Contamination Screening Evaluation Report

OSCEOLA PARKWAY EXTENSION PD&E RE-EVALUATION

Osceola and Orange Counties, Florida CFX Project No. 599-223 CFX Contract No. 001250 GEC Project No. 4256E

Prepared for: RS&H, Inc. 301 East Pine Street, Suite 350 Orlando, Florida 32801

and
Central Florida Expressway Authority

Prepared by:
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February 2019



At the very foundation of our community

December 19, 2018 Revised January 29, 2019 Revised February 14, 2019

RS&H, Inc. 301 East Pine Street, Suite 350 Orlando, Florida 32801

Attention:

Mr. Daniel Kristoff, P.E.

Subject:

Contamination Screening Evaluation Report

OSCEOLA PARKWAY EXTENSION PD&E RE-EVALUATION

Osceola and Orange Counties, Florida

CFX Project No. 599-223 CFX Contract No. 001250 GEC Project No. 4256E

Dear Mr. Kristoff:

Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to present this Contamination Screening Evaluation Report (CSER) for the above-referenced project. This report describes our evaluation procedures, presents the information we obtained, and identifies 25 sites that have been assigned Contamination Risk Potential Ratings.

We appreciate the opportunity to work with RS&H, Inc. and the Central Florida Expressway Authority on this project. If you have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

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EXECUTIVE SUMMARY

Geotechnical and Environmental Consultants, Inc. (GEC) has been retained by RS&H, Inc., on behalf of the Central Florida Expressway Authority (CFX), to provide a Contamination Screening Evaluation Report (CSER) for the Osceola Parkway Extension PD&E Re-Evaluation project.

The purpose of this evaluation was to assess the risk of encountering petroleum or hazardous substance contamination of soil, groundwater, surface water, or sediment that could adversely affect this project. The CSER activities included a review of Florida Department of Environmental Protection (FDEP) Map Direct files, historical aerial photographs, and a site reconnaissance of the project study area.

As a result of this evaluation, we have assigned Contamination Risk Ratings to 25 sites. The 25 site locations are shown on **Figures 3A-3D** and the contamination status of each site is summarized in **Table 1**.

The following tables present the 25 **Low, Medium,** and **High-Risk** contamination sites as they pertain to the four alternative alignments under review:

ALTERNATIVE 405 (BOGGY CREEK)

SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
1	Publix Super Market #1625	14185 Lake Nona Boulevard	Low
2	Citrus Grove - Boggy Creek Road	Boggy Creek Road	Medium
3	Boggy Creek Tree Farms, LLC	6350 New Hope Road, 6301 Beth Road, 6386 Beth Road	Medium
4	Bob Zirots Lanscaping & Nursery, Inc. (Southside Garden Supply)	14645 Boggy Creek Road	Medium
5	Historical Citrus Grove - Simpson Road	5707 Simpson Road	Low
6	Historical Auto Salvage Yard	14857 Boggy Creek Road	High
7	Circle K #7466	3280 Boggy Creek Road	Medium
8	Showcase M.H. Sales, Inc.	3300 Morningside Drive	Low
9	Historical Ranching Structures and Existing Cattle Pens	0.45 mile east of the SR 417 and Boggy Creek Road interchange, 0.1 mile south of SR 417	Medium
10	Area of Dumping	0.8 mile northeast of the SR 417 and Boggy Creek Road interchange	Low
11	Railroad	300 feet north of SR 417	Low
12	Historical Cattle Pen - SR 417	350 feet north of SR 417	Low
13	Orlando City Lift Station #139	6655 Central Florida Greenway	Low
15	Historical Ranch Structures	1 mile northwest of the Boggy Creek Road and Narcoossee Road intersection	Medium

SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
23	Construction Material and Dumping	14262 Boggy Creek Road	Medium
24	Debris Dumping	14411 Boggy Creek Road	Medium
25	Existing Cattle Pen	Northeast quadrant of SR 417 and Boggy Creek Road interchange	Medium

ALTERNATIVE 404B (LAKE NONA)

SITE	SITE NAME	SITE ADDRESS / LOCATION	RISK
NO.	SITE IVAIVIE	SHE ADDRESS / LOCATION	POTENTIAL
6	Historical Auto Salvage Yard	14857 Boggy Creek Road	High
7	Circle K #7466	3280 Boggy Creek Road	Medium
8	Showcase M.H. Sales, Inc.	3300 Morningside Drive	Low
9	Historical Ranching Structures and Existing Cattle Pens	0.45 mile east of the SR 417 and Boggy Creek Road interchange, 0.1 mile south of SR 417	Medium
10	Area of Dumping	0.8 mile northeast of the SR 417 and Boggy Creek Road interchange	Low
11	Railroad	300 feet north of SR 417	Low
12	Historical Cattle Pen - SR 417	350 feet north of SR 417	Low
13	Orlando City Lift Station #139	6655 Central Florida Greenway	Low
14	University of Florida-Lake Nona Research Center #3425	6550 Sanger Road	Low
15	Historical Ranch Structures	1 mile northwest of the Boggy Creek Road and Narcoossee Road intersection	Medium
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
25	Existing Cattle Pen	Northeast quadrant of SR 417 and Boggy Creek Road interchange	Medium

ALTERNATIVE 107C-1 (SPLIT OAK IMPACT)

SITE	SITE NAME	SITE ADDRESS / LOCATION	RISK
NO.	SITE NAIVIE	SITE ADDRESS / LOCATION	POTENTIAL
16	Historical Citrus Grove - Boggy Creek Road and	West of the Narcoossee Road and Clapp	Low
10	Narcoossee Road	Simms Duda Road intersection	Low
		Northeast quadrant of the Narcoossee	
17	Hi-Acres Services	Road and Calpp Simms Duda Road	Low
		intersection	

SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
18	Historical Citrus Grove - Clapp Simms Duda Road	0.7 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
19	Historical Row Crops - Clapp Simms Duda Road	0.5 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
20	Lake Hart Property Area #12	1.1 miles east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium

ALTERNATIVE 207D-1 (AVOID SPLIT OAK / WETLAND)

SITE	SITE NAME	SITE ADDRESS / LOCATION	RISK
NO.	SHE NAIVIE	SITE ADDRESS / LOCATION	POTENTIAL
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
18	Historical Citrus Grove - Clapp Simms Duda Road	0.7 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
19	Historical Row Crops - Clapp Simms Duda Road	0.5 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
20	Lake Hart Property Area #12	1.1 miles east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
21	Historical Citrus Grove - Cyrils Drive	Southwest quadrant of the Cyrils Drive and Franklin Road intersection	Low
22	Apparent Lumber Camp	1.75 miles east of the Cyrils Drive and Absher Road intersection	Low

Based on our current knowledge of the design plans, Level 2 Contamination Impact Analyses (CIA) may be required for the 12 **Medium-Risk** sites and the 1 **High-Risk** site listed above to evaluate the presence of contamination.

1.0 INTRODUCTION

1.1 Contract Information

Geotechnical and Environmental Consultants, Inc. (GEC) has been retained by RS&H, Inc., on behalf of the Central Florida Expressway Authority (CFX), to provide a Contamination Screening Evaluation Report (CSER) for the Osceola Parkway Extension PD&E Re-Evaluation project. This CSER was performed as part of CFX Contract No. 001250.

This CSER was performed in accordance with the negotiated contamination scope detailed in CFX's Agreement for Professional Services dated March 9, 2017, and Supplemental Agreement No. 1 dated July 5, 2018.

2.0 PROJECT DESCRIPTION

The study corridor of the proposed Osceola Parkway Extension begins west of the Boggy Creek Road and Simpson Road intersection and extends eastward along the Orange/Osceola County line for approximately 6 miles before turning south into Osceola County to meet the northern terminus of the proposed Northeast Connector Expressway. The project also includes a north/south segment linking to SR 417 in the general vicinity of the Boggy Creek Road interchange. The four alternative alignments under review (405, 404B, 207D-1 and 107C-1) are shown on excerpts of the U.S. Geological Survey (USGS) Narcoossee, St. Cloud North, and Pine Castle, Florida Quadrangle maps (Figure 1).

3.0 CONTAMINATION SCREENING METHODOLOGY

GEC conducted this evaluation in general accordance with Chapter 20 of the FDOT PD&E Manual dated June 14, 2017. Chapter 20 guidelines were modified as follows:

- Historical aerial photographs and the FDEP OCULUS Document Management System,
 Map Direct Website, and Nexus Portal are will be reviewed.
- A Site Reconnaissance will be performed.
- A local regulatory agency interview will be performed.
- No additional databases or historical resources will be consulted.

The study area is defined by the following distances from the right of way:

- All sites within 500 feet
- Non-landfill solid waste sites within 1,000 feet

 Solid waste landfills, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or National Priorities List (NPL) sites within ½ mile

Based on the results of the contamination screening activities, GEC assigned Contamination Risk Potential Ratings (CRPRs) to sites. The contamination potential risk rating system was developed by FDOT and incorporates four levels of risk: **No, Low, Medium and High**. For a description of the four risk levels please refer to **Appendix C.**

4.0 INFORMATION SOURCES

4.1 USGS Quadrangle Map

According to the USGS Narcoossee, St. Cloud North, and Pine Castle, Florida Quadrangle maps, reproduced in **Figure 1**, natural ground surface elevations range from +70 to +80 feet NGVD along the western alignments (Alternatives 405 and 404B) and from +60 to +80 feet NGVD along the eastern alignments (Alternatives 207D-1 and 107C-1). The USGS Quadrangle map depicts several wetlands along the project corridor.

No landfills are depicted that would represent potential contamination concerns on, or in the immediate vicinity of, the study area.

4.2 NRCS Soil Survey Review

The Natural Resources Conservation Service (NRCS) Soil Surveys for Osceola and Orange counties were reviewed for near-surface soil and groundwater information. The NRCS Soil Survey maps of the four alternatives are shown on **Figures 2A-2D**. The NRCS Soil Survey soil types along the alternative alignments are provided in the following table.

Unit No.	Soil Name		
	Osceola County		
1	Adamsville sand, 0 to 2 percent slopes		
5	Basinger fine sand, 0 to 2 percent slopes		
6	Basinger fine sand, depressional, 0 to 1 percent slopes		
9	Cassia fine sand, 0 to 2 percent slopes		
10	Delray loamy fine sand, depressional		
15	Hontoon muck, frequently ponded, 0 to 1 pecent slopes		
16	Immokalee fine sand, 0 to 2 percent slopes		
19	Malbar fine sand, 0 to 2 percent slopes		
22	Myakka fine sand, 0 to 2 percent slopes		
24	Narcoossee fine sand, 0 to 2 percent slopes		

Unit No.	Soil Name	
Osceola County		
27	Ona fine sand, 0 to 2 percent slopes	
32	Placid fine sand, frequently ponded, 0 to 1 percent slopes	
34	Pomello fine sand, 0 to 5 percent slopes	
39	Riviera fine sand, frequently ponded, 0 to 1 percent slopes	
40	Samsula muck, frequently ponded, 0 to 1 percent slopes	
42	Smyrna fine sand, 0 to 2 percent slopes	
43	St. Lucie fine sand, 0 to 5 percent slopes	
44	Tavares fine sand, 0 to 5 percent slopes	
Orange County		
2	Archbold fine sand, 0 to 5 percent slopes	
3	Basinger fine sand, 0 to 5 percent slopes	
19	Hontoon muck, frequently ponded, 0 to 1 percent slopes	
20	Immokalee fine sand	
23	Malabar fine sand	
26	Ona fine sand, 0 to 2 percent slopes	
34	Pomello fine sand, 0 to 5 percent slopes	
37	St. Johns fine sand	
40	Samsula muck, frequently ponded, 0 to 1 percent slopes	
41	Samsula-Hontoon-Basinger association, depressional	
42	Sanibel Muck	
44	Smyrna- Smyrna, wet, fine sand, 0 to 2 percent slopes	
46	Tavares fine sand, 0 to 5 percent slopes	
54	Zolfo-Urban land complex	

No landfills are depicted that would represent potential contamination concerns on, or in the immediate vicinity of, the study area.

Information contained in the NRCS Soil Survey is very general and may be outdated. It may not, therefore, be reflective of actual soil and groundwater conditions, particularly if recent development in the site vicinity has modified soil conditions or surface/subsurface drainage.

4.3 Historical Aerial Photographs

The study corridor of the proposed Osceola Parkway Extension begins west of the Boggy Creek Road and Simpson Road intersection and extends eastward along the Orange / Osceola County line for approximately 6 miles before turning south into Osceola County to meet the northern terminus of the proposed Northeast Connector Expressway. The project also includes a north/south segment linking to SR 417 in the general vicinity of the Boggy Creek Road interchange. The four alternative alignments under review (405, 404B, 207D-1 and 107C-1) are

shown on excerpts of the U.S. Geological Survey (USGS) Narcoossee, St. Cloud North, and Pine Castle, Florida Quadrangle maps (**Figure 1**).

Historical aerial photographs of the study area were reviewed to evaluate past land use and to identify features that may indicate hazardous material or petroleum contamination. Available historical aerial photographs of the study area were accessed from Google Earth, the Florida Department of Transportation, and the University of Florida websites. Aerial photographs for the following years were reviewed: 1944, 1951, 1959, 1969, 1973, 1974, 1978, 1984, 1990, 1994, 1995, 1999, 2003, 2004, 2008, 2013, and 2018.

Alternative 405

Alternative 405 begins at the Boggy Creek Road and SR 417 interchange and travels south along Boggy Creek Road towards the Simpson Road intersection. The corridor then extends eastward along the Orange/Osceola County line for about 3 miles before turning northeast and continuing to Narcoossee Road. Boggy Creek Road and Narcoossee Road are visible dating back to 1944. The SR 417 interchange is first visible in 1994 with the construction of SR 417.

The north/south segment of Boggy Creek Road is visible with citrus groves adjacent to the east and west in 1944. By 1959, the west side of Boggy Creek Road had been cleared predominately for pastureland. Much of the existing residential and commercial structures on the northern portion of Boggy Creek Road had been constructed by 1974. Development adjacent to the Simpson Road intersection, commercial facilities, and residential communities, were visible beginning in 1984. A gas station is first visible in the southwest quadrant of the Simpson Road intersection in 1990.

The eastern portion of the alternative predominately traverses wetlands and wooded rangeland. Development of the eastern portion of Boggy Creek Road begins in 1951 and encounters and parallels the proposed alignment beginning at the Tindall Acres Road intersection. Ranching structures are seen 0.75 mile west of Narcoossee Road and 0.25 mile north of Boggy Creek. In 1969, a citrus grove is visible north of Boggy Creek Road as the alternative approaches Narcoossee Road.

Alternative 404B

Alternative 404B begins 1 mile east of the Boggy Creek Road and SR 417 interchange and travels south through wetlands and wooded rangeland towards the Orange/Osceola County line. The corridor then extends west to intersect with Boggy Creek Road and Simpson Road, and eastward along the Orange/Osceola County line for 2 miles before turning northeast and continuing to Narcoossee Road. Boggy Creek Road and Narcoossee Road are visible dating back to 1944. The SR 417 interchange is first visible in 1994.

Between 1944 and 1969, the north/south segment of the alternative is seen as undeveloped wooded rangeland with various trails. In 1974, a railroad has begun to be constructed just north of the existing SR 417. Development south of and adjacent to the north/south segment, commercial facilities, and residential communities, were visible beginning in 1984. A large rectangular stormwater pond is visible about 0.8 mile south of SR 417 and to the east of the proposed alignment in the 1990 aerial photograph.

The eastern portion of the alternative predominately traverses wetlands and wooded rangeland. Development of the eastern portion of Boggy Creek Road begins in 1951 and encounters and parallels the proposed alignment beginning at the Tindall Acres Road intersection. Ranching structures are seen 0.75 mile west of Narcoossee Road and 0.25 mile north of Boggy Creek Road. In 1969, a citrus grove is visible north of Boggy Creek Road as the alternative approaches Narcoossee Road.

Alternative 107C-1

Alternative 107C-1 begins just north of the Narcoossee Road and Clapp Simms Duda Road intersection and travels about 3 miles southeast towards the Cyrils Drive and Absher Road intersection. The alignment continues another 0.75 mile east of the intersection before the alternative splits into two separate segments. One alignment travels northeast for 2.8 miles, crossing wetlands and a canal. The second segment heads southeast for 1.4 miles along the eastern side of a wetland.

Narcoossee Road and Clapp Simms Duda Road are visible dating back to 1944 with prominent row crops north of Clapp Simms Duda Road, east of the intersection. Areas of citrus groves are visible south of Clapp Simms Duda Road. The eastern portion of the alignment traverses an apparent logging operation between 1944 and 1951. In 1984, a large citrus grove was constructed in the northeast quadrant of the Narcoossee Road and Clapp Simms Duda Road intersection.

Alternative 207D-1

Alternative 207D-1 begins just north of the Narcoossee Road and Clapp Simms Duda Road intersection and travels about 2.4 miles southeast towards the Cyrils Drive and Franklin Road intersection. The alignment continues east along Cyrils Drive to its intersection with Absher Road. The alignment continues another 0.6 mile east of that intersection before the alternative splits into three separate segments. One alignment travels northeast for 3 miles, crossing wetlands and a canal. A center segment continues directly eastward for 1.3 miles, crossing a canal. The third alignment heads southeast for 1.3 miles along the eastern side of a wetland.

Narcoossee Road and Clapp Simms Duda Road are visible dating back to 1944 with prominent row crops north of Clapp Simms Duda Road, east of the intersection. Areas of citrus groves are visible south of Clapp Simms Duda Road and Cyrils Drive. The eastern portion of the alignment traverses an apparent logging operation (1944 and 1951) with multiple camps adjacent to the middle segment. In 1984, a large citrus grove was constructed in the northeast quadrant of the Narcoossee Road and Clapp Simms Duda Road intersection. The proposed alignment traverses an excavated pond, north of the Cyrils Drive and Franklin Road intersection, constructed in 1995.

Potential contamination sites identified from the aerial photographs are described in the Potential Contamination Site Summary in **Table 1**. The historical aerial photographs are provided in **Appendix A**.

5.0 PUBLIC RECORD REVIEW

5.1 FDEP OCULUS Document Management System, Map Direct Website, and Nexus Portal

The FDEP uses the OCULUS Document Management System, Map Direct Website, and Nexus Portal to provide public record information for petroleum or hazardous material releases to the environment, generators of hazardous waste, and solid waste facilities. Information contained in this data management system includes the status of active and abandoned storage tanks, tank inspection reports, tank closure reports, environmental assessment reports, remedial action reports, hazardous waste generator compliance details, and solid waste facility compliance details.

GEC reviewed the OCULUS Document Management System, Map Direct Website, and Nexus Portal within the search distances provided in Section 3.0. The results of our review have been incorporated into our Potential Contamination Site Summary in **Table 1**. The FDEP OCULUS, Map Direct, and Nexus Portal Information can be found in **Appendix D**.

5.2 EDB Delineated Areas

The Florida Legislature had the FDEP implement the Delineated Areas Program in 1988 under Chapter 62-524, FAC. The purpose of the program was to protect public health and groundwater resources by regulating potable water well construction and testing standards for areas of known groundwater contamination. During the period 1962 to 1980, the Florida Department of Agriculture and Consumer Services (FDACS) conducted widespread applications of ethylene dibromide (EDB), an agricultural pesticide, to control nematodes in citrus groves. In 1983, the FDEP began testing groundwater in potable wells throughout Florida due to the discovery of EDB in wells in other states. The delineated areas of EDB groundwater

contamination are shown on the FDEP Map Direct website. The potable wells, agricultural or residential, with confirmed impacts were shown on the website with a 1,000-foot buffer zone in an attempt to project future migration of contaminants. However, this does not mean that there is not EDB contamination outside of that 1,000-foot zone.

After reviewing these EDB-delineated areas on the FDEP Map Direct website, in the vicinity of the study area, GEC found that no EDB-delineation areas appear within the study area.

5.3 Agricultural Land Use

Citrus groves, plant nurseries, and agricultural fields were present within the study area in historical aerial photographs. Agricultural features include vegetation planted in rows, striated fields (row crops), barns and sheds, irrigation wells, well pumps, pump houses, and spray tank filling stations.

Trees, plants, and crops are cultivated in rows. This is a typical signature of an agricultural property. Citrus groves, plants in nurseries, and agricultural crops such as melon cultivation are common agricultural land uses.

Irrigation wells, well pumps, and spray tank filling stations are commonly found associated with agricultural properties. The irrigation wells are often connected to a pump and irrigation system. Irrigation systems can include metal, plastic and, historically, tansite (asbestos) irrigation lines that run from the well to water the planted vegetation. Some irrigation systems have fertilizer and chemical tanks that are interconnected with the irrigation system, allowing the crops to be fertilized or treated using the irrigation system. Many farms spot-spray Round-Up, an herbicide for unwanted weeds and vegetation.

Irrigation pumps are commonly found inside small buildings or "pump houses". Irrigation pumps can be electrical or fuel powered. The pumps that are powered by electricity often have an associated electrical transformer and the pumps powered by fuel (often diesel) have an associated fuel tank. Fuel powered pumps are typically larger and require more maintenance such as changing of oil and greasing or lubricating moving parts. Historically, some farmers would drain the used oil to the ground as opposed to collecting and recycling the used oil.

Some properties also have filling pipes for spray tanks that can be on trucks, tractors, or trailers. The filling pipe is sometimes a garden hose; however, a pipe in an inverted "L" shape with a downspout is common. Pesticides and herbicides are added to the tanks and the tanks filled with water for application to the plants. Chemicals can be spilled and tanks can be allowed to overflow. In some instances, stagnant fluids remaining in the tanks are discharged at the filling location.

Barns and pole barns are used for equipment and material storage. Often the farms have tractors, water tank trucks or trailers, and various spray equipment. Chemicals that may be stored for farm use include pesticides, herbicides, tractor and truck fuel, oil, and fertilizers. Some farms have a maintenance barn where vehicle repair and maintenance is performed. Some of these facilities had aboveground or underground fuel tanks for fueling various farm equipment.

Historically many citrus groves, vineyards, and plant nurseries would heat the groves when temperatures dropped in the winter, to protect the crops from frost or freeze. The most commonly used heater was the smudge pot. A smudge pot used diesel fuel, oil, waste oil, kerosene or other flammable liquid. Some farmers would burn old tires in them or on the ground. Other farmers had fuel-powered pole-mounted fans that would cause a breeze that would theoretically keep frost from forming.

Some farms also have dumping areas; these can be in surface piles or excavated holes in the ground, such as side-slopes of hills. Common types of dumped objects include agricultural chemical containers, tires, irrigation piping, plant pots, plant or tree cuttings, and various broken farming equipment. Some farms have on-site landfills or dumps where farm and house-related debris has been buried.

Agricultural contamination impacts include pesticides, herbicides, petroleum, and other impacts. Pesticide and herbicide impacts can be residual amounts from routine spraying, from spills, or from areas where it was stored. Petroleum impacts can be from fueling spills, overfilling fuel tanks, vehicles, or smudge pots, and discharges from rusted tanks and smudge pots. Other impacts could be from electrical transformers (PCB), discharging used oil to the ground during pump or vehicle maintenance and repairs, or burning old tires on the ground to heat an area during a cold spell.

Contamination impacts are typically identified through interviews with the landowner and/or observing historical features (buildings, wells, dump areas), and sampling soil and groundwater.

GEC did not observe any obvious evidence of environmental impacts from agricultural usage at the time of site reconnaissance. Agricultural land uses are identified as **Site Nos. 2, 3, 4, 5, 9, 12, 15, 16, 17, 18, 19, 20, 21** and **25** in **Table 1**.

5.4 Railroad Corridors

One railroad corridor was identified about 300 feet north of SR 417, within the limits of the western study areas.

Historical rail lines have several common chemical constituents of concerns as follows:

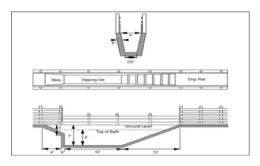
- **Arsenic**: The most commonly used arsenic-containing products were herbicides, pesticides, insecticides, and wood-treating agents such as chromated copper arsenate.
- Creosote: Creosote is used to coat railroad ties.
- **Polynuclear aromatic hydrocarbons**: Polynuclear aromatic hydrocarbons are a coal tar and creosote by-product. Coal tar is more commonly associated with rail yards.
- Other inorganic constituents used in herbicides.

Due to its residual nature, arsenic is the most commonly occurring chemical constituent related to railroad beds as a result of liberal applications of herbicides used to keep the railroad free of vegetation. The creosote and polynuclear aromatic hydrocarbons are commonly found associated with railroad ties and rail yards.

The railroad corridor is identified as Site No. 11 in Table 1.

5.5 Cattle Dip Vats

Cattle dip vats were a response to cattle tick fever in the 1890s. The United States Department of Agriculture (USDA) initiated the cattle dip vat program in 1906 and approximately 3,200 cattle dip vats had been constructed by 1940.



Cattle dip vats were used until the 1960s and many vats have not been located or documented. Cattle dip vats were used to apply pesticides to cattle and other livestock to kill ticks and, thereby, eliminate tick-borne diseases. The vats were typically constructed of concrete. They consisted of four sections; the entrance slide, dipping vat, exit stairs, and drip pad. Cattle were funneled into a chute leading to the entrance slide,

would then slide down into the pesticide-filled vat, swim or walk across the vat and walk up the exit stairs to the drip pad. The vats were roughly four feet wide, seven feet deep, and 40 feet long as shown on the included diagram.

Due to the relatively small size of the vat and the narrow profile, it is difficult to identify a cattle dip vat from aerial photographs or in a wooded area. Cattle dip vats are typically identified when the landowner reveals the location, when they are located near historical cattle pens and chutes, and by happening upon them. To add to the difficulty in identifying historical cattle dip vats, many landowners removed the vats when the program was closed. They either dug up the vat or broke up the concrete and covered it with soil.

No cattle dip vats were identified within the study area through public record and database review, historical aerial photograph review, or site reconnaissance. Based on available information, we found no evidence that cattle dip vats within the study area contribute to contamination risk for this project. However, a detailed field search to identify cattle dip vats was not within the scope of this study.

6.0 INTERVIEWS

On December 3, 2018, GEC submitted a request for information to Mr. Mike Bryant and Mr. Mark Gantz, both inspectors with Osceola County, regarding any known contamination issues within the study area. Mr. Bryant and Mr. Gantz were not aware of any environmental impacts along the proposed alternatives.

On January 22, 2019, GEC submitted a request to Ms. Ruth Rauenzahn, Environmental Program Supervisor for the Orange County Environmental Protection Division (OCEPD), in regard to the property located at 14857 Boggy Creek Road (**Site No. 6**). Ms. Rauenzahn indicated no petroleum storage tanks or petroleum contamination have been reported for the property. Ms. Rauenzahn stated she would ask additional OCEPD departments about the site in question. GEC has not received any additional information from OCEPD as of the date of this CSER.

On January 22, 2019, GEC submitted a records request to FDEP regarding the most recent updates for the property located at 14857 Boggy Creek Road (Site No. 6). FDEP stated no records were found matching the address provided.

No additional interviews were performed in the preparation of this assessment. The interview documentation is included in **Appendix E**.

7.0 SITE RECONNAISSANCE

A GEC representative performed a reconnaissance of the study area between November 30 and December 5, 2018. The purpose of the reconnaissance was to document existing conditions and evaluate whether current land uses could result in hazardous material or petroleum product contamination of environmental media.

The properties within the project study area were visually inspected for evidence of contamination such as stressed vegetation, underground tank vent and fill pipes, dumping, accumulated areas of debris, evidence of buried materials, and ground staining.

Details of the site reconnaissance are incorporated in the Potential Contamination Site Summary in **Table 1**. Photographs documenting the current site conditions are provided in **Appendix F**.

8.0 CONCLUSIONS AND RECOMMENDATIONS

This CSER has identified the 25 sites that, in GEC's opinion, have some risk of contamination impacts to this project. The site locations are shown on **Figures 3A-3D**. **Table 1** summarizes the findings for each rated site.

8.1 Potential Contamination Sites

The following tables present the 25 **Low, Medium,** and **High-Risk** contamination sites as they pertain to the four alternative alignments under review:

ALTERNATIVE 405 (BOGGY CREEK)

SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
1	Publix Super Market #1625	14185 Lake Nona Boulevard	Low
2	Citrus Grove - Boggy Creek Road	Boggy Creek Road	Medium
3	Boggy Creek Tree Farms, LLC	6350 New Hope Road, 6301 Beth Road, 6386 Beth Road	Medium
4	Bob Zirots Lanscaping & Nursery, Inc. (Southside Garden Supply)	14645 Boggy Creek Road	Medium
5	Historical Citrus Grove - Simpson Road	5707 Simpson Road	Low
6	Historical Auto Salvage Yard	14857 Boggy Creek Road	High
7	Circle K #7466	3280 Boggy Creek Road	Medium
8	Showcase M.H. Sales, Inc.	3300 Morningside Drive	Low
9	Historical Ranching Structures and Existing Cattle Pens	0.45 mile east of the SR 417 and Boggy Creek Road interchange, 0.1 mile south of SR 417	Medium
10	Area of Dumping	0.8 mile northeast of the SR 417 and Boggy Creek Road interchange	Low
11	Railroad	300 feet north of SR 417	Low
12	Historical Cattle Pen - SR 417	350 feet north of SR 417	Low
13	Orlando City Lift Station #139	6655 Central Florida Greenway	Low
15	Historical Ranch Structures	1 mile northwest of the Boggy Creek Road and Narcoossee Road intersection	Medium
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low

SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
23	Construction Material and Dumping	14262 Boggy Creek Road	Medium
24	Debris Dumping	14411 Boggy Creek Road	Medium
25	Existing Cattle Pen	Northeast quadrant of SR 417 and Boggy Creek Road interchange	Medium

ALTERNATIVE 404B (LAKE NONA)

SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
6	Historical Auto Salvage Yard	14857 Boggy Creek Road	High
7	Circle K #7466	3280 Boggy Creek Road	Medium
8	Showcase M.H. Sales, Inc.	3300 Morningside Drive	Low
9	Historical Ranching Structures and Existing Cattle Pens	0.45 mile east of the SR 417 and Boggy Creek Road interchange, 0.1 mile south of SR 417	Medium
10	Area of Dumping	0.8 mile northeast of the SR 417 and Boggy Creek Road interchange	Low
11	Railroad	300 feet north of SR 417	Low
12	Historical Cattle Pen - SR 417	350 feet north of SR 417	Low
13	Orlando City Lift Station #139	6655 Central Florida Greenway	Low
14	University of Florida-Lake Nona Research Center #3425	6550 Sanger Road	Low
15	Historical Ranch Structures	1 mile northwest of the Boggy Creek Road and Narcoossee Road intersection	Medium
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
25	Existing Cattle Pen	Northeast quadrant of SR 417 and Boggy Creek Road interchange	Medium

ALTERNATIVE 107C-1 (SPLIT OAK IMPACT)

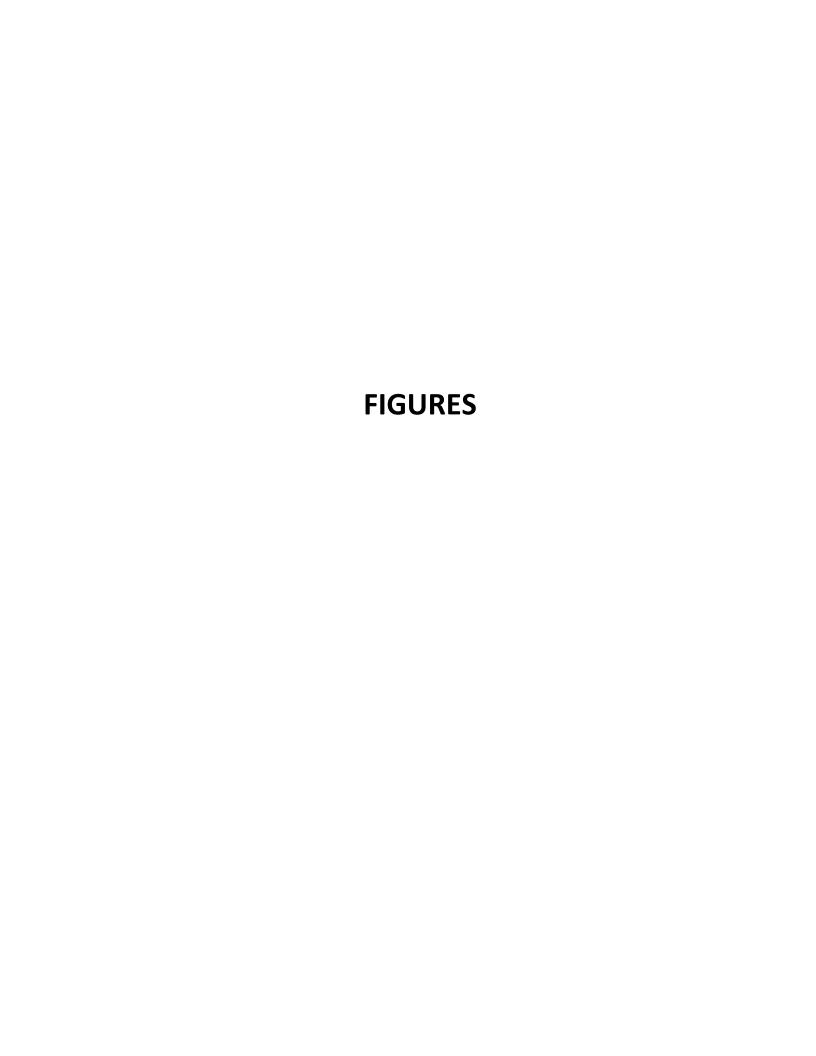
SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
18	Historical Citrus Grove - Clapp Simms Duda Road	0.7 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
19	Historical Row Crops - Clapp Simms Duda Road	0.5 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium

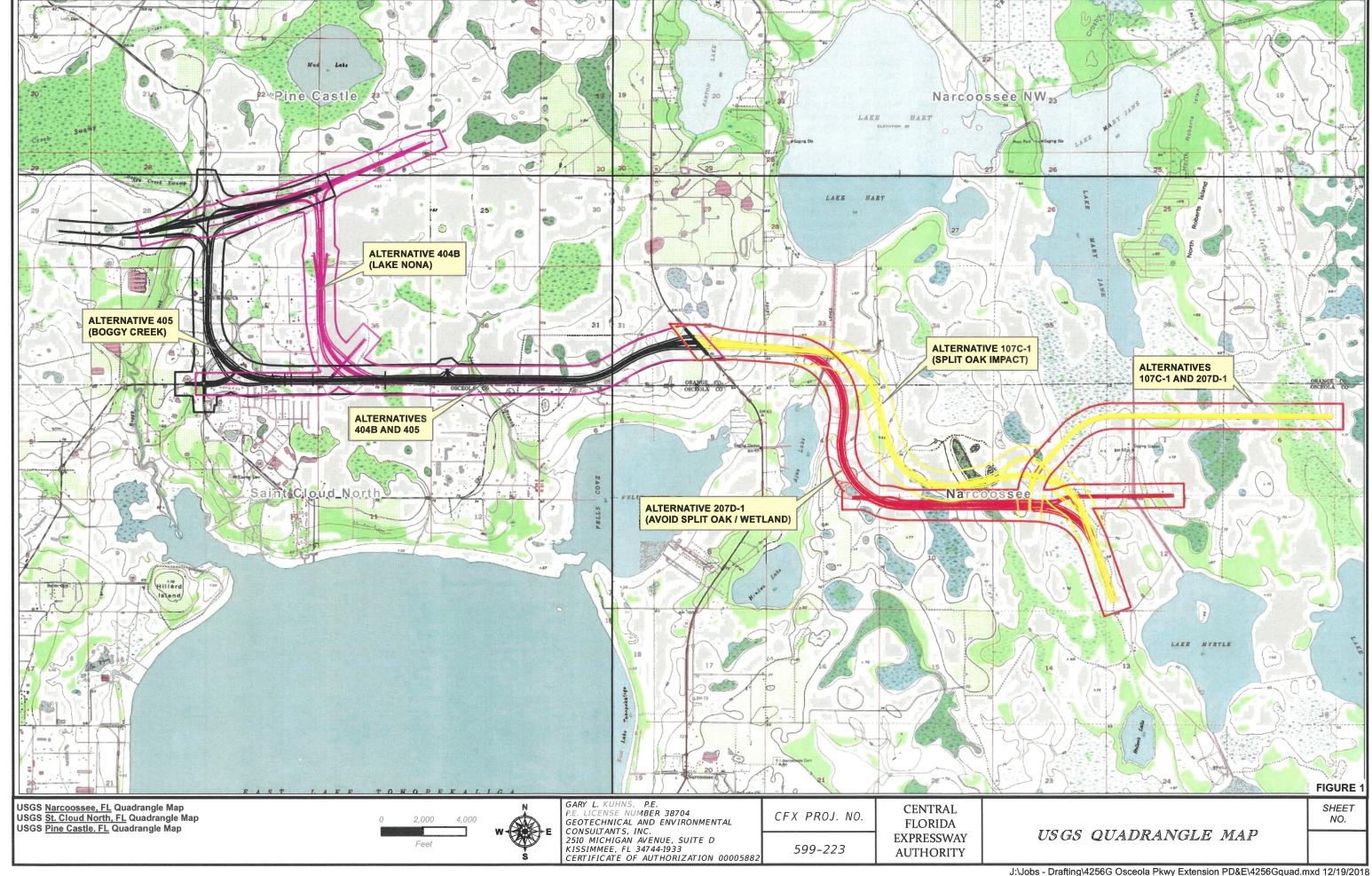
SITE NO.	SITE NAME	SITE ADDRESS / LOCATION	RISK POTENTIAL
20	Lake Hart Property Area #12	1.1 miles east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium

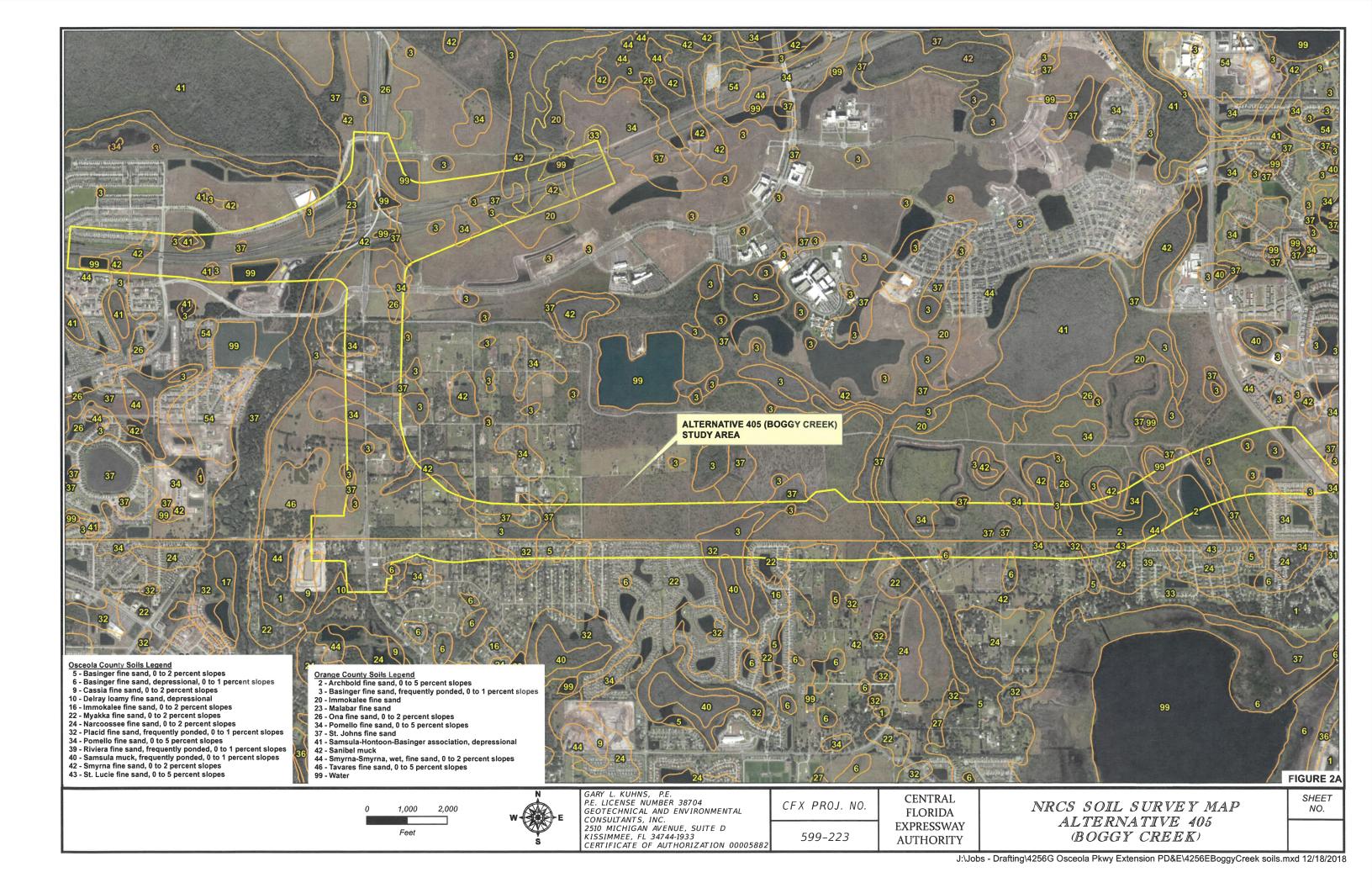
ALTERNATIVE 207D-1 (AVOID SPLIT OAK / WETLAND)

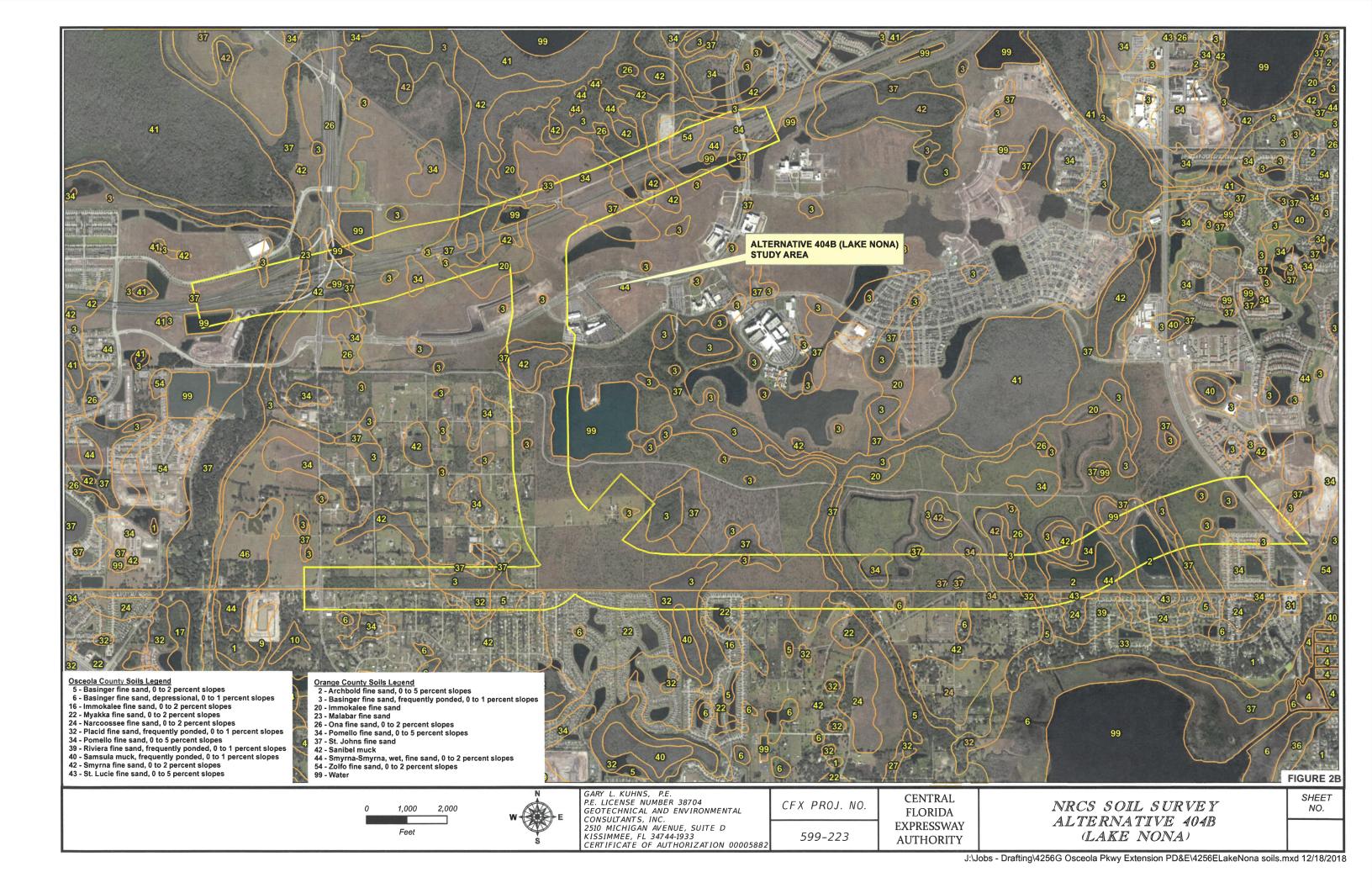
SITE	SITE NAME	SITE ADDRESS / LOCATION	RISK
NO.		5.7.2.7.2.7.2.5.7	POTENTIAL
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	Low
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	Low
18	Historical Citrus Grove - Clapp Simms Duda Road	0.7 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
19	Historical Row Crops - Clapp Simms Duda Road	0.5 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
20	Lake Hart Property Area #12	1.1 miles east of the Narcoossee Road and Clapp Simms Duda Road intersection	Medium
21	Historical Citrus Grove - Cyrils Drive	Southwest quadrant of the Cyrils Drive and Franklin Road intersection	Low
22	Apparent Lumber Camp	1.75 miles east of the Cyrils Drive and Absher Road intersection	Low

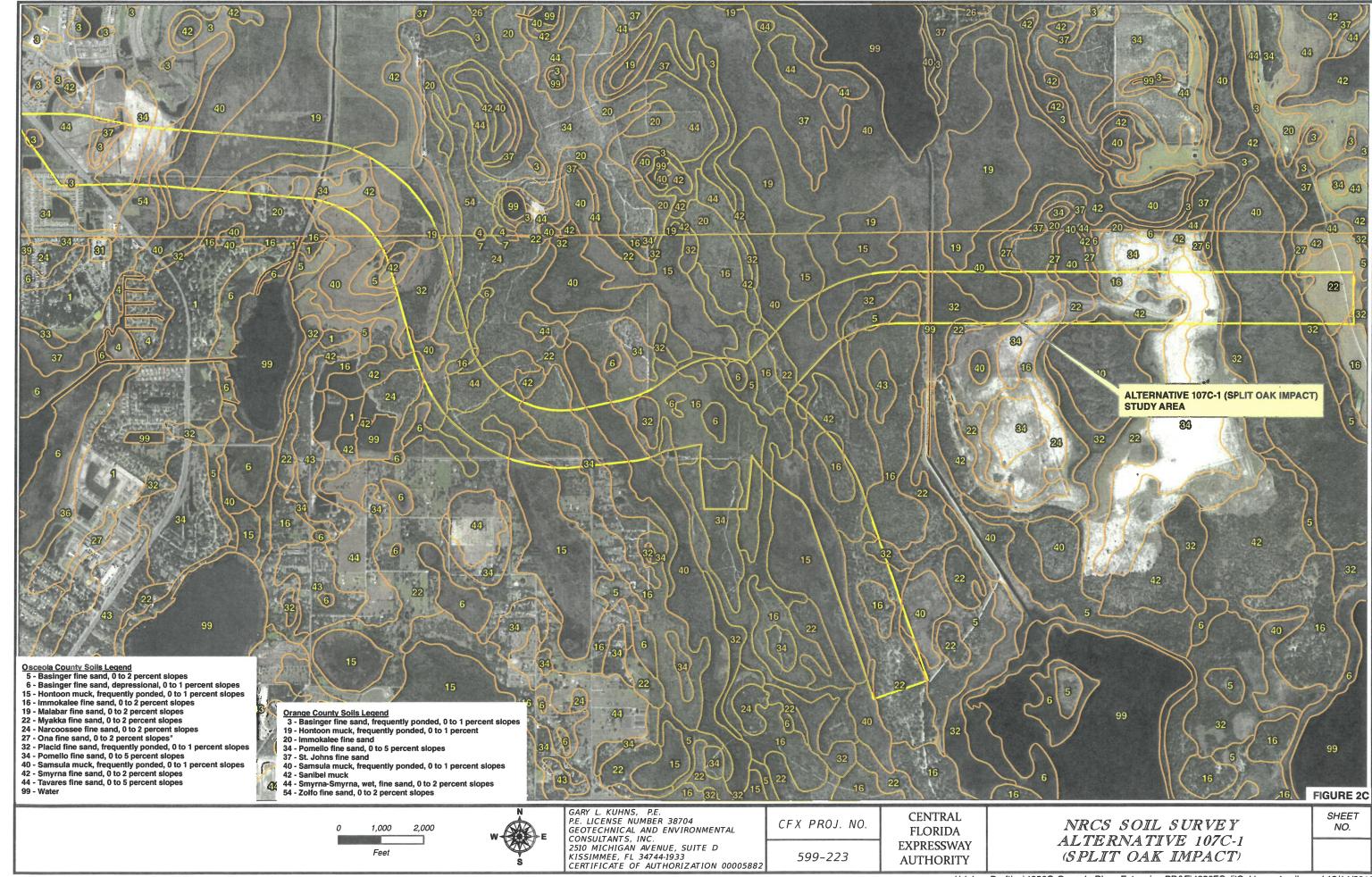
Based on our current knowledge of the design plans, Level 2 CIAs may be required for the 12 **Medium-Risk** sites and the 1 **High-Risk** site listed above to evaluate the presence of contamination.

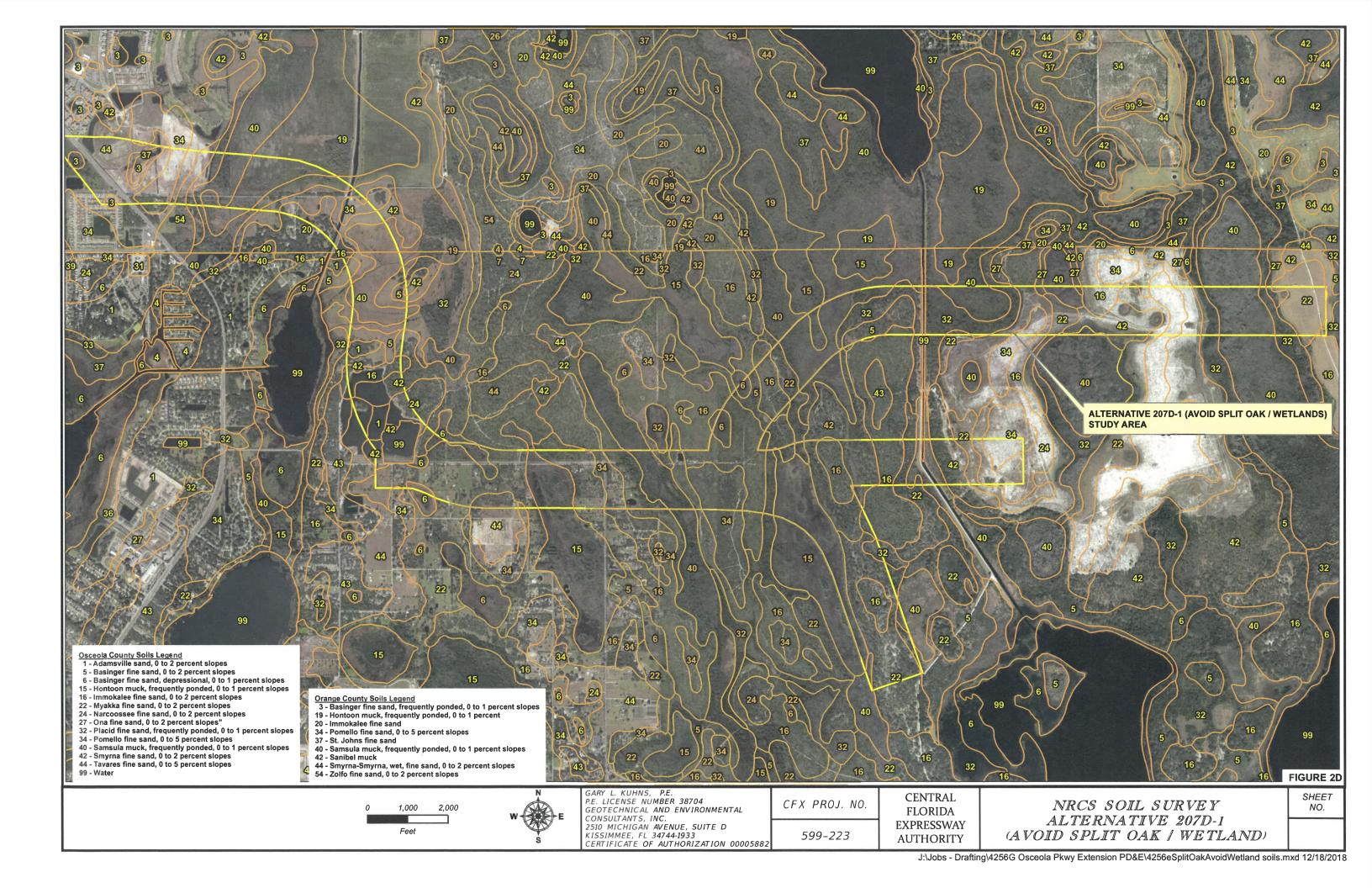


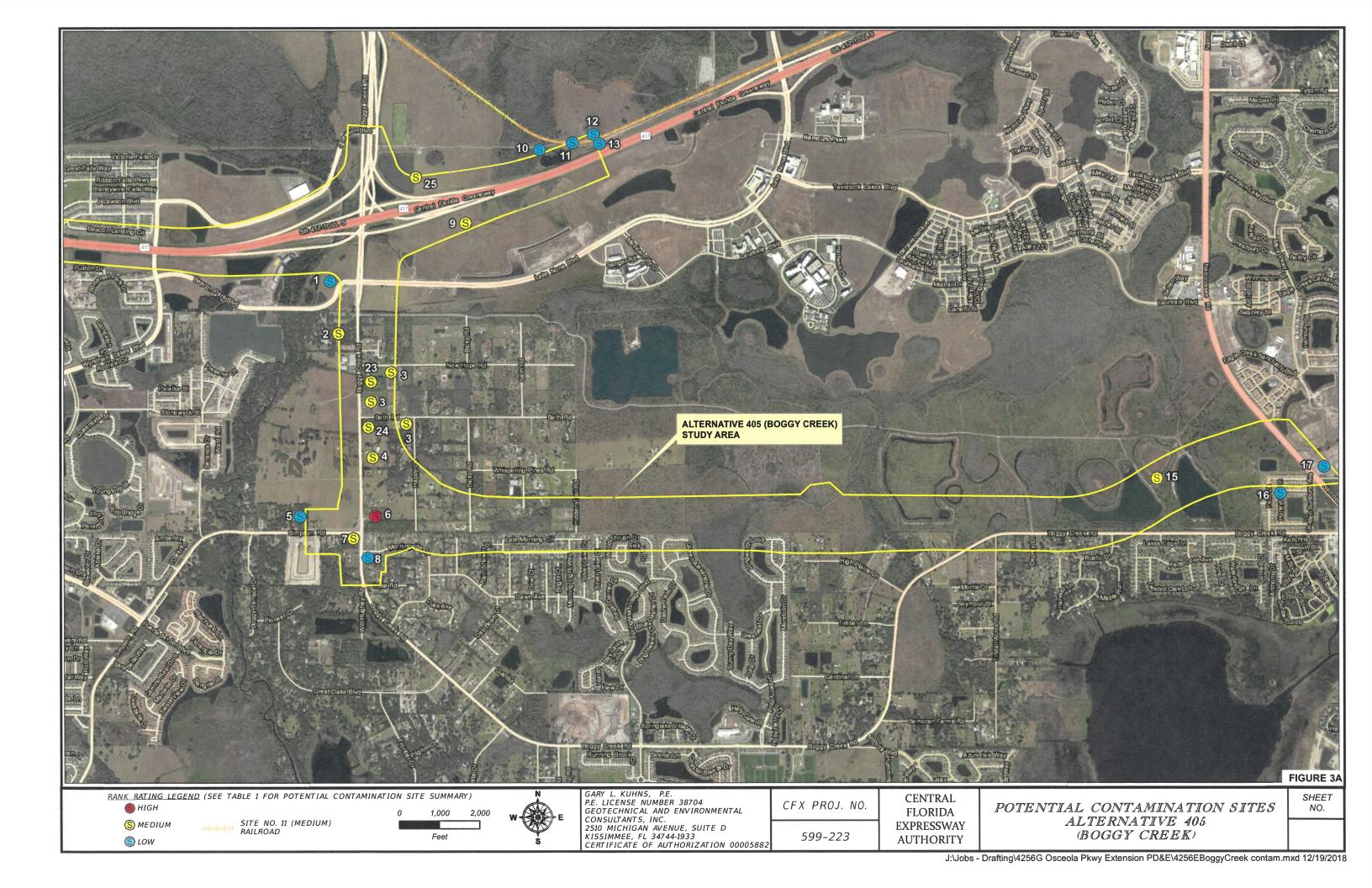


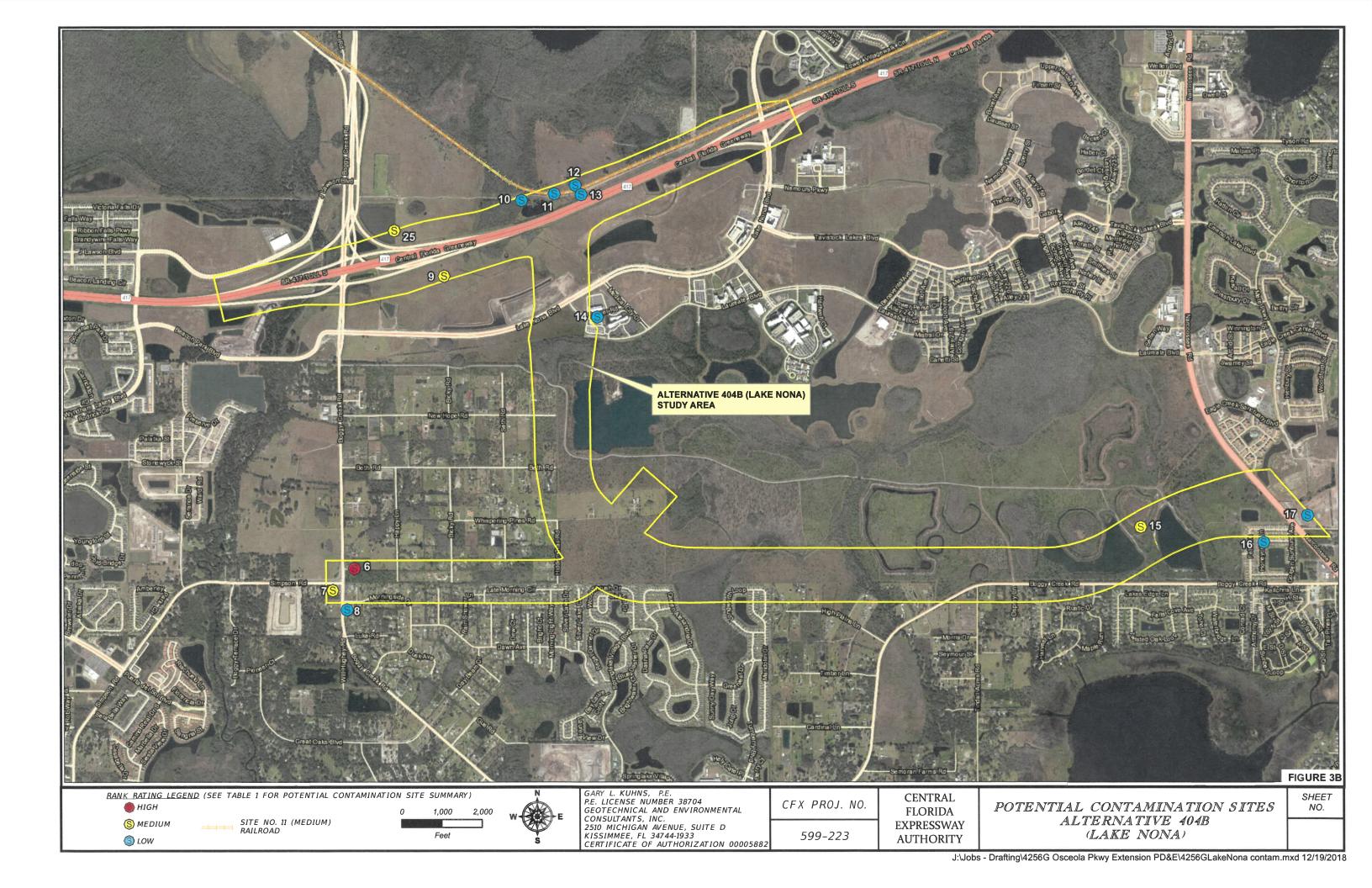


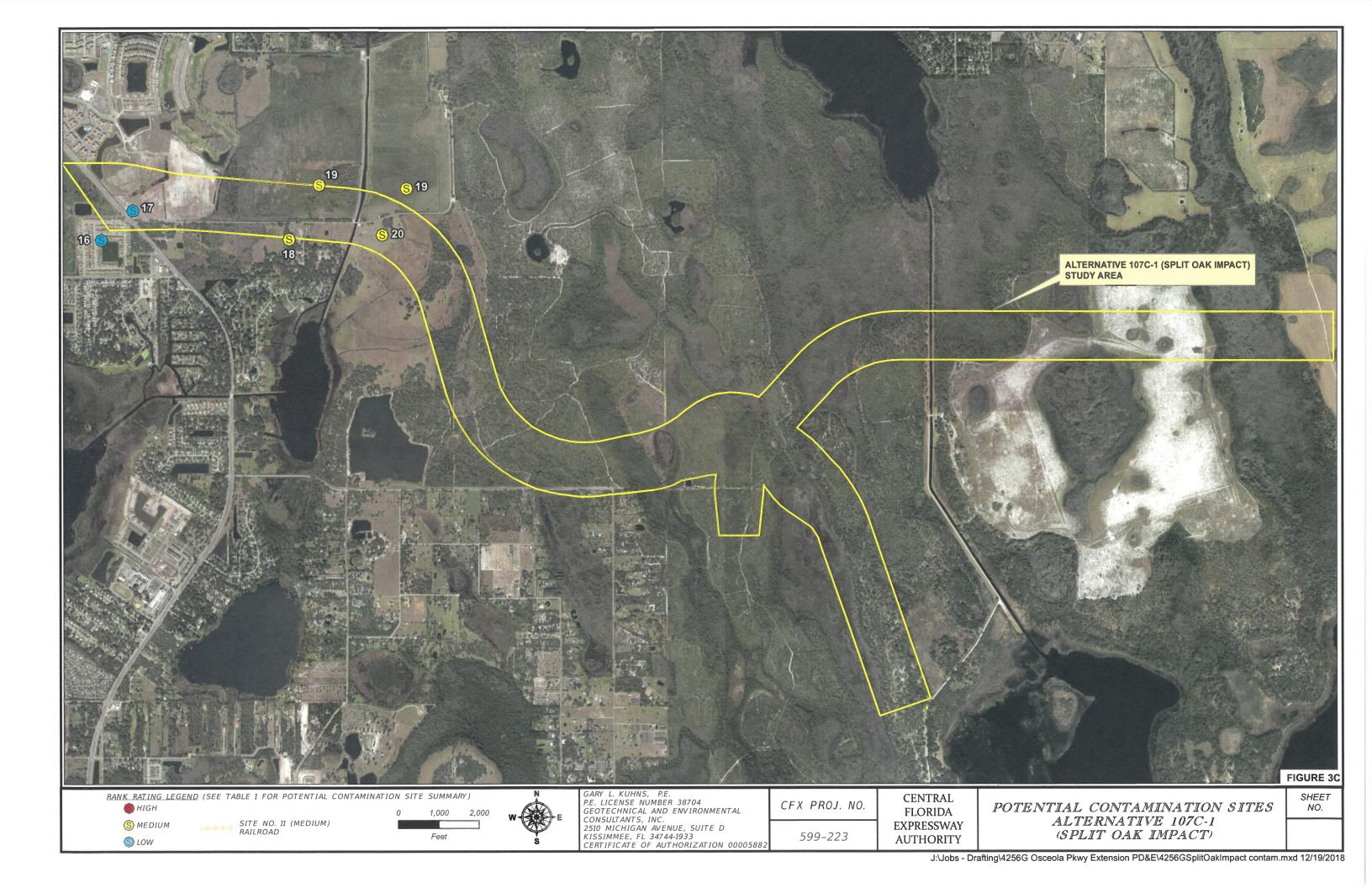


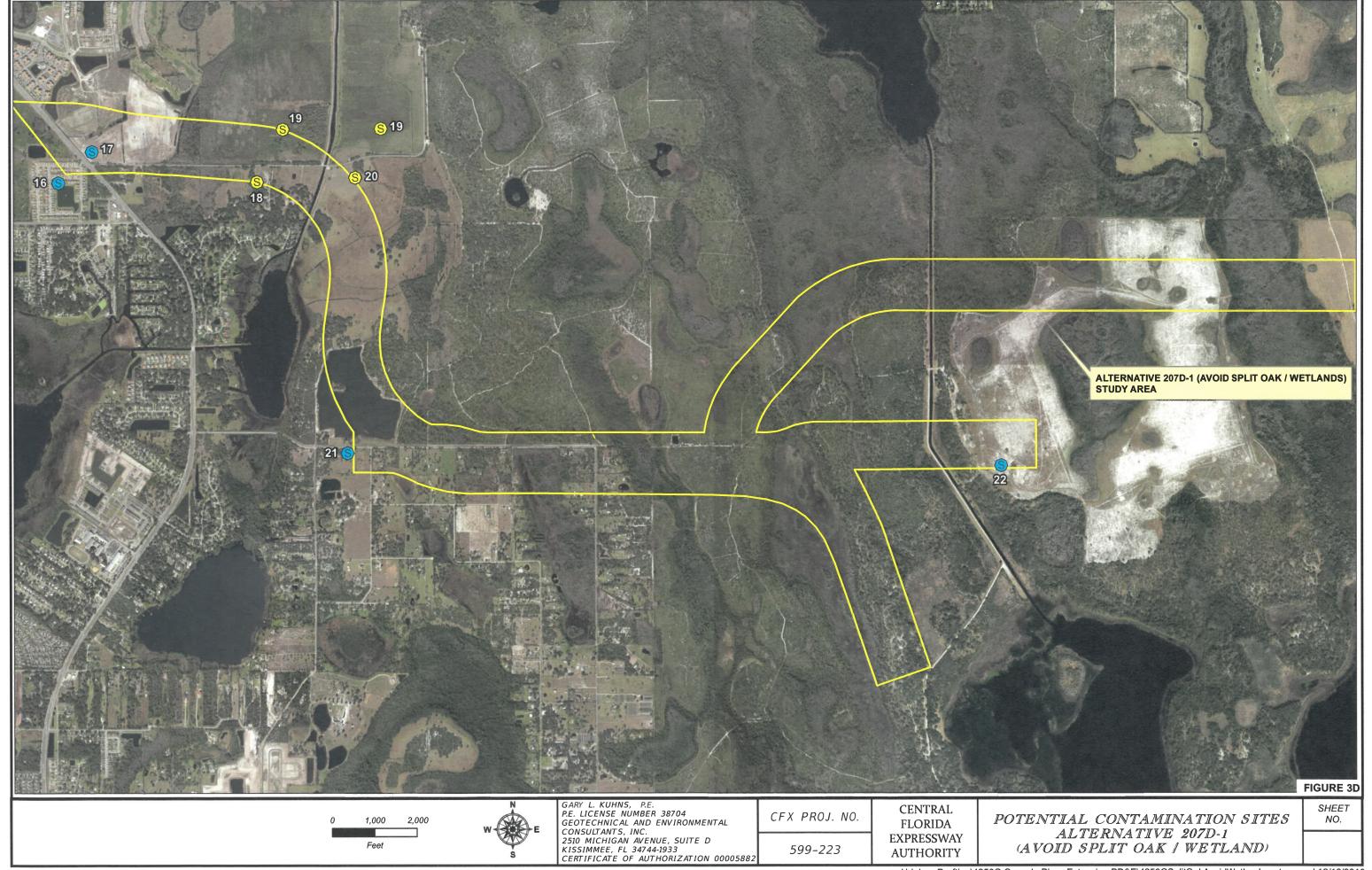


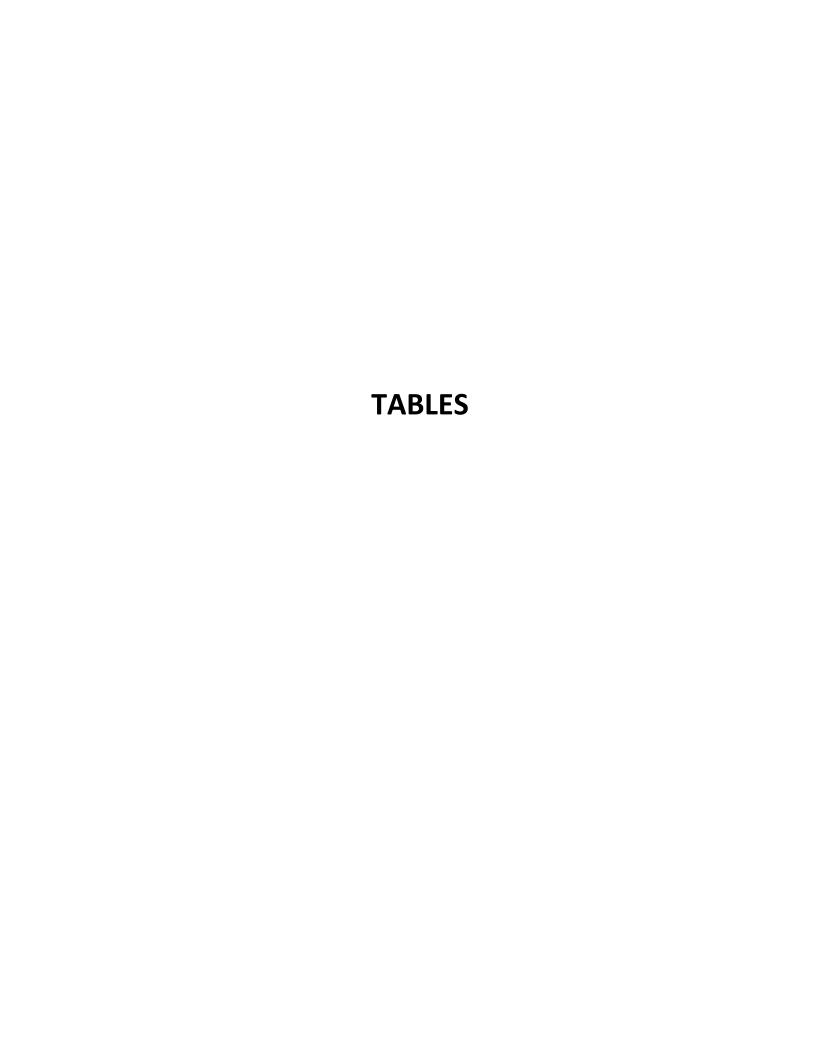












Potential Contamination Site Summary

OSCEOLA PARKWAY EXTENSION PD&E RE-EVALUATION

CFX Project No. 599-223 CFX Contract No. 001250 GEC Project No. 4256E Page 1 of 4

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Site No.	Site Name	Site Address / Location	Facility ID	Contaminants of Concern	Active Storage Tanks (Y/N)	Distance/Direction from ROW	Current Facility Type	Location Verified (Y/N)	Risk Potential	Comments
1	Publix Super Market #1625	14185 Lake Nona Boulevard	9816363	Petroleum Products	Υ	Adjacent/W	Super Market	Υ	Low	This site is currently operating as a super market with a 1,000-gallon diesel emergency generator tank (aboveground). No violations or contamination concerns are documented at this location that would appear to present a concern to the proposed roadway construction. As of July 2018, this site is operating in compliance with FDEP regulations. Due to the age of this aboveground emergency generator tank and lack of documented spills or discharges, this site is assigned a Low-Risk .
2	Citrus Grove - Boggy Creek Road	Boggy Creek Road	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/W	Plant Nursery	Υ	Medium	Between 1944 and 1959, the aerial photograph review depicted this site as a historical citrus grove. Agricultural land uses are observed in 2013 and 2018 aerial photographs as an apparent plant nursery. Based on the potential for agricultural chemical impacts on-site, this location has been assigned a Medium-Risk .
3	Boggy Creek Tree Farms, LLC	6350 New Hope Road, 6301 Beth Road, 6386 Beth Road	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/E	Plant Nursery	Υ	Medium	Between 1999 and 2018, the aerial photograph review depicted this site as a tree farm. This site consists of the adjacent parcels and one nearby parcel that have the same owner (Ohara/Kramer LLC) and are associated plant nurseries. Based on the potential for agricultural chemical impacts on-site, this location has been assigned a Medium-Risk .
4	Bob Zirots Landscaping & Nursery, Inc. (Southside Garden Supply)	14645 Boggy Creek Road	8627080	Hazardous Materials and Petroleum Products	N	Within proposed roadway	Plant Nursery	Y	Medium	Three storage tanks have been removed from the property (one underground and two aboveground) and a discharge has been documented on February 19, 2003. A contaminated soil source removal was performed and subsequently FDEP issued the property a Site Rehabilitation Completion Order (SRCO), dated May 2004, in regard to the February 2003 discharge. Between 1984 and 2018, the aerial photograph review depicted this site as a plant nursery or tree farm. Based on the potential for agricultural chemical impacts on-site, this location has been assigned a Medium-Risk.
5	Historical Citrus Grove - Simpson Road	5707 Simpson Road	N/A	Hazardous Materials and Petroleum Products	N	425 feet/W	Wooded Property	Υ	Low	Between 1944 and 1990, the aerial photograph review depicted this site as a historical citrus grove. The grove was allowed to go fallow and became overgrown. This historical citrus grove is located near the edge of the 500-foot search radius and therefore, is assigned a Low-Risk .
6	Historical Auto Salvage Yard	14857 Boggy Creek Road	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/E	Residence	Υ	High	Between 1994 and 2013, the aerial photograph review depicted this site as an apparent historical auto salvage yard. Common environmental concerns related to auto salvage yards are described in the Federal Register Volume 60, No. 189 (attached in Appendix J). Due to the potential for auto salvage related contamination impacts, this site has been assigned a High-Risk .

Potential Contamination Site Summary

OSCEOLA PARKWAY EXTENSION PD&E RE-EVALUATION

CFX Project No. 599-223 CFX Contract No. 001250 GEC Project No. 4256E Page 2 of 4

	1 ugc 2 01 4									
Site No.	Site Name	Site Address / Location	Facility ID	Contaminants of Concern	Active Storage Tanks (Y/N)	Distance/Direction from ROW	Current Facility Type	Location Verified (Y/N)	Risk Potential	Comments
7	Circle K #7466	3280 Boggy Creek Road	8731776, FLD984254300	Hazardous Materials and Petroleum Products	Υ	Adjacent/W	Gas Station	Υ	Medium	In response to a November 23, 1988 discharge, a Post Active Remediation Monitoring Report, dated March 2018, indicates that groundwater analytical results were above Cleanup Target Levels (CTLs) within one monitoring well in the control portion of the site. The March 2018 report depicts groundwater flow generally towards the west and not towards the proposed Boggy Creek alignment. Subsequently, it was recommended that a Remediation Action Plan Modification be completed. Due to the presence of groundwater contamination impacts and the site being an active gasoline station, this location is assigned a Medium-Risk .
8	Showcase M.H. Sales, Inc.	3300 Morningside Drive	78065	Hazardous Materials	N	Adjacent/E	Vacant Commercial Facility	Υ	Low	On August 3, 2018, this site was inspected as part of the Small Quantity Generator Assessment, Notification, and Verification Program (SQG Program). The site was identified as a mobile home dealership (Showcase M.H. Sales, Inc.) with a non-generator of hazardous waste designation. Due to a lack of complaints, violations, or documented contamination impacts, this site is assigned a Low-Risk.
9	Historical Ranching Structures and Existing Cattle Pens	0.45 mile east of the SR 417 and Boggy Creek Road interchange, 0.1 mile south of SR 417	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/SW	Cattle Pen	Υ	Medium	Between 1951 and 1990, the aerial photograph review depicted this site as containing former ranching structures that included a barn. Vehicle and equipment parking was also noted. A 95' by 95' cattle pen structure is first visible in the 1994 historical aerial photograph. No cattle dip vat was identified at this location. Based on the potential for vehicle maintenance, petroleum, and agricultural-related chemical impacts on-site, this location has been assigned a Medium-Risk.
10	Area of Dumping	0.8 mile northeast of the SR 417 and Boggy Creek Road interchange	N/A	Hazardous Materials and Petroleum Products	N	480 feet/N	Debris	Υ	Low	At the time of site reconnaissance, household trash, hydraulic oil containers and stained soil was documented over 475 feet north of SR 417. This area of dumping was about 5 feet long by 5 feet wide. Due to the location and small size of the area of stained soil and dumping, this site is assigned a Low-Risk .
11	Railroad	300 feet north of SR 417	N/A	Hazardous Materials and Petroleum Products	N	300 feet/N	Railroad	Υ	Low	Dating back to 1984, a railroad is visible running north of and parallel to SR 417. Due to its residual nature, arsenic is the most commonly occurring chemical constituent related to railroad beds, and liberal applications of herbicides were used to keep the railroad free of vegetation. Creosote and polynuclear aromatic hydrocarbons are commonly associated with railroad ties and rail yards. Based on the distance from the proposed roadway alignment, the railroad is assigned a Low-Risk.
12	Historical Cattle Pen - SR 417	350 feet north of SR 417	N/A	Hazardous Materials and Petroleum Products	N	350 feet/N	Vacant / Undeveloped	Υ	Low	Between 1944 and 1978, the aerial photograph review depicted this site as former cattle pens. Based on the location of this cattle pen being about 350 feet north of SR 417, it is assigned a Low-Risk .

Potential Contamination Site Summary

OSCEOLA PARKWAY EXTENSION PD&E RE-EVALUATION

CFX Project No. 599-223 CFX Contract No. 001250 GEC Project No. 4256E Page 3 of 4

Site No.	Site Name	Site Address / Location	Facility ID	Contaminants of Concern	Active Storage Tanks (Y/N)	Distance/Direction from ROW	Current Facility Type	Location Verified (Y/N)	Risk Potential	Comments
13	Orlando City Lift Station #139	6655 Central Florida Greenway	9805557	Petroleum Products	Y	Adjacent/N	Lift Station	Y	Low	This site is currently operating as a lift station with a 4,000-gallon diesel emergency generator tank (aboveground). No violations or contamination concerns are documented at this location that would appear to present a concern to the proposed roadway construction. Due to the location of the lift station being north of SR 417, and a lack of documented spills or discharges, this site is assigned a Low-Risk.
14	University of Florida- Lake Nona Research Center #3425	6550 Sanger Road	9813132	Petroleum Products	Y	475 feet/E	Academic Research Center	Y	Low	This site is currently operating as a research center with a 3,400-gallon diesel emergency generator tank (aboveground). No violations or contamination concerns are documented at this location that would appear to present a concern to the proposed roadway construction. As of July 2016, this site is operating in compliance with FDEP regulations. Due to the age of this aboveground emergency generator tank and lack of documented spills or discharges, this site is assigned a Low-Risk .
15	Historical Ranch Structures	1 mile northwest of the Boggy Creek Road and Narcoossee Road intersection	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/NW	Vacant - Building Foundation	Y	Medium	Between 1959 and 1994, the aerial photograph review depicted this site as former ranching residence and potential barn or maintenance shed. At the time of site reconnaissance, a building foundation and drain pipes were observed. Based on the potential for agricultural chemical impacts on-site, this location has been assigned a Medium-Risk .
16	Historical Citrus Grove - Boggy Creek Road and Narcoossee Road	West of the Narcoossee Road and Clapp Simms Duda Road intersection	N/A	Hazardous Materials and Petroleum Products	N	150 feet/S	Residential Community	Y	Low	Between 1969 and 1978, the aerial photograph review depicted this site as a historical citrus grove. This site was converted into a cattle pasture between 1984 and 2008. A residential community was under construction in 2013. Due to the amount of earth moving involved in constructing a residential subdivision, any contaminated soils have likely been scattered and/or covered. Based on the residential construction on-site, this location is assigned a Low-Risk .
17	Hi-Acres Services	Northeast quadrant of the Narcoossee Road and Calpp Simms Duda Road intersection	8622736	Hazardous Materials and Petroleum Products	N	Within proposed roadway	Under Construction	Y	Low	The 1,000 gallon aboveground storage tank listed at this site is located >500 feet north of the proposed roadway construction. Between 1984 and 2003, the aerial photograph review depicted this site as a historical citrus grove. Most recently, the 2018 aerial photograph reveals the construction of a residential subdivision at this location. Due to the amount of earth moving involved in constructing a residential subdivision, any contaminated soils have likely been scattered and/or covered. Based on the residential construction on-site, this location is assigned a Low-Risk.

Potential Contamination Site Summary

OSCEOLA PARKWAY EXTENSION PD&E RE-EVALUATION

CFX Project No. 599-223 CFX Contract No. 001250 GEC Project No. 4256E Page 4 of 4

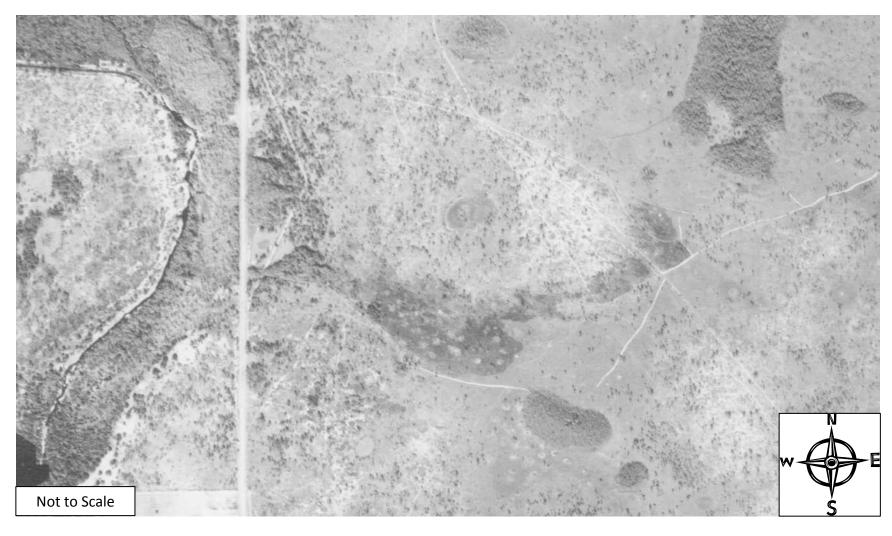
Site No.	Site Name	Site Address / Location	Facility ID	Contaminants of Concern	Active Storage Tanks (Y/N)	Distance/Direction from ROW	Current Facility Type	Location Verified (Y/N)	Risk Potential	Comments
18	Historical Citrus Grove - Clapp Simms Duda Road	intersection	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/S	Historical Citrus Grove	Y	Medium	Between 1995 and 2013, the aerial photograph review depicted this site as a historical citrus grove. Based on the potential for agricultural chemical impacts on-site, this location has been assigned a Medium-Risk.
19	Historical Row Crops - Clapp Simms Duda Road	0.5 mile east of the Narcoossee Road and Clapp Simms Duda Road intersection	N/A	Hazardous Materials and Petroleum Products	N	Within proposed roadway	Vacant / Undeveloped	Y	Medium	Between 1944 and 1978, the aerial photograph review depicted this site as historical row crops. Based on the potential for agricultural chemical impacts on-site, this location has been assigned a Medium-Risk .
20	Lake Hart Property Area #12	1.1 miles east of the Narcoossee Road and Clapp Simms Duda Road intersection	9301102	Hazardous Materials and Petroleum Products	N	Adjacent/S	Cattle Pen	Y	Medium	A 300-gallon underground storage tank is documented as being removed from this location. No inspections or assessment information was available within the public record regarding the removal/abandonment of the storage tanks. The public file does not describe the former tank location on-site. At the time of site reconnaissance, a cattle pen was observed at this location. Based on the potential for petroleum and agricultural chemical impacts on-site, this location has been assigned a Medium-Risk .
21	Historical Citrus Grove - Cyrils Drive	Southwest quadrant of the Cyrils Drive and Franklin Road intersection	N/A	Hazardous Materials and Petroleum Products	N	Adjacent/W	Residential Community	Y	Low	Between 1944 and 1990, the aerial photograph review depicted this site as a historical citrus grove. Most recently, the 2018 aerial photograph reveals the construction of a residential subdivision at this location. Due to the amount of earth moving involved in constructing a residential subdivision, any contaminated soils have likely been scattered and/or covered. Based on the residential construction on-site, this location is assigned a Low-Risk .
22	Apparent Lumber Camp	1.75 miles east of the Cyrils Drive and Absher Road intersection	N/A	Hazardous Materials and Petroleum Products	N	500 feet/S	Vacant / Undeveloped	Y	Low	Between 1944 and 1984, the aerial photograph review depicted this site as having multiple structures. The utilization and contamination status of these structures is unknown. Due to the low-impact of the former buildings and the logging activities at this location, this site has been assigned a Low-Risk .
23	Construction Material and Dumping	14262 Boggy Creek Road	N/A	Hazardous Materials and Petroleum Products	N	Adjacent East	Construction Material and Dumping	Υ	Medium	This construction material and dumping area was observed in the 2008 through 2018 aerial photographs. Due to the potential for petroleum or hazardous material dumping, this site has been assigned a Medium-Risk .
24	Debris Dumping	14411 Boggy Creek Road	N/A	Hazardous Materials and Petroleum Products	N	Adjacent East	Vacant Property	Y	Medium	This debris dumping area was observed in the 2004 through 2008 aerial photographs. Due to the potential for petroleum or hazardous material impacts, this site has been assigned a Medium-Risk .
25	Existing Cattle Pen	Northeast quadrant of the SR 417 and Boggy Creek Road interchange	N/A	Hazardous Materials	N	Adjacent North and East	Cattle Pen	Y	Medium	From about 1994 through 2018, a cattle pen was observed at this location. Based on the potential for petroleum and agricultural chemical impacts on-site, this location has been assigned a Medium-Risk .

APPENDIX A

Historical Aerial Photographs

ALTERNATIVE 405

BOGGY CREEK



1944 (Image 1 of 6)



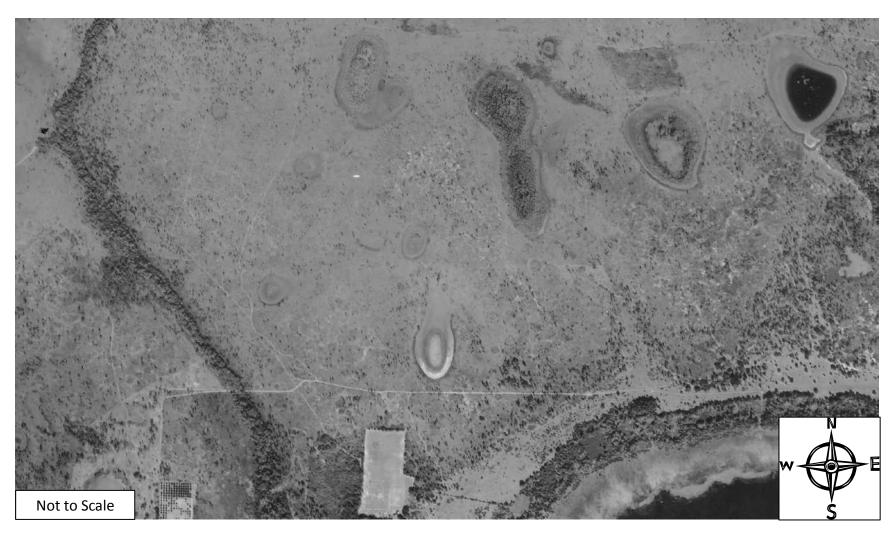
1944 (Image 2 of 6)



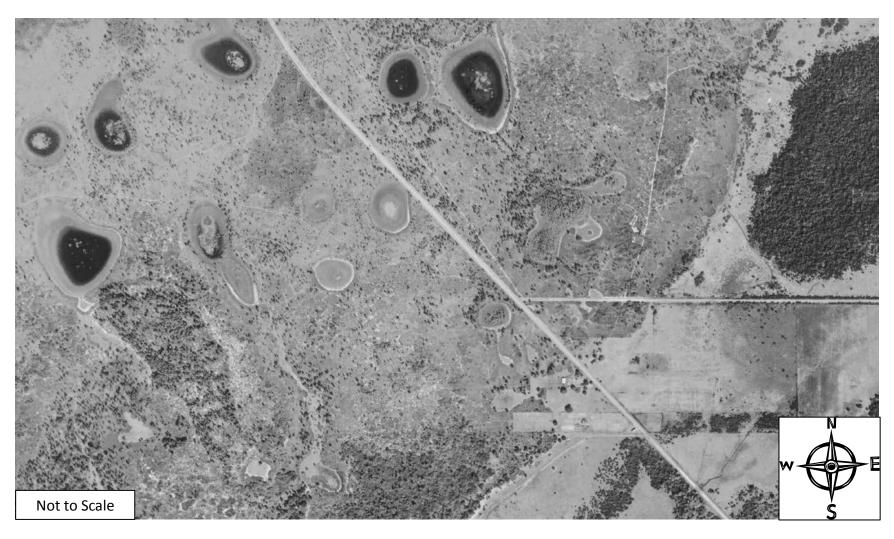
1944 (Image 3 of 6)



1944 (Image 4 of 6)



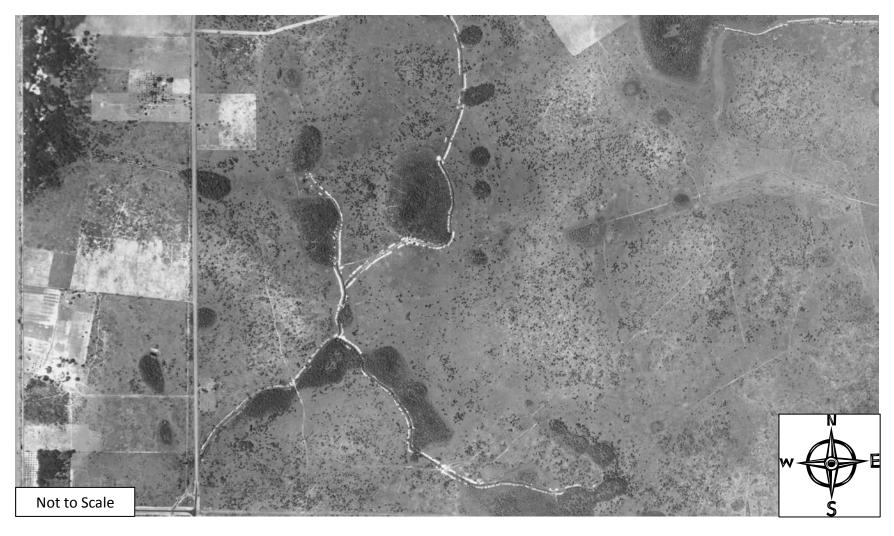
1944 (Image 5 of 6)



1944 (Image 6 of 6)



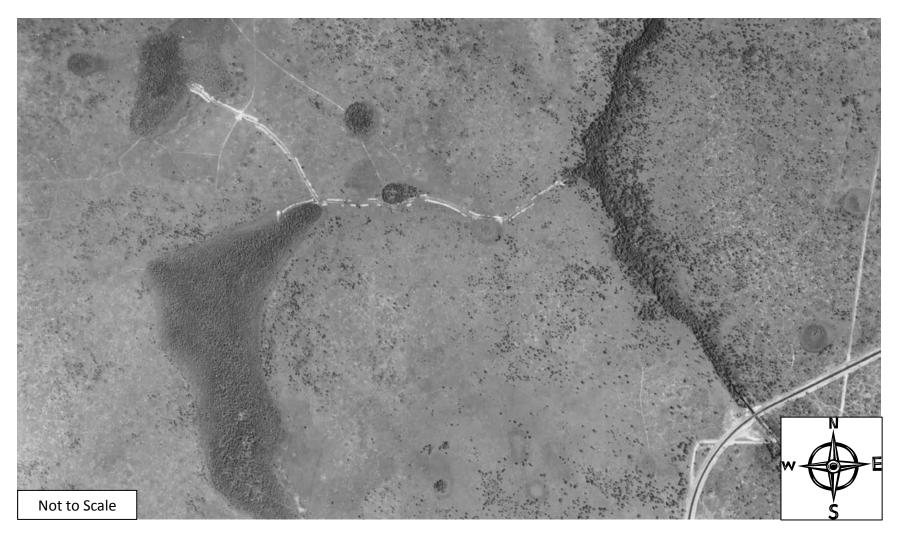
1951 (Image 1 of 6)



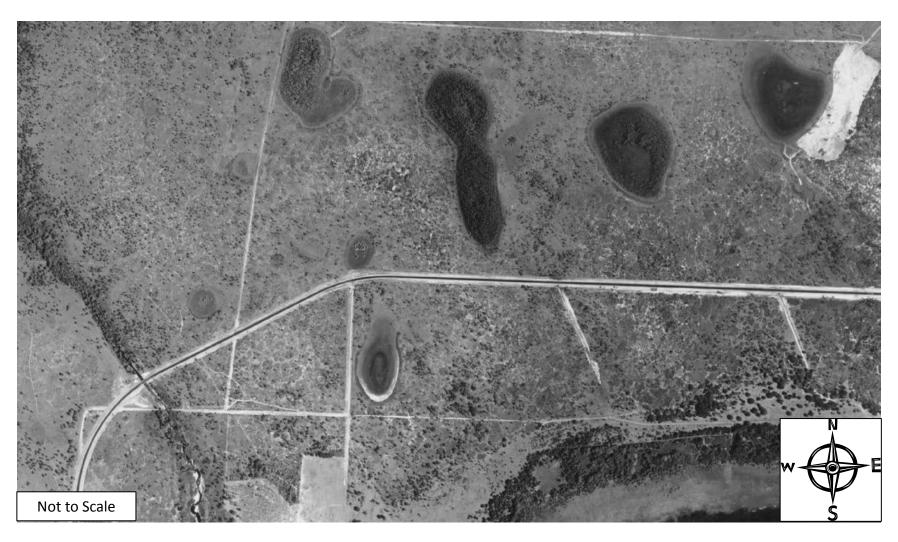
1951 (Image 2 of 6)



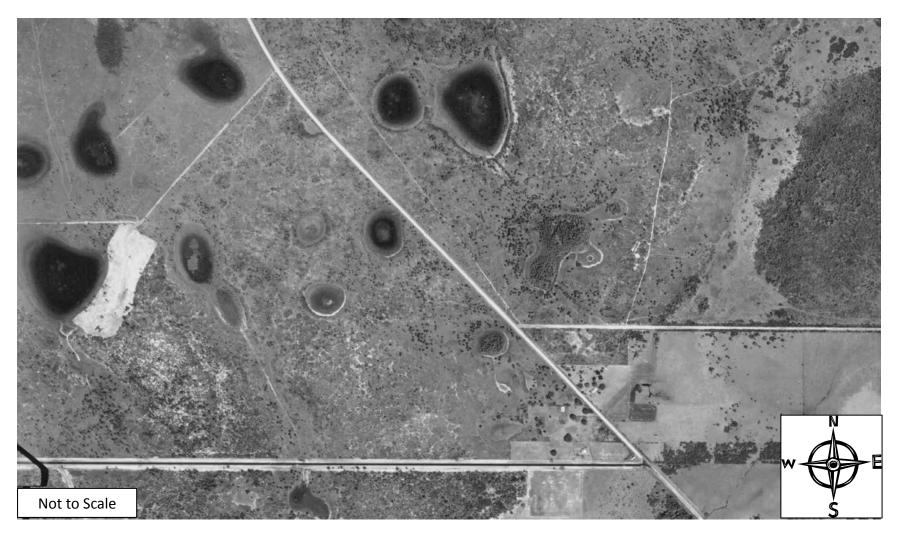
1951 (Image 3 of 6)



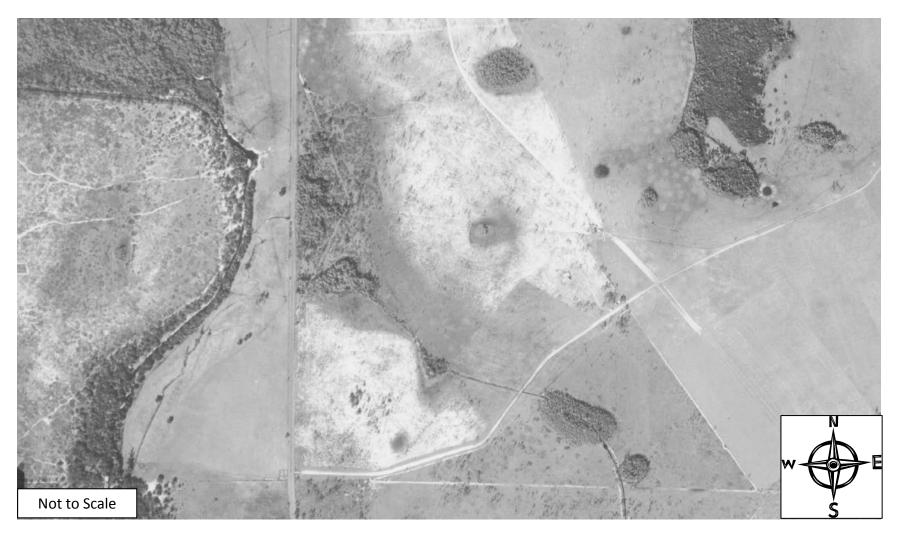
1951 (Image 4 of 6)



1951 (Image 5 of 6)



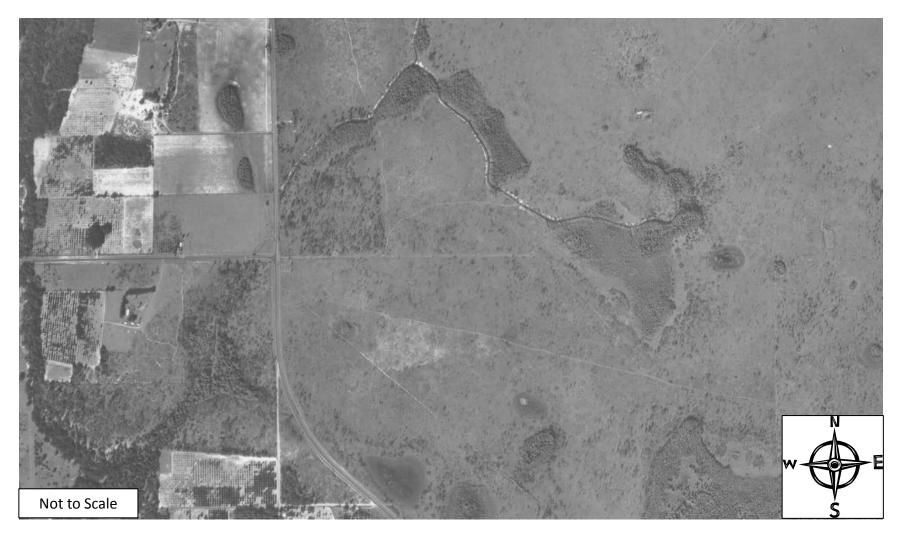
1951 (Image 6 of 6)



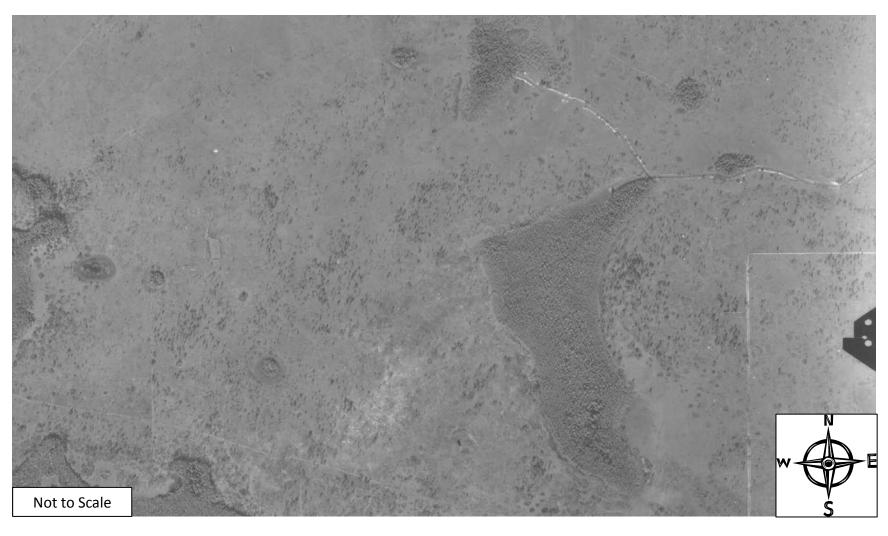
1959 (Image 1 of 6)



1959 (Image 2 of 6)



1959 (Image 3 of 6)



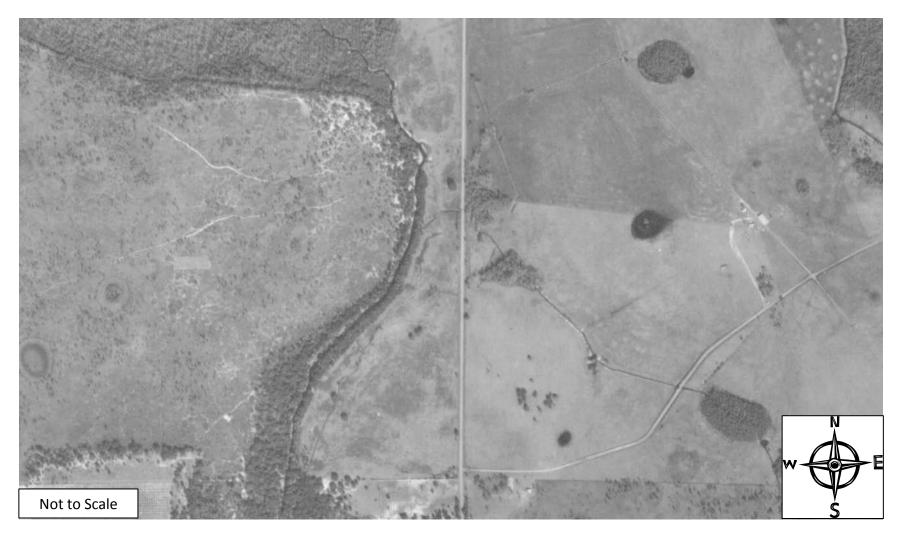
1959 (Image 4 of 6)



1959 (Image 5 of 6)



1959 (Image 6 of 6)



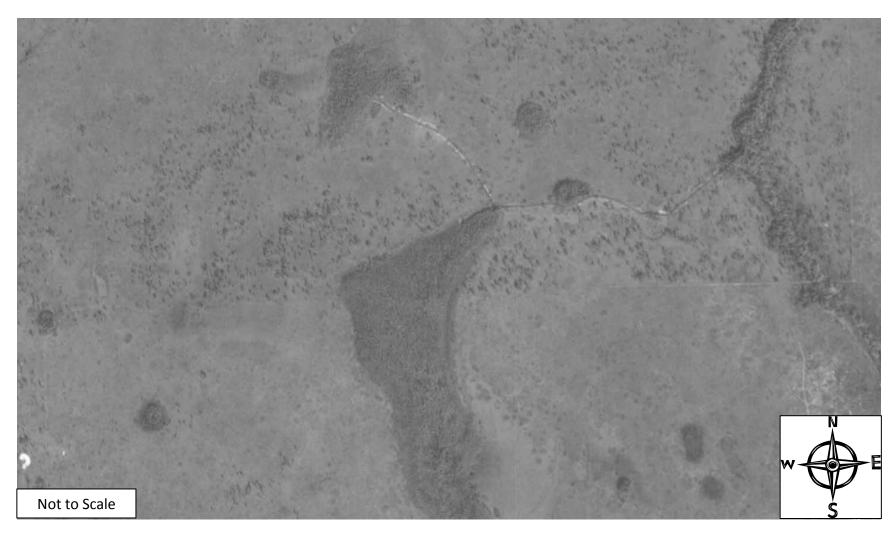
1969 (Image 1 of 6)



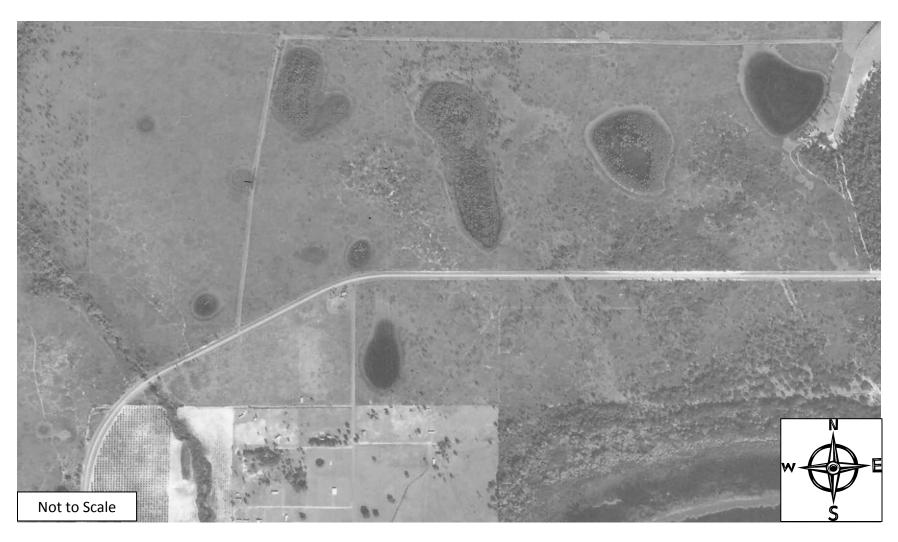
1969 (Image 2 of 6)



1969 (Image 3 of 6)



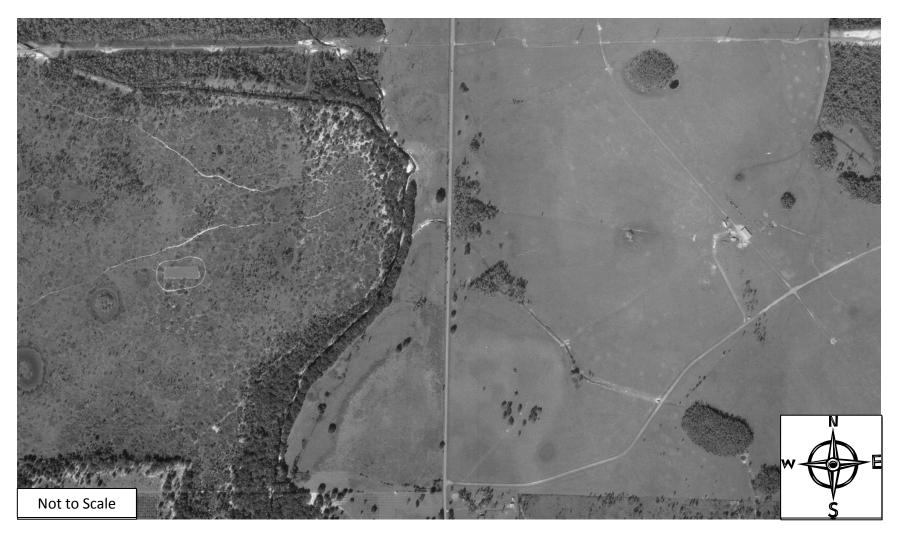
1969 (Image 4 of 6)



1969 (Image 5 of 6)



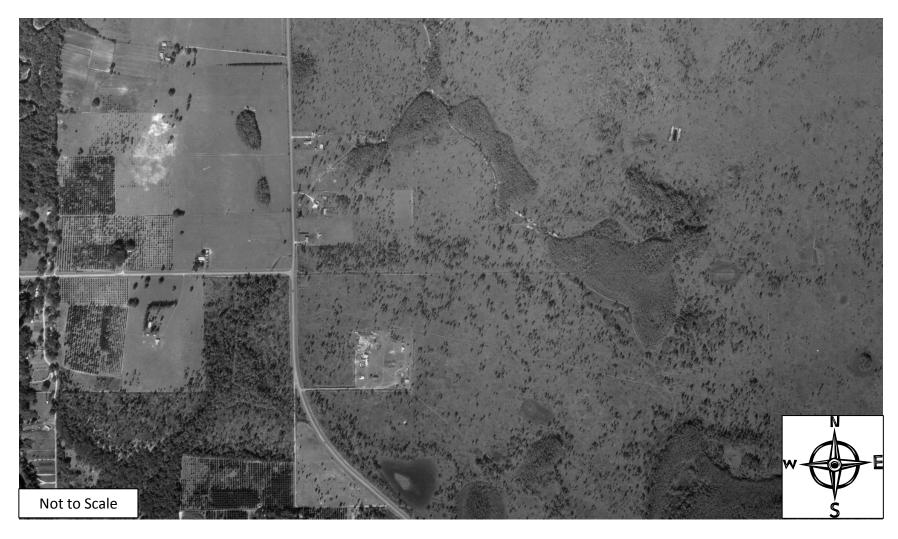
1969 (Image 6 of 6)



1974 (Image 1 of 6)



1974 (Image 2 of 6)



1974 (Image 3 of 6)



1974 (Image 4 of 6)



1974 (Image 5 of 6)



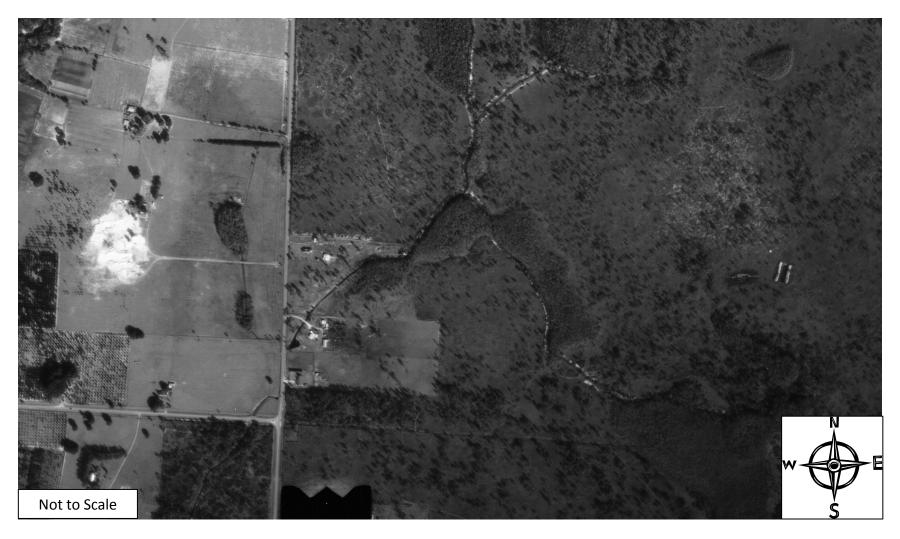
1974 (Image 6 of 6)



1978 (Image 1 of 6)



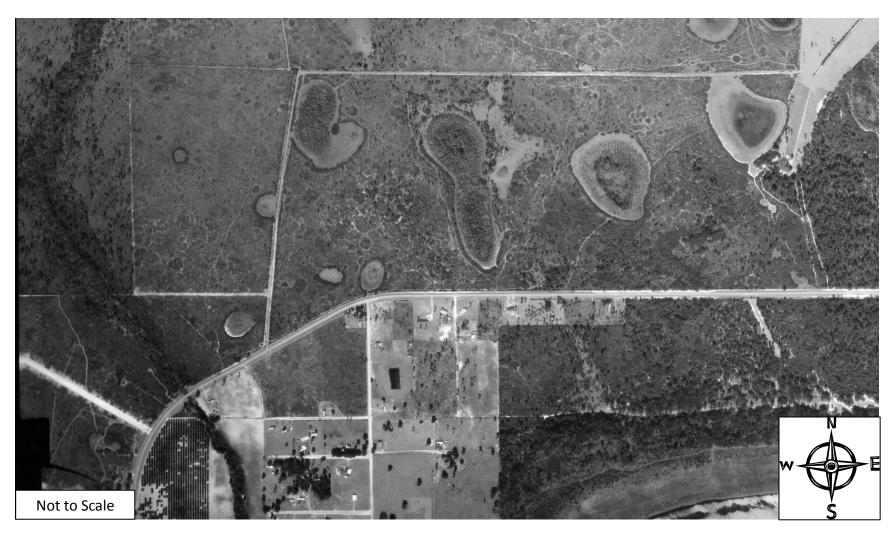
1978 (Image 2 of 6)



1978 (Image 3 of 6)



1978 (Image 4 of 6)



1978 (Image 5 of 6)



1978 (Image 6 of 6)



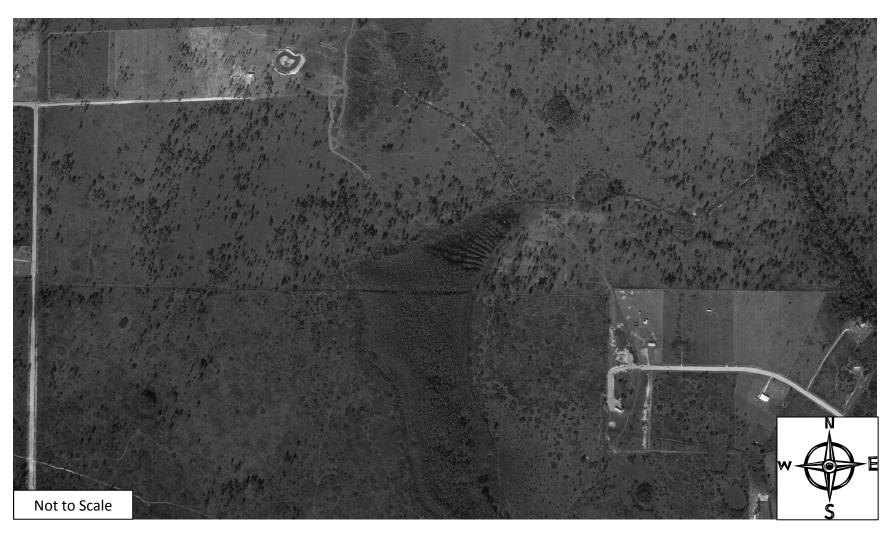
1984 (Image 1 of 6)



1984 (Image 2 of 6)



1984 (Image 3 of 6)



1984 (Image 4 of 6)



1984 (Image 5 of 6)



1984 (Image 6 of 6)



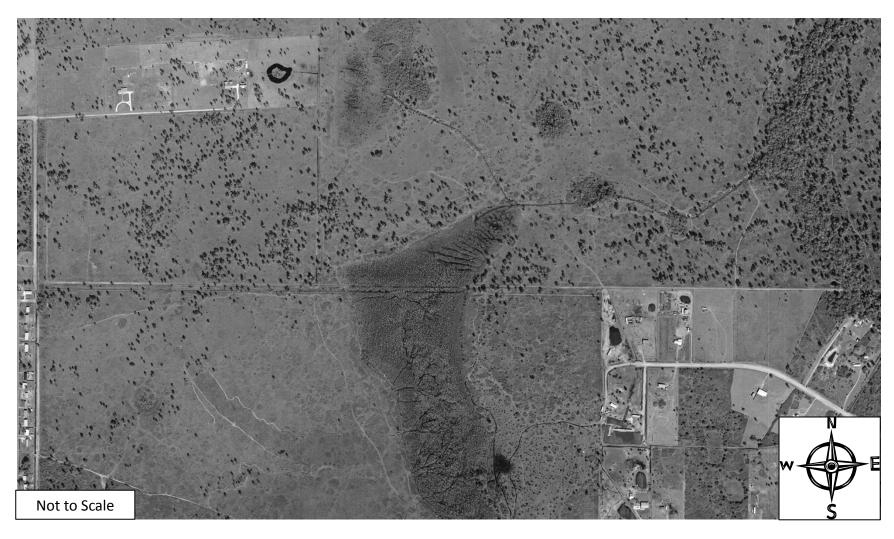
1990 (Image 1 of 6)



1990 (Image 2 of 6)



1990 (Image 3 of 6)



1990 (Image 4 of 6)



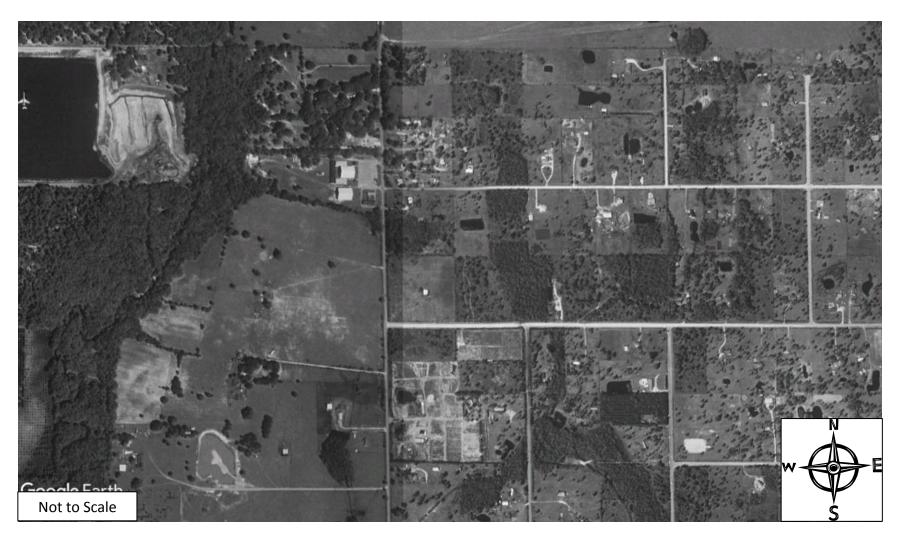
1990 (Image 5 of 6)



1990 (Image 6 of 6)



1994 (Image 1 of 6)



1994 (Image 2 of 6)



1994 (Image 3 of 6)



1994 (Image 4 of 6)



1994 (Image 5 of 6)



1994 (Image 6 of 6)



1999 (Image 1 of 6)



1999 (Image 2 of 6)



1999 (Image 3 of 6)



1999 (Image 4 of 6)



1999 (Image 5 of 6)



1999 (Image 6 of 6)



2003 (Image 1 of 6)



2003 (Image 2 of 6)



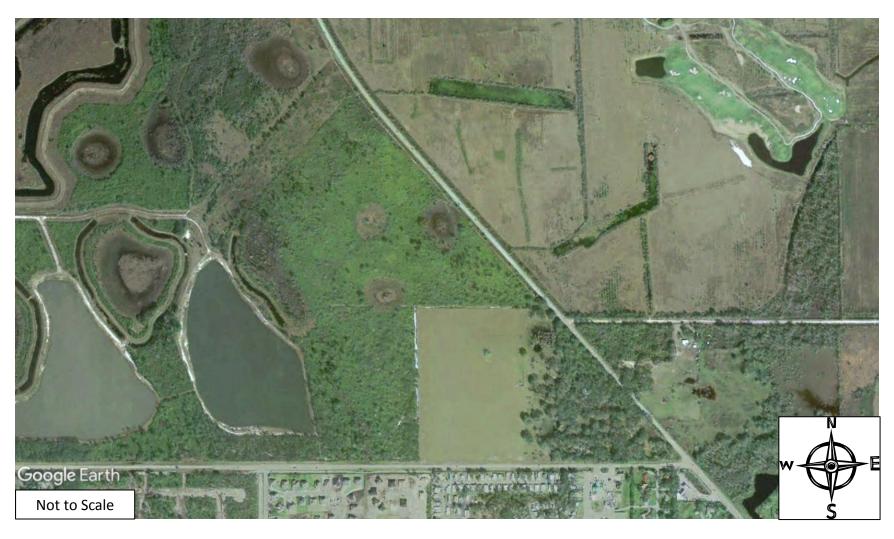
2003 (Image 3 of 6)



2003 (Image 4 of 6)



2003 (Image 5 of 6)



2003 (Image 6 of 6)



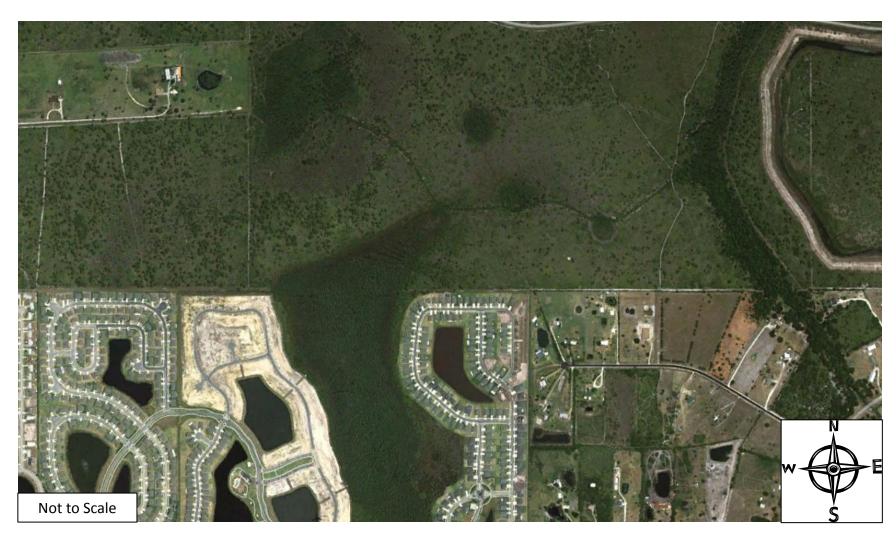
2008 (Image 1 of 6)



2008 (Image 2 of 6)



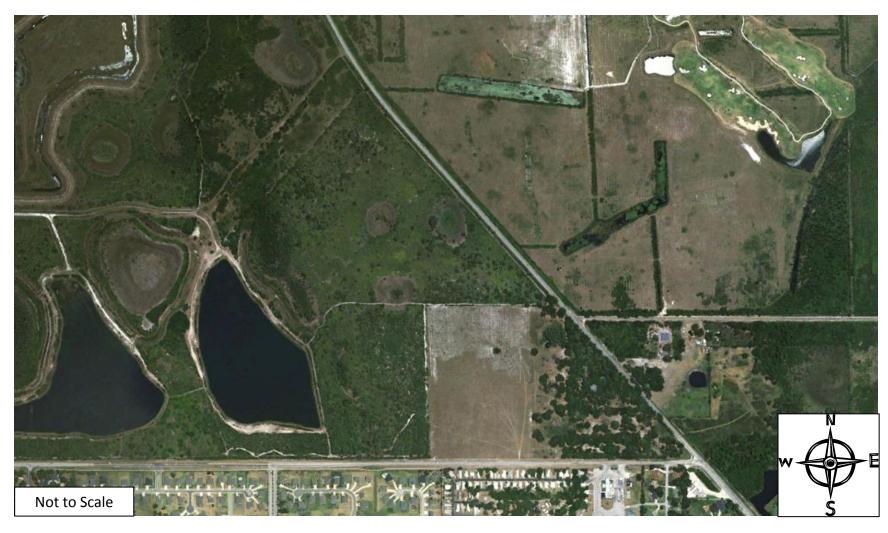
2008 (Image 3 of 6)



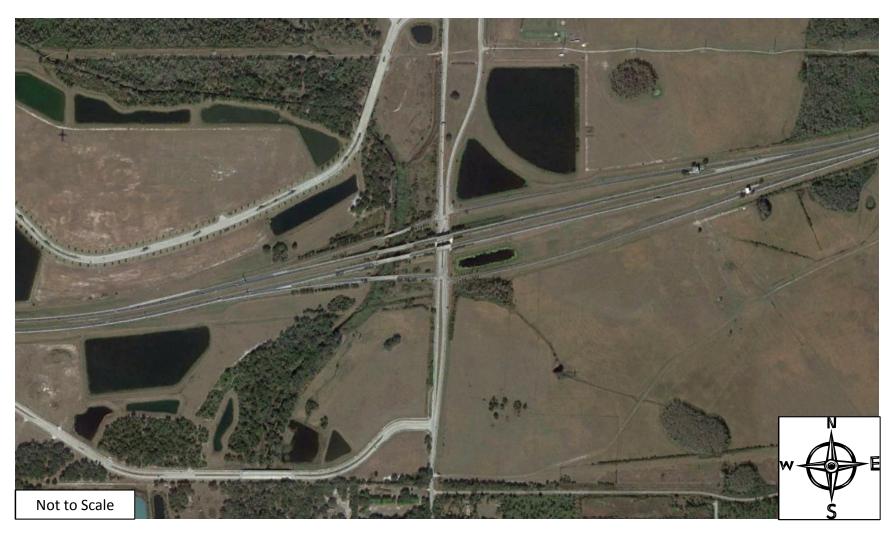
2008 (Image 4 of 6)



2008 (Image 5 of 6)



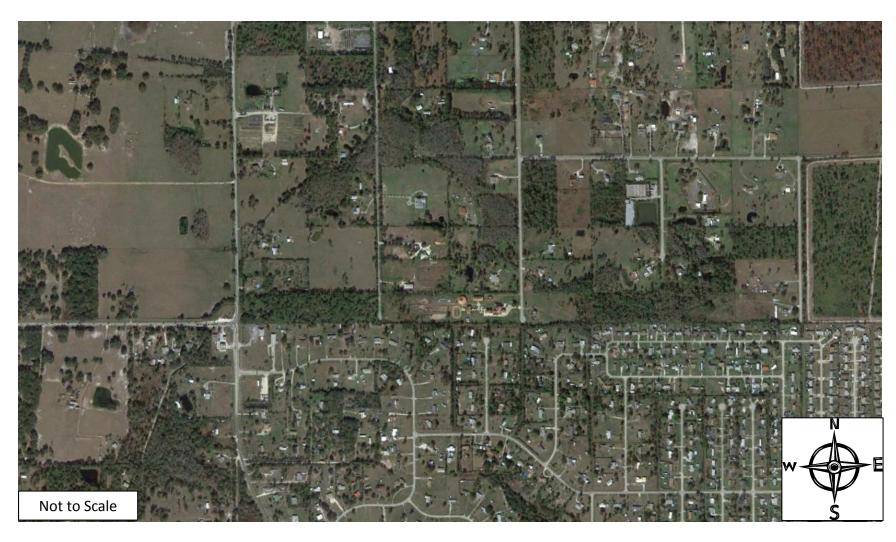
2008 (Image 6 of 6)



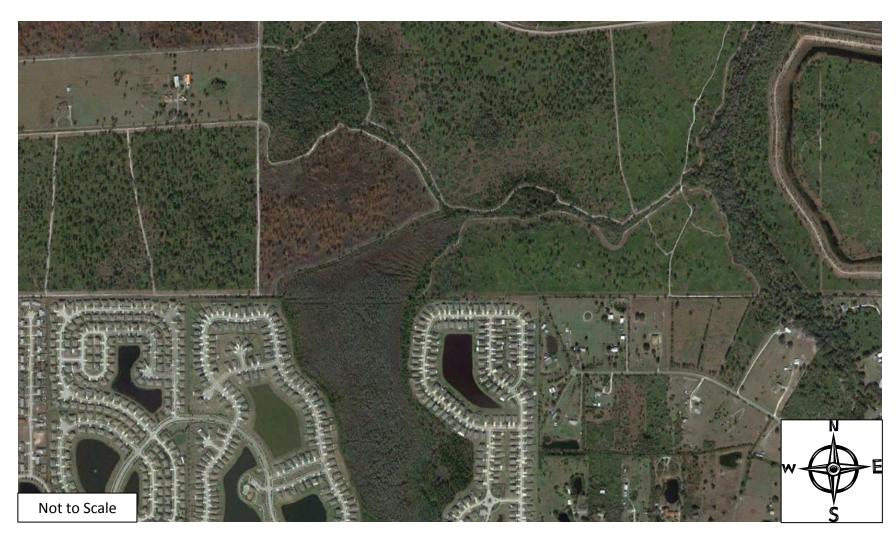
2013 (Image 1 of 6)



2013 (Image 2 of 6)



2013 (Image 3 of 6)



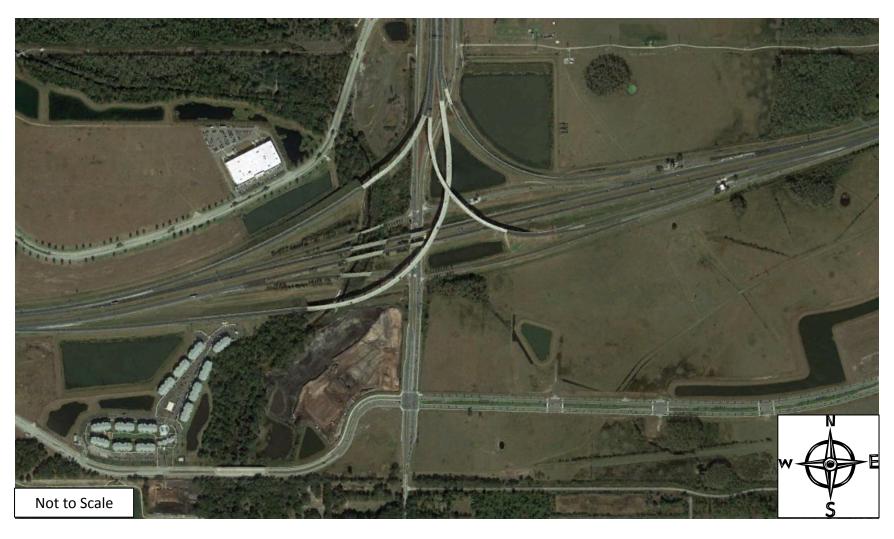
2013 (Image 4 of 6)



2013 (Image 5 of 6)



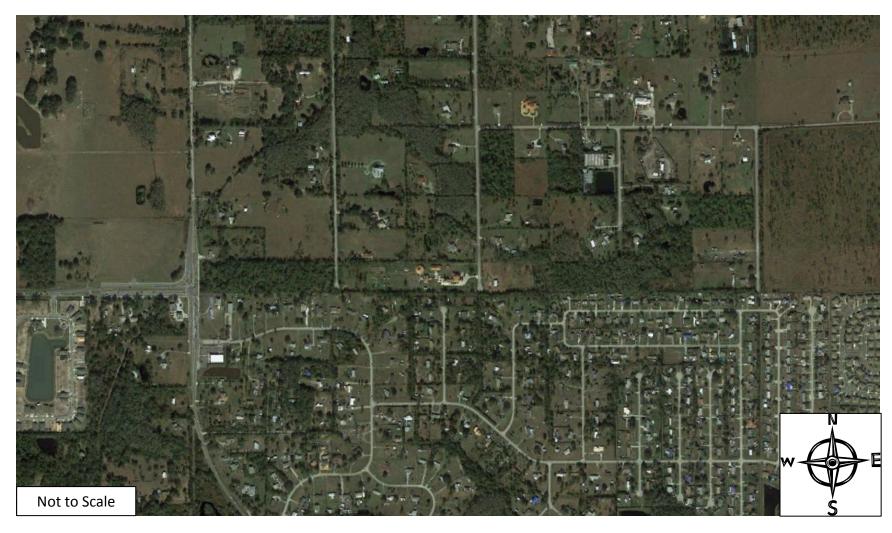
2013 (Image 6 of 6)



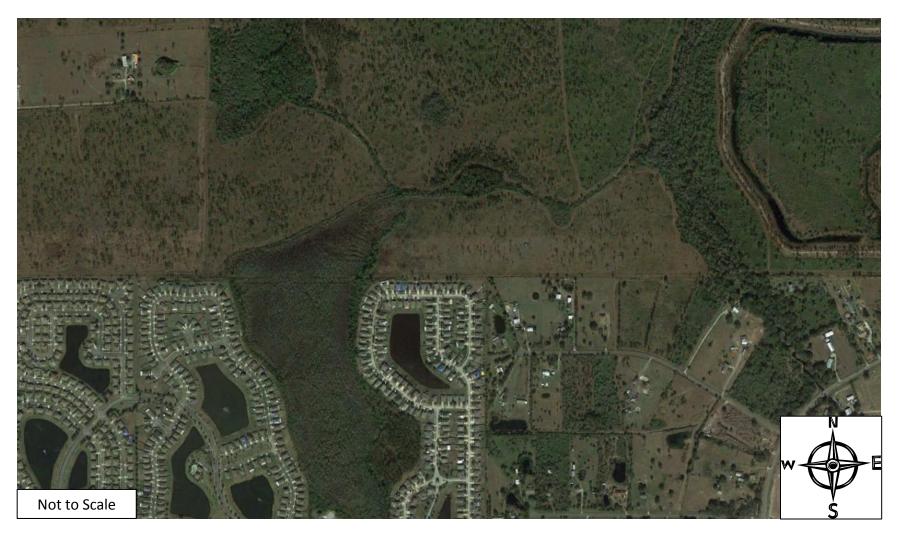
2018 (Image 1 of 6)



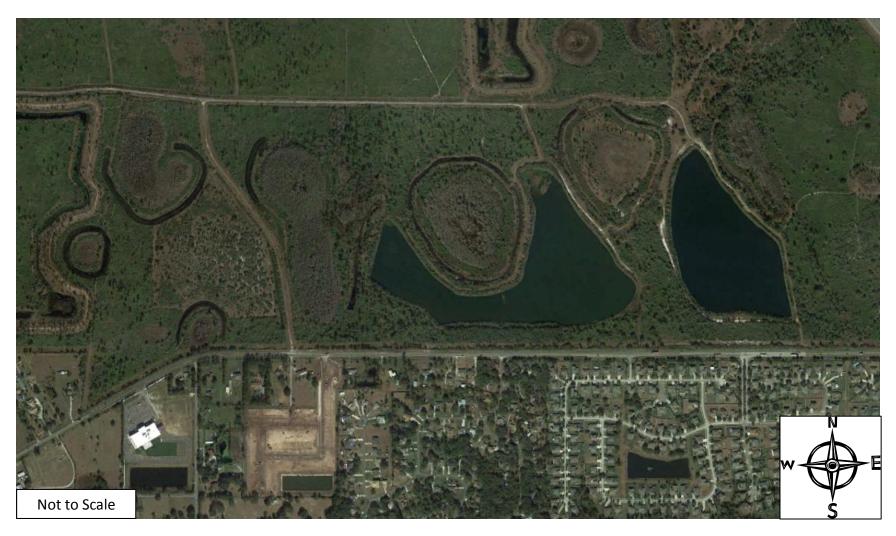
2018 (Image 2 of 6)



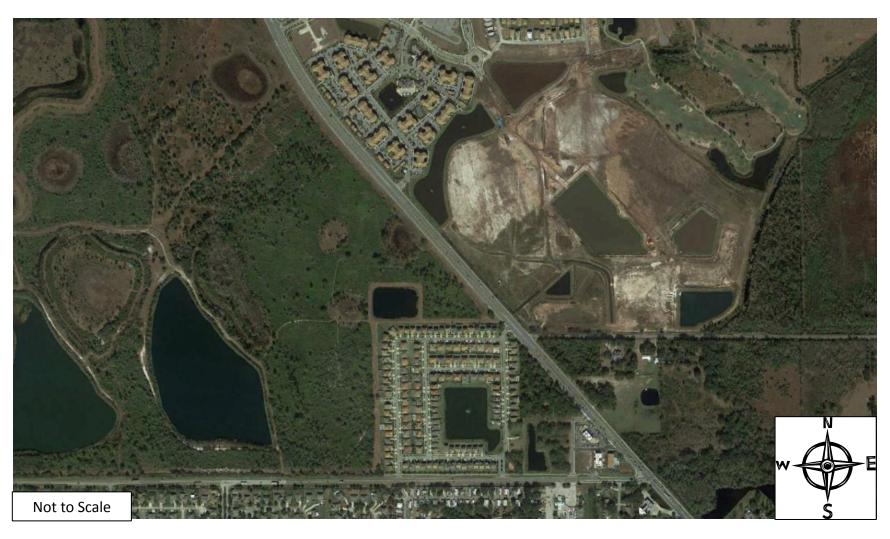
2018 (Image 3 of 6)



2018 (Image 4 of 6)



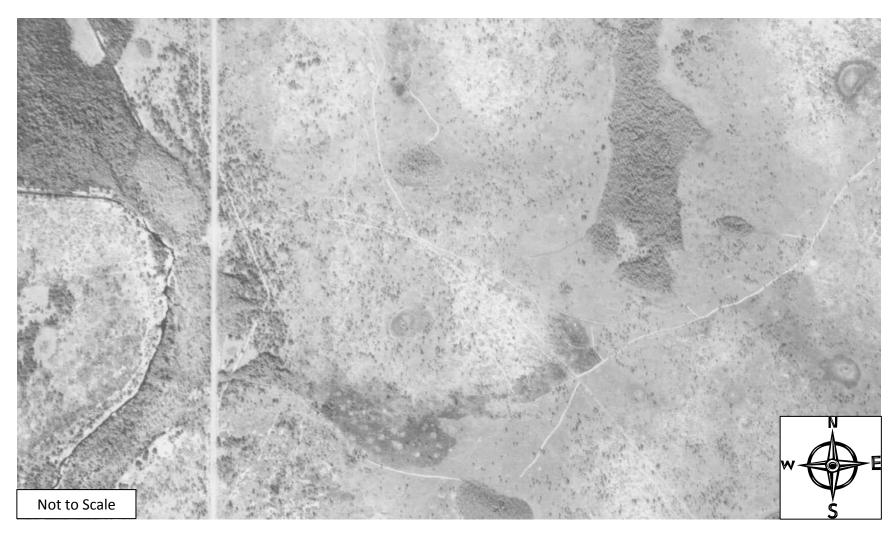
2018 (Image 5 of 6)



2018 (Image 6 of 6)

ALTERNATIVE 404B

LAKE NONA



1944 (Image 1 of 8)



1944 (Image 2 of 8)



1944 (Image 3 of 8)



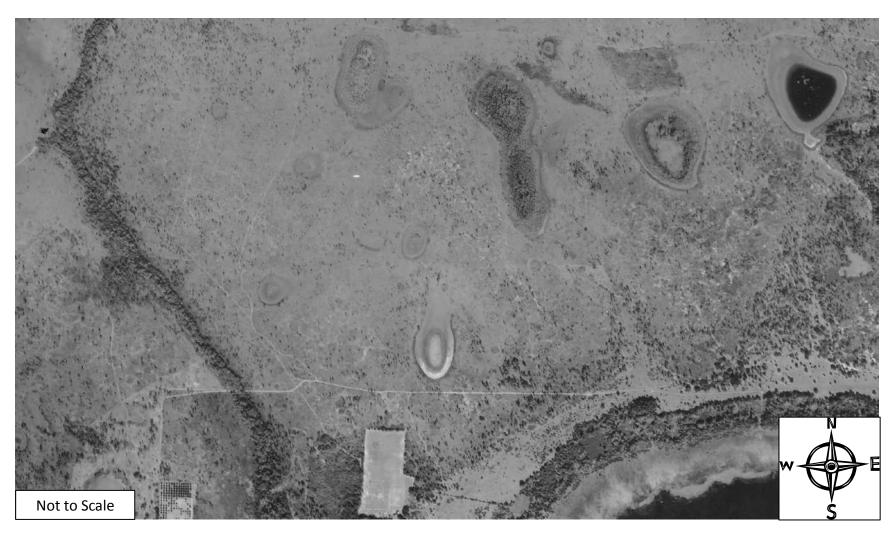
1944 (Image 4 of 8)



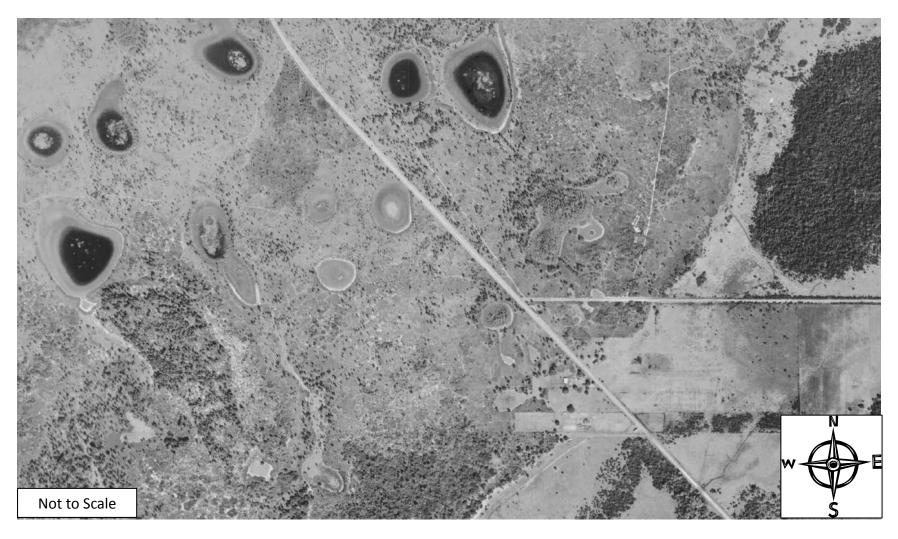
1944 (Image 5 of 8)



1944 (Image 6 of 8)



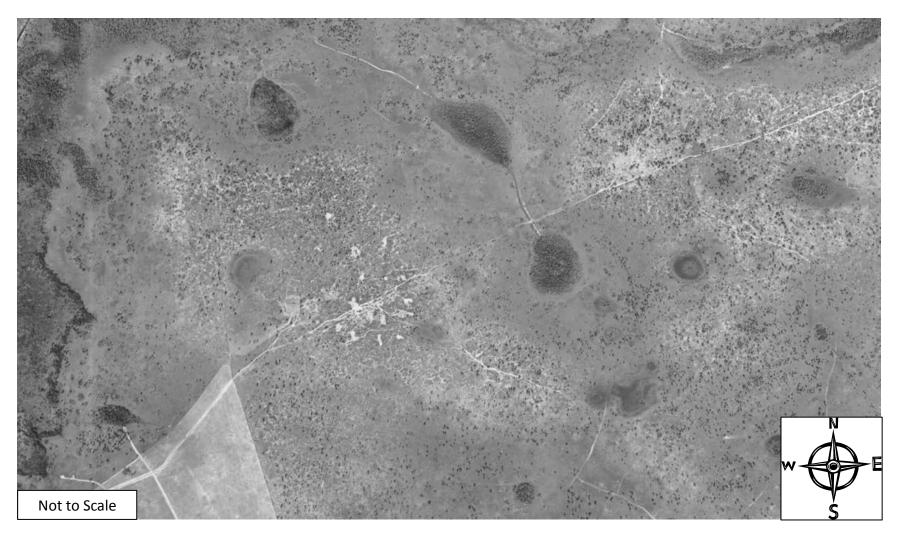
1944 (Image 7 of 8)



1944 (Image 8 of 8)



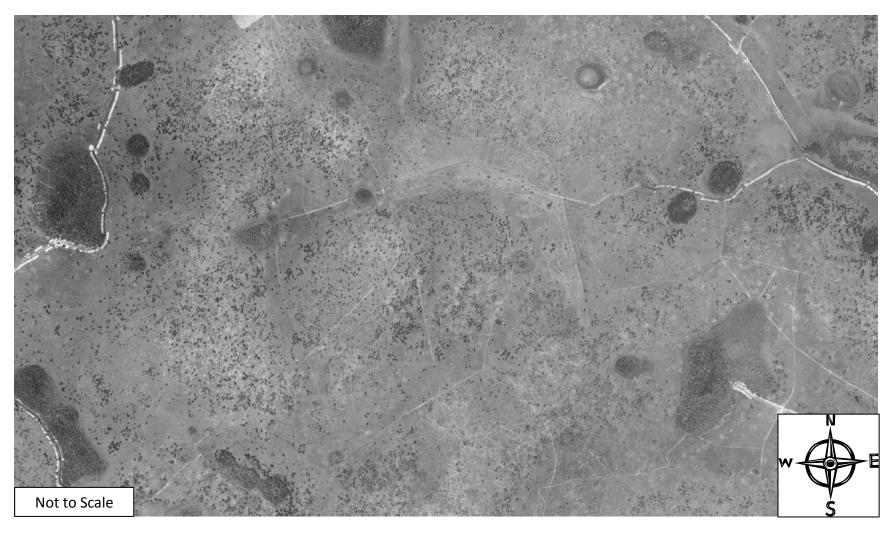
1951 (Image 1 of 8)



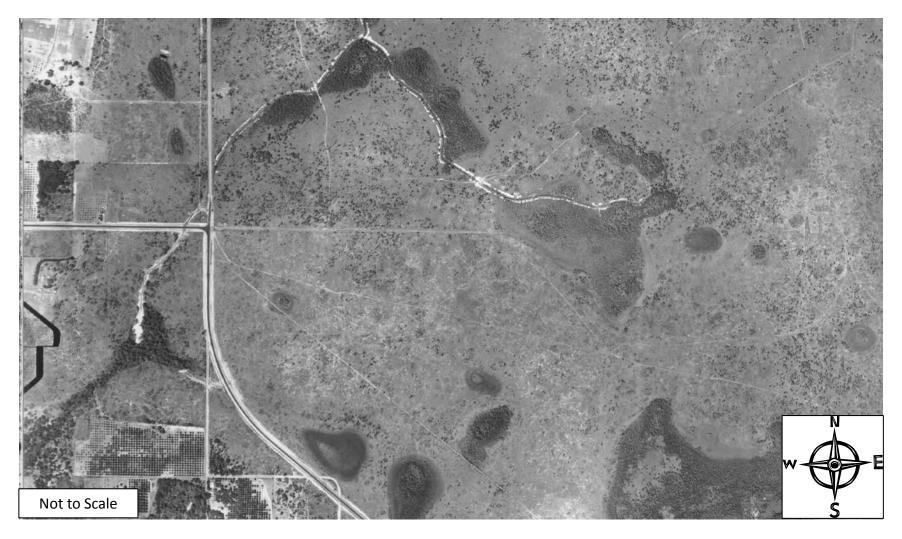
1951 (Image 2 of 8)



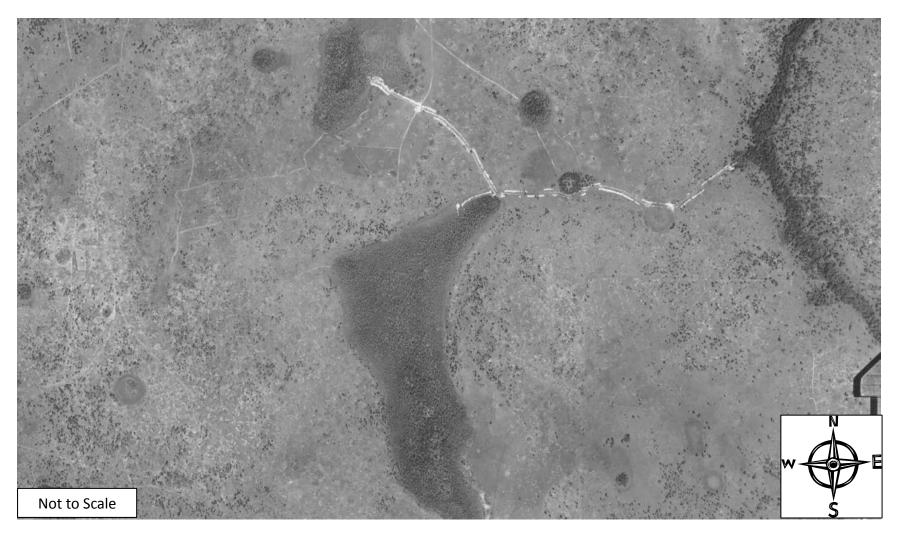
1951 (Image 3 of 8)



1951 (Image 4 of 8)



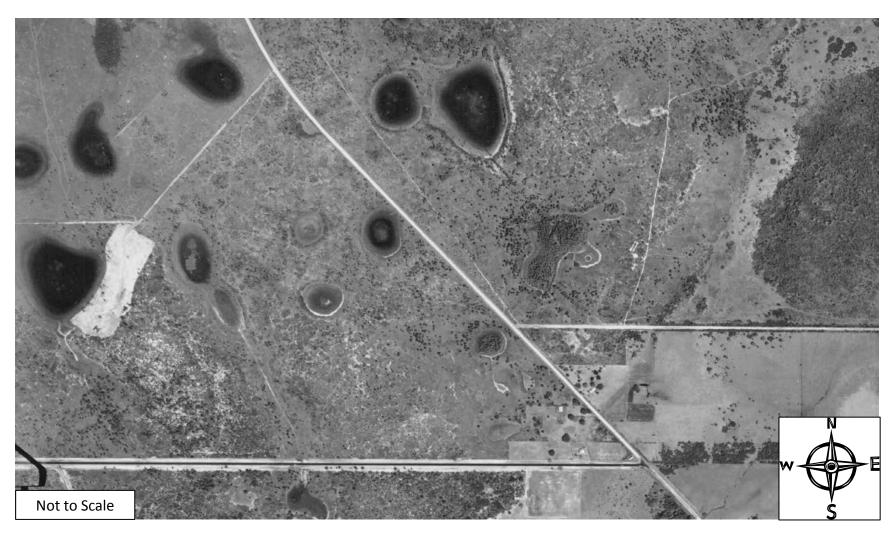
1951 (Image 5 of 8)



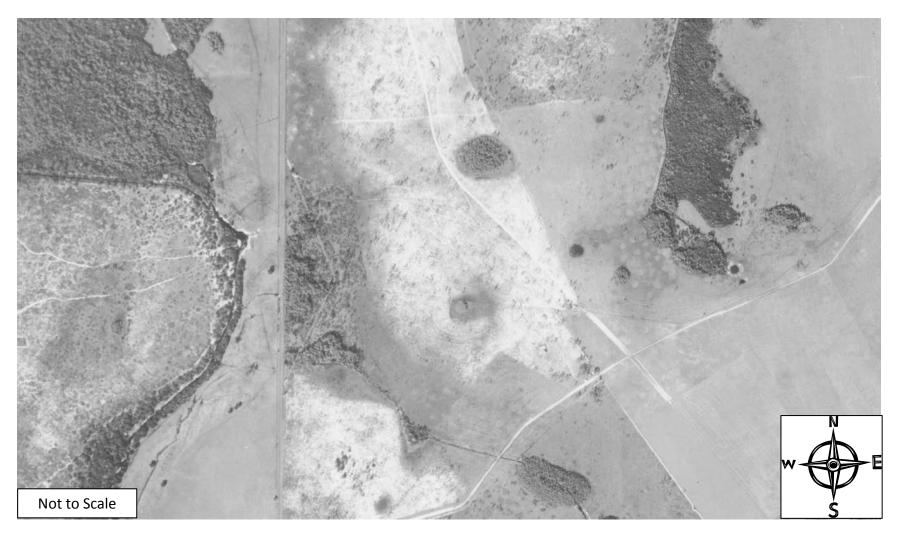
1951 (Image 6 of 8)



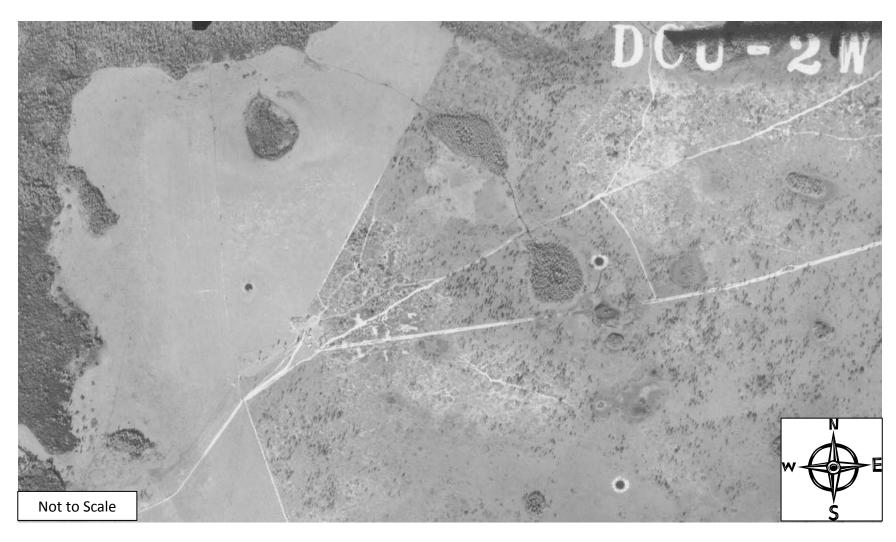
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1951 (Image 8 of 8)



1959 (Image 1 of 8)



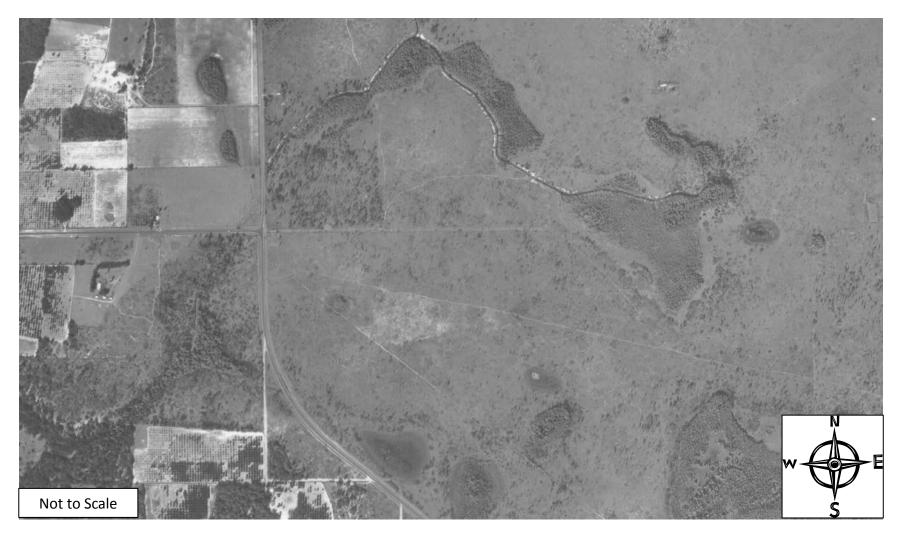
1959 (Image 2 of 8)



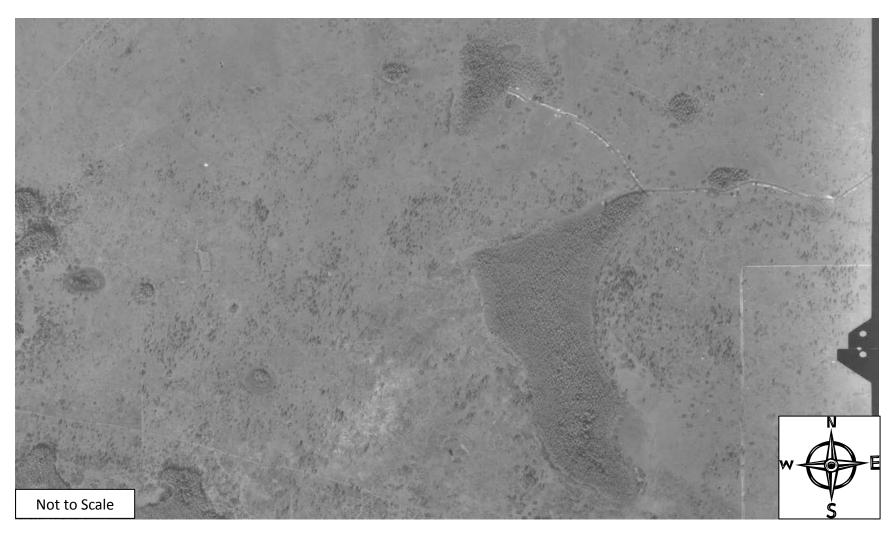
1959 (Image 3 of 8)



1959 (Image 4 of 8)



1959 (Image 5 of 8)



1959 (Image 6 of 8)



1959 (Image 7 of 8)



1959 (Image 8 of 8)



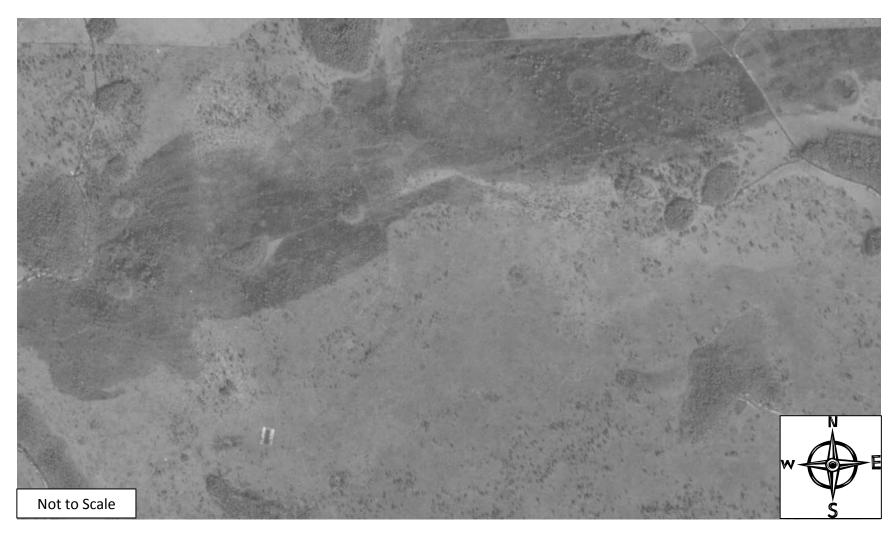
1969 (Image 1 of 8)



1969 (Image 2 of 8)



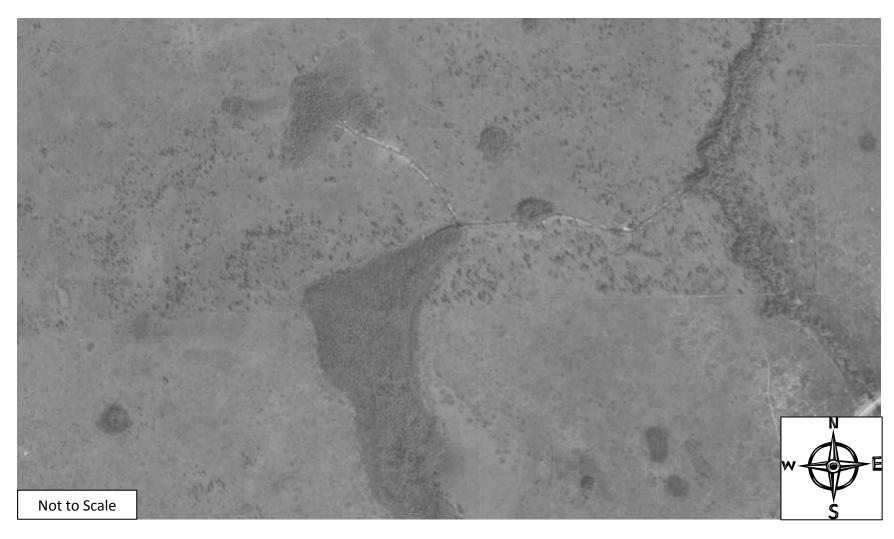
1969 (Image 3 of 8)



1969 (Image 4 of 8)



1969 (Image 5 of 8)



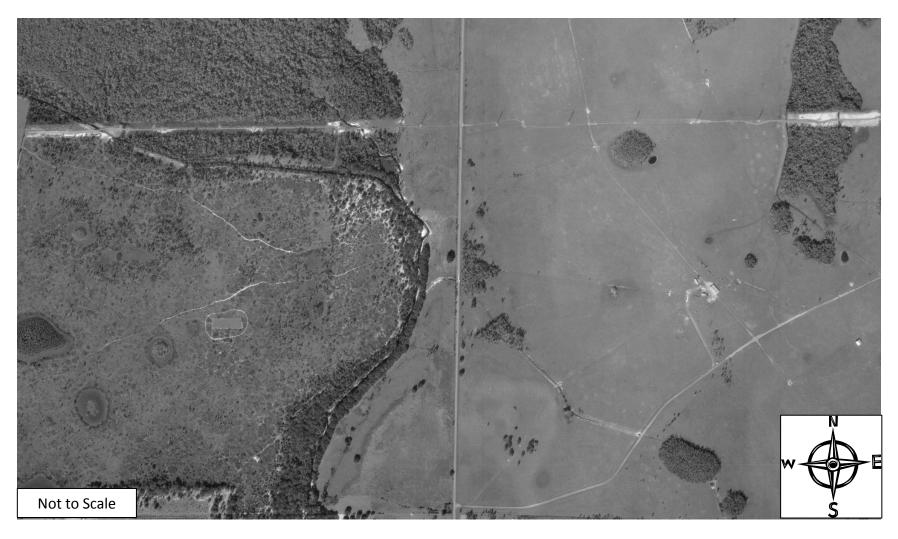
1969 (Image 6 of 8)



1969 (Image 7 of 8)



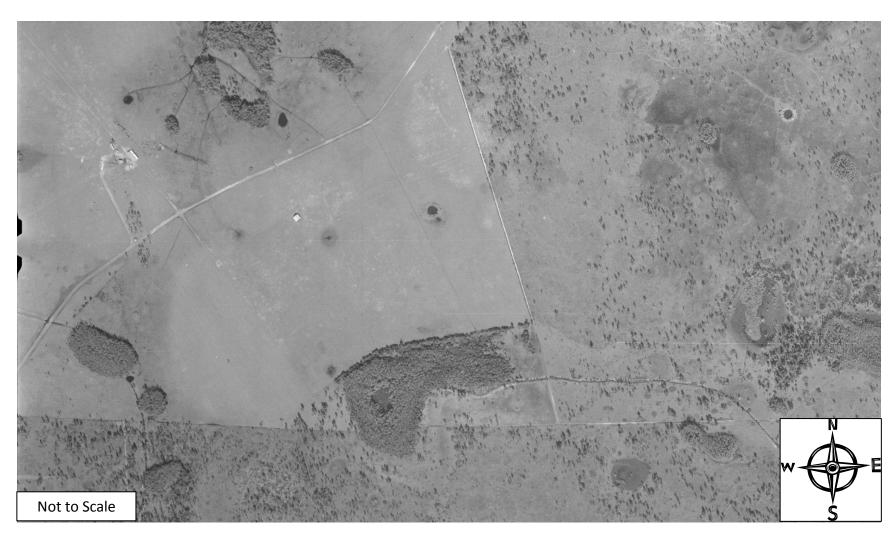
1969 (Image 8 of 8)



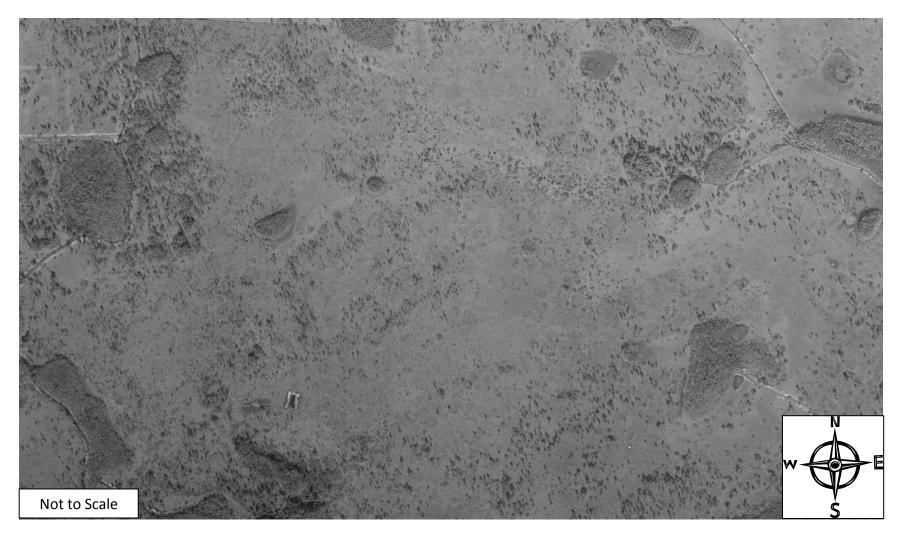
1974 (Image 1 of 8)



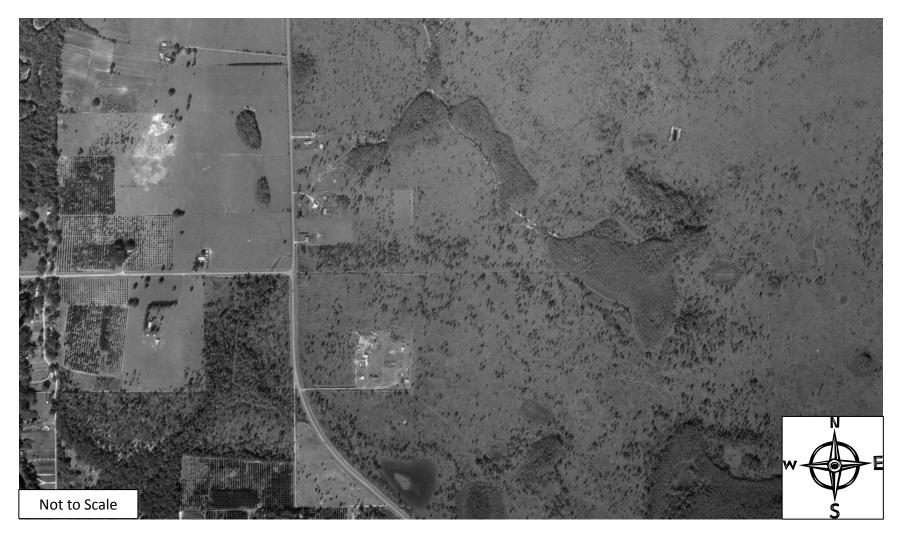
1974 (Image 2 of 8)



1974 (Image 3 of 8)



1974 (Image 4 of 8)



1974 (Image 5 of 8)



1974 (Image 6 of 8)



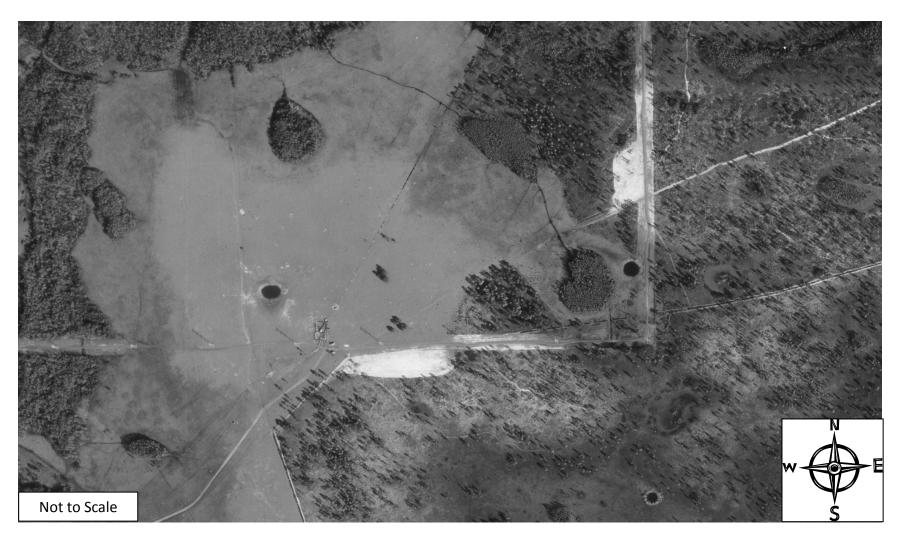
1974 (Image 7 of 8)



1974 (Image 8 of 8)



1978 (Image 1 of 8)



1978 (Image 2 of 8)



1978 (Image 3 of 8)



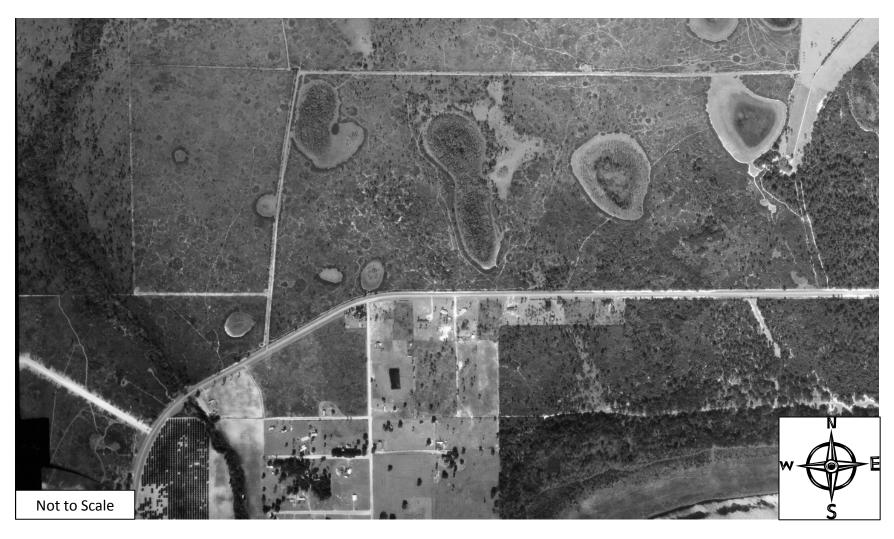
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1978 (Image 5 of 8)



1978 (Image 6 of 8)



1978 (Image 7 of 8)



1978 (Image 8 of 8)



1984 (Image 1 of 8)



1984 (Image 2 of 8)



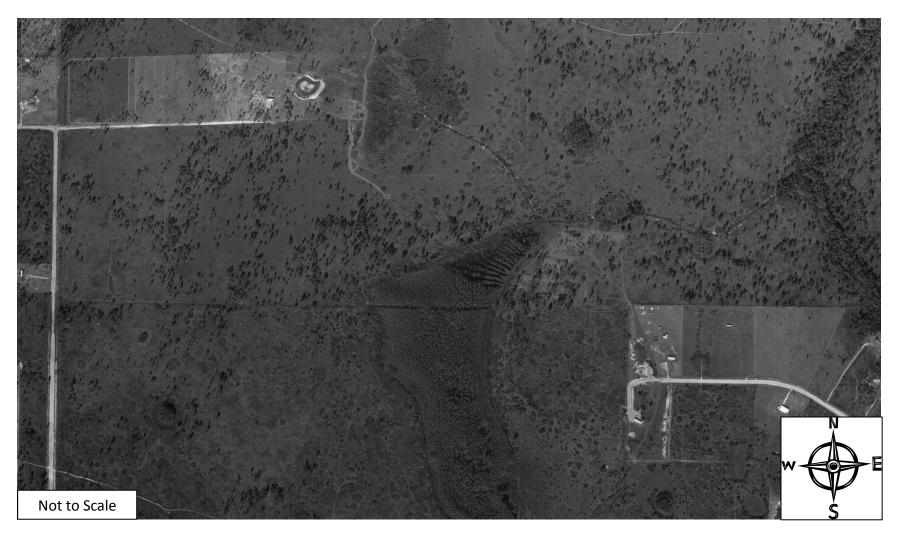
1984 (Image 3 of 8)



1984 (Image 4 of 8)



1984 (Image 5 of 8)



1984 (Image 6 of 8)



1984 (Image 7 of 8)



1984 (Image 8 of 8)



1990 (Image 1 of 8)



1990 (Image 2 of 8)



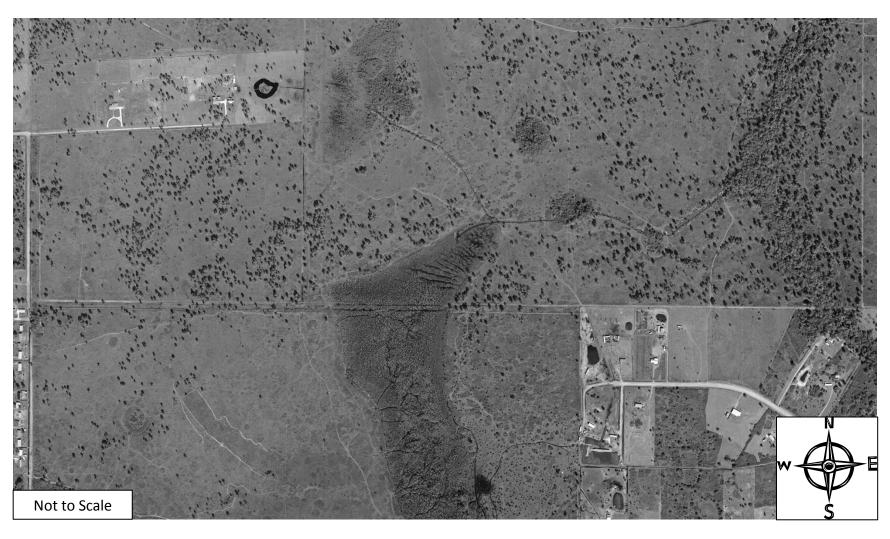
1990 (Image 3 of 8)



1990 (Image 4 of 8)



1990 (Image 5 of 8)



1990 (Image 6 of 8)



1990 (Image 7 of 8)



1990 (Image 8 of 8)



1994 (Image 1 of 8)



1994 (Image 2 of 8)



1994 (Image 3 of 8)



1994 (Image 4 of 8)



1994 (Image 5 of 8)



1994 (Image 6 of 8)



1994 (Image 7 of 8)



1994 (Image 8 of 8)



1999 (Image 1 of 8)



1999 (Image 2 of 8)



1999 (Image 3 of 8)



1999 (Image 4 of 8)



1999 (Image 5 of 8)



1999 (Image 6 of 8)



1999 (Image 7 of 8)



1999 (Image 8 of 8)



2003 (Image 1 of 8)



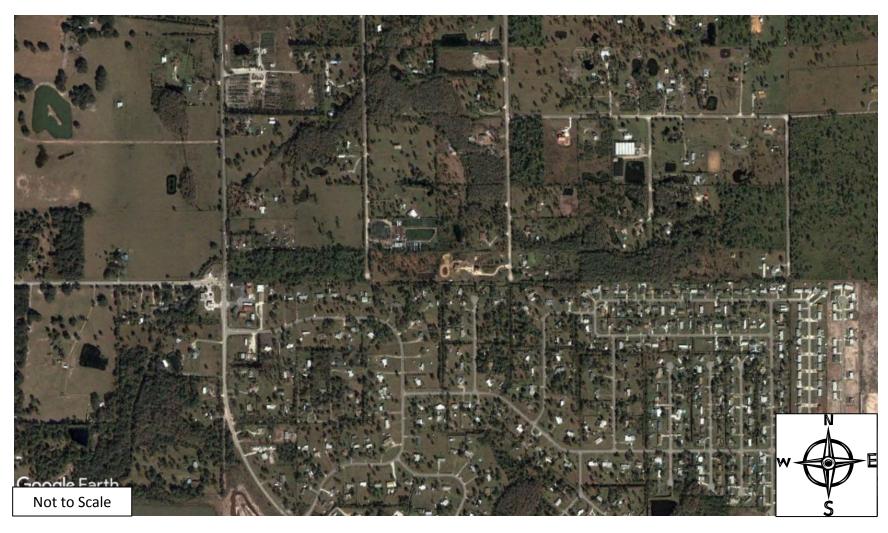
2003 (Image 2 of 8)



2003 (Image 3 of 8)



2003 (Image 4 of 8)



2003 (Image 5 of 8)



2003 (Image 6 of 8)



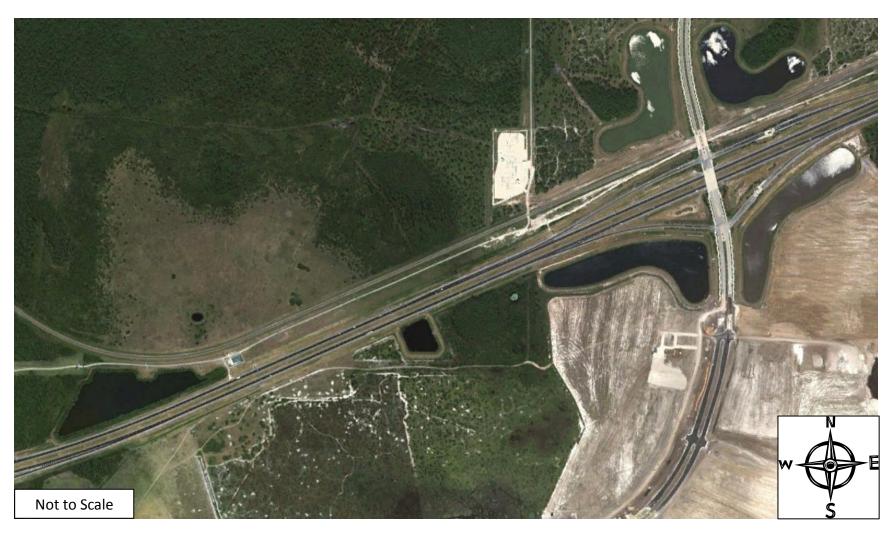
2003 (Image 7 of 8)



2003 (Image 8 of 8)



2008 (Image 1 of 8)



2008 (Image 2 of 8)



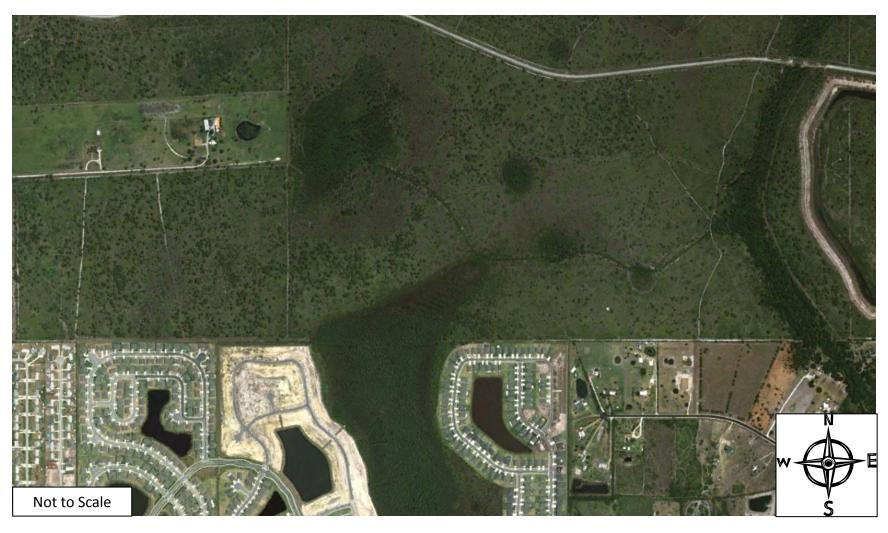
2008 (Image 3 of 8)



2008 (Image 4 of 8)



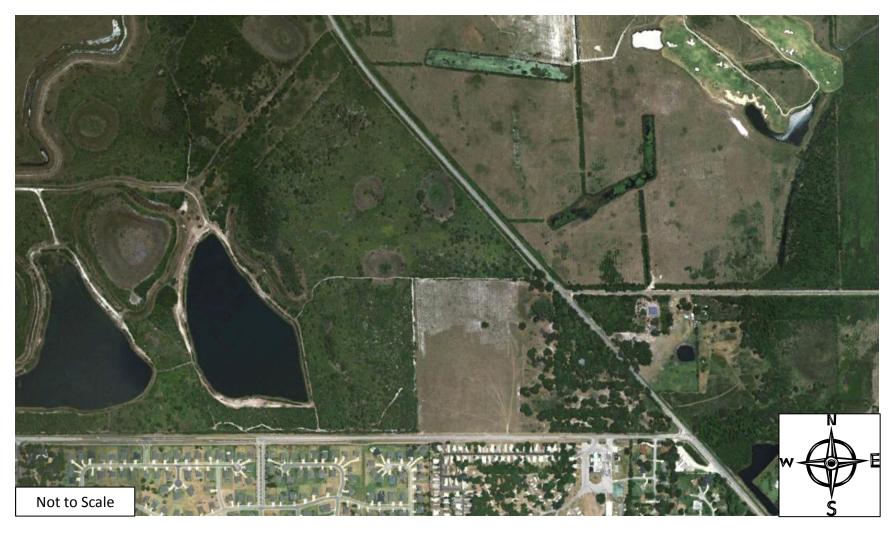
2008 (Image 5 of 8)



2008 (Image 6 of 8)



2008 (Image 7 of 8)



2008 (Image 8 of 8)



2013 (Image 1 of 8)



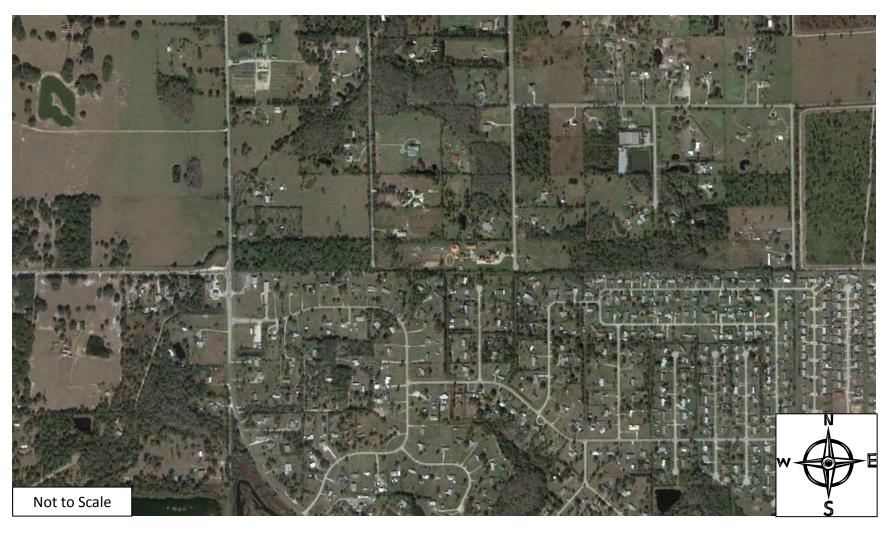
2013 (Image 2 of 8)



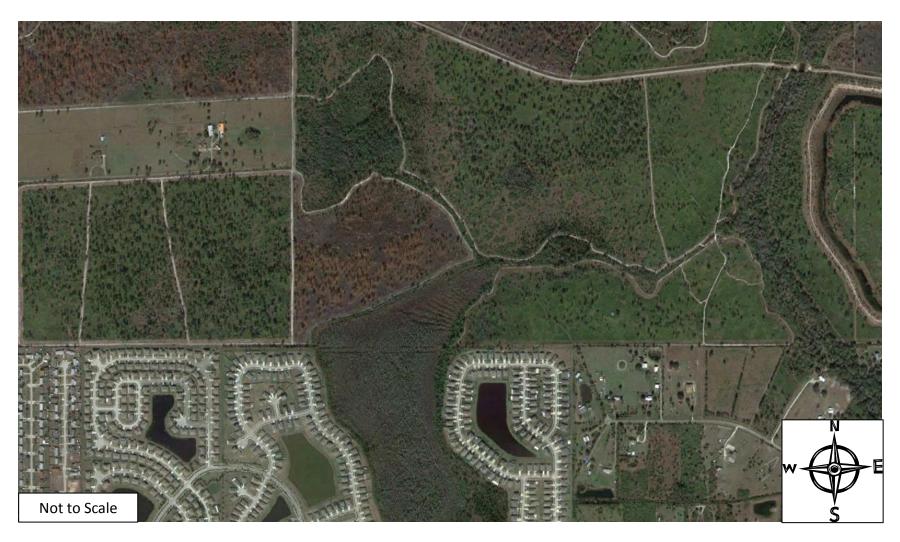
2013 (Image 3 of 8)



2013 (Image 4 of 8)



2013 (Image 5 of 8)



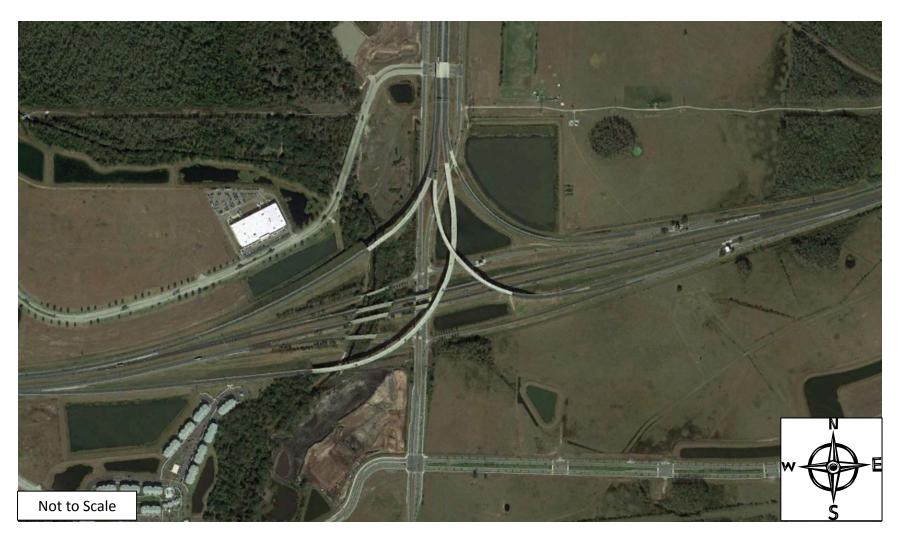
2013 (Image 6 of 8)



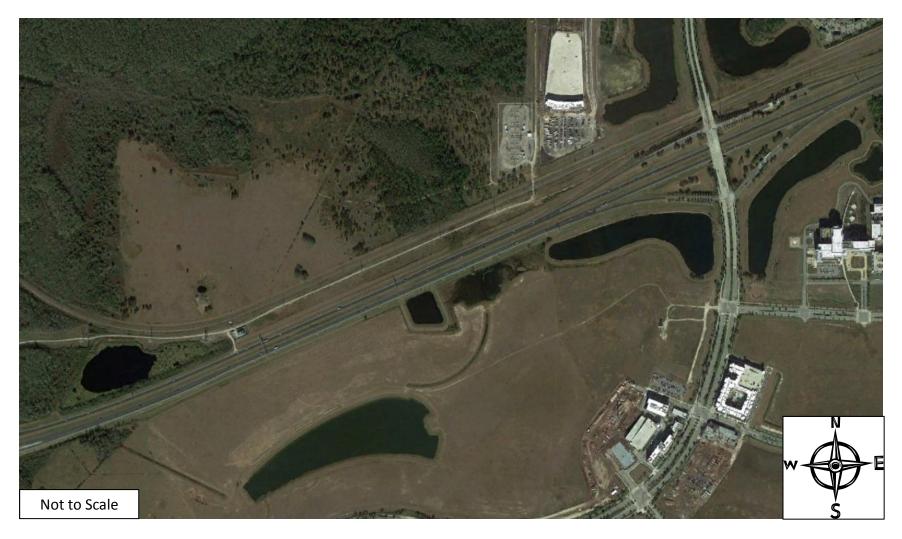
2013 (Image 7 of 8)



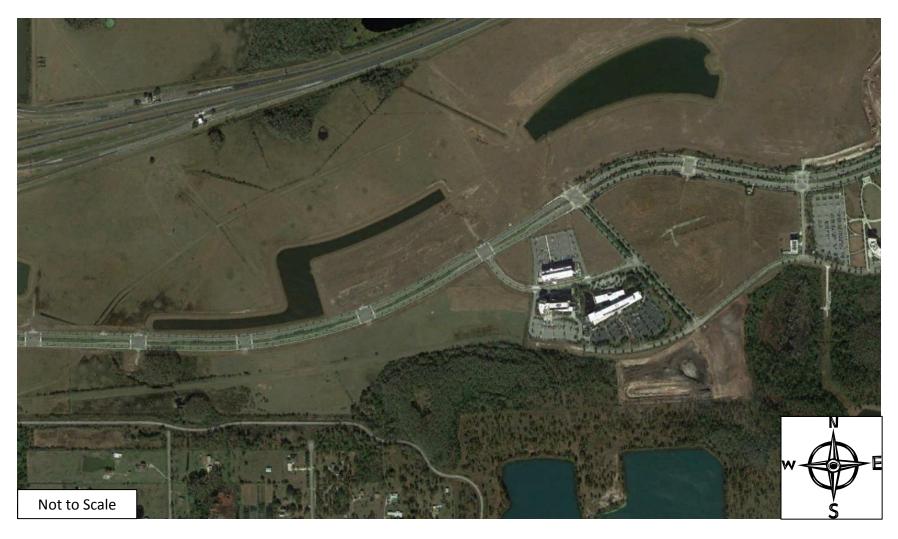
2013 (Image 8 of 8)



2018 (Image 1 of 8)



2018 (Image 2 of 8)



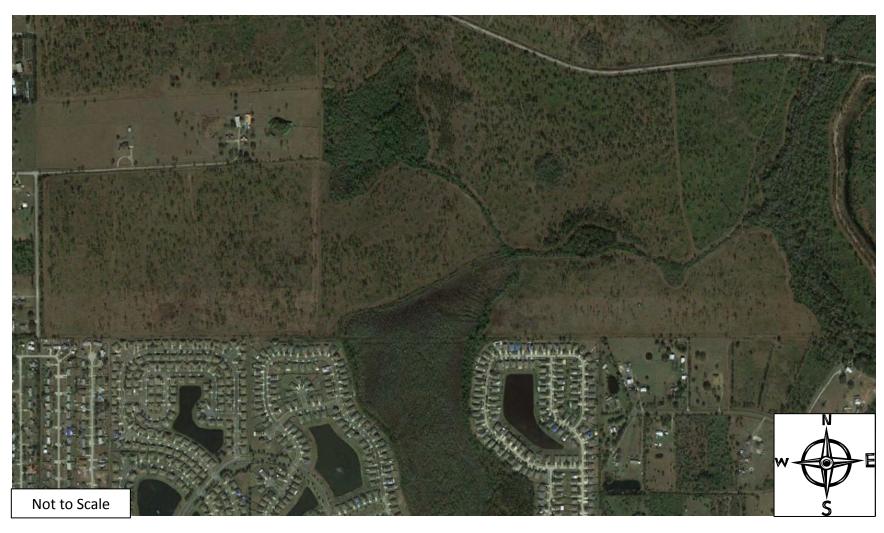
2018 (Image 3 of 8)



2018 (Image 4 of 8)



2018 (Image 5 of 8)



2018 (Image 6 of 8)



2018 (Image 7 of 8)

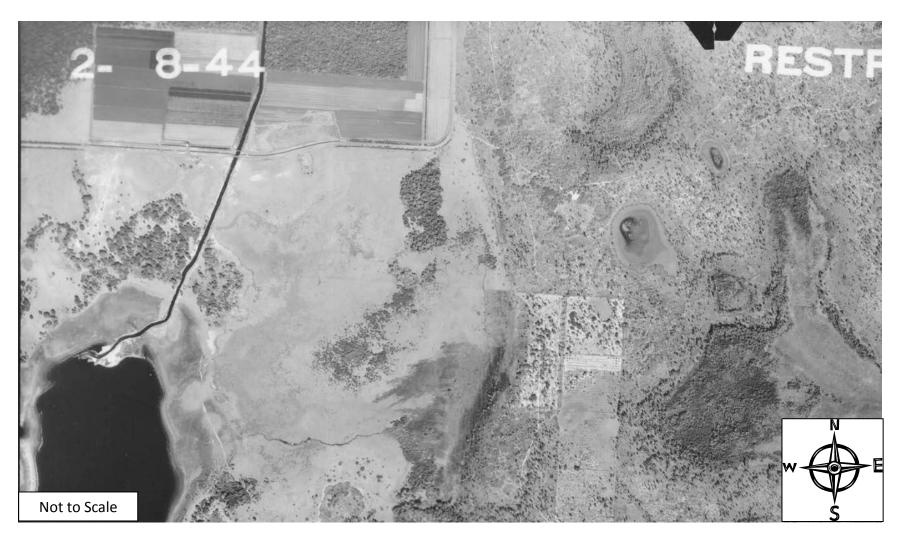


2018 (Image 8 of 8)

ALTERNATIVE 107C-1 SPLIT OAK IMPACT



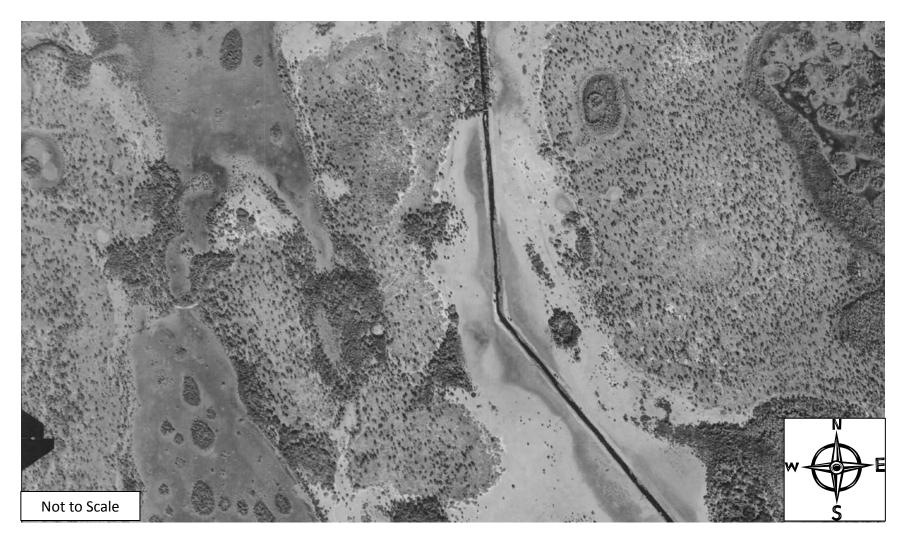
1944 (Image 1 of 8)



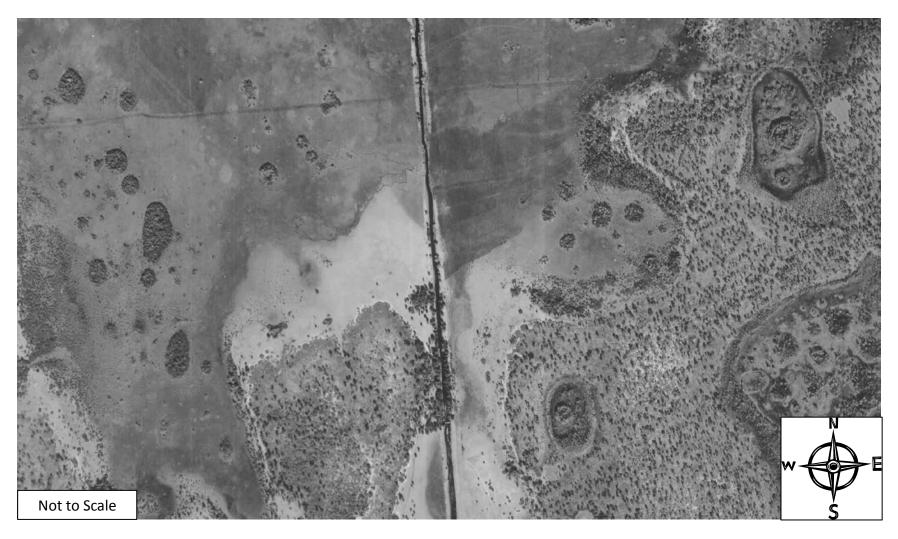
1944 (Image 2 of 8)



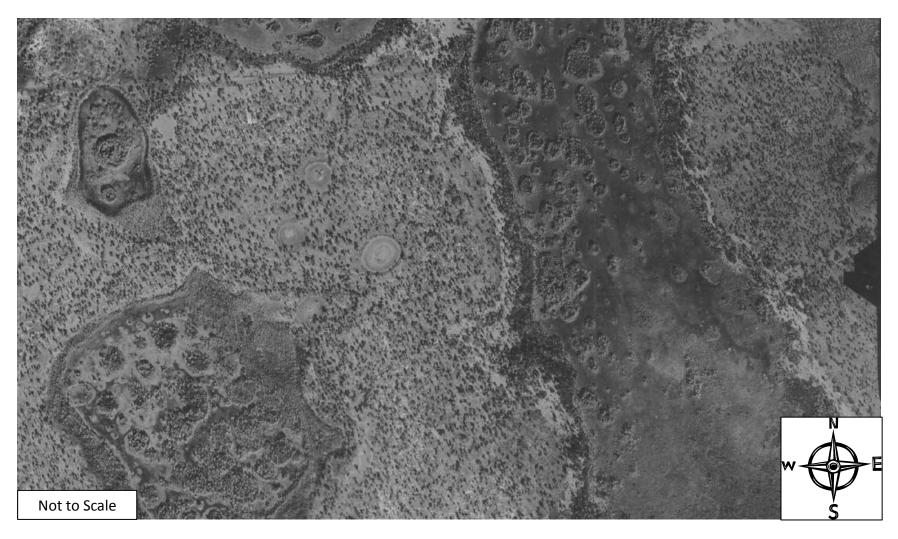
1944 (Image 3 of 8)



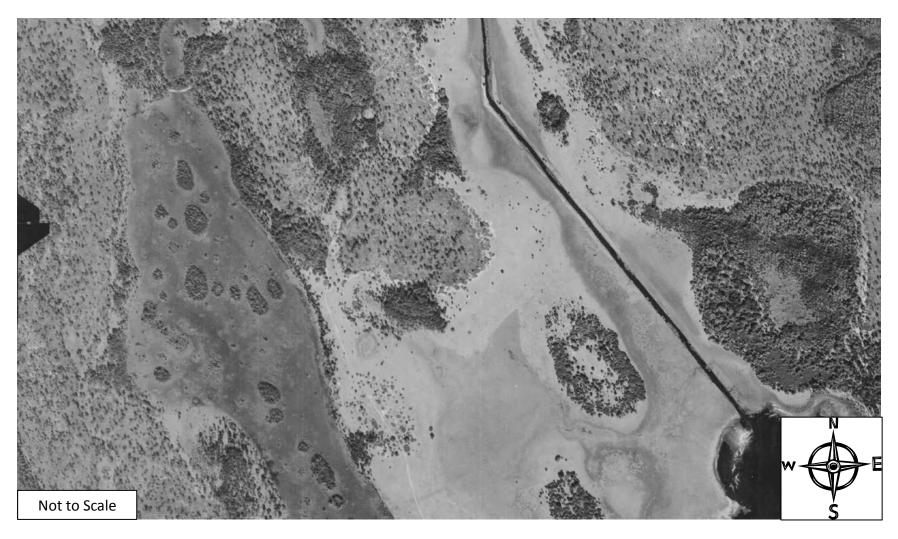
1944 (Image 4 of 8)



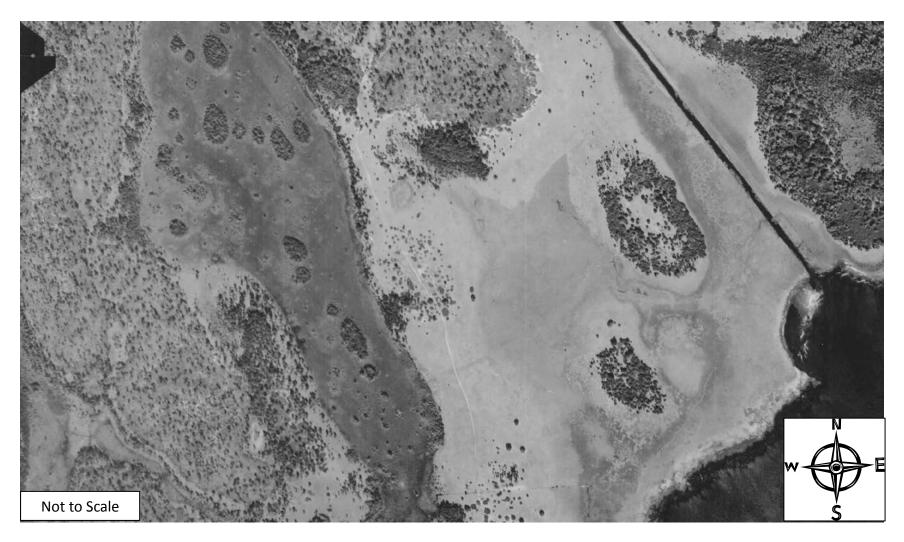
1944 (Image 5 of 8)



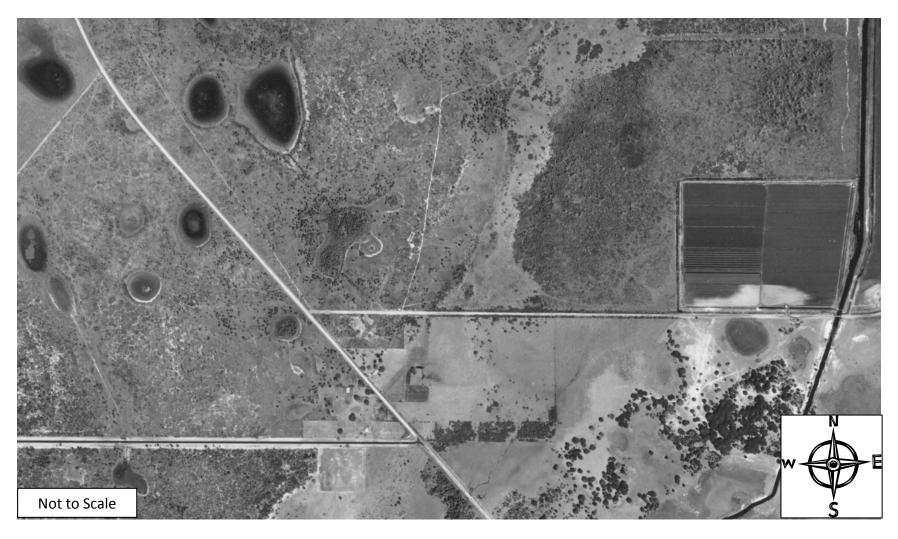
1944 (Image 6 of 8)



1944 (Image 7 of 8)



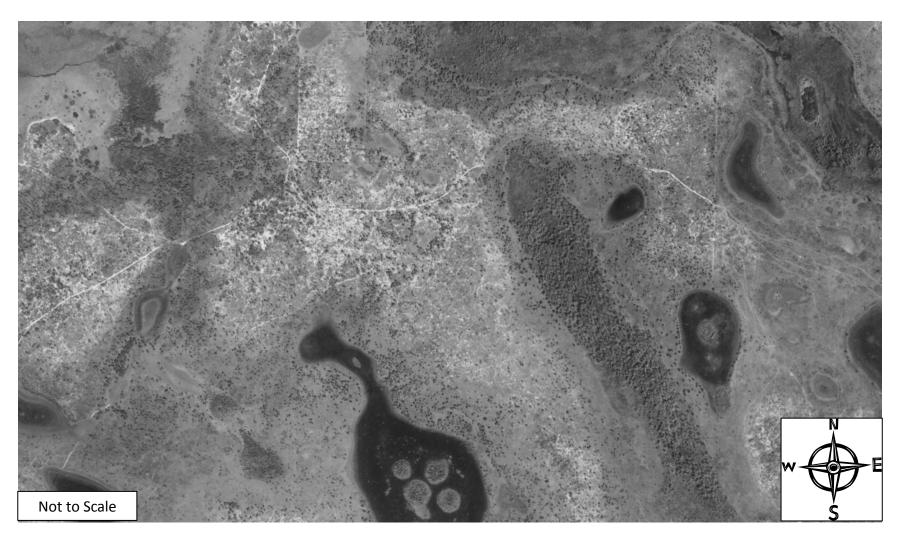
1944 (Image 8 of 8)



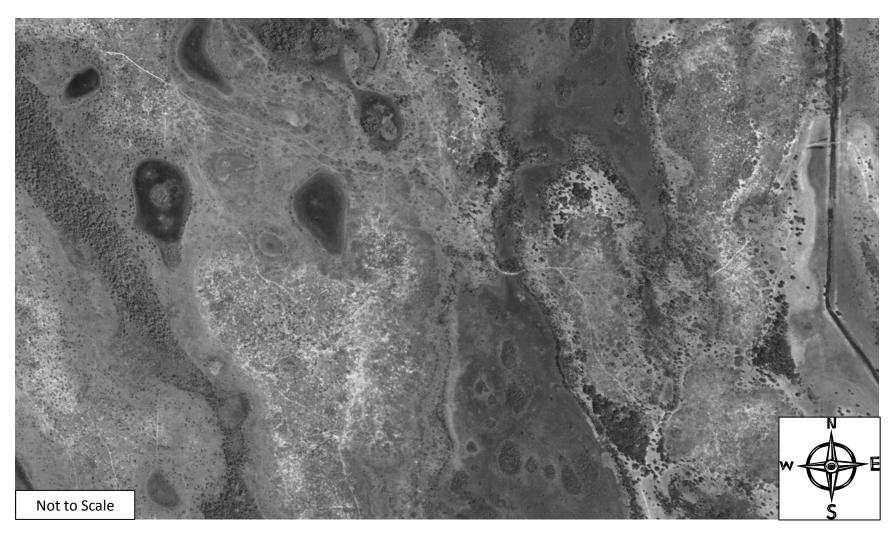
1951 (Image 1 of 8)



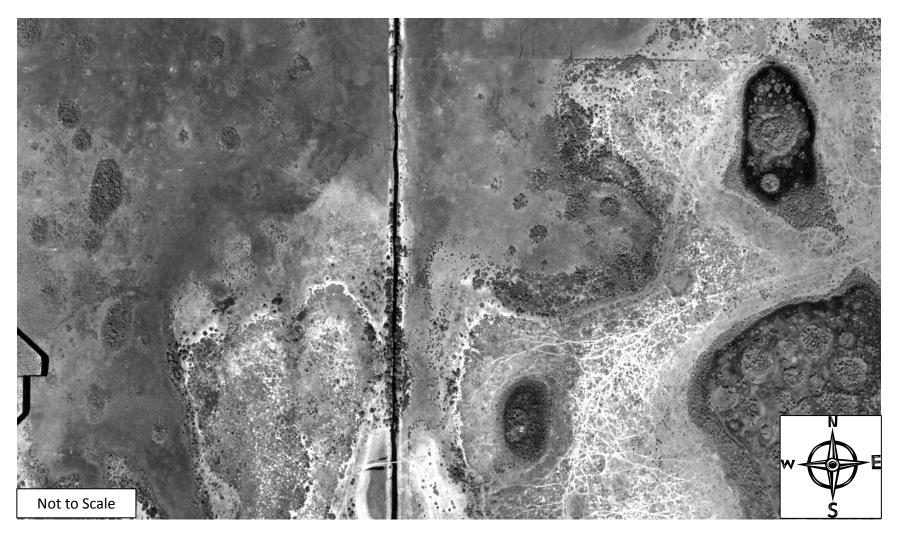
1951 (Image 2 of 8)



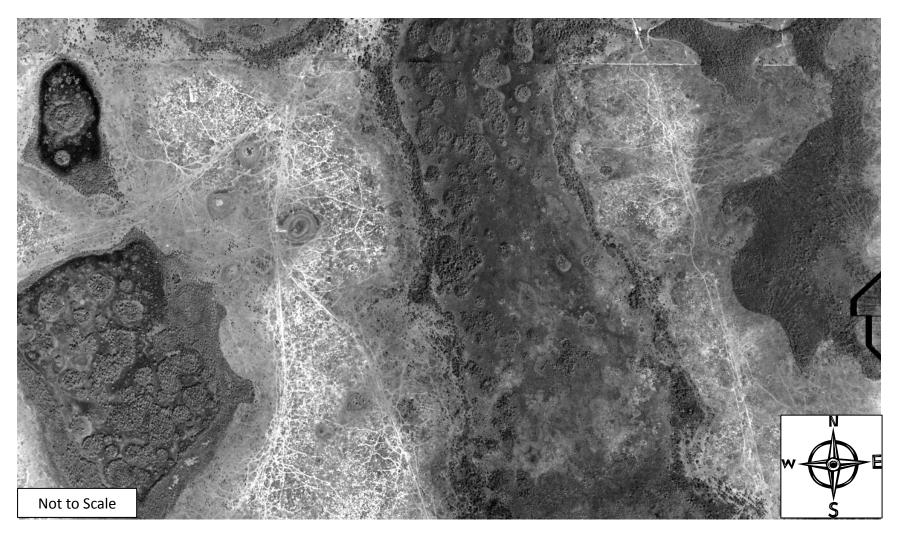
1951 (Image 3 of 8)



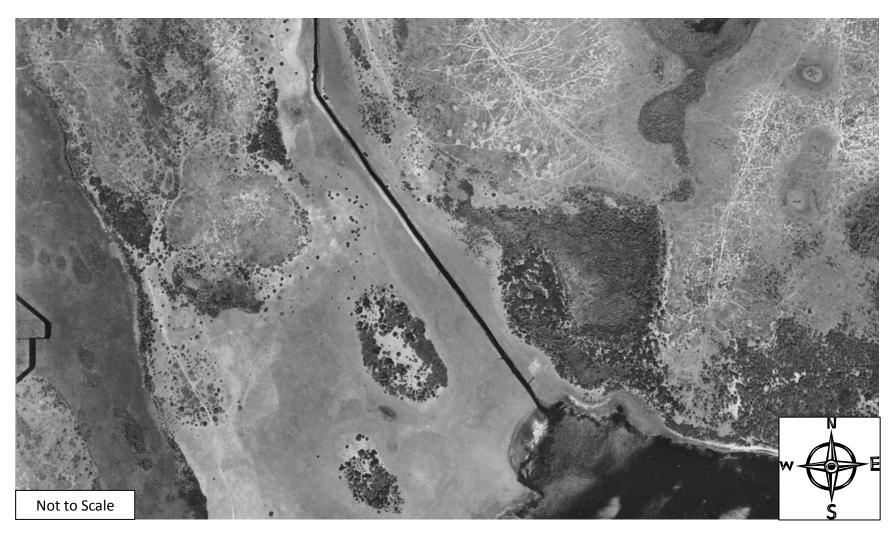
1951 (Image 4 of 8)



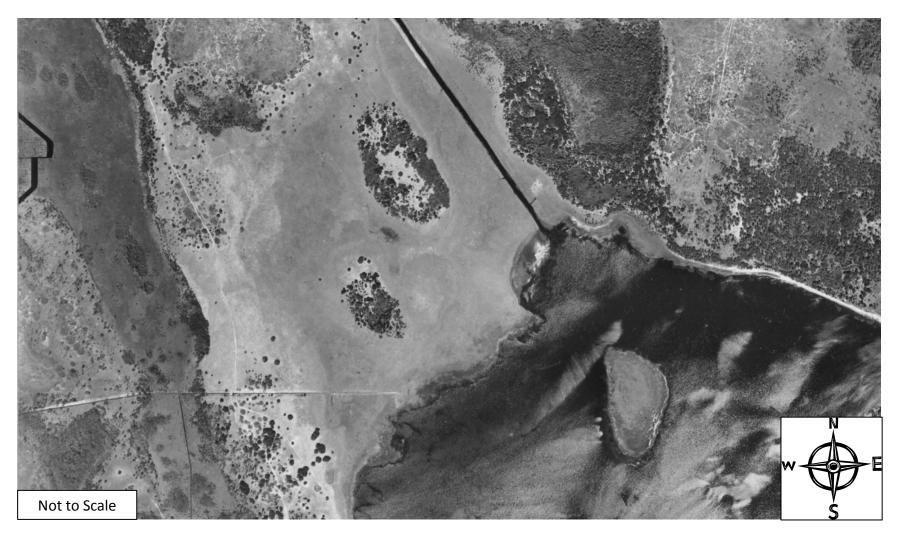
1951 (Image 5 of 8)



1951 (Image 6 of 8)



1951 (Image 7 of 8)



1951 (Image 8 of 8)