

Mitigation Attachment

County Road 99 Pine Barren Creek Bridge

FDOT 430466-1

June 9, 2016

Estimated Wetland Impact

1.23 acres of palustrine forested wetlands / 0.82 UMAM functional loss

Proposed Mitigation

Establishment of approximately 5.52 acres of Freshwater Forested Wetlands within abandoned sand pit wetlands connected to the floodplain of the Escambia River. The project will be known as Mystic Springs Restoration Area (Lat/Long: 30.8563° N, -87.3129° W).

USACE Permit SAJ-2015-035347 SP-MAO (Public Notice)

Scope

Proposed mitigation for replacement of the CR 99 Bridge on Pine Barren Creek (a tributary to the Escambia River) consists of planting forested wetland species on approximately 5.52 acres within old sand pit wetlands adjacent to the Escambia River floodplain. The Mystic Springs Restoration Area was created by removing sand from upland bluffs adjacent to the Escambia River floodplain during the 1940s or early 1950s, contouring the site to create wetland terraces and connecting it to the floodplain prior to abandonment. The site has surface elevations similar to the nearby forested floodplain wetlands. This site is periodically flooded by the Escambia River during high flow conditions. Water levels within the restoration area range from two feet during periods of flooding to ground level during periods of drought. Soils consist of deep coarse sandy clay. Mitigation would focus on successful establishment of appropriate wetland tree species (e.g., cypress (*Taxodium distichum*), red maple (*Acer rubrum*), river birch (*Betula nigra*), and Carolina ash (*Fraxinus caroliniana*), and control of exotic vegetation.

Development of this plan is guided by compliance with the 12 components of a compensatory mitigation plan as outlined in 33 CFR §332.4(c)(2)–(14) of the 2008 EPA Final Rule (Compensatory Mitigation for Losses of Aquatic Resources).

1—Objectives [§332.4(c)(2)]

The objective of this project is to establish approximately 5.52 acres of forested wetland species within old abandoned sand pit wetlands connected to the adjacent Escambia River.

Pre-Restoration Habitat Cover—the site has been terraced with shallow herbaceous wetlands that are seasonally inundated with four to six inches of water and dominated by scattered rushes, sedges and substantial Bahia grass coverage; lower terraced wetlands appear to be permanently inundated ranging from six inches to two feet and are dominated by buttonbush (*Cephalanthus occidentalis*), willow (*Salix caroliniana*) and the occasional red maple, cypress or river birch; lesser creeping rush (*Juncus repens*), early St. John's Wort (*Hypericum apocynifolium*) and (*Eleocharis spp.*). Soils are coarse sand and clay. The lake formed within the sand pit is steep edged and greater than six foot in depth and not considered in this restoration plan. Current site was evaluated as low quality FLUCCS 640—Vegetated Non-Forested Wetlands.

Post-Restoration Habitat Cover—floodplain forest (Freshwater Forested Wetlands). Approximately FLUCCS 615—Stream and Lake Swamps (Bottomland) (high-quality).

2—Site Selection Criteria [§332.4(c)(3)]

This site was selected as offsetting mitigation for the CR 99 Pine Barren Creek Bridge impacts for the following reasons:

- The impacts are not within the service area of any existing or planned private mitigation bank, or within the service area of any in-lieu fee program.
- The mitigation is within the same watershed as the impacts (Escambia River; HUC 03140305).
- The mitigation addresses ecological needs of the Escambia River floodplain and larger Pensacola Bay System watershed.
- The hydrology of the mitigation site will be maintained naturally without human manipulations.
- The mitigation enables creation of forested floodplain wetlands that would otherwise be unfunded.

When complete, the mitigation will be self-sustaining and managed for ecological integrity by the NFWFMD.

3—Site Protection Instrument [§332.4(c)(4)]

In accordance with the site protection clauses of the USACE/EPA compensatory mitigation Final Rule of 2008, title to this site (fee-simple) will be held in perpetuity by the NFWFMD. The mitigation site will be managed in a natural condition as conservation lands as part of the Escambia River Water Management Area. The NFWFMD, a governmental entity created by the

Florida Water Resources Act of 1972, given taxing authority by a Florida constitutional amendment in 1973, with jurisdictional boundaries covering 16 counties established in Florida Statutes 373.069, manages over 200,000 acres in the Florida Panhandle for water resources protection and ecosystem integrity. Florida Statutes 373.1391 mandates ecological management of NFWMD lands, although allowing for multiple uses such as hunting and passive recreation when such uses do not conflict with ecological management goals. It is the policy of the NFWMD Governing Board to prioritize the conservation, protection and restoration of water resources and natural ecosystems over other uses such as public access.

4—Baseline Information [§332.4(c)(5)]

The Mystic Springs Restoration Area is currently an abandoned sand pit dug in the 1940s or early 1950s. The restoration site has terraced herbaceous wetlands that are seasonally inundated with four to six inches of water and dominated by scattered rushes, sedges and substantial Bahia grass coverage; lower areas with permanent inundation ranging from six inches to two feet are dominated by buttonbush (*Cephalanthus occidentalis*), willow (*Salix caroliniana*) lesser creeping rush (*Juncus repens*), early St. John's Wort (*Hypericum apocynifolium*) and (*Eleocharis spp.*) in wettest portions of site. Soils (probed down to three feet) are coarse sand and clay. Very minor recruitment of floodplain tree species has occurred (i.e., several river birch, one river cypress and one red maple). The remaining pit lakes were not considered in this restoration plan.

The site is subject to periodic flooding from the Escambia River via an excavated cut. During non-flood conditions, water levels in the upper wetland terraces are generally in the <6-inch range and may dry completely. Within the lower wetland terraces, when flooded, water levels may stage up to two feet deep for extended periods and appear to remain at or near six inches during the rest of the year. At high flood stages, the site is inundated by the Escambia River.

Maps and Figures (see attached)

- Location of proposed mitigation in relation to the CR 99 Pine Barren Creek Bridge impact site.
- 1940 B&W Aerial.
- 1955 B&W Aerial.
- 2013 DOQ.
- LiDAR.
- Soils (NRCS).
- Photograph (6/2/2016) of site.
- UMAM Scoring Sheets.

5—Determination of Credits [§332.4(c)(6)]

Estimated lift to wetland function generated by this project is derived using the Uniform Mitigation Assessment Method (UMAM). UMAM estimates are based on establishment of high-

quality Freshwater Forested Wetlands in an abandoned sand pit, and include time lag and risk factors. Assessments by NFWFMD staff suggest that this project will yield 0.88 UMAM credits of functional lift.

6—Detailed Work Plan [§332.4(c)(7)]

Freshwater Forested Wetlands will be established via planting a mix of hydrophytic trees (river birch, red maple, Carolina ash, river cypress). Planted trees will be three gallon-sized saplings at least six to eight feet in height, and will be planted using an auger (smaller, bare-root seedlings are not appropriate for this site because of soil conditions and the potential for extended flooding after planting). Tree will be planted at a density of 600 trees per acre, with the goal of at least 400 mature trees per acre.

7—Maintenance Plan [§332.4(c)(8)]

After establishment of Freshwater Forested Wetlands, this site will be maintained in perpetuity by the NFWFMD. Exotic vegetation will be treated with herbicides when necessary, and additional trees may be planted if necessary to maintain success criteria densities. Hydrology will be maintained by natural processes and determined by the periodic flooding of the Escambia River, groundwater, precipitation, and evapotranspiration.

8—Performance Standard [§332.4(c)(9)]

- 400 hydrophytic trees per acre in a healthy and thriving condition.
- Nuisance vegetation $\leq 5\%$ cover per acre.
- Exotic vegetation $\leq 1\%$ cover per acre.

9—Monitoring [§332.4(c)(10)]

Monitoring protocols to ensure mitigation success will be conducted annually for a minimum of five years from the start of mitigation activities or as required by USACE and/or ERP permit conditions. Monitoring will be performed by NFWFMD staff or qualified consulting firms. All monitoring reports will be posted at www.NFWFMDwetlands.com. Corrective measures will be taken if necessary.

10—Long-term Management [§332.4(c)(11)]

The Freshwater Forested Wetlands established by this project will be managed in perpetuity by the NFWFMD. Exotic vegetation will be treated as necessary to meet ecological success

criteria. Additional plantings of hydrophytic trees will be undertaken if necessary to ensure appropriate tree densities.

11—Adaptive Management Plan [§332.4(c)(12)]

If changes in the implementation of this mitigation plan become necessary due to the stochastic nature of ecological processes, the NFWWMD will first obtain approvals from the USACE.

12—Financial Assurances [§332.4(c)(13)]

The NFWWMD is a governmental entity created by the Florida Water Resources Act of 1972 with the mission of protecting water resources protection and ecosystem integrity. Funds from FDOT are specifically earmarked to implement and maintain mitigation.

As of 5/31/2016, the NFWWMD had \$16,229,460.91 in a dedicated mitigation fund. This fund was established to receive payment from sales of mitigation credits and to ensure adequate funding for the implementation and long-term management of mitigation sites, in accordance with 62-342.850 FAC.

Other Information [§332.4(c)(14)]

Uncertainty and Risk. The uncertainty and risk associated with implementation of this type of mitigation is considered moderate. Hydrologic regime will be controlled by natural processes with no human intervention. The use of larger saplings (3 gallon-size) and auger holes (as opposed to bare-root trees and planting with dibble bars) will increase the likelihood of survival of planted trees during flood events as they become established.

Size and ecological value of parcel / watershed approach. When established, the Freshwater Forested Wetlands (4.47 acres) will be a contiguous part of the Escambia River floodplain.

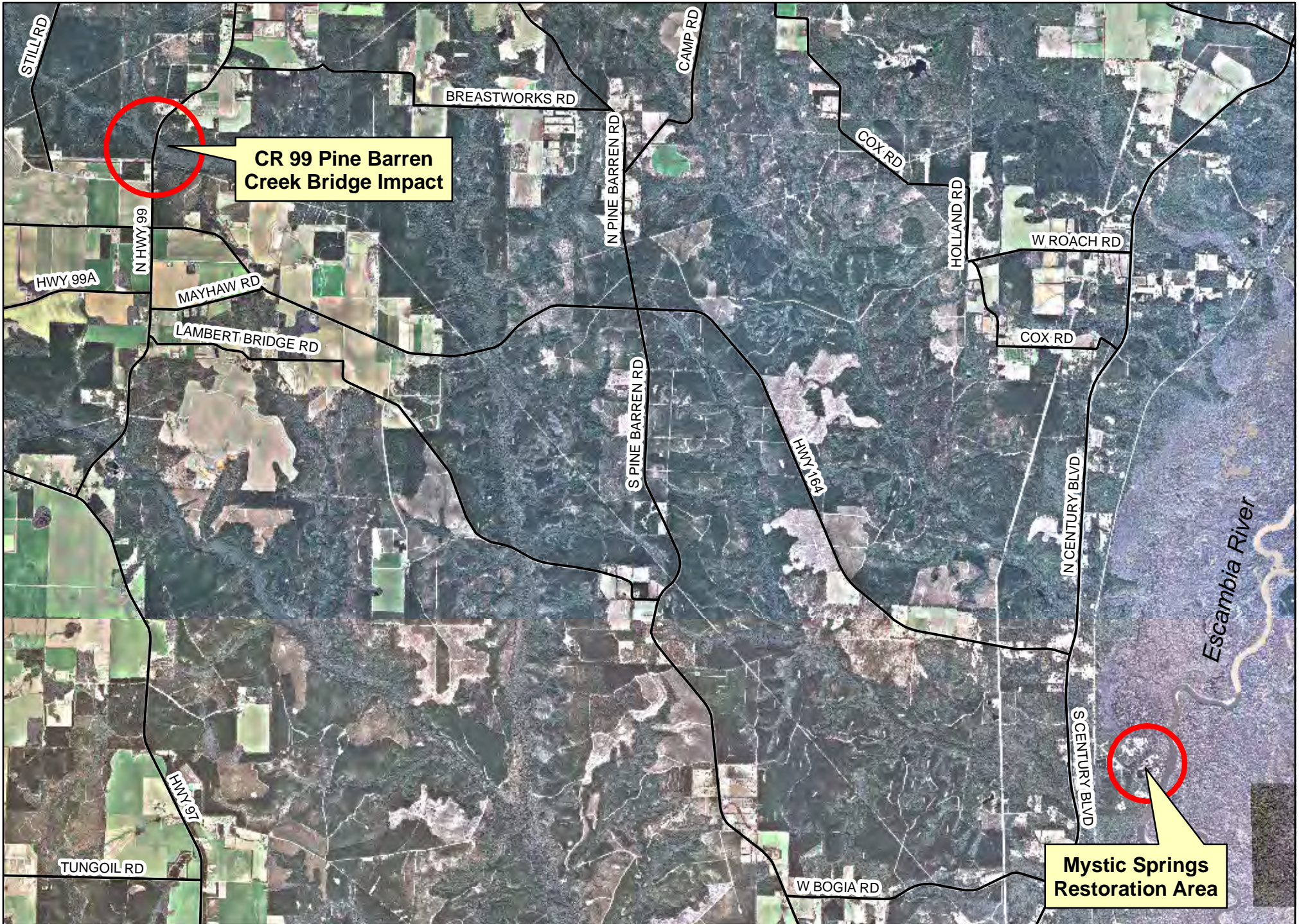
Temporal loss. There will be a temporal lag between the time of planting of hydrophytic trees and establishment of mature Freshwater Forested Wetlands (estimated at 16 – 20 years for UMAM calculation purposes).

Scientific/technical analysis, planning, and implementation. Over the past twenty years, the NFWWMD has gained extensive experience implementing a variety of large and small-scale wetland restoration projects (see www.NFWWMDwetlands.com for a listing and details on all mitigation projects implemented by the NFWWMD) Professional staff includes licensed professional engineers, biologists, geographers, planners, and GIS specialists. Contracts are also in place for outside consultants as needed.

Long-term viability of the mitigation site. The Mystic Springs Restoration Area will be preserved and managed for ecological integrity in perpetuity by the NFWFMD. Mitigation funds will be available for future monitoring and maintenance as needed.

Any additional information requested by the USACE to determine the appropriateness, feasibility, and practicability of this compensatory mitigation project will be provided.

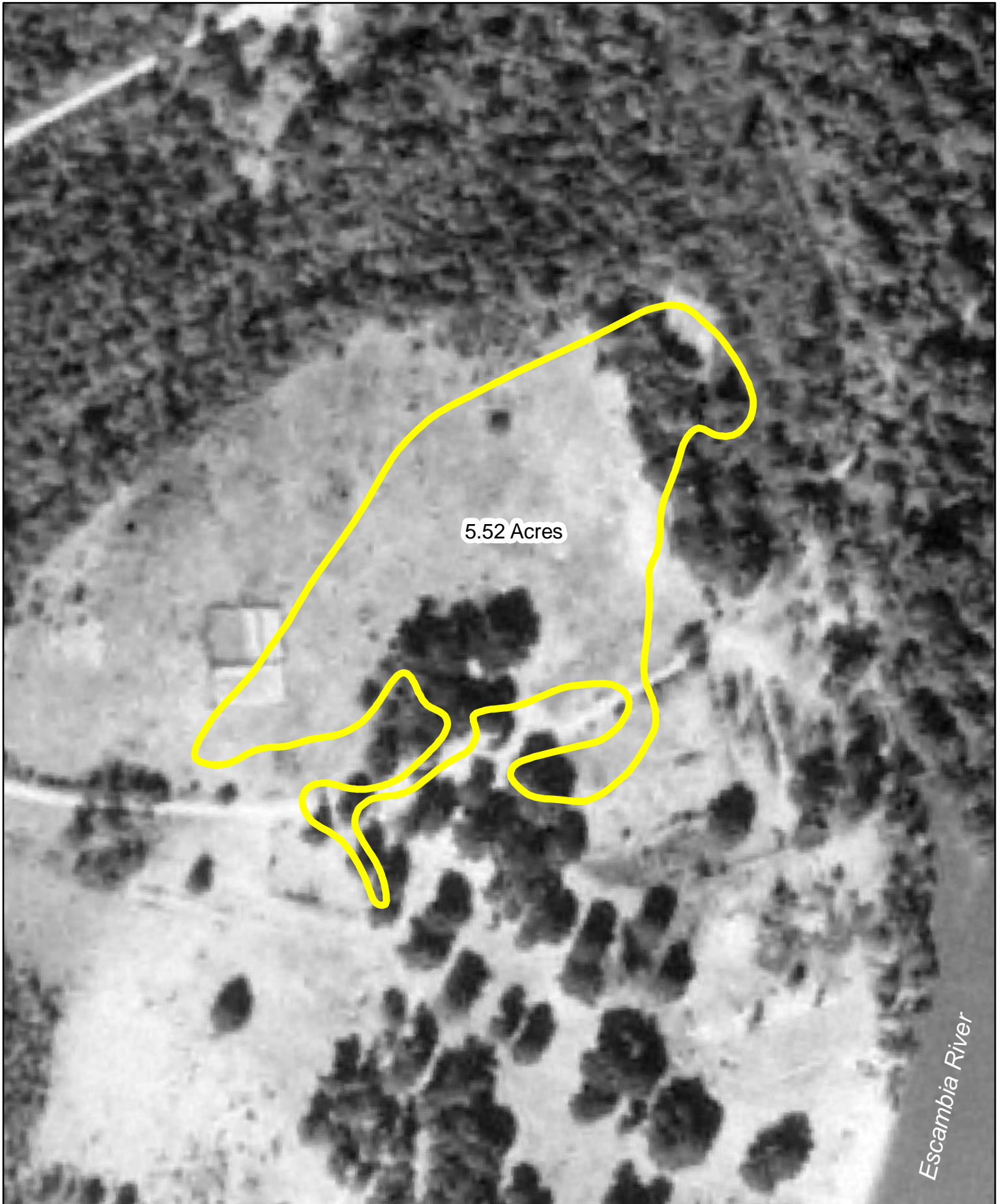
CR 99 Pine Barren Creek Bridge and Mystic Springs Restoration Area - 2013 DOQ



0 2.5 5 Miles



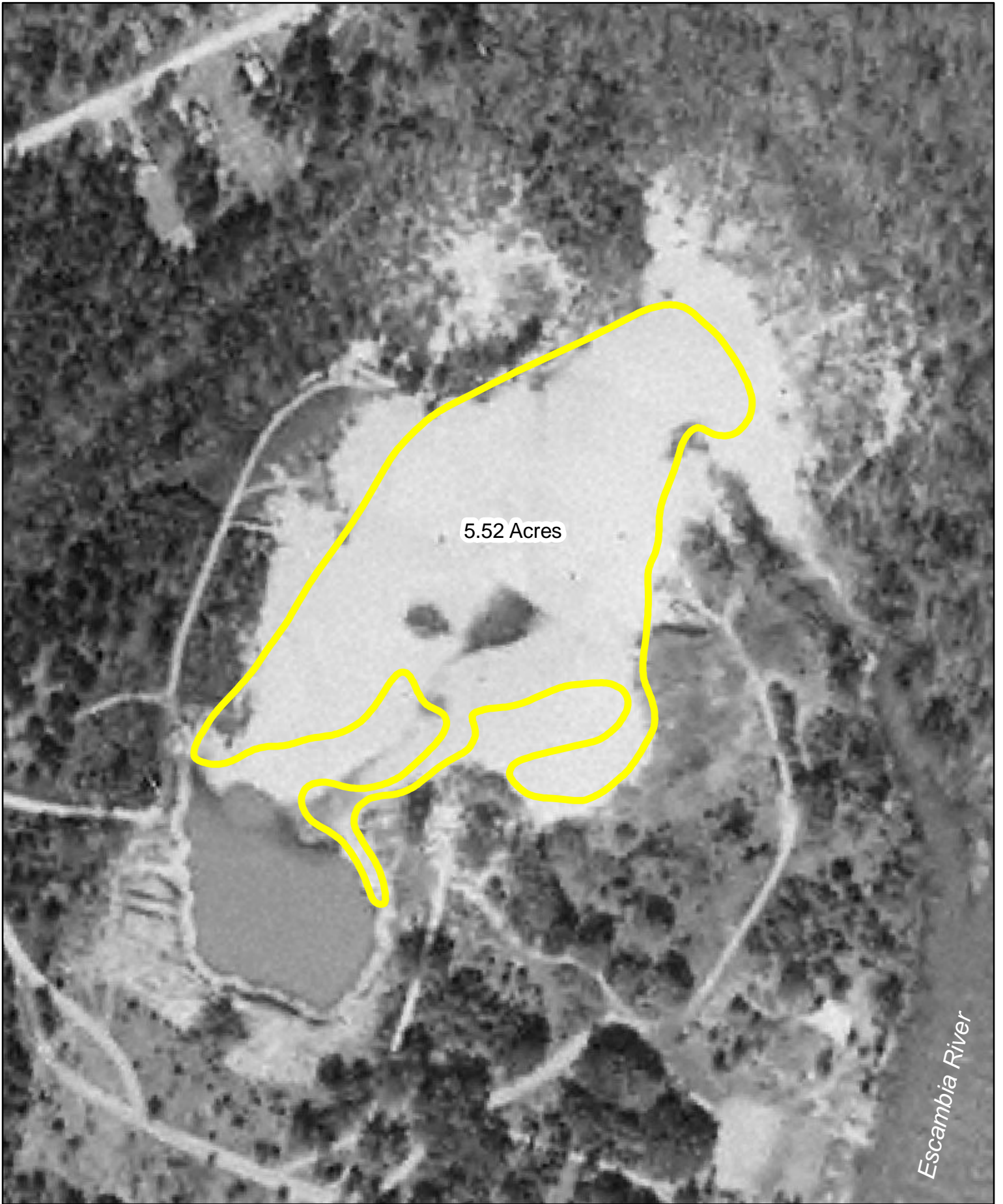
Mystic Springs Restoration Area - 1940 B&W Aerial



0 250 500 Feet



Mystic Springs Restoration Area - 1955 B&W Aerial



5.52 Acres

Escambia River

0 250 500 Feet

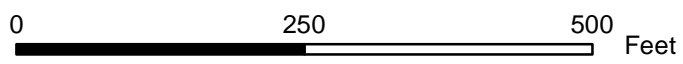


Mystic Springs Restoration Area - 2013 DOQ

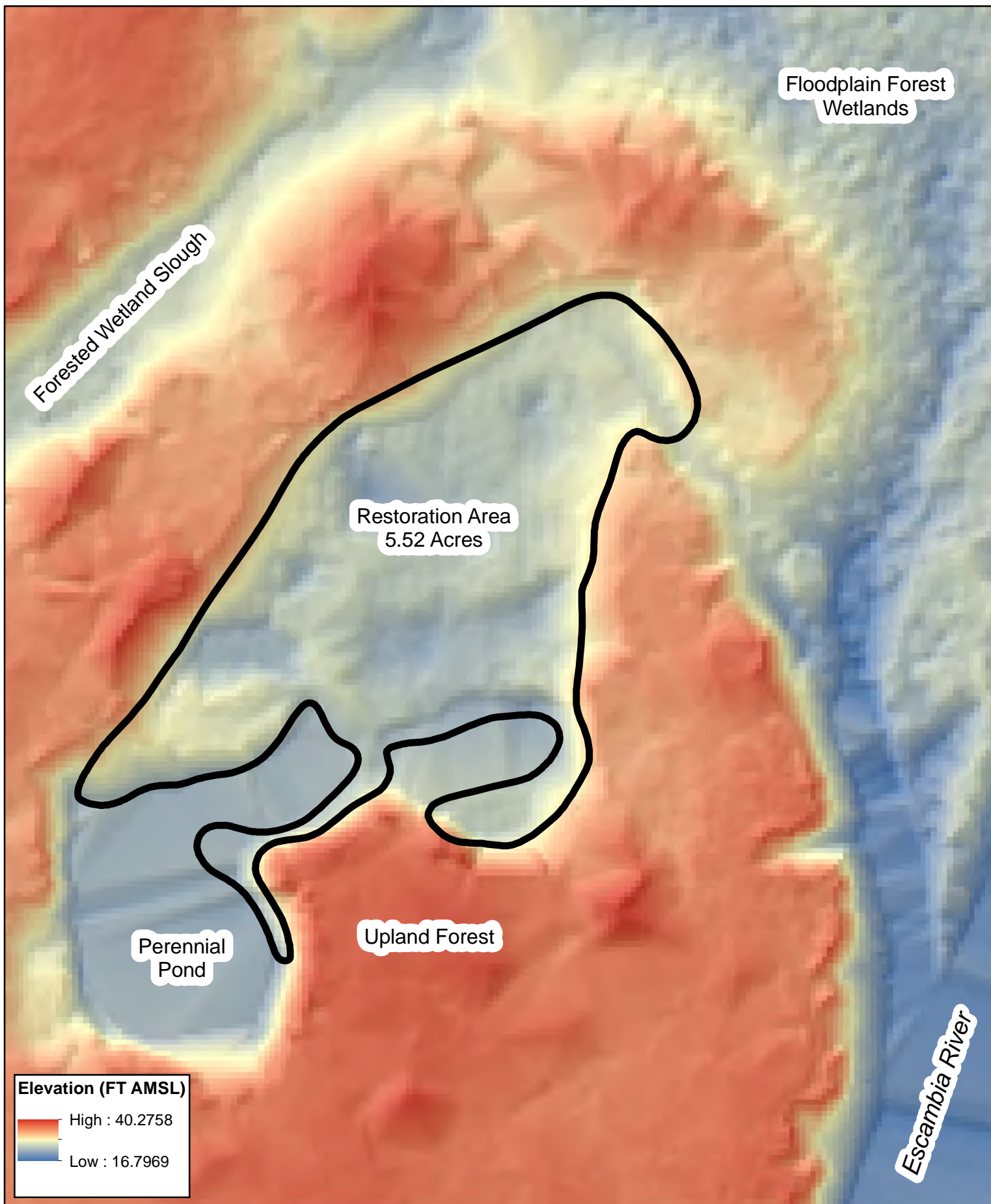


5.52 Acres

Escambia River



Mystic Springs Restoration Area - LiDAR



0

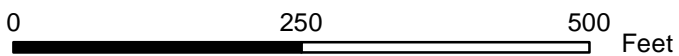
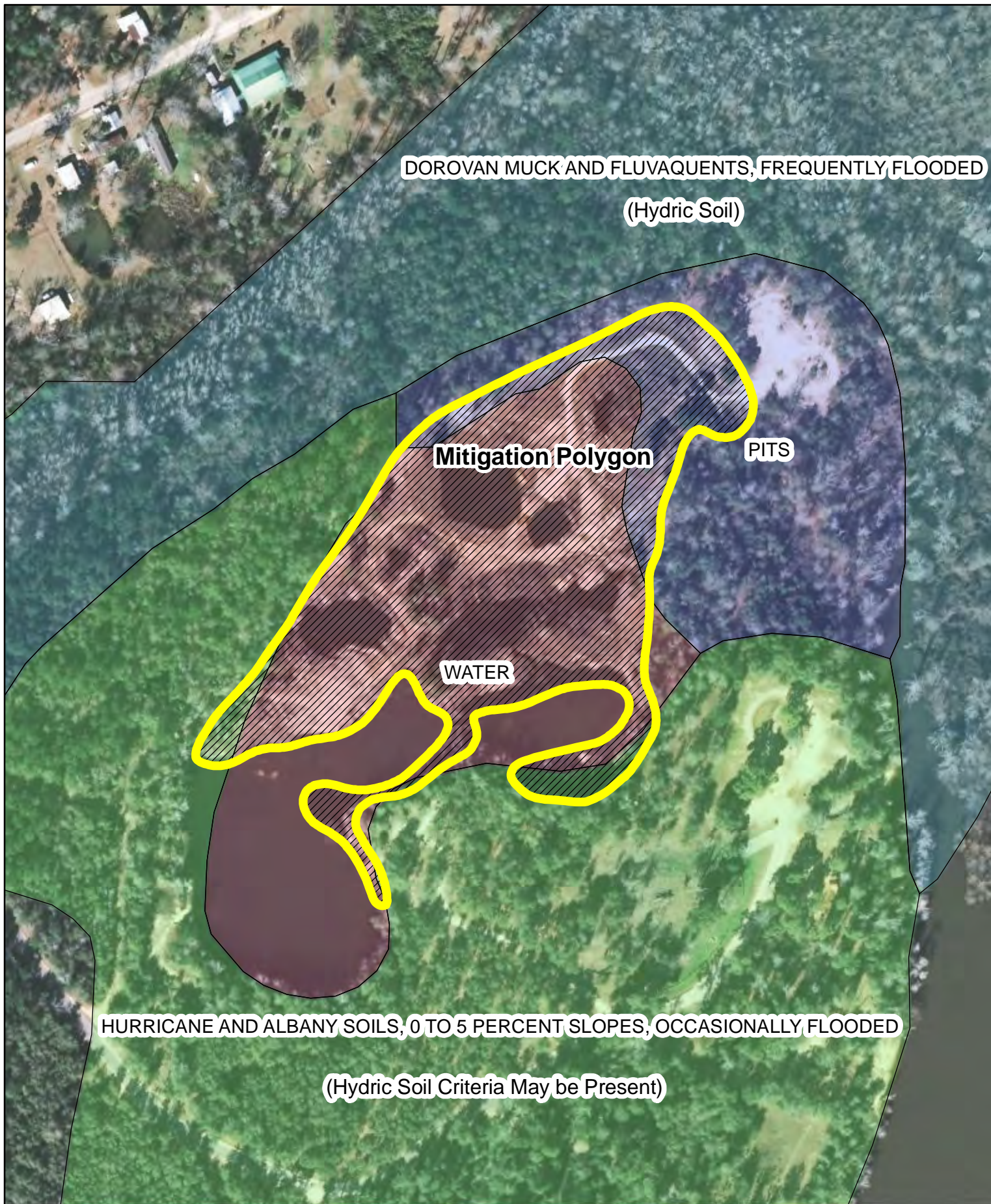
500

1,000

Feet



Mystic Springs Restoration Area - NRCS Soils Data



Mystic Springs Restoration Site UMAM Estimate - 6/9/2016

Polygon	UMAM Acres	L1	L2	W1	W2	C1	C2	W/Out	With	Raw Delta	Time Lag	P Factor	Risk	Adjusted Delta	UMAM Credits
Mystic Springs	5.52	4	9	7	7	2	9	0.43	0.83	0.40	1.68	1	1.5	0.16	0.883
5.52 (Wetland Acreage Total)													(Total UMAM Credit) 0.88		

Explanation of Column Headings:

Polygon = Name of assessment polygon

UMAM Acres = Acres of assessment polygon

L1 = Location and Landscape Support score (pre-mitigation)

L2 = Location and Landscape Support score (post-mitigation)

W1 = Water Environment score (pre-mitigation)

W2 = Water Environment score (post-mitigation)

C1 = Community Structure score (pre-mitigation)

C2 = Community Structure score (post-mitigation)

W/Out = UMAM functional value (pre-mitigation; 0 = no value; 1 = 100% value)

With = UMAM functional value (post-mitigation; 0 = no value; 1 = 100% value)

Raw Delta = "With" minus "W/Out" (i.e., the raw functional lift from implementation of project)

Time Lag = Lag between implementation and full achievement of success criteria

P Factor = Preservation Factor (used only for preservation-only mitigation projects)

Risk = Risk the mitigation project will fail

Adjusted Delta = Functional lift of project adjusted for Time Lag, Risk, and Preservation Factor

UMAM Credit = Functional UMAM credits generated from mitigation project

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name Mystic Springs		Application Number Not Applicable		Assessment Area Name or Number Mystic Springs	
FLUCCS code 640 (pre-restoration) 615 (post-restoration)		Further classification (optional) ---		Impact or Mitigation Site? Mitigation	Assessment Area Size 5.52 Acres
Basin/Watershed Name/Number Escambia River (HUC 03140305)	Affected Waterbody (Class) III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) ---		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Abandoned sand pit contiguous to Escambia River floodplain.					
Assessment area description Abandoned sand pit; extensive Bahai grass coverage; buttonbush.					
Significant nearby features Escambia River.			Uniqueness (considering the relative rarity in relation to the regional landscape.) Not unique.		
Functions Water storage; water quality; floral and faunal habitat.			Mitigation for previous permit/other historic use None		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) ---			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) ---		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.) ---					
Additional relevant factors ---					
Assessment conducted by NWFWMD Staff			Assessment date(s) 6/9/2016		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name Mystic Springs	Application Number Not Applicable	Assessment Area Name or Number Mystic Springs
Impact or Mitigation Mitigation	Assessment conducted by: NFWFMD Staff	Assessment date: 6/9/2016

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Without Mitigation - Abandoned sand pit with very low-quality wetlands. With Mitigation - Establishment of high-quality forested floodplain wetlands.			
w/out mit	w/mit			
4	9			

.500(6)(b)Water Environment (N/A for Uplands)	Without Mitigation - Site periodically flooded by Escambia River. With Mitigation - Site periodically flooded by Escambia River.			
w/out mit	w/mit			
7	7			

.500(6)(c)Community structure Vegetation and/or Benthic Community	Without Mitigation - Low-quality non-forested wetland; exotic vegetation coverage. With Mitigation - Establishment of high-quality forested wetlands.			
w/out mit	w/mit			
2	9			

Score = sum of above scores/30 (if uplands, divide by 20)	
w/out mit	w/mit
0.43	0.83

Preservation Adjustment Factor (PF) =	1
(16 - 20 YRS) Time Lag Factor =	1.68
Risk Factor =	1.5
Adjusted Delta [(Raw Delta * PF) / (T * R)] =	0.16

UMAM Functional Assessment	
Polygon Acreage = 5.52	
Functional Gain w/Mitigation (Adjusted Delta * Acres) =	0.88

Raw Delta = [w/mit - w/out mit]
0.40