as on title page) 1. Janus Research 3. _____
2. _____ 4. _____

Publication Year 2020 **Number of Pages in Report** (do not include site forms) 22

Publication Information (Give series, number in series, publisher and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*.)
Janus Research, 1107 N Ward St, Tampa FL 33607

Supervisors of Fieldwork (even if same as author) Names Kathleen S. hoffman; Amy Streelman

Affiliation of Fieldworkers: Organization Janus Research City Tampa

Key Words/Phrases (Don't use county name, or common words like *archaeology*, *structure*, *survey*, *architecture*, *etc.*)
1. Big 3. Solar 5. Jackson 7. _____
2. Bend 4. III 6. Sims 8. _____

Survey Sponsors (corporation, government unit, organization, or person funding fieldwork)
Name _____ Organization Environmental Consulting & Technology, Inc.
Address/Phone/E-mail 1408 N Westshore Blvd, Suite 115, Tampa, FL 33607

Recorder of Log Sheet Janus Research **Date Log Sheet Completed** 11-2-2020

Is this survey or project a continuation of a previous project? ☐No ☒Yes: **Previous survey #s (FMSF only)** _____

Project Area Mapping

Counties (select every county in which field survey was done; attach additional sheet if necessary)
1. Hillsborough 3. _____ 5. _____
2. _____ 4. _____ 6. _____

USGS 1:24,000 Map Names/Year of Latest Revision (attach additional sheet if necessary)
1. Name GIBSONTON Year 1971 4. Name _____ Year _____
2. Name _____ Year _____ 5. Name _____ Year _____
3. Name _____ Year _____ 6. Name _____ Year _____

Field Dates and Project Area Description

Fieldwork Dates: Start 10-6-2020 End 10-6-2020 **Total Area Surveyed** (fill in one) _____hectares 90.20 acres
Number of Distinct Tracts or Areas Surveyed 1
If Corridor (fill in one for each) **Width:** _____meters _____feet **Length:** _____kilometers _____miles

Florida Master Site File / Div. of Historical Resources / R.A. Gray Bldg / 500 S Bronough St., Tallahassee, Florida 32399-0250
Phone 850.245.6440, Fax 850.245.6439, Email: SiteFile@dos.myflorida.com

Survey Log Sheet

Survey #_____

Research and Field Methods

Types of Survey (select all that apply): ☒archaeological ☒architectural ☐historical/archival ☐underwater ☐damage assessment ☐monitoring report ☐other(describe): _____

Scope/Intensity/Procedures

50 cm diameter shovel tests (n=6) were dug judgmentally to cover approximately 10% of low probability areas. All soil was screened. Visual inspection of project APE.

Preliminary Methods (select as many as apply to the project as a whole)

☐Florida Archives (Gray Building)	☐library research- *local public*	☒local property or tax records	☒other historic maps	☐LIDAR
☐Florida Photo Archives (Gray Building)	☐library-special collection	☐newspaper files	☒soils maps or data	☐other remote sensing
☒Site File property search	☐Public Lands Survey (maps at DEP)	☒literature search	☐windshield survey	
☒Site File survey search	☐local informant(s)	☐Sanborn Insurance maps	☒aerial photography	

☐other (describe): _____

Archaeological Methods (select as many as apply to the project as a whole)

☐Check here if **NO** archaeological methods were used.

☐surface collection, controlled	☐shovel test-other screen size	☐block excavation (at least 2x2 m)	☐metal detector
☐surface collection, uncontrolled	☐water screen	☐soil resistivity	☐other remote sensing
☒shovel test-1/4"screen	☐posthole tests	☐magnetometer	☒pedestrian survey
☐shovel test-1/8" screen	☐auger tests	☐side scan sonar	☐unknown
☐shovel test 1/16"screen	☐coring	☐ground penetrating radar (GPR)	
☐shovel test-unscreened	☐test excavation (at least 1x2 m)	☐LIDAR	

☒other (describe): _____

Historical/Architectural Methods (select as many as apply to the project as a whole)

☐Check here if **NO** historical/architectural methods were used.

☐building permits	☐demolition permits	☐neighbor interview	☐subdivision maps
☐commercial permits	☐windshield survey	☐occupant interview	☐tax records
☐interior documentation	☐local property records	☐occupation permits	☐unknown

☒other (describe): Visual Survey of APE

Survey Results

Resource Significance Evaluated? ☐Yes ☒No

Count of Previously Recorded Resources 0 **Count of Newly Recorded Resources** 0

List Previously Recorded Site ID#s with Site File Forms Completed (attach additional pages if necessary)

List Newly Recorded Site ID#s (attach additional pages if necessary)

Site Forms Used: ☐Site File Paper Forms ☒Site File PDF Forms

REQUIRED: Attach Map of Survey or Project Area Boundary

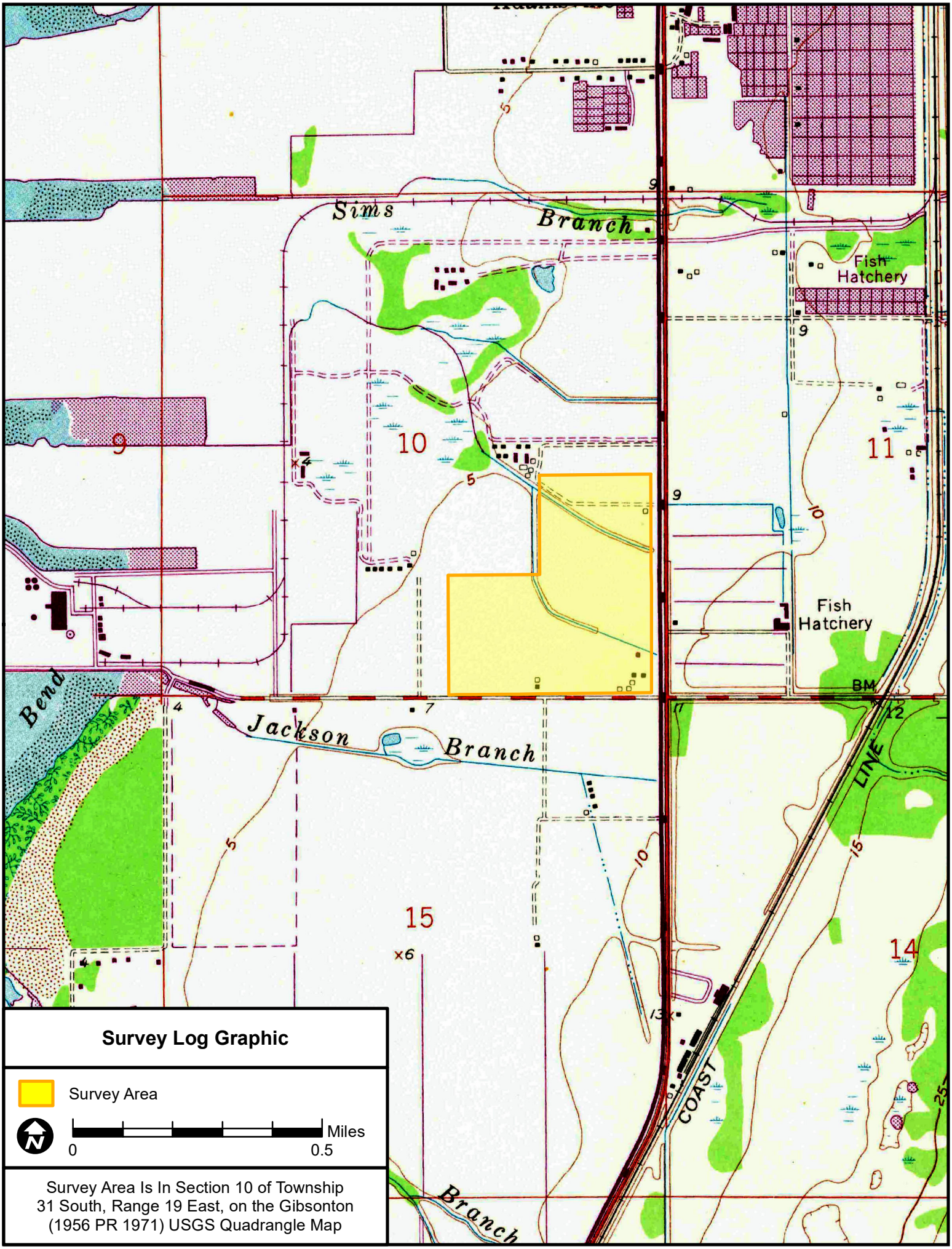
SHPO USE ONLY	SHPO USE ONLY	SHPO USE ONLY

Origin of Report: ☐872 ☐Public Lands ☐UW ☐1A32 # _____ ☐Academic ☐Contract ☐Avocational ☐Grant Project # _____ ☐Compliance Review: CRAT # _____

Type of Document: ☐Archaeological Survey ☐Historical/Architectural Survey ☐Marine Survey ☐Cell Tower CRAS ☐Monitoring Report ☐Overview ☐Excavation Report ☐Multi-Site Excavation Report ☐Structure Detailed Report ☐Library, Hist. or Archival Doc ☐Desktop Analysis ☐MPS ☐MRA ☐TG ☐Other: _____

Document Destination: Plottable Projects **Plotability:** _____

Florida Master Site File / Div. of Historical Resources / R.A. Gray Bldg / 500 S Bronough St., Tallahassee, Florida 32399-0250
Phone 850.245.6440, Fax 850.245.6439, Email: SiteFile@dos.myflorida.com



Survey Log Graphic

Survey Area

N

Miles

0 0.5

Survey Area Is In Section 10 of Township 31 South, Range 19 East, on the Gibsonton (1956 PR 1971) USGS Quadrangle Map

JANUS MAIN OFFICE
1107 N. Ward Street
Tampa, FL 33607

JANUS RESEARCH
EST. 1979

Tel. 813.636.8200
Fax 813.636.8212
janus@janus-research.com

Tampa Bay ▪ Miami ▪ Ft. Myers ▪ Atlanta

December 3, 2020

Dr. Timothy A. Parsons
Director and State Historic Preservation Officer
Florida Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Re: Cultural Resources Assessment Survey Addendum for the TECO Big Bend Solar III Project Area, Hillsborough County, Florida

Attention: Mr. Jason Aldridge, Compliance Review Supervisor, and Deputy State Historic Preservation Officer

Dear Mr. Aldridge:

On behalf of Tampa Electric Company (TEC) and in association with Environmental Consulting & Technology, Inc. (ECT), Janus Research conducted a Cultural Resources Assessment Survey (CRAS) Addendum for the Tampa Electric Company (TEC) Big Bend Solar III Project Area in Hillsborough County, Florida.

This CRAS was conducted in anticipation of United States Army Corps of Engineers (USACE) and Florida Department of Environmental Protection (FDEP) permits. This assessment complies with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended), as implemented by 36 CFR 800 -- Protection of Historic Properties (incorporating amendments effective August 5, 2004); the revised Chapter 267, Florida Statutes (F.S.); standards embodied in the Florida Division of Historical Resources' (FDHR's) Cultural Resource Management Standards and Operational Manual (February 2003), and Chapter 1A-46 (Archaeological and Historical Report Standards and Guidelines), Florida Administrative Code. All work also conforms to professional guidelines set forth in the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716, as amended and annotated). Principal Investigators meet the Secretary of the Interior's Professional Qualification Standards (48 FR 44716) for archaeology, history, architecture, architectural history, or historic architecture.

The objective was to identify cultural resources located within the project area of potential effect (APE) and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places* (National Register) according to the criteria set forth in 36 CFR Section 60.4.

Approximately 28.1 acres of the current 90.2 acres project area were surveyed in 2018 and no cultural resources were identified within the current APE as a result of that work (Janus Research 2018; Florida Master Site File Manuscript No. 25161; DHR Project File No.: 2016-1484-G). In a letter dated June 13, 2018, the State Historic Preservation Office (SHPO)/FDHR concurred with the determination that no historic properties were identified during the survey. As a result of the current survey of the remaining 62.1 acres, no previously recorded or newly archaeological sites or archaeological occurrences were identified. The survey also identified no newly recorded historic resources and confirmed that two previously recorded structures formerly located within the APE, 8HI11369 and 8HI11370, are no longer extant. Based on the results of the CRAS Addendum, no further work is recommended.

At this time, we respectfully request your concurrence with the findings in this letter and the enclosed report. If you have questions regarding the subject project, please feel free to contact me at 813-636-8200 or kate_hoffman@janus-research.com.

Sincerely,

Kathleen S. Hoffman

Kathleen S. Hoffman
Vice President

Cc: Adriano Alcoz, Tampa Electric Company
Anthony Arcuri, Environmental Consulting &Technology, Inc

TAB 9

APPENDIX G
COMPLETED BASELINE WETLAND UMAM WORKSHEETS

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Big Bend III Solar		**Wetland 1 (W1)**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6417	**FDEP: 647** **FNAI: None, Shrub Swamp** **SCS: None**	**Baseline**	**0.12 acre**

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
18 Tampa Bay Tributaries	**Class III**	**None**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

The area is a depression apparently created by clearing and fence removal on abandoned farm land; water pools to the area and stands. The area is adjacent to an old canal but does not appear to be connected to it.

Assessment area description

The area is a long wide shallow depression that maintains enough water to support coastalplain willows (*Salix caroliniana*) and southern cattails (*Typha domingensis*) at its east end. The western portion of the area is only marginally wet.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
U.S. Highway 41, electrical power station, light industrial area	**Relatively common in general landscape**

Functions	Mitigation for previous permit/other historic use
BIOLOGICAL: **Wading bird feeding, roosting, nesting; some vertical heterogeneity (1-2 strata); forage fish cover, feeding, breeding; amphibian cover feeding, some breeding; small-medium-large mammal foraging, denning; reptile feeding and cover.** **PHYSICAL/CHEMICAL:** **Water quality treatment; sediment/erosion control; recharge/discharge; detrital export; flood retention/detention.**	

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
AQUATIC FAUNA: crayfish, midge larvae, and dragonfly larvae; HERPETOFAUNA: frogs (several species), toads, sirens, mud turtle, musk turtle, cottonmouth moccasin, and water snakes; BIRDS: red-winged blackbird, egrets, herons, and ibis; MAMMALS: raccoon, marsh rabbit, and opossum.	**Little blue heron (ST, foraging, incidental), tricolored heron (ST, foraging, incidental), roseate spoonbill (ST, foraging, incidental) and wood stork (FT, foraging, incidental)**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

No evidence of wildlife usage

Additional relevant factors:

The area appears to be the result of grading and fence line removal.

Assessment conducted by:	Assessment date(s):
C. Vandaveer	**8-Oct-20**

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Big Bend III Solar		**Wetland 1 (W1)**
Impact or Mitigation	Assessment conducted by:	Assessment date:
Baseline	**C. Vandaveer**	**October 8, 2020**

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: **2**	with:
The area is apparently the result of grading and probably fence removal. It is situated on old abandoned farm land which has become overgrown with cogongrass (*Imperata cylindrica*), rose natalgrass (*Melinis repens*), Brazilian pepper trees (*Schinus terebinthifolia*), Australian pines (*Casuarina equisetifolia*), and saltbush (*Baccharis halimifolia*). The greater landscape is composed of roads and highways, light industrial, a power plant, and commercial and residential development. **There is scant evidence of wildlife usage, except for passerines like warblers, blue jays, and cardinals.**		
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: **3**	with:
The area receives runoff from the surrounding land. Water drains from the west to the east end where it stands long enough to support a small area of coastalplain willows and southern cattails. The area probably could support the life cycle of frogs and toads, but there was no evidence of amphibians, crayfish, or other hydrologically dependent animals.		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: **4**	with:
The plant community in the area is composed of coastalplain willows, southern cattails, and Peruvian primrosewillow (*Ludwigia peruviana*) at the east end; the west end has salt bush and cogongrass which is doing poorly due to periods of inundation/saturation.		

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres: **0.30**	with:

If preservation as mitigation,
Preservation adjustment factor = **N/A**
Adjusted mitigation delta = **N/A**

For impact assessment areas
FL = delta x acres = **N/A**

Delta = [with-current]

If mitigation
Time lag (t-factor) = **N/A**
Risk factor = **N/A**

For mitigation assessment areas
RFG = delta/(t-factor x risk) = **N/A**

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

TAB 10

APPENDIX H
FRAC-OUT CONTINGENCY PLAN

FRAC-OUT CONTINGENCY PLAN
FOR
DIRECTIONAL DRILLING

Table of Contents

1.0 Introduction and Purpose
2.0 Site Supervisor/Foreman Responsibilities
3.0 Equipment
4.0 Training
5.0 Drilling Procedures
    5.1 Vac-Truck
    5.2 Field Response to FRAC-OUT Occurrence
    5.3 Response Close-out Procedures
    5.4 Construction Re-start
    5.5 Bore Abandonment
6.0 Notification
    6.1 Communication with Regulatory Agency Personnel
    6.2 Documentation
7.0 Project Completion and Clean-up

FRAC-OUT Contingency Plan (FCP)

1.0 Introduction and Purpose

Directional bore operations have a potential to release drilling fluids into the surface environment through frac-out (A frac-out is the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface.) Because drilling mud, consist largely of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. However, if it is released into the water bodies, bentonite has the potential to adversely impact fish and invertebrates.

While drilling fluids seepage associated with a frac-out is most likely to occur near the bore entry and exit points where the drilling head is shallow, frac-outs can occur in any location along a directional bore. This frac-out contingency plan (FCP) establishes operational procedures and responsibilities for the prevention, contaminate, and clean-up of frac-out associated with the proposed directional drilling utility project of Viasys.
All personnel and sub-contractors responsible for the work must adhere to this plan during the directional drilling process.

The specific objectives of this plan are to:

1. Minimize the potential for frac-out associated with directional drilling activities;
2. Provide for timely detection of frac-out;
3. Ensure an organized, timely and “minimum-impact” response in the event of a Frac-out and release of drilling bentonite;
4. Ensure that all appropriate notifications are made to the customer, management and safety personnel.

2.0 Site Supervisor/Foreman Responsibilities

The site supervisor/foreman has the overall responsibility for implementing this FCP. The site supervisor/foreman will ensure that all employees are trained prior to all drilling. The site supervisor/foreman shall be notified immediately when a frac-out is detected. The site supervisor/foreman will be responsible for ensuring that the safety department is aware of the frac-out, coordinating personnel, response, clean-up, regulatory agency, notification, and coordination to ensure proper clean-up, disposal of recovered material and timely reporting of the incident. The site supervisor/foreman shall ensure all waste disposal materials are properly containerized, labeled and removed from the site to an approved disposal facility by personnel experienced in the removal, transport and disposal of drilling mud.

The site supervisor/foreman shall be familiar with all aspects of the drilling activity, the contents of this Frac-out Contingency Plan and the conditions of approval under which the activity is permitted to take place. The site supervisor/foreman shall have the authority to stop work and commit the resources (personnel and equipment) necessary to implement this plan. The site supervisor/foreman shall assure that a copy of this plan is available (onsite) and accessible to all workers are properly trained and familiar with the necessary procedures for response to frac-out, prior to commencement of drilling operations.

The site supervisor shall ensure that:

1. All equipment and vehicles are to be checked and maintained daily to prevent leaks of hazardous materials.
2. Spill kits and spill containment materials are available on-site at all times and that the equipment is in good working order.
3. Equipment required to contain and clean up a Frac-out release will be available at the work site.
4. If equipment is required to be operated near a riverbed, absorbent pads and plastic sheeting for placement beneath motorized equipment shall be used to protect the riverbed from engine fluids.

3.0 Equipment

The following equipment will be used to complete the bore under this plan.

1. Directional Drill: Vermeer 36 X 50 (certified by Vermeer Service Dept 8-08) Drill Specs are as follows
    - Load Capacities: 33,000 lbs of pull back and 44,000 lbs of rotation
    - Maximum drilling pressure of drill: 4995psi
    - Intended drilling pressure for this bore: between 150 & 200 psi
    - Maximum GPM allowed by machine: 70 GPM
    - Intended GPM for this bore: 8-10 GPM drilling out and maximum of 15 GPM pulling product back.
2. Vacuum System: 4,000 Gallon portable vacuum truck.

4.0 Training

Prior to the start of construction, the site supervisor/foreman, shall ensure that the crew members receive training in the following:

1. The previsions of the Frac-out Contingency Plan, equipment maintenance and site specific permit and monitoring requirements.

2. Inspection procedures for release prevention and containment equipment and materials.
3. Contractor crew obligation to immediately stop the drilling operation upon first evidence of the occurrence of a frac-out and to immediately report any frac-out release.
4. Contractor/crew member responsibilities in the event of a release.
5. Operation of release prevention and control equipment and the location of release control materials, as necessary and appropriate.
6. Protocols for communication with agency representatives who might be on-site during clean-up efforts.

5.0 Drilling Procedures

The following shall be followed each day, prior to the start of work. The Frac-out Contingency Plan shall be available on-site during construction period. The site supervisor/foreman shall be on-site at any time that drilling is occurring or is planned to occur The site supervisor/foreman shall ensure that a documented job briefing meeting (toolbox meeting) is held at the start of each day of drilling to review safety issues and the appropriate procedures to be followed in case of a frac-out. Questions shall be answered and clarification given on any point over which the drilling crew or other project staff has concerns.

Drilling pressure shall be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels shall be monitored randomly by the operator. Pressure levels shall be set at a minimum level to prevent frac-outs. During the pilot bore, maintain the drilled annulus. Cutters and reamers will be pulled back into previously-drilled sections after each new joint of pipe is added.

Once the drilling rig is in place, and drilling begins, the operator shall stop work whenever the pressure in the drill rig drops, or there is a lack of returns in the entrance pit. At this time the supervisor/foreman shall inform TEC representative of the potential frac-out. The supervisor and the drill rig operator shall work to coordinate the likely location of the frac-out. The location of the frac-out shall be recorded and notes made on the location and measures taken to address the concern. The following subsections shall be adhered to when addressing a frac-out situation.

Water containing mud, silt, bentonite, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake, flowing stream or any other water source. The bentonite used in the drilling process shall be either disposed of at an approved disposal facility or recycled in an approved manner. Other construction materials and waste shall be recycled, or disposed of, as appropriate.

5.1 Vacuum Truck

A 500 gallon capacity vacuum truck shall be staged on location from which it can be mobilized so that any place along the drill shot can be reached by the apparatus within 10 minutes of a frac-out.

5.2 Field Response to Frac-out Occurrence

The response of the field crew to a frac-out release shall be immediate and in accordance with procedures identified in this Plan. All appropriate emergency actions that do not pose additional threats to sensitive resources will be taken, as follows:

1. Directional boring will stop immediately.
2. The bore stem will be pulled back to relieve pressure on the frac-out.
3. The site supervisor/foreman will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications made.
4. The site supervisor/foreman shall evaluate the situation and recommend the type and level of response warranted, including the level of notification required.
5. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, a leak stopping compound shall be used to block the frac-out. If the use of leak stopping compound is not fully successful, the bore stem shall be redirected to a new location along the desired drill path where a frac-out has not occurred.
6. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand, to a depth of 2-feet, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand shall be placed and the area returned to pre-project contours.
7. If a frac-out occurs, reaches the surface and becomes widespread, the site supervisor/foreman shall authorize a readily accessible vacuum truck and any other necessary equipment to be mobilized. If heavy equipment is used in the process of clean-up operations the vacuum truck can be placed on either end of the line of the drill so that the frac-out can be reached by crew on foot, or may be pulled by the heavy equipment, so that contaminated soils can be vacuumed up.

5.3 Response Close out Procedure

When the release has been contained and cleaned up, response close out activities will be conducted at the direction of the site supervisor/foreman and shall include the following:

1. The recovered drill fluid will either be recycled or hauled to an approved facility for disposal. No recovered drilling fluids will be discharged into streams, storm drains or any other water source.

2. All Frac-out excavation and clean-up sites will be returned to pre-project contours using clean fill, as necessary.
3. All containment measures (fiber, rolls, straw bale) will be removed, unless otherwise specified by the site supervisor/foreman and/ or TEC representative.

5.4 Construction Re-start

For small releases not requiring external notification, drilling may continue, if 100 percent containment is achieved through the use of a leak stopping compound or redirection of the bore and the clean-up crew remains at the frac-out location throughout the construction period.

For releases requiring external notification and/or other agencies, construction activities will not start without prior approval from the safety department or TEC representative.

5.5 Bore Abandonment

Abandonment of the bore will only be required when all efforts to control the frac-out within the existing directional bore have failed and approval is given by a TEC representative.

6.0 Notification

In the event of a frac-out that reaches any ditches within or outside TEC, the site supervisor/foreman will notify the TEC representative. All notifications will occur within 1 hour and proper documentation will be accomplished in a timely and complete manner. The following information will be provided:

1. Name and telephone number of person reporting.
2. Location of the release.
3. Date and time of release.
4. Type quantity, estimated size of release
5. How the release occurred
6. The type of activity that was occurring around the area of the frac-out.
7. Description of any sensitive areas, and their location in relation to the frac-out.
8. Description of the methods used to clean up or secure the site.
9. Listing of the current permits obtained for the project.

6.1 Communicating with Regulatory Agency Personnel

All employees will adhere to the following protocols when Regulatory Agency Personnel arrive on site. Only the site supervisor/foreman, safety department, or TEC representative are to coordinate communication with Regulatory Agency Personnel.

6.2 Documentation

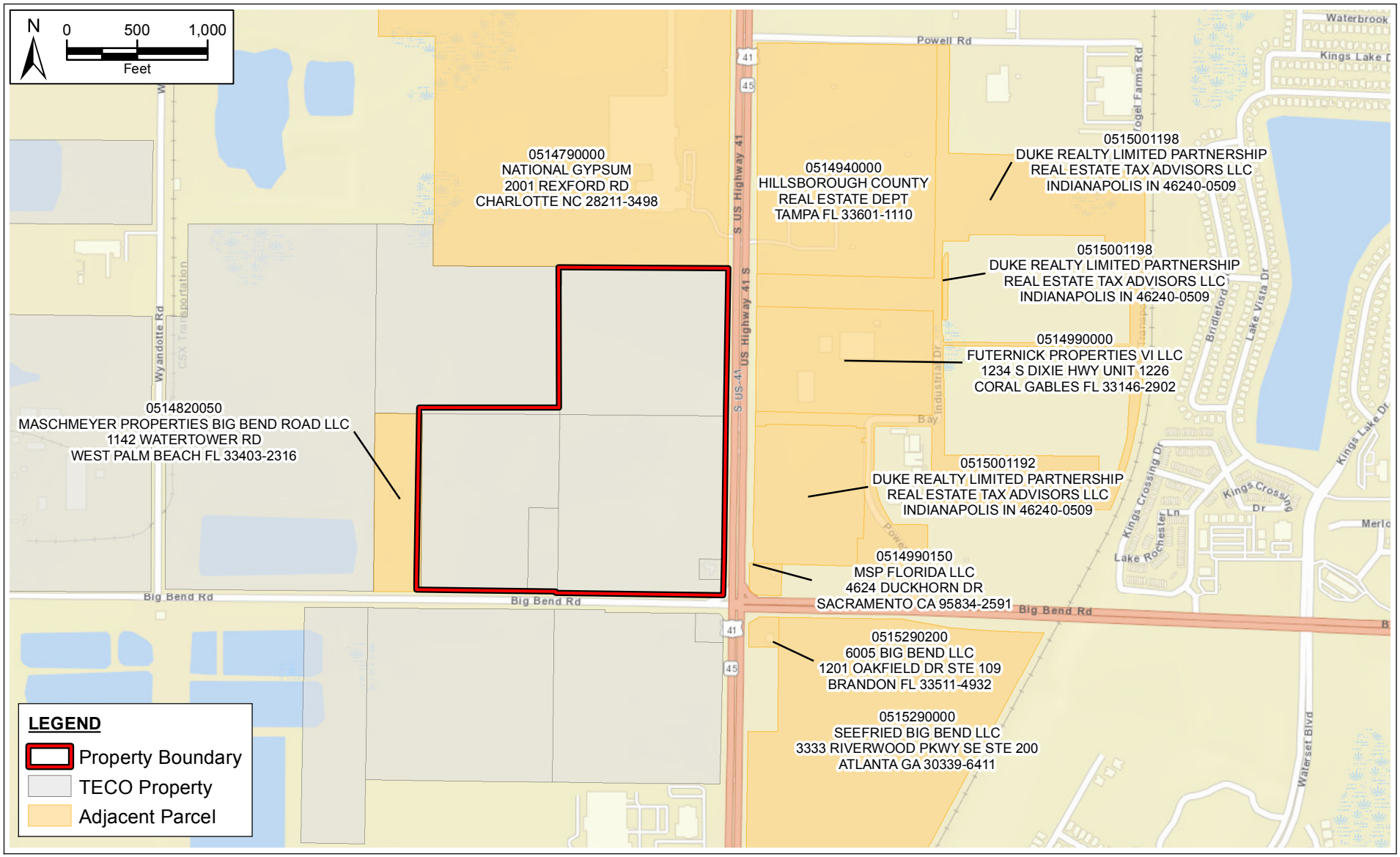
The site supervisor/foreman shall record the frac-out event in his/her daily log and will also fill out a Root Cause detailing the specific cause of "frac-out" with a detailed drawing. The Root Cause will include the following: Details on the release event, including an estimated amount of bentonite released, the size of the area impacted, and the success of the clean-up action. The Root Cause report shall include the: Name and telephone number of person reporting; Date, How the release occurred; The type of activity that was occurring around the frac-out; The description of methods used to clean up or secure the site; and a listing of the current permits obtained for the project.

7.0 Project Completion and Clean-up

1. All materials and any other rubbish-construction debris shall be removed from the construction zone at the end of each workday.
2. Relief pits at the bore entry and exit will be filled and returned to natural grade
3. All protective measures (fiber rolls, straw bales, silt fence) will be removed unless otherwise specified by the site supervisor/foreman.

TAB 11

APPENDIX I
ADJACENT PROPERTY OWNERSHIP MAP



APPENDIX I
ADJACENT PROPERTY OWNERSHIP MAP
BIG BEND III SOLAR POWER PLANT PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: ESRI Street Map, 2021; Hillsborough Co. PA, 2021; ECT, 2021.

TECO
TAMPA ELECTRIC
AN EMERA COMPANY

Q:\projects\TECO\BB_PhaseIII\200637\0200\Adj_owners.mxd

jvonborstel 1/29/2021 3:25:49 PM