Preliminary Report on the Conditions at the Suwannee River Water Management District Edwards Bottomlands Mitigation Project Along Alligator Creek in the City of Starke

July 2025

Paul Still
Bradford Environmental Forum
stillpe@aol.com

Based on site visits to the Mitigation Project in 2025 and historic water level data and site visits to the Mitigation Project in 2025 Bradford Environmental Forum believes that the Suwannee River Water Management District (SRWMD) Edwards Bottomlands Mitigation Project along Alligator Creek in Starke creates a serious flooding threat along Alligator Creek upstream of the Mitigation Project due to reduced stormwater flows through the Mitigation site.

Immediate action is required by the Suwannee River Water Management District (SRWMD) to address the flooding risk created by the SRWMD Mitigation Project.

The Bradford Environmental Forum does not believe the claim in the 3 2024 Monitoring reports that the Mitigation Project is meeting the requirements of the Army Corps of Engineers permit can be supported.

Action is needed not only to restore the ecological integrity of the Mitigation Project site but also to protect downstream ecosystem that are being impacted by trash and invasive plant propagules.

The Bradford Environmental Forum contends that the SRWMD needs to take the following immediate actions.

1. Remove the excess vegetation, trash and debris, and sediments that have accumulated in the secondary channel of the Mitigation Project. Not removing these items causes reduced flows through the site during significant rain events increasing the risk of upstream flooding and higher flood levels.

2. Initiate an aggressive invasive and nuisance plant treatment plan to control the invasive and nuisance plants at the Mitigation Project.

3. Install more piezometers in the constructed wetlands to document wetland soil conditions.

4. Initiate the process required by the ACOE Permit Standard e. to undertake a remediation program to address the issues raised in this document.

Cover pages of the Reports referenced in this document

EDWARDS BOTTOMLAND MITIGATION AREA
2024 PHASE 1 REPORT
Bradford COUNTY, FLORIDA
USACE Permit No. SAJ-2016-03157 (NW-RLT)

APPLICANT:

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT TWO
1109 SOUTH MARION AVENUE
LAKE CITY, FLORIDA 32025

CO-APPLICANT:

CITY OF STARKE
P.O. DRAWER C,
STARKE, FLORIDA 32091

AGENCY:

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49,
LIVE OAK, FLORIDA 32060

PREPARED BY:

SES Environmental Resource Solutions LLC

DECEMBER 2024

EDWARDS BOTTOMLAND MITIGATION AREA
2024 PHASE 2 REPORT
Bradford COUNTY, FLORIDA
USACE Permit No. SAJ-2016-03157 (NW-RLT)

APPLICANT:

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT TWO
1109 SOUTH MARION AVENUE
LAKE CITY, FLORIDA 32025

CO-APPLICANT:

CITY OF STARKE
P.O. DRAWER C,
STARKE, FLORIDA 32091

AGENCY:

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49,
LIVE OAK, FLORIDA 32060

PREPARED BY:

SES Environmental Resource Solutions LLC

DECEMBER 2024

Cover pages of reports referenced in this document

EDWARDS BOTTOMLAND MITIGATION AREA
2024 PHASE 3 REPORT
Bradford COUNTY, FLORIDA
USACE Permit No. SAJ-2016-03157 (NW-RLT)

APPLICANT:

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT TWO
1109 SOUTH MARION AVENUE
LAKE CITY, FLORIDA 32025

CO-APPLICANT:

CITY OF STARKE
P.O. DRAWER C,
STARKE, FLORIDA 32091

AGENCY:

SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49,
LIVE OAK, FLORIDA 32060

PREPARED BY:

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DECEMBER 2024

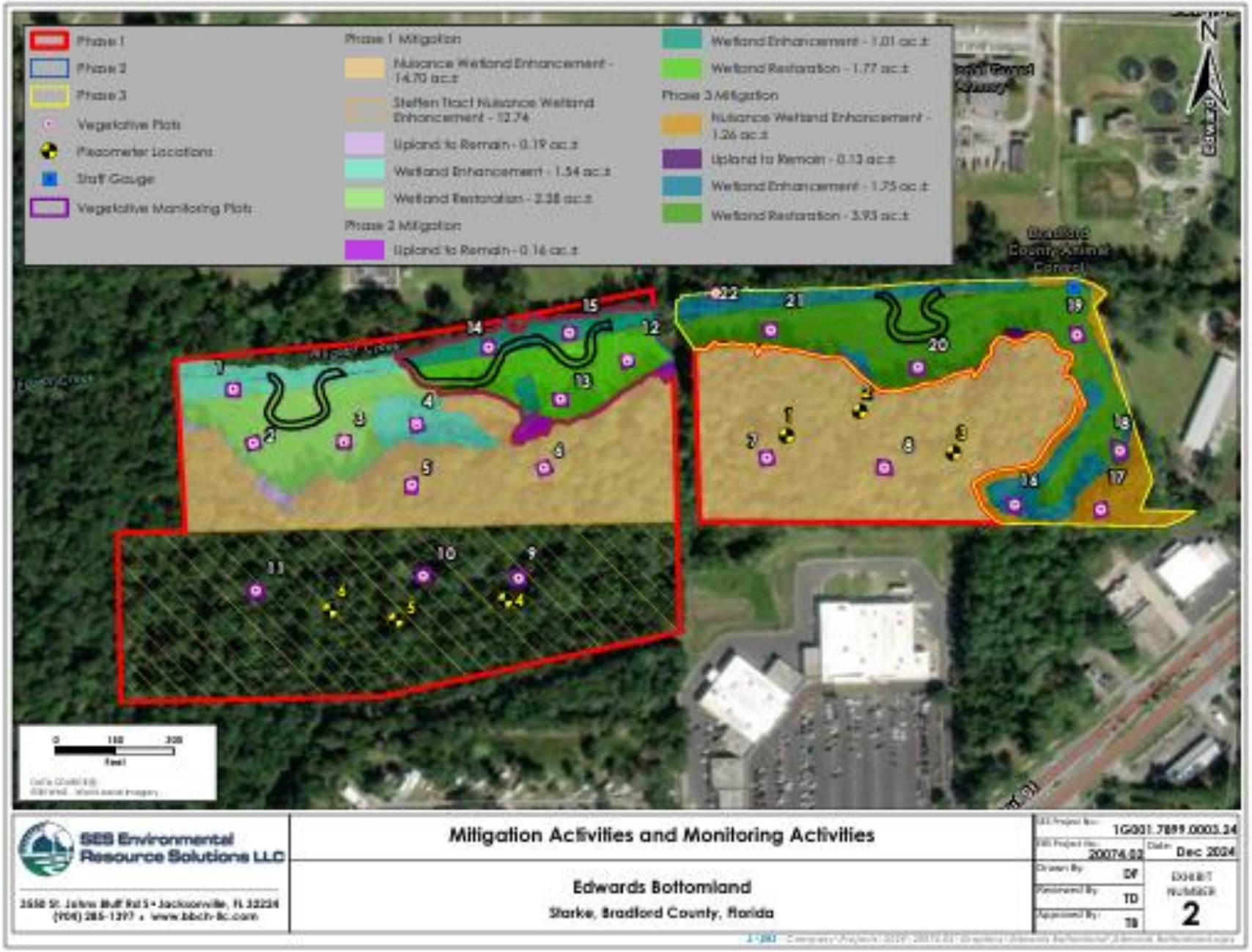
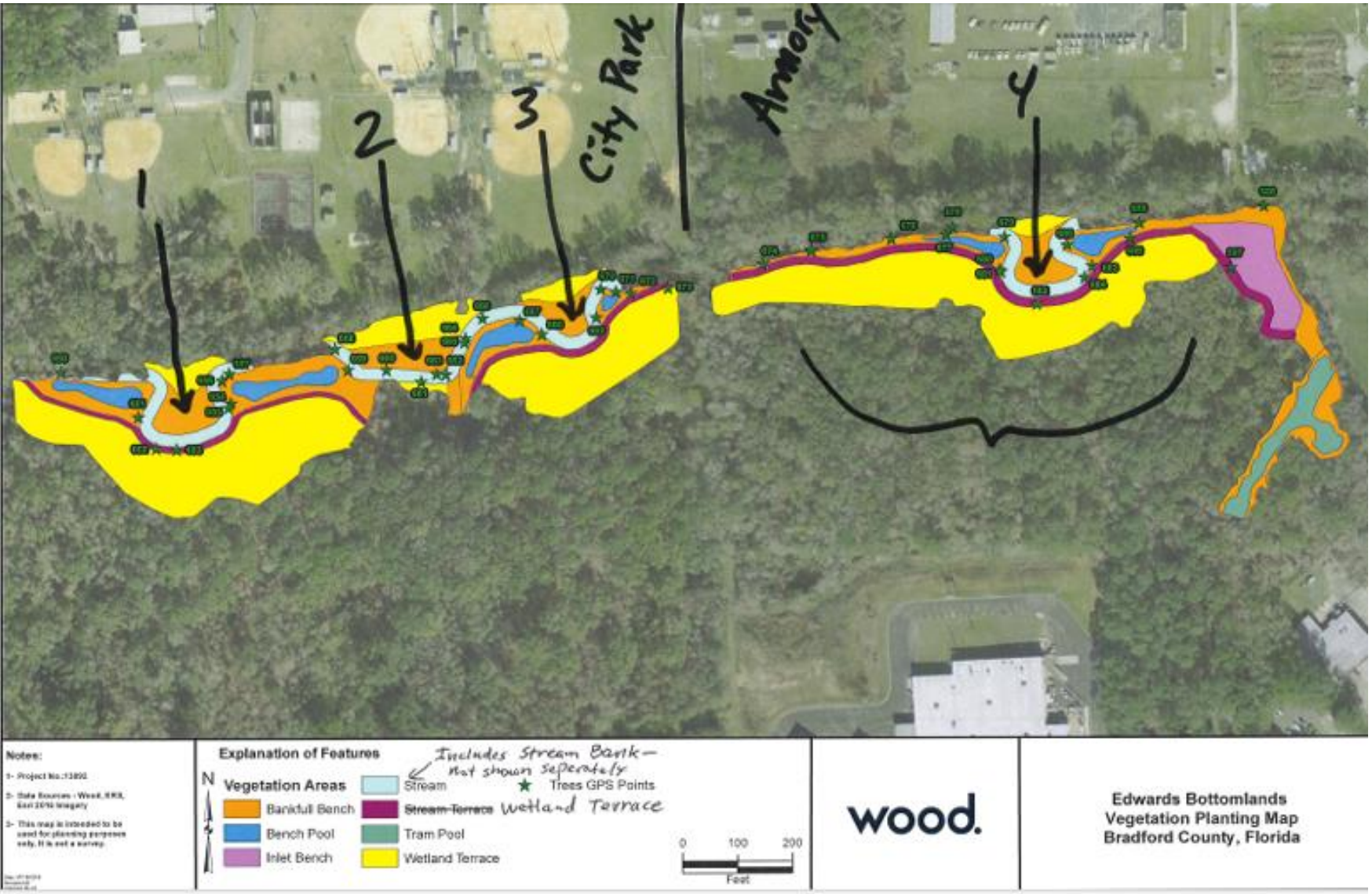


Exhibit Number 2 on the left is used in each of the three Reports. The red line which is the project boundary is not shown on the eastern side of the Mitigation Project.

The location of the 22 numbered plots that were used to evaluate permitted requirements for greater than 80% cover by appropriate wetland species and less than 5% cover by nuisance/invasive species can be seen in the image.



This image associated with the planting activities provides a representation of elevations introduced into the Mitigation Project site.

The orange and blue areas form the secondary channel designed to manage high flows. They were supposed to offset the reduced flows caused by the addition of the four numbered ox bows.

The Wetland Terrace is where the wetland trees were to be established..

The following wording from the Report provides a timeline for each phase

2024 Phase 1 Annual Monitoring Report pages 1 and 2

The earthwork, initial nuisance/invasive species control, and planting required for Phase 1 was completed on 22 July 2019, and the Time Zero monitoring event was conducted on 18 October 2019. This monitoring report presents data collected during the fifth annual monitoring iteration, conducted in October 2024.

2024 Phase 2 Annual Monitoring Report page 1

This report summarizes the 2024 fourth annual monitoring event, please note that the requirement for semi-annual monitoring iterations has ceased and Phase 2 has entered the annual fall monitoring phase.

2024 Phase 2 Annual Monitoring Report pages 1 and 2

The earthwork, initial nuisance/exotic species control, and planting required for Phase 3 was completed in June 2021. This monitoring report presents data collected during the third semi-annual monitoring event and was conducted in March 2024 and October 2024 respectively.

Each report lists the following Requirements

2.0 REQUIREMENTS

The following performance standards are included in the USACE permit:

a. At least 80 percent cover by appropriate wetland species (i.e., FAC or wetter).
b. Cover of FISC Category I and II invasive plant species, pursuant to the most current list established by the Florida Invasive Species Council at http://www.floridainvasives.org, and the nuisance species, dogfennel (Eupatorium capillifolium), Bermudagrass (Cynodon spp.), Bahiagrass (Paspalum notatum), and cattail (Typha spp.). shall total less than 5 percent.
c. Less than 20 percent mortality of planted wetland species.
d. Hydrologic enhancement will result in soils that are, at a minimum, saturated to the surface between 5 and 12.5 percent of the growing season.
e. The Permittee shall achieve the above performance standards by the end of the 5-year monitoring period, with no maintenance during the 5th year of monitoring. In the event that the above performance standards have not been achieved, the Permittee shall undertake a remediation program approved by the Corps in accordance with the Remediation Special Condition of this permit.

a. At least 80 percent cover by appropriate wetland species (i.e., FAC or wetter).

The method used to evaluate appropriate cover appeared to be flawed for the following reasons:

1. The site follows a stream and thus the mitigation activities, soils and hydrogeology are more are linier. Using 22 10x10 meter plots does not provide an accurate picture of site condition.
2. All four corners of some of the the plots are not marked. This makes it difficult to verify the report data.
3. The corner posts for Plot 22 indicate the plot was not 10X10 meters.
4. The method used to estimate percent coverage is flawed because it added percent coverage for each stratum (see tables in the following slide). In Phase 1 five plots had over 100% appropriate cover. Plot 7 had 165.5 appropriate cover. Should the data be reported for each stratum?
5. No information was found about how the number of plots were determined nor how the the locations of the plots were determined.

Plott 22 SE Post is only
24 feet from the NE Post

Plot 22 SW Post is only
28 feet from the NW Post

Adding the area to make a 10X10 meter plot to the south side of the Plot 22 adds the following invasive plants: wedilia, Ceaser weed, Japanese Climbing fern, and Camphor. This would increase the invasive cover percentage for Plot 22.

Percent Cover of Desirable Wetland Species, Non-Desirable and FISC Nuisance/Invasive Species

Table 4.2 below summarizes the absolute percent cover (all stratum) of appropriate wetland species, non-appropriate species, and nuisance/invasive species in each plot and provides the average percent cover for each location and site average. Note that non-appropriate species include non-native plants not identified as a *FISC Cat I or II* species and native plants with a FACU indicator status. Control is not required for non-appropriate species, but the treatment of certain individuals may be advisable if they appear to be competing with desirable native species. Please note, absolute coverages were taken within installed monitoring plots and include the total of canopy, subcanopy, and groundcover strata. Appendix A includes a summary of raw data per plot.

Table 4.2.: A summary of monitoring plot data.

Plot	October 2024 Cover by Desirable Species	October Cover 2024 by Non-Desirable Species	October Cover 2024 by Nuisance/Invasive Species
1	87	0	8.5
2	114.5	0	1.5
3	49	5	7.5
4	50	0	0
5	105.5	2	9
6	74.6	0	10.5
7	165.5	1	1
8	147.5	3	1
9	138	5	0.5
10	98	2	3.5
11	82	0	0
Site Averages	**101%**	**1.6%**	**3.9%**

Percent Cover of Desirable Wetland Species, Non-Desirable and FISC Nuisance/Invasive Species

Table 4.2 below summarizes the absolute percent cover (all stratum) of appropriate wetland species, non-appropriate species, and nuisance/invasive species in each plot and provides the average percent cover for each location and site average. Note that non-appropriate species include non-native plants not identified as a *FISC Cat I or II* species and native plants with a FACU indicator status. Control is not required for non-appropriate species, but the treatment of certain individuals may be advisable if they appear to be competing with desirable native species. Please note, absolute coverages were taken within installed monitoring plots and include the total of canopy, subcanopy, and groundcover strata.

Table 4.2.: A summary of monitoring plot data.

Plot	2024 Cover by Desirable Species	2024 Cover by Non-Desirable Species	2024 Cover by FISC Nuisance/Invasive Species
12	85	2.5	1.5
13	81	3.5	3
14	93	1	6.5
15	71	5.5	7
Phase Averages	**82.5%**	**3.1%**	**4.5%**

Table 4.2 below summarizes the absolute percent cover (all stratum) of appropriate wetland species, non-appropriate species, and nuisance/invasive species in each plot and provides the average percent cover for each location and site average. Note that non-appropriate species include non-native plants not identified as a *FISC Cat I or II* species and native plants with a FACU indicator status. Control is not required for non-appropriate species, but the treatment of certain individuals may be advisable if they appear to be competing with desirable native species. Please note, absolute coverages were taken within installed monitoring plots and include the total of canopy, subcanopy, and groundcover strata.

Table 4.2.: A summary of monitoring plot data.

Plot	March Cover By Desirable Species	October Cover By Desirable Species	March Cover By Non-Desirable Species	October Cover By Non-Desirable Species	March Cover By Nuisance/Invasive Species	October Cover By Nuisance/Invasive Species
16	94	80	4	7.5	3	12
17	108	107	4	4	4	4
18	33	41	0	0	0	3
19	61	91	0	2	2	5.5
20	111	72	2	0	0	8
21	98	109	4	0	1	4
22	56	74	2	3	4	1
Phase 3 Averages	**80%**	**82%**	**2%**	**2.4%**	**2%**	**5.4%**

b. Cover of FISC Category I and II invasive plant species, to the most current list established by the Florida Invasive Species Council at http://www.floridainvasives.org, and the nuisance species, dogfennel (Eupatorium capillifolium), Bermudagrass (Cynodon spp.), Bahiagrass (Paspalum notatum), and cattail (Typha spp.). shall total less than 5 percent.

The method used to evaluate nuisance and invasive plants appears to be flawed for the following reasons:

1. The site follows a stream and thus the mitigation activities, soils and hydrogeology are more are linier. Using 22 10x10 meter plots does not provide an accurate picture of site condition.
2. All four corners of all the plots are not marked.
3. The corner posts for Plot 22 indicate the plot was not 10X10 meters. When the plot is expanded to a 10X10 plot the invasive plant coverage increases.
4. Previous site visits seem to indicate that the herbicide applicators treated plants in the plots but not in areas adjacent to the plots.
5. No information is found about how the number of plots was determined nor how the the locations of the plots were determined.

Nuisance and Invasive Plants noted in the 3 monitoring reports.

The 2024 Phase 1 Annual Monitoring Report page 5

Nuisance and invasive species observed included dogfennel (Eupatorium capillifolium), Peruvian primrose-willow (Ludwigia peruviana), caesarweed (Urena lobata), Bahiagrass (Paspalum notatum), Bermudagrass (Cynodon dactylon), Japanese climbing fern (Lygodium japonicum), Britton's wild petunia (Ruellia simplex), cattail (Typha spp.), camphor tree (Cinnamonum camphora), Chinese tallow (Triadica sebifera), wedelia (Sphagneticola trilobata), wax begonia (Begonia cucullata), rattlebox (Crotalaria spectabillis) and perennial seedbox (Sesbania punicea).

2024 Phase 2 Annual Monitoring Report page 4

Nuisance and invasive species observed included Peruvian primrose-willow (Ludwigia peruviana), caesarweed (Urena lobata), Japanese climbing fern (Lygodium japonicum), Britton's wild petunia (Ruellia simplex), wedelia (Sphagneticola trilobata) and wild taro (Colocasia escuelents).

2024 Phase 3 Annual Monitoring Report page 4

Nuisance/invasive species observed included dogfennel (Eupatorium capillifolium), Peruvian primrose-willow (Ludwigia peruviana), Japanese climbing fern (Lygodium japonicum), camphor tree (Cinnamonum camphora), and torpedo grass (Panicum repens).

The absence of air yam, air potato, Coral Ardisia, and Tropical Soda Apple indicates that the north bank of Alligator Creek in Phases 1 and 3 may not have been visited during the site evaluation. Even though the north bank was treated with herbicides the invasive plants were present in 2025 and the coverage may be over 50%.

The following slides show the invasive plant species found at the Mitigation Project in 2025.

Wedelia (Sphagneticola trilobata was found along the banks of Alligator Creek in other locations in all 3 Phases of the Mitigation Project .

Caesarweed (Urena lobata) was found in all 3 Phases of the Mitigation Project. Ceaserweed produced seeds in 2024. It has started blooming this year.

Peruvian primrose-willow (Ludwigia peruviana) was found in all 3 phases of the Mitigation Project. It has started blooming this year.

Tropical Soda Apple (Solanum viarum) was found on the north bank of Alligator Creek in Phase 3 and in few locations in Phases 1 and 2 of the Mitigation Project. Tropical Soda Apple is spread by animals that eat the plants fruits.

Chinese tallow (Triadica sebifera) was found in all 3 phases of the Mitigation Project.
This tree has resprouted after the herbicide treatment of the north bank of Alligator Creek.

Perennial seedbox (Sesbania punicea) is found in all 3 Phases of the Mitigation Project.

It has produced seeds in 2025.

Coral Ardisia (Ardisia crenata) was found on the north bank of Alligator Creek in Phase 1 of the Mitigation Project.

Air yam (Dioscorea bulbifera) it is heart shaped leaf in the image was found on the north bank of Alligator Creek in Phase 1.

wild taro (Colocasia escuelents) was found in all 3 Phases of the Mitigation Project

Camphor tree (Cinnamonum camphora) was found in all 3 Phases of the Mitigation Project. This tree is on the north side of Alligator Creek and resprouted after the herbicide treatment.

MBritton’s wild petunia (Ruellia simplex) was found on the banks of Alligator Creek in Phases 1 and 3.

The following slides show the two nuisance plant species found at the Mitigation Project in 2025.

Dogfennel (Eupatorium capillifolium was found in all 3 Phases of the Mitigation Project.

Dogfennel may have the greatest coverage of all the nuisance and invasive plants at the Mitigation Project.

Cattail (Typha spp.) a nuisance plant found in Phase 1.

c. Less than 20 percent mortality of planted wetland species.

3.0 METHODOLOGY

A total of 710 wetland trees and shrubs were planted in portions of Phase 1 within designated Wetland Restoration and Wetland Enhancement areas. In addition to the planted individuals, several desirable wetland tree and shrubs species were found to be naturally recruiting into the mitigation area. Ten percent (71) of the installed trees were chosen as a representative sample to determine percent survival. They were flagged with blue marking tape and numbered identification tags were attached. During the 2023 monitoring event all planted specimens were geospatially located using a Trimble TDC650. Please see Appendix A, Exhibit 3 for a map of planted individuals. Planted species included bald cypress (Taxodium distichum), sweetgum (Liquidambar styraciflua), American elm (Ulmus americana), red maple (Acer rubrum), sweetbay magnolia (Magnolia virginiana), dahoon holly (Ilex cassine), green ash (Fraxinus pennsylvanica), swamp chestnut oak (Quercus michauxii), and tupelo (Nyssa biflora). Several naturally recruited sweetgums and sycamores (Platanus occidentalis) were included in the tagged trees. Of the 71 tagged trees, a total of 57 or more are required to survive to demonstrate less than 20% mortality. (Appendix A, Exhibit 3)

There are very significant issues associated with tree planting and the tree mortality assessment.

1. The list of trees species sampled for mortality in the 2024 Reports does not match the tree species included in the ACOE permit plans.

2. No data is presented that confirms the number of trees planted match the number of trees and the tree species listed in the ACOE permit plans.

3. The tagging of trees to be tracked for survival was not done at the time of planting.

The 2024 Phase 1 Annual Monitoring Report states on pages 1 and 2:

The earthwork, initial nuisance/invasive species control, and planting required for Phase 1 was completed on 22 July 2019, and the Time Zero monitoring event was conducted on 18 October 2019.

It is possible and likely that trees would have died between July and October that should be included in the morality calculation.

5. The 2024 Phase 1 Annual Monitoring Report states on page 2:
Several naturally recruited sweetgums and sycamores (Platanus occidentalis) were included in the tagged trees.
The requirement that "Less than 20 percent mortality of planted wetland species." does not appear to allow naturally recruited trees to be considered since they would not have been planted. The number of "naturally recruited sweetgums and sycamores" is not provided. Adding the sweet gums to the tagged tree count also increases the percentage of sweet gums in the tagged group would mean sweet gum in the mortality sample would be 7% higher than the sweet gum in the 2017 ACOE plans.

6. The trees tagged are not distributed throughout the Phase 1 planted area and may not represent tree mortality in all parts of Phase 1.

7. After 6 years of growth the planted trees in Phase 1 should be 6 to 15 feet tall. Some of the trees that were still alive were less than 3 feet tall with multiple stems.

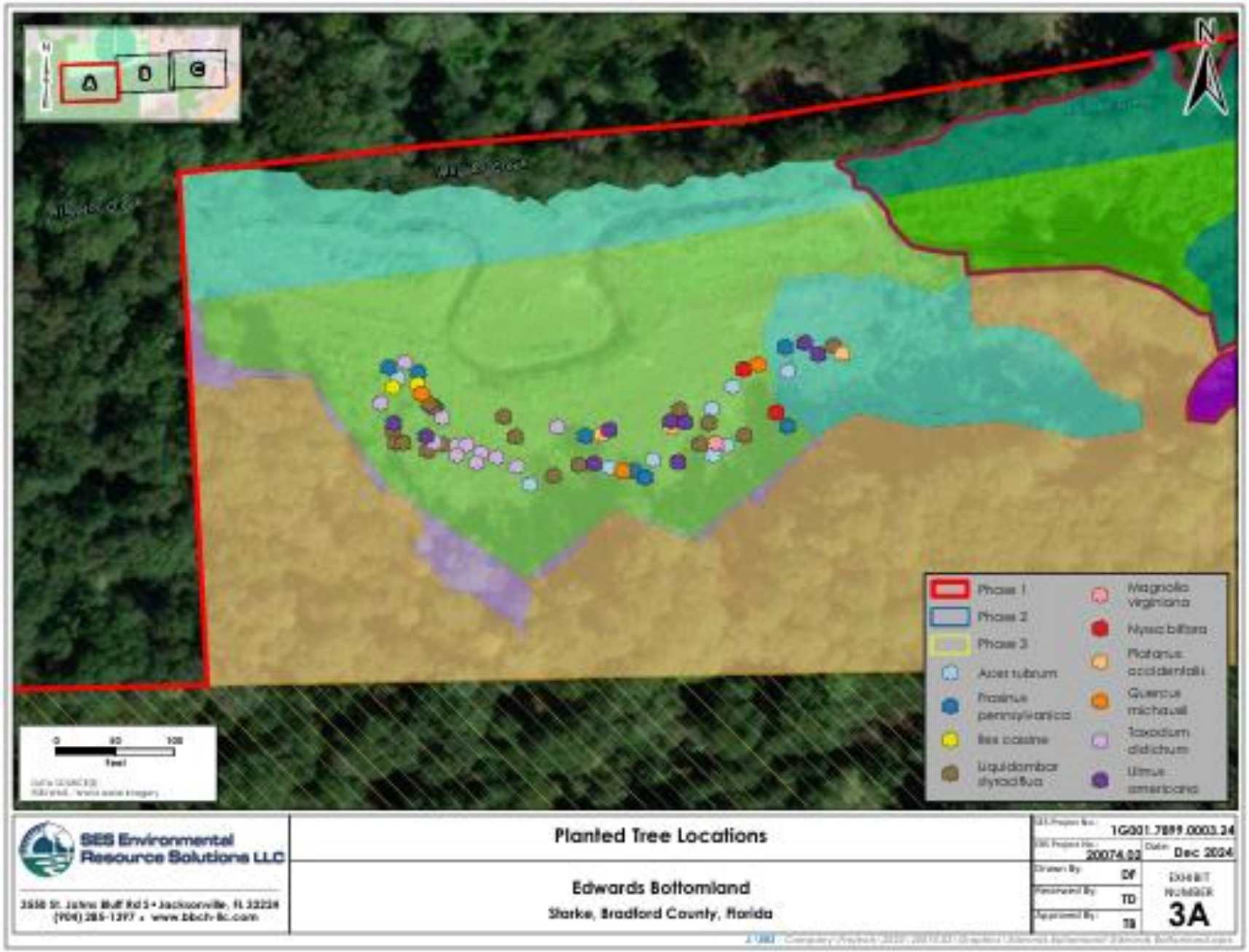
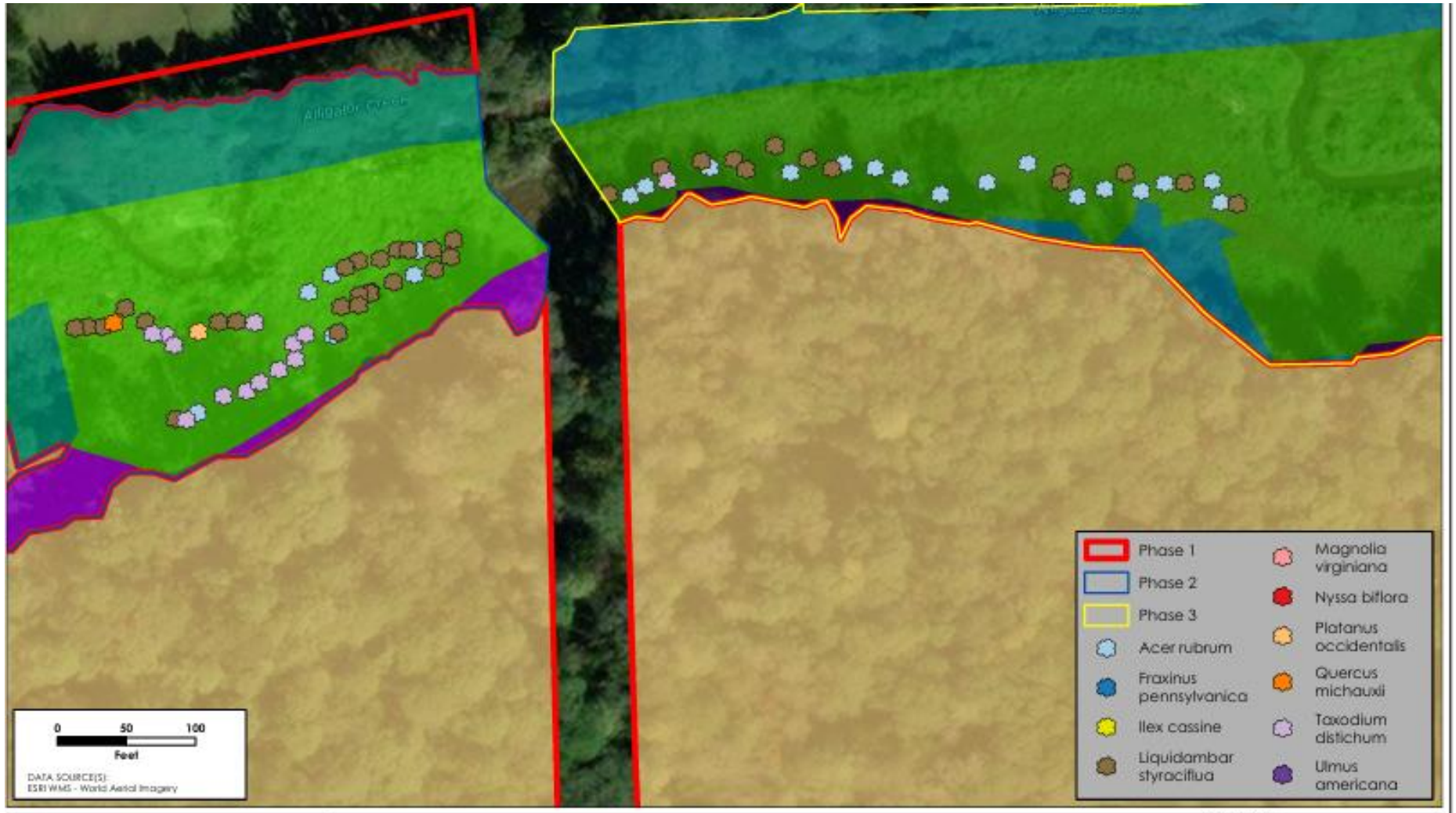


Exhibit 3A shows that the trees tagged for the mortality sample were not distributed evenly throughout the Phase 1 tree planting area.



SES Environmental Resource Solutions LLC
3550 St. Johns Bluff Rd S • Jacksonville, FL 32224
(904) 285-1397 • www.bbch-llc.com

Planted Tree Locations

Edwards Bottomland
Starke, Bradford County, Florida

SES Project No.:	1G001.7899.0003.24
ERS Project No.:	20074.02
Date:	Dec 2024
Drawn By:	DF
Reviewed By:	TD
Approved By:	TB
EXHIBIT NUMBER	3B

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Exhibit 3A shows that the trees tagged for the mortality sample were not distributed evenly throughout the Phase 2 tree planting area (on the left) and the Phase 3 planting area (on the right).

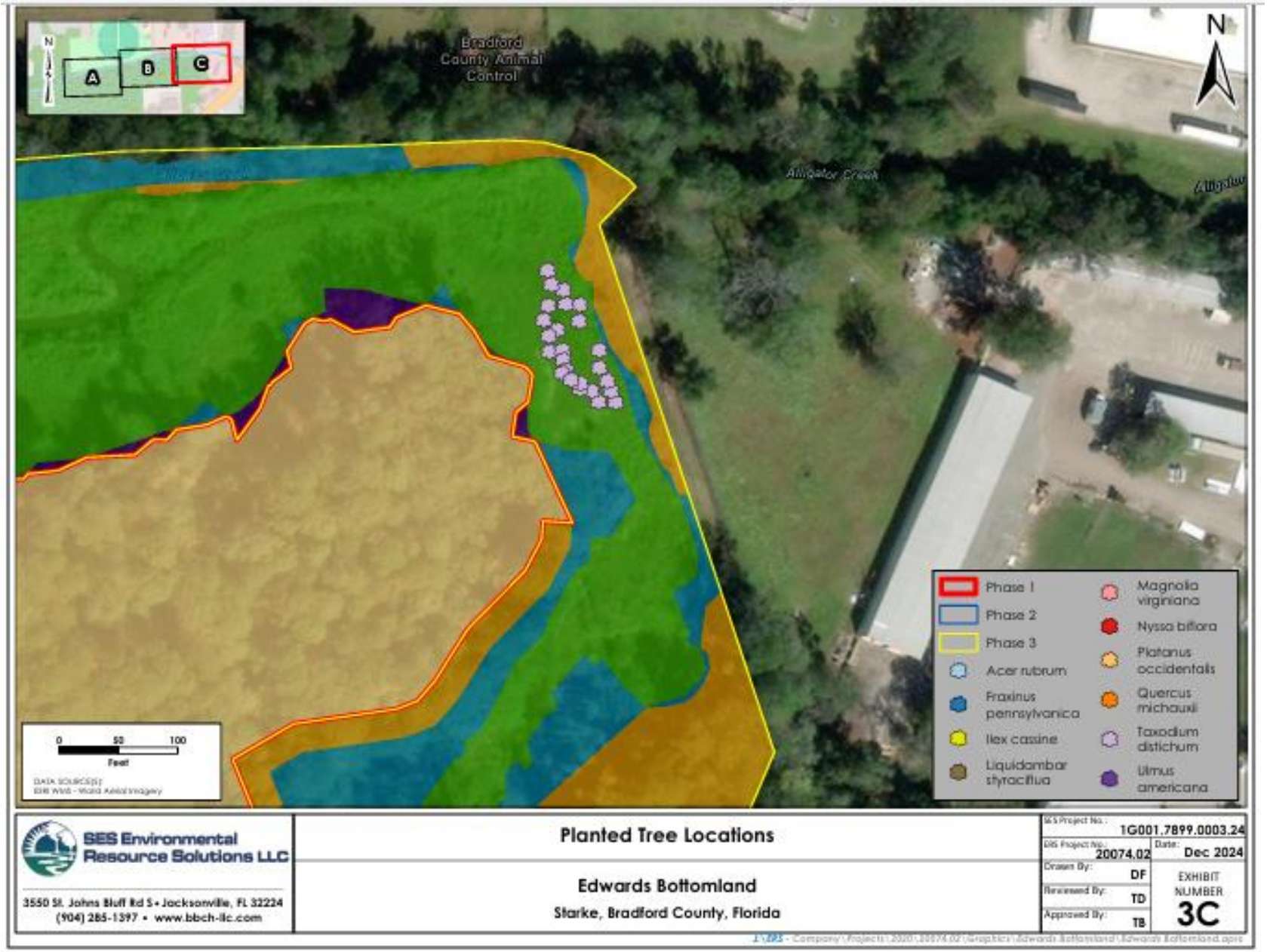


Exhibit 3A shows that the trees tagged for the mortality sample were not distributed evenly throughout the Phase 3 tree planting area.

This is a tree with the numbered metal tag overgrown by the tree. The image illustrates the expected size of the trunk.

The image also illustrates why metal tags wired to planted trees need to be moved as the tree grows.

This image shows a tree counted as living which it is, but is not of the form or size you would expect or want for a 6-year-old tree,

This and the next image are in the Wetland Terrace planting area of Phase 1.

Some of the trees planted in Phase 1 In 2019 are 6 to 15 feet tall.

The absence of 6 to 15 feet tall trees in most of the two images is a clear proof that the tree planting has failed to establish the expected and required wetland tree population.

Establishing a diverse tree canopy is critical to the success of the Mitigation Project.

Please note that plots 1-4 are located in the Wetland Enhancement and Wetland Restoration areas where canopy elements were removed as part of the initial site preparation.

The words “where canopy elements were removed as part of the initial site preparation” indicate there was a significant error in the design, permitting, implementation and monitoring of the Mitigation Project.

The mature canopy of an existing wetland system was removed to be replaced with a non functioning wetland without canopy elements.

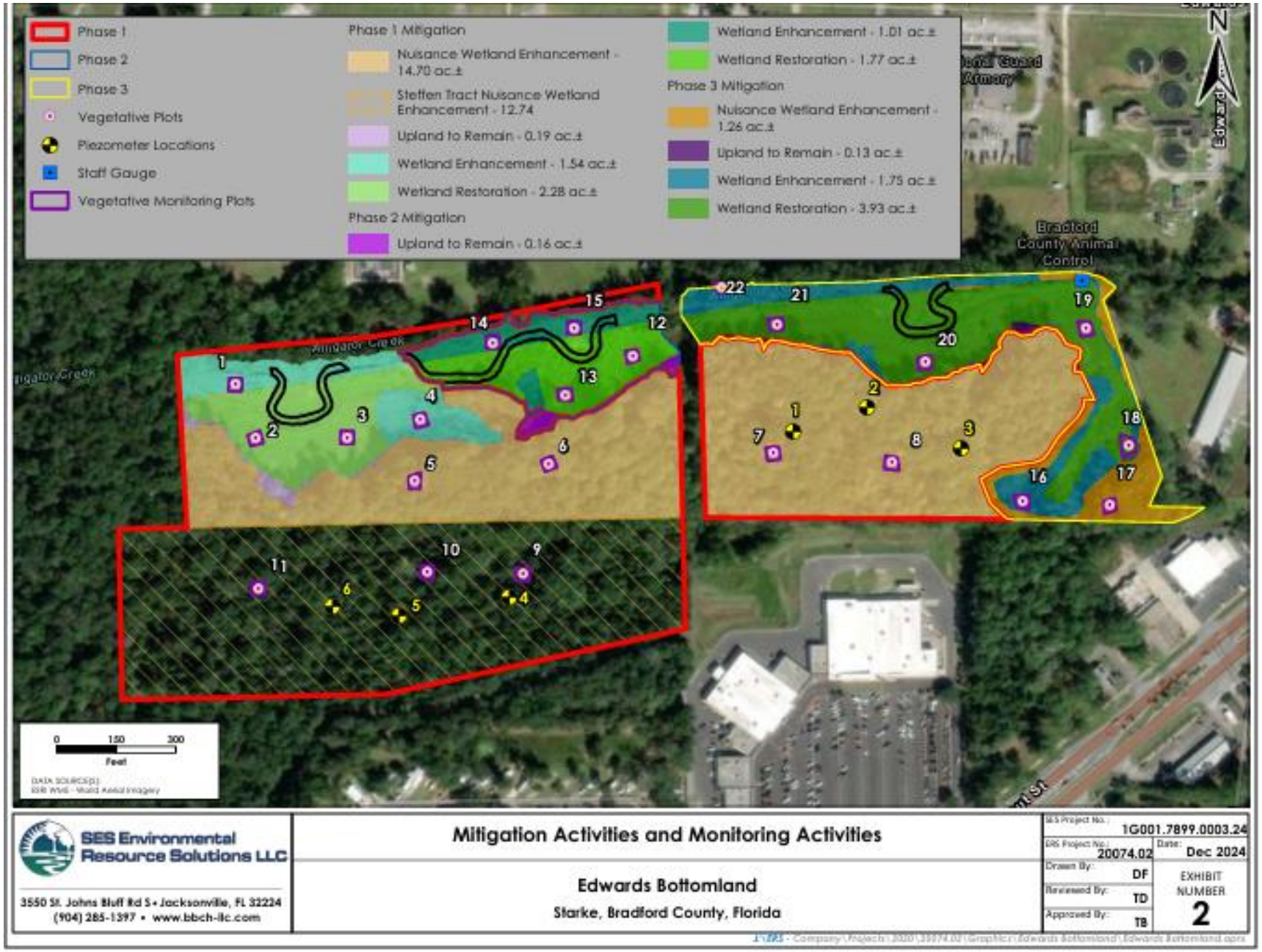
How many acres of wetlands with a mature canopy in the Mitigation Project site were destroyed to mitigate for destroying other wetlands?

d. Hydrologic enhancement will result in soils that are, at a minimum, saturated to the surface between 5 and 12.5 percent of the growing season.

All Three 2024 Annual Monitoring Reports state:

Hydrological Observations

Standing water and moist soils were observed throughout the enhancement and wetland restoration areas. Other hydrological indicators include secondary flow channels, water stained, leaves, high water marks, and crayfish burrows. The staff gauge in Alligator creek read 1.72 ± feet. Data from the SRWMD piezometers will be included and discussed in future monitoring reports as it becomes available.



There appears to have been no piezometers installed in the Wetland Enhancement & Wetland Restoration areas

The information in the three 2024 Reports fails to document that the soils were saturated to the surface between 5 and 12.5 percent of the growing season is being meet. One or two observations a year would not represent 5% of the growing season. The lack of piezometers in the wetlands created by removing topsoil is a concern as is the lack of data from the installed piezometers.

e. The Permittee shall achieve the above performance standards by the end of the 5-year monitoring period, with no maintenance during the 5th year of monitoring. In the event that the above performance standards have not been achieved, the Permittee shall undertake a remediation program approved by the Corps in accordance with the Remediation Special Condition of this permit.

The Bradford Environmental Forum believes it is clear that Phase 1 of the Mitigation project did not meet the performance standards of the ACOE permit and that Phases 2 and 3 are not likely to meet those standards.

The wise action now would be to undertake drafting a remediation program now but take immediate steps to reduce the flooding risk associate with the current Mitigation Project conditions

Trash and debris and sediments and flooding

Trash and debris and sediments and flooding are not addressed in the ACOE permit but are addressed in the SRWMD Environmental Resource Permit (parts copied below.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris.

17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the District will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

This large trash and debris and sediment deposit is on the west side of the first ox bow in the Mitigation Project. It reduces flow at a critical point of the Mitigation Project.

Closer view of trash view of items in the previous image.

Closer view of trash in the previous image. A child's electric car to the left of the tire and rim has been covered up with trash, debris, and sediments after it got stuck on woody vegetation

The child's car was first noted about 50 yards downstream of the Laura Street bridge on 3/22/2022 (see next Page}.

Child’s battery powered car first found just downstream of the Laura Street Alligator Creek Bridge on 3/22/2022. It has been Carries downstream during major high water events.

There are 2 concerns associate with trash and debris:

1. The flooding resulting from lower flows during and after rain events and
2. the environmental impacts of the trash as it is carried down stream and deposited in downstream wetlands and lakes.

It should be noted that some of the downstream wetlands are another SRWMD Mitigation Project.

A key factor in the accumulation of trash and debris is vegetation can trap the trash and debris and sediments forming small dams and reducing the channel's cross section.

The vegetation itself reduces flows.

It is critical that the secondary channel in the Mitigation Project be keep free of woody vegetation and be limited to low growing ground cover plants.

This is an image of part of a secondary channel. The center of the image illustrates an ideal cover that would prevent erosion but not reduce flows or trap trash and debris.

The upper right area shows the secondary channel overgrown with woody vegetation that reduces flows and can trap trash, debris and sediments which reduce flow.

This image illustrate the dense woody vegetation growing the secondary channel on the Western side of the Mitigation Project.

Removing this flow reducing vegetation should be done as normal maintenance by the SRWMD.

Trees that fall across the main channel trap trash and debris slowing main channel flow and causing flows in the secondary channel which can move trash down stream. Removing trees that have fallen across the main channel should be done as normal maintenance by the SRWMD.

The Bradford Environmental Forum contends that the SRWMD needs to take the following immediate actions.

1. Remove the excess vegetation, trash and debris, and sediments that have accumulated in the secondary channel of the Mitigation Project. Not removing these items causes reduced flows through the site during significant rain events increasing the risk of upstream flooding and higher flood levels.
2. Initiate an aggressive invasive and nuisance plant treatment plan to control the invasive and nuisance plants at the Mitigation Project.
3. Install more piezometers in the constructed wetlands to document wetland soil conditions.
4. Initiate the process required by the ACOE Permit Standard e. to undertake a remediation program to address the issues raised in this document.