

Mitigation Attachment

Brickyard Road at Molino

May 30, 2013

Wetland Impact

Approximately 0.50 acre of roadside ditch and forested wetland (0.20 UMAM functional Loss). The impact is at Brickyard Road and an unnamed, 1st order stream on the north side of Molina in Escambia County which discharges to the Escambia River floodplain. Historically a forested drainage, this wetland is impacted by flooding caused by a railroad embankment ~200 feet downstream (per historic railroad maps, probably initially constructed in the late 1800s) and a pond constructed ~100 feet upstream (constructed between 1958 and 1966 per available historic aerials). Extensive tree die-off, apparently due to flooding from the railroad embankment, has converted portions of the forested wetland to marsh or open water. Exotics, including Chinese tallow, are also invading the area. This impact is not within the service area of any private or public mitigation bank.

Proposed Mitigation

Hydrologic enhancement (Low-Water-Crossing) at Cotton Creek Road on Northwest Florida Water Management District (NFWFMD) lands along the Escambia River approximately five miles north of the impact.

USACE Permit

SAJ-2013-00295

Scope

Cotton Creek Road, a dirt and gravel road, raised above natural grade, lacking culverts, and necessary for management access, disrupts the natural hydrology of a forested wetland slough. This mitigation project will offset the wetland functional loss associated with Florida Department of Transportation (FDOT) replacement of a bridge on Brickyard Road on an unnamed stream on the north side of Molino by enhancing 6.49 acres of palustrine wetlands via construction of one (1) low-water-crossing (LWC).

U.S. Army Corps of Engineers
Permit # SAJ-2013-00295
Date: May 30, 2013
Attachment: 2



1—Objectives

The objective of this project is to enhance the hydrology of 6.49 acres of forested wetlands (approximately FLUCCS 615 – Bottomland) via construction of one (1) low-water-crossing (LWC) on Cotton Creek Road on NFWMD Escambia WMA lands.

Pre-Restoration Habitat Cover—Forested Wetland (approximately Bottomland–FLUCCS 615). 6.49 acres

Post-Restoration Habitat Cover—Forested Wetland (approximately Bottomland–FLUCCS 615). 6.49 acres

2—Site Selection Criteria

The Escambia River Water Management Area (WMA) was established by the NFWMD to protect water resources and natural habitat. Hydrologic enhancements, such as that proposed herein, improve the ecological and protection value of the WMA.

This site was selected as offsetting mitigation for the Brickyard Road at Molino impact for the following reasons:

- The impacts are not within the service area of any existing or planned mitigation bank.
- The impacts are proximate (~5 miles) and hydrologically connected, via the Escambia River floodplain, to the mitigation area.
- The impacts and mitigation area are within the same watershed (Escambia River).
- The mitigation addresses the ecological needs of the Escambia River WMA.
- The mitigation is generally “in-kind” (palustrine forested wetlands mitigating for palustrine forested and roadside ditch impacts).
- The mitigation enables the NFWMD to implement wetland enhancements that would otherwise be unfunded and not implemented.

When complete, the mitigation will be self-sustaining and managed for ecological integrity in perpetuity by the NFWMD as part of the Escambia River WMA.

3—Site Protection Instrument

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 NFWMD. The mitigation site will be managed in a natural condition as conservation lands as part of the Escambia River Water Management Area.

The NFWMD, 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 NFWFMD 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 NFWFMD 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

The Cotton Creek Road mitigation site consists of a dirt road raised above natural grade with fill material that bisects a forested wetland slough. This road blocks natural overland sheet flows and alters wetland moisture regimes.

Maps and Figures (see attached)

- Location of Impact and Mitigation
- Location of Impact Relative to Mitigation Bank MSAs
- 2007 DOQ of Impact
- 1941 B&W Aerial of Impact
- 2010 DOQ of Cotton Creek LWC No. 1
- 1941 B&W Aerial of Cotton Creek LWC No.1
- LiDAR of Cotton Creek LWC No. 1
- Cotton Creek Area Soils
- Low-Water-Crossing (LWC) Typical Drawing
- Photos of Proposed LWC Location
- Preliminary UMAM Assessment

The Cotton Creek area is part of the ~35,000-acre Escambia River WMA. The slough that will be enhanced by installation of a LWC is subject to frequent flooding by the Escambia River. Blackgum is the dominant species within the slough, with other wetland forested species, including cypress, present.

5—Determination of Credits

Estimated mitigation credits for this project were derived using the Uniform Mitigation Assessment Method (UMAM). Assessments by NFWFMD staff, subject to USACE approval, suggest that implementation may yield a functional gain of 0.45 UMAM credits.

Determining the wetland area enhanced by installation of low-water-crossings (LWCs) is necessarily subjective. For UMAM scoring purposes and based on extensive experience in Tates Hell State Forest using protocols previously accepted by the USACE, NFWFMD staff estimate that this LWC would enhance 6.49 acres. The assumption is that the hydrologic enhancement benefits will extend at least 300 feet out from the center of each LWC; the area of the road footprint is ignored for calculation purposes.

6—Detailed Work Plan

The low-water-crossing (LWC) site is located in a generally low-energy hydraulic environment, should not be subject to significant scour potential, and will typically only contain water when the Escambia River is experiencing high water levels. Existing road fill at the LWC site will be excavated to natural grade (plus approaches at a maximum 4% grade), a geotextile woven fabric (conforming to FDOT Design Standards, Index 199, Class D-1 or D2) lain down with a minimum fabric overlap of 2 ft., and covered with a 12 inch thick coarse aggregate base consisting of limestone or granite 2-6 inches in diameter ($D_{50} = 4$ inches). A 12 inch thick rock apron consisting of 6-10 inch diameter material ($D_{50} = 8$ inches) will be placed on each side of the LWC. Road fill excavated from LWC construction will be disposed by spreading it on the existing management access road or other appropriate disposal area; it will not be placed into any wetland area, or into any upland area that is managed in a natural state. Cut and fill estimates will be generated as LWC dimensions are finalized and reported when a Joint Application for Works in Waters of Florida is submitted to the USACE. The LWC, subject to engineering design and site-specific conditions, is anticipated to be ≤ 140 FT long.

Construction is anticipated for 2013 and should be completed within four months or less, depending on weather, site conditions, and circumstances outside the control of the NFWFMD. Construction will be performed during dry weather and will be temporarily suspended during periods of heavy rainfall or high water levels. Grading and excavation activities are anticipated to be performed using heavy equipment such as backhoes, small bulldozers or excavators.

Best Management Practices (BMPs) for turbidity, sedimentation and erosion control will be implemented and maintained at all times during construction to prevent siltation and turbid discharges into waters of the state. Silt and sedimentation control measures will be installed and properly maintained at all points where runoff from disturbed areas could result in water quality violations of Chapter 62-302, F.A.C.

Staging of Construction Activities. The excavation and moving of soil materials will be scheduled in stages to minimize the size of areas disturbed and unprotected from erosion for the shortest reasonable time.

Protection of Desirable Vegetation. Stockpiling, vehicular parking and excessive foot or vehicular traffic will not be allowed within wetland areas. Material storage, fueling and servicing equipment, undertaking equipment maintenance, and cleaning will not be performed in or immediately adjacent to wetland areas. Erosion and sediment controls, such as silt fences, may be needed around the perimeter of stockpiles to prevent the transportation of soils from the area.

Best Management Practices. Erosion control measures which will minimize impacts to wetlands and wetland vegetation will be used during construction activities. This can be accomplished by the use of floating turbidity barriers, floating silt screen/curtains, sediment basins, earthen berms, and straw, geotextile or similar bale or log barriers which are free of exotic or noxious weed species. The use of staked silt fences is not recommended except to contain stockpiles in areas such as roadbeds that are outside wetland areas. Erosion controls where flowing water may be present, such as low water crossings, will require best management practices appropriate for the field conditions. Straw or similar bales or logs may not be appropriate where flowing water is present. Floating turbidity barriers or silt screen/curtains and temporary earthen berms are best management practices that may be used to prevent the transport of sediment in ditches, streams, and wetland waterways.

Stabilization of Disturbed Areas. Prompt stabilization of all disturbed areas will be undertaken during and after completion of the project. All disturbed areas will be stabilized within two weeks of disturbance. Suitable methods for stabilization are grading, establishment of a vegetative cover by mulching and/or seeding, and the use of geo-textiles. When seeding and mulching, Brown Top Millet seed or similar (free of exotic or noxious weed species) will be applied to disturbed areas and covered with approximately one (1) inch thick organic mulch of wheat straw (free of exotic or noxious weed species). Steep slopes are more susceptible to erosion than flatter slopes, so temporary mulching and quick establishment of vegetation are extremely important. Jute mats, or similar devices, may be used on steep slopes until the vegetation has become established to prevent erosion.

Suspension of Work During Inclement Weather. Construction will be carried out during dry weather conditions to the extent practical and erosion and sedimentation control measures will be implemented. Excavations and other construction activities will be suspended during periods of inclement weather or high water levels if there is potential for environmental damage.

Inspection and Maintenance of Erosion and Sedimentation Control. Routine inspection and maintenance of erosion and sedimentation control features will be provided until the project is complete. Barriers will be regularly maintained to insure their effectiveness. Sediments will be cleaned out periodically and before major predicted rainfall events.

Removal of Sediment and Erosion Control Measures. All temporary erosion control measures, whether temporary sediment basin, silt fence, straw bales, or other measures, will be removed following the successful establishment of vegetation.

7—Maintenance Plan

After hydrologic enhancements are implemented this site will be maintained in perpetuity by the NFWFMD as part of the Escambia River WMA.

8—Performance Standards

- Low-water-crossing is installed at appropriate elevation.
- Non-failure of low-water-crossing.

9—Monitoring

Monitoring protocols to ensure that the hydrologic enhancements are maintained will be conducted annually for a minimum of five years from the start of mitigation activities or as required by USACE permit conditions. Monitoring will be performed by NFWFMD staff or qualified consulting firms. All monitoring reports, expected to consist of general photos, panoramic photos, and site condition notes, will be posted at www.NFWFMDwetlands.com. Corrective measures will be taken if necessary.

10—Long-term Management

The enhanced forested wetland slough will be managed in perpetuity by the NFWFMD as part of the Escambia River WMA.

11—Adaptive Management Plan

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

12—Financial Assurances

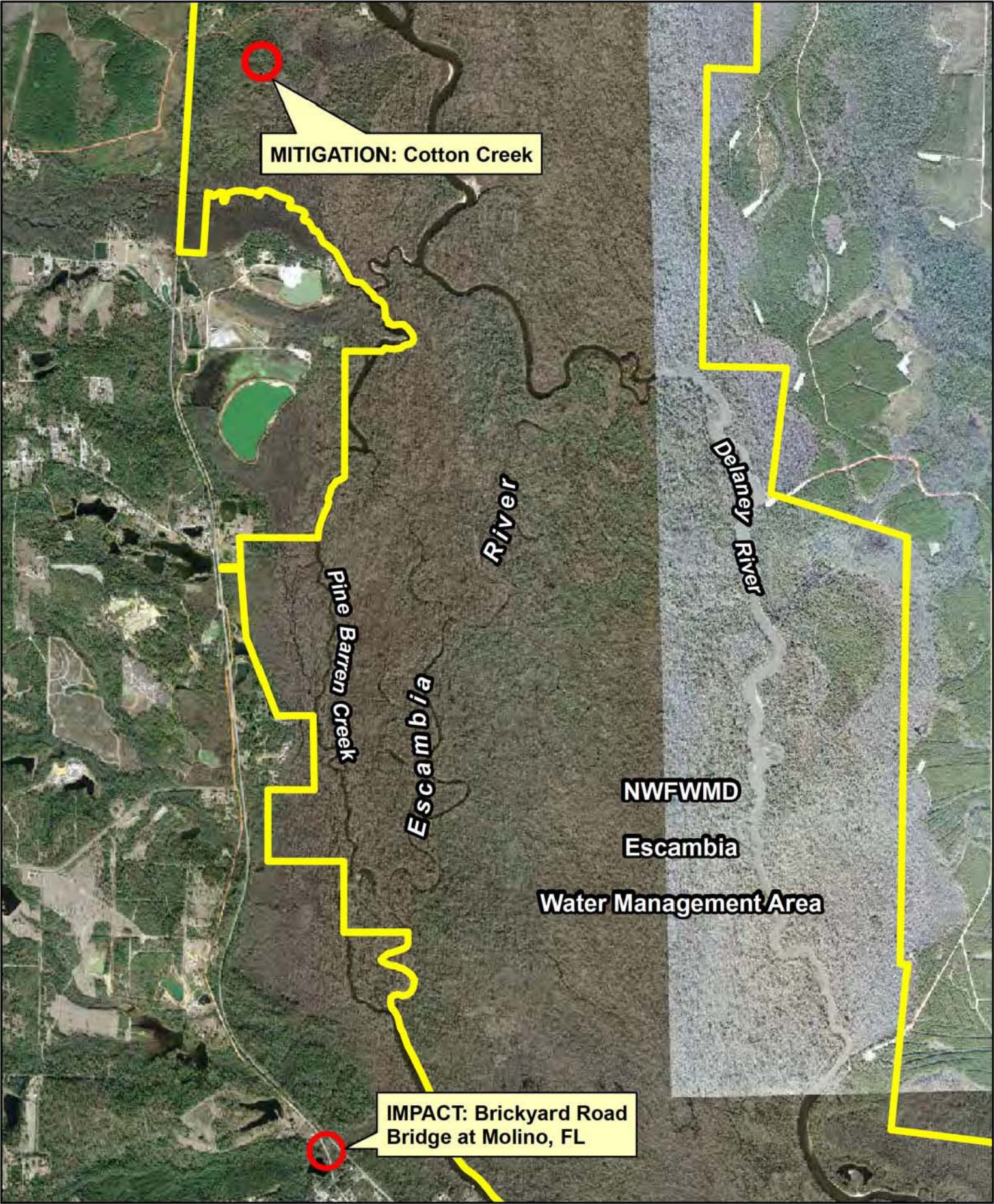
The NFWMD is a governmental entity created by the Florida Water Resources Act of 1972 with the mission of protecting water resources protection and ecosystem integrity. Funds are specifically earmarked to implement and maintain mitigation.

As of 3/31/2013, the NFWMD had \$16,494,020.85 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.

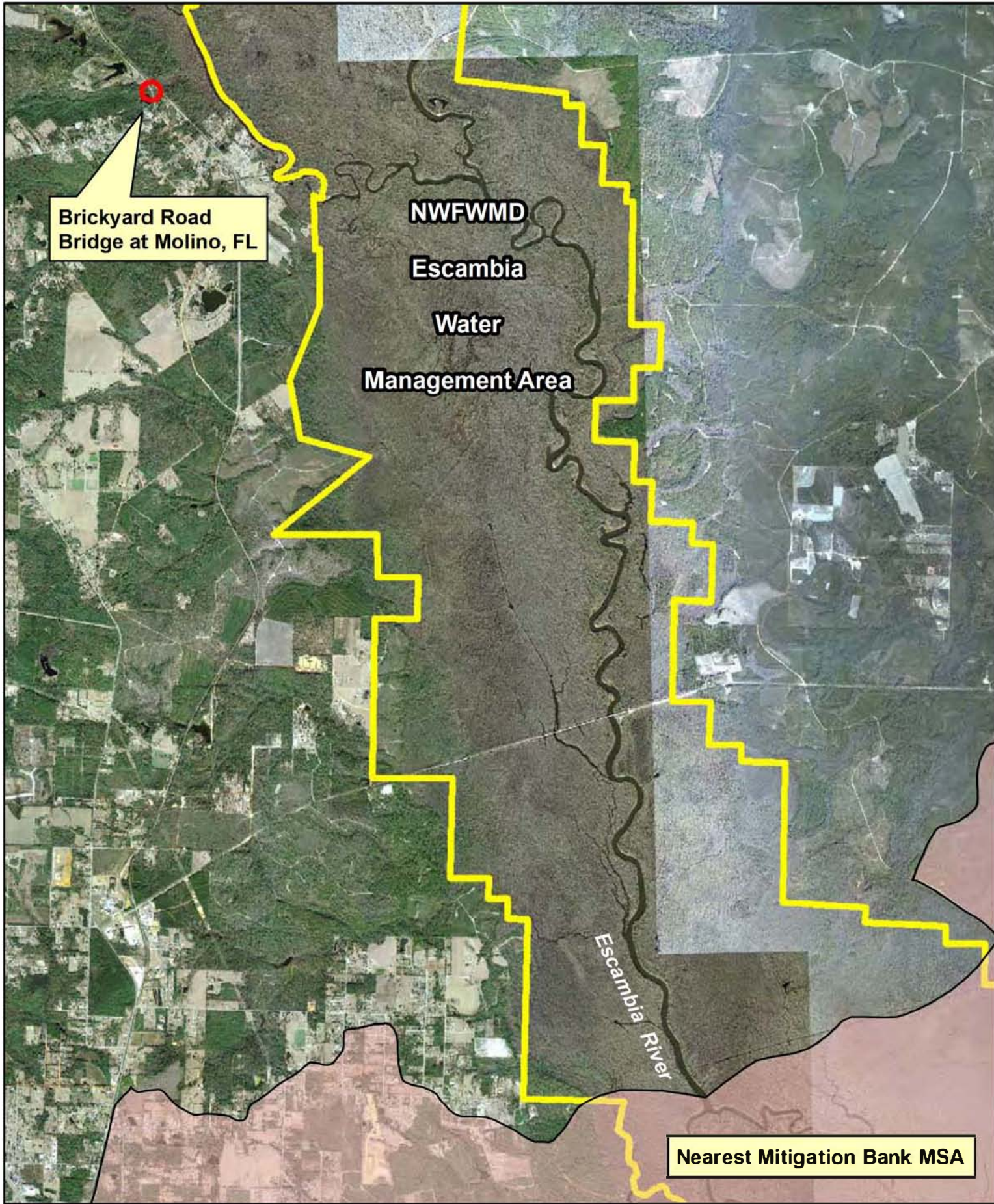
Other Information

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

Brickyard Road Bridge at Molino and Proposed Mitigation



Brickyard Road Bridge at Molino in Relation to Nearest Mitigation Bank MSA



**Brickyard Road
Bridge at Molino, FL**

**NFWMD
Escambia
Water
Management Area**

Nearest Mitigation Bank MSA

Brickyard Road Bridge at Molino, FL



Escambia River Floodplain

Brickyard Road

CSX Railroad

Unnamed Creek

Human Made Pond

CSX RR Embankment
Dams Unnamed Creek
Causing Flooding of
Wetland and Forest Die Off

Brickyard Road Bridge at Molino, FL

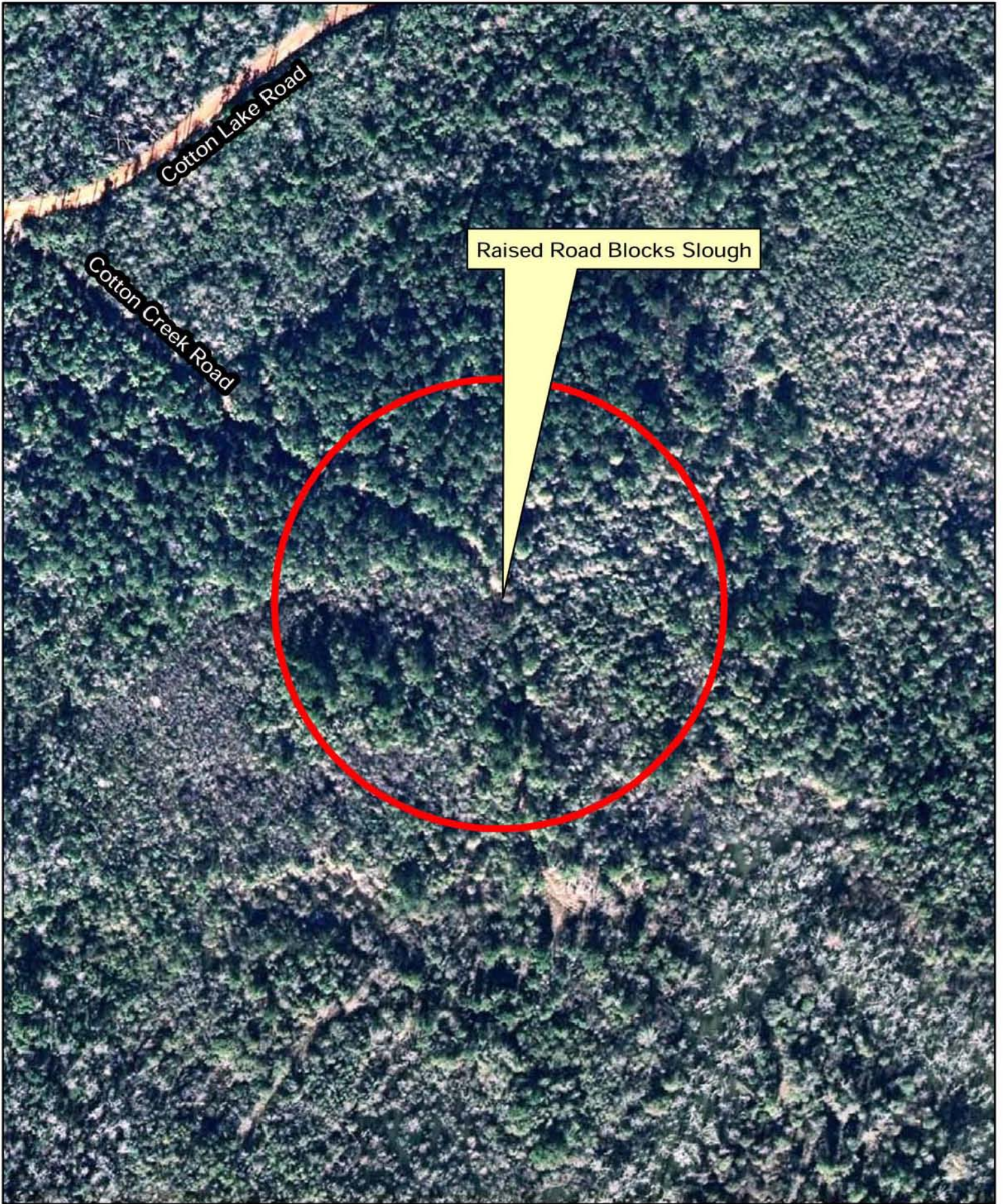


1941 B&W Aerial

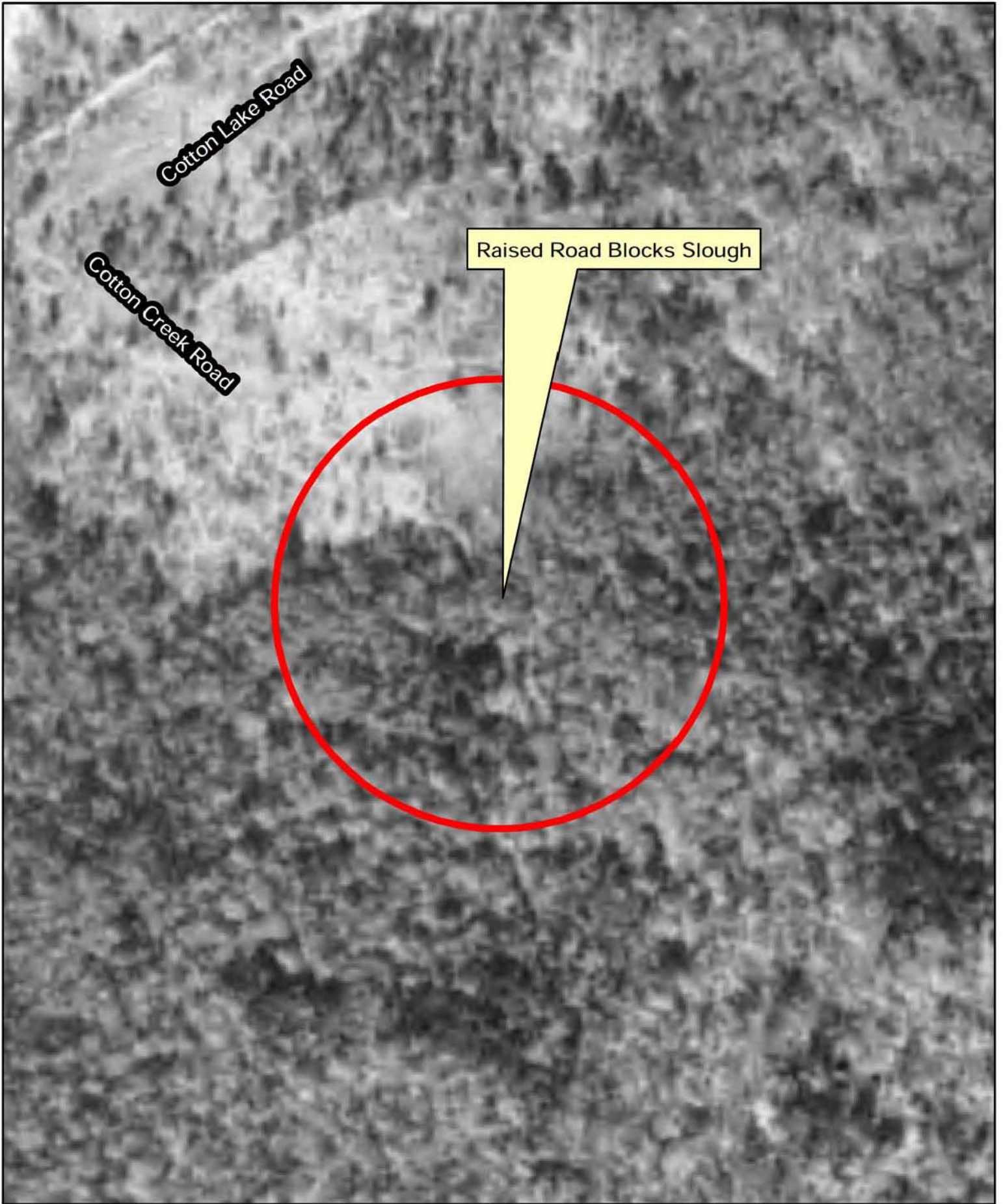
0 500 1,000 Feet



Cotton Creek Road - Low-Water-Crossing No. 1



Cotton Creek Road - Low-Water-Crossing No. 1

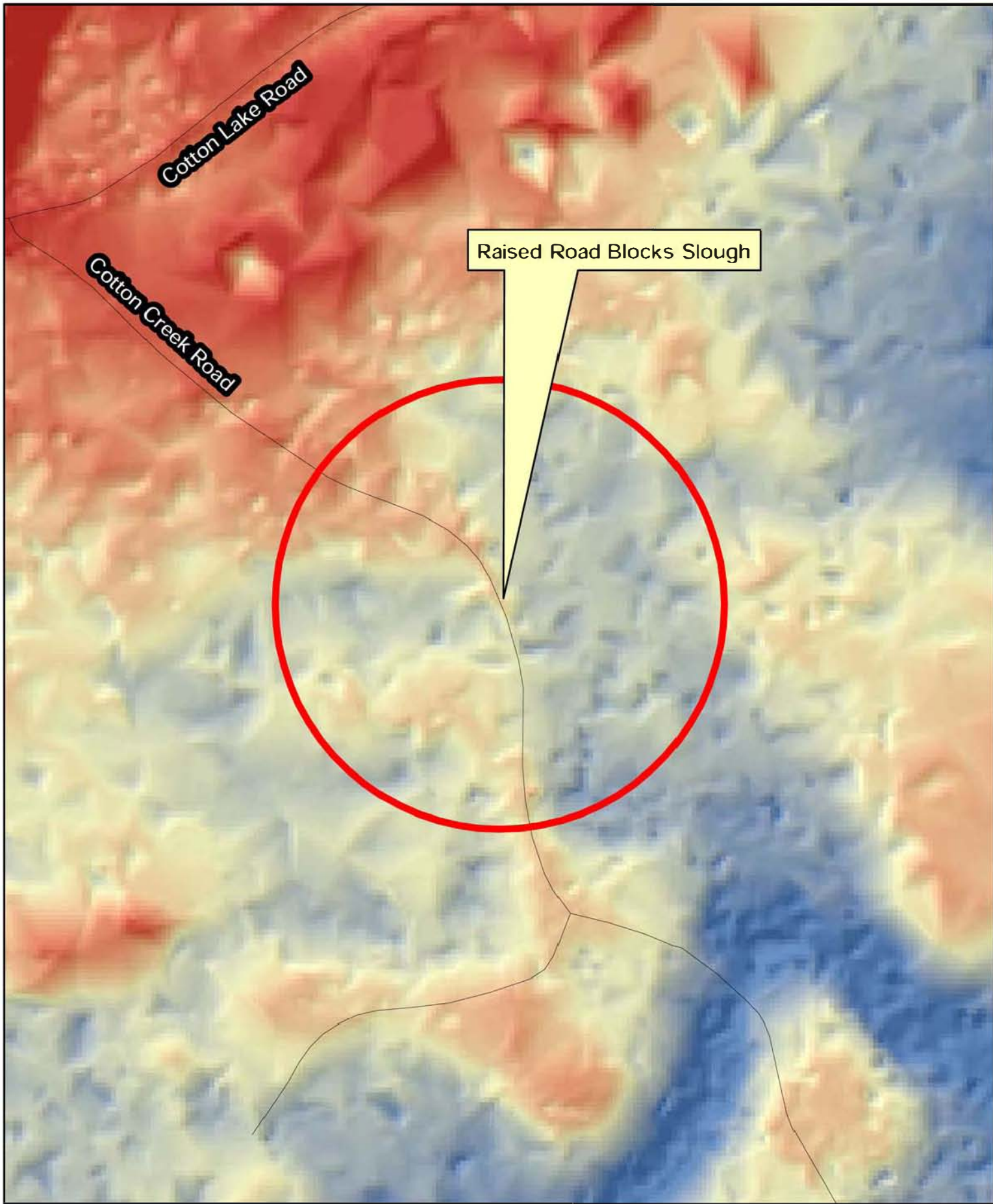


1941 B&W Aerial

0 250 500 Feet



Cotton Creek Road - Low-Water-Crossing No. 1

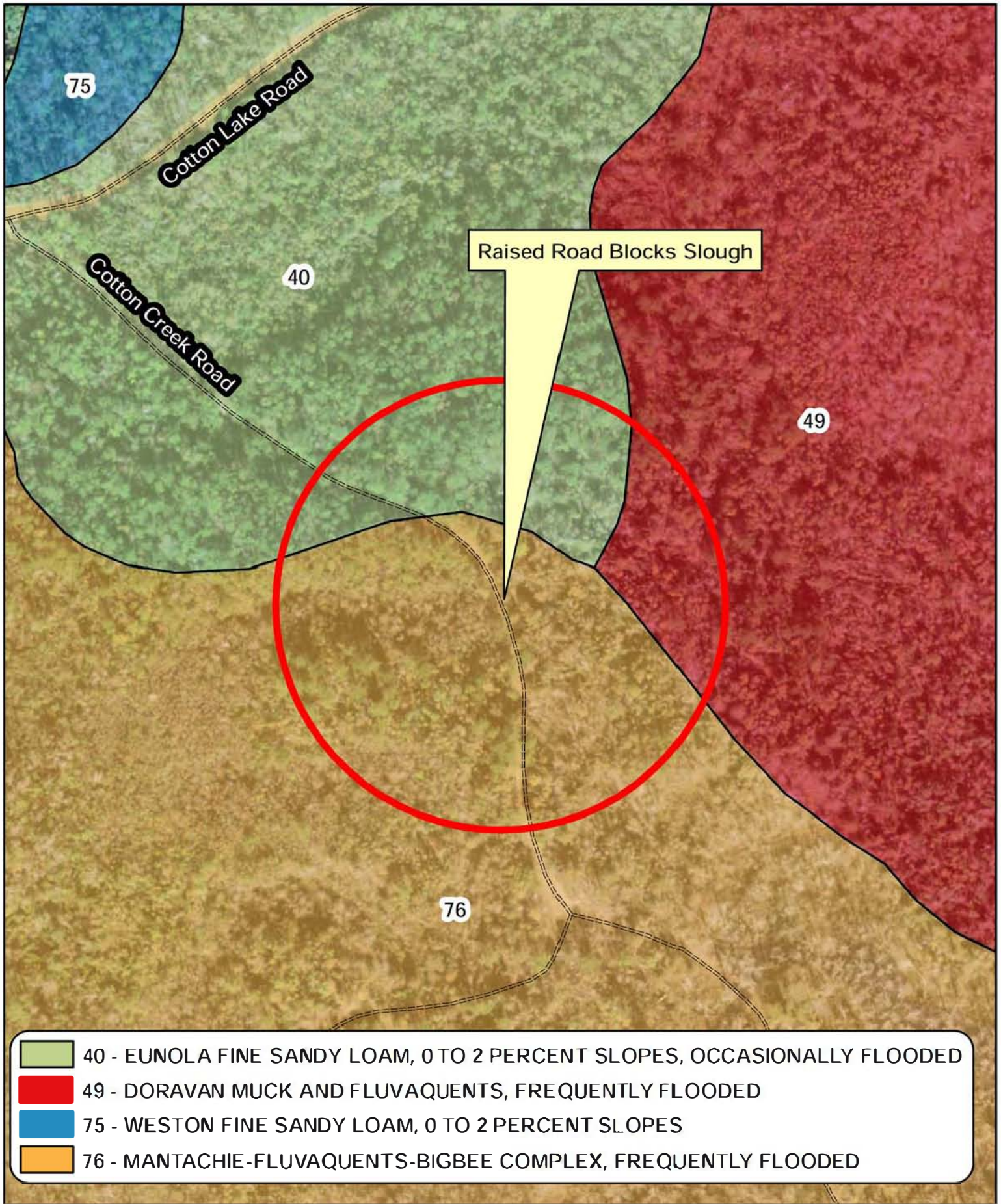


LIDAR

0 250 500 Feet



Cotton Creek Road - Low-Water-Crossing No. 1



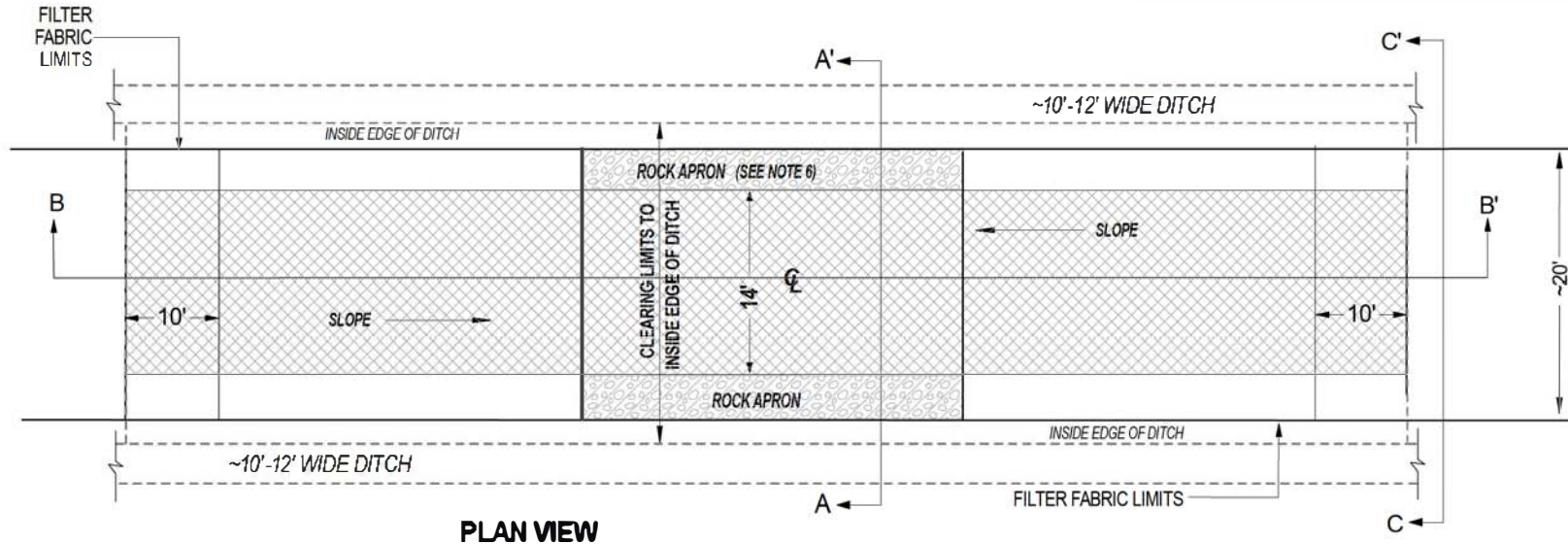
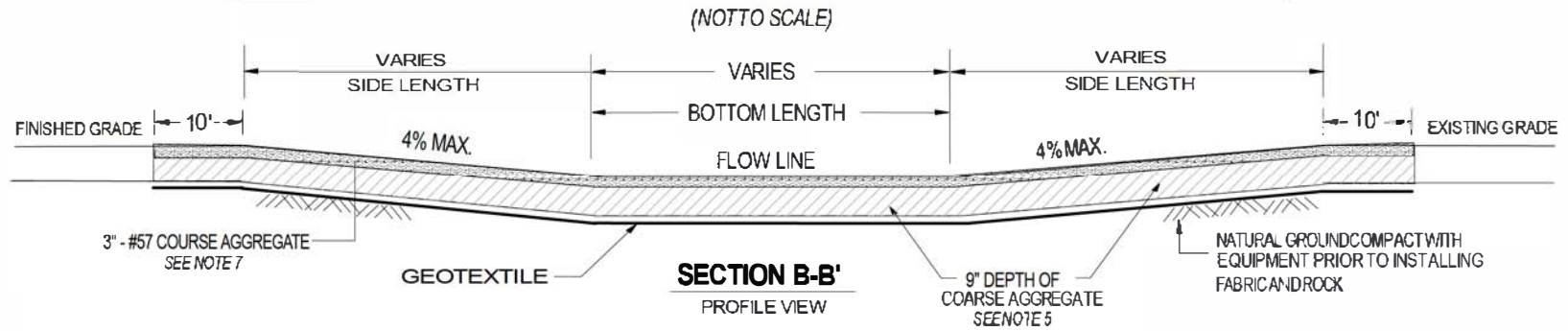
Raised Road Blocks Slough

- 40 - EUNOLA FINE SANDY LOAM, 0 TO 2 PERCENT SLOPES, OCCASIONALLY FLOODED
- 49 - DORAVAN MUCK AND FLUVAQUENTS, FREQUENTLY FLOODED
- 75 - WESTON FINE SANDY LOAM, 0 TO 2 PERCENT SLOPES
- 76 - MANTACHIE-FLUVAQUENTS-BIGBEE COMPLEX, FREQUENTLY FLOODED

NRCS Soils

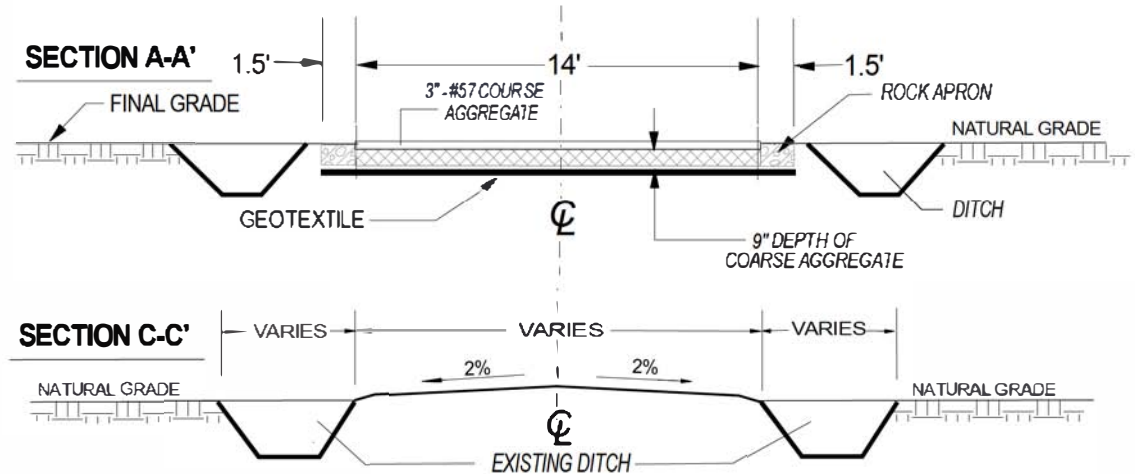


TYPICAL HARDENED LOW WATER CROSSING DETAIL



NOTES:

1. LIMESTONE SHALL BE TRUCK DUMPED AND MACHINE SPREAD OVER THE FABRIC FOLLOWING PLACEMENT OF FABRIC.
2. FABRIC SHALL CONFORM TO FOOT 2008 DESIGN STANDARDS, INDEX 501, USAGE 3.
3. MINIMUM FABRIC OVERLAP SHALL BE 6" ON EACH EDGE. ROCK SHALL BE PLACED ON LAP PRIOR TO PLACING ROCK ON SINGLE LAYERS OF FABRIC TO PREVENT LATERAL MOVEMENT.
4. ALL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
5. UNLESS OTHERWISE APPROVED BY ENGINEER COARSE AGGREGATE SHALL MEET FOOT SIZE #1 OR #2 GRADATION (~2"-4" dia) AND CONSIST OF LIMESTONE OR GRANITE WITH A MAXIMUM L. A. ABRASION LOSS OF 35%.
6. ROCK APRON SHALL CONSIST OF BEDDING STONE, RUBBLE OR COBBLES IN THE 6" TO 10" RANGE WITH A D50 OF 8 INCHES.
7. UNLESS OTHERWISE APPROVED BY ENGINEER, TOP LAYER OF COARSE AGGREGATE SHALL MEET FOOT SIZE #57 GRADATION (SEC. 901) WITH A MAXIMUM L. A. ABRASION LOSS OF 35%.





Proposed Low-Water-Crossing (West Side)



Proposed Low-Water-Crossing (East Side)

UMAM Assessment Polygon
Cotton Creek Road - Low-Water-Crossing No. 1



**Cotton Creek Road Hydrologic Enhancements (Escambia River WMA)
UMAM Estimate - 4/26/2013**

Polygon	UMAM Acres	L1	L2	W1	W1	C1	C2	W/Out	With	Raw Delta	Time Lag	P Factor	Risk	Adjusted Delta	UMAM Credits
LWC #1	6.49	10	10	8	9	8	9	0.87	0.93	0.07	1	1	1	0.07	0.454
6.49 (Total Wetland Enhancement Acreage)														(Total UMAM Credit)	0.45

UMAM In-house Estimate by NFWFMD Staff on February 8, 2013 (FRI).

Polygon "LWC #1" is a Low-Water-Crossings (LWC). Delineating an area that is ecologically enhanced by construction of a LWC is inherently arbitrary. UMAM assumptions used here are that each LWC will enhance a surrounding area of 6.49 acres (this assumption is based on extensive experience implementing hydrologic enhancements in Tates Hell State Forest and has been previously accepted by the USACE).

UMAM Acres - Area 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% Functional Value).

With - UMAM Functional Value Post-Mitigation (0 = No Value, 1 = 100% Functional Value).

Raw Delta - "With" minus "W/Out" (the raw functional lift generated from implementation of the mitigation).

Time Lag - Lag between when mitigation is implemented and when target ecological conditions are achieved.

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

Risk - Risk that mitigation project will fail.

Adjusted Delta - Functional lift of mitigation project adjusted for Time Lag, Risk, and Preservation Factor.

UMAM Credits - Functional UMAM Credits generated from mitigation project.

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

Site/Project Name Cotton Creek Road		Application Number Not Applicable		Assessment Area Name or Number LWC #1	
FLUCCS code 625 / 630		Further classification (optional) ---		Impact or Mitigation Site? Mitigation	Assessment Area Size 6.49 Acres
Basin/Watershed Name/Number Pensacola Bay SWIM Basin	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 Floodplain wetlands contiguous to the Escambia River.					
Assessment area description Bottomland Forested Wetlands - FLUCCS 615. Natural hydrologic flows are disrupted by Cotton Creek Road, a raised road blocking a slough.					
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)	

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

Site/Project Name Cotton Creek Road	Application Number Not Applicable	Assessment Area Name or Number LWC #1
Impact or Mitigation Mitigation	Assessment conducted by: NFWFMD Staff	Assessment date:

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 w/outmit w/mit 10 10	<p>Without Mitigation - This portion of Cotton Creek Road is surrounded by generally high-quality forested floodplain wetlands. With Mitigation - Installation of low-water-crossing may provide minor improvements to habitat connectivity, yet will not significantly affect Location and Landscape Support. [No Change in Score]</p>
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.500(6)(b)Water Environment (N/A for Uplands) w/out mit w/mit 8 9	<p>Without Mitigation - Cotton Creek Road blocks a forested wetland slough and disrupts natural hydrologic flows within the assessment polygon. With Mitigation - Hydrologic regime within the assessment polygon is enhanced.</p>
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.500(6)(c)Community structure Vegetation and/or Benthic Community w/outmit w/mit 8 9	<p>Without Mitigation - Forested floodplain vegetation including cypress and black gum. Extended flooding caused by altered hydrology may affect seedling recruitment and long-term viability of the forest canopy within the assessment polygon. With Mitigation - Hydrologic regime is enhanced which improves the long-term viability of the forested community within the assessment polygon.</p>
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Score = sum of above scores/30 (if uplands, divide by 20)	
w/outmit	w/mit
0.87	0.93

Raw Delta = [w/mit - w/out mit]
0.07

Preservation Adjustment Factor (PF) =	1
Time Lag Factor =	1
Risk Factor =	1
Adjusted Delta [(Raw Delta * PF) / (T * R)] =	0.07

UMAM Functional Assessment	
Polygon Acreage =	6.49
Functional Gain w/Mitigation (Adjusted Delta * Acres) =	0.45

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Submit this form and one set of as-built engineering drawings to the U.S. Army Corps of Engineers, Enforcement Section, Pensacola Permitting Section, 41 North Jefferson Street, Suite 301 Pensacola, Florida 32502. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-232-3131.

1. Department of the Army Permit Number: SAJ-2013-00295(NW-AWP)

2. Permittee Information:

Name: _____

Address: _____

3. Project Site Identification (physical location/address):

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled, and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer

Name (Please type)

(FL, PR, or VI) Reg. Number

Company Name

City

State

ZIP

(Affix Seal)

Date

Telephone Number

U.S. Army Corps of Engineers
Permit # SAJ-2013-00295
Date: May 30, 2013
Attachment: 3



