

R-2576 Mid-Currituck Bridge

Attachment 18:

**Landlocked Parcels  
Wetland Field  
Investigation, November 6,  
2019**

## MEMORANDUM

To: Roy Bruce

From: Adam Efird, John Dorney

Date: November 6, 2019

Subject: Landlocked Parcels Wetland Field Investigation

Field investigations were conducted by Moffatt & Nichol on August 7 and 8, 2019 to<sup>1</sup> evaluate seven parcels in Currituck County that may become landlocked as a result of Mid-Currituck Bridge construction. Prior to the fieldwork, Moffatt & Nichol sent landowner contact letters informing landowners of the fieldwork to be conducted as well as staff contact information. One landowner, Edward Markert, requested that he be contacted before conducting any field investigations on his properties. Moffatt & Nichol staff visited his home to discuss the project and request permission to conduct the investigations on his two parcels.

Weather conditions on August 7 were sunny and warm. A significant rain event occurred the evening of August 7 and therefore, hydrologic indicators within identified wetlands were significantly more pronounced during field investigations on August 8. The sites were visited from east to west, with the two easternmost parcels visited on August 7, and the remaining parcels visited on August 8. Field data collection consisted of photographs, GPS points of North Carolina Wetland Assessment Method (NCWAM) data form locations, and NCWAM data forms.

### Results

Moffatt & Nichol determined that all wetlands located within the seven parcels are non-riparian wetlands. The wetlands east of US 158/Caratoke Highway included areas of Pine Flat, Hardwood Flat, and Non-Riverine Swamp Forest. The Non-Riverine Swamp Forest east of US Highway 158 was generally drier and showed less evidence of inundation than the Non-Riverine Swamp Forest to the west of the highway.

### Maple Swamp Parcels

There are four potentially land locked parcels in Maple Swamp (Figure 1). The two eastern parcels (Jones Lumber Company (site 2) and Patricia Parker property (site 1) are both recovering from past logging maybe 20 years ago or less. The Parker site is drier with two different wetland types on the same parcel (pine flat and hardwood flat). The NC WAM ratings are similar in either case as shown in Table 1. The Jones Lumber Company site is lower in elevation and wetter than the Parker site. Overall, these two sites rate as High but the Jones Lumber Company site rates Low for habitat and the Parker site as a Hardwood flat, rates Medium for habitat. These lower ratings reflect the influence of past logging.

Neither the Jones Lumber site nor the Parker site are reference quality<sup>2</sup> as reflected in the NC WAM subfunction ratings which include some Medium and Low Ratings. It is expected that if these sites were left undisturbed, they would eventually become higher quality wetlands.

<sup>1</sup> A preliminary site visit was made to sites 5, 6, and 7 on June 5, 2019 with a follow-up on August 7 and 8, 2019.

<sup>2</sup> Reference quality is operationally defined as all three functions and all subfunctions rating as High using the NC WAM method.

The two parcels on the west side of Maple Swamp are less disturbed and therefore rate higher. The Marcella Walker tract (site 3) is a Hardwood flat which is fairly mature but is missing the oaks which are more typical of mature hardwood flats. The Edward Markert tract (site 4) is slightly lower in the landscape and is a non-riverine swamp forest. Both wetlands rate overall High but again some of the habitat subfunctions rate Medium. Therefore, neither site is reference quality, but these two parcels contain wetlands with generally higher quality ratings than in the eastern part of Maple Swamp mainly since they are more mature and have not been cut for many decades.

All four of these parcels were determined to be non-riparian wetland types despite their location either on the edge or just above a broad, flat valley (Maple Swamp) that runs north about 2.5 miles north of Adylett Road to the Intracoastal Waterway or 4.75 miles south of Adylett Road to high ground at the end of the valley. However, there are no signs of surface water flow and no channels were observed in Maple Swamp. Finally, the Maple Swamp soils were mapped as soils of marine terraces and depressions rather than as floodplain soils.

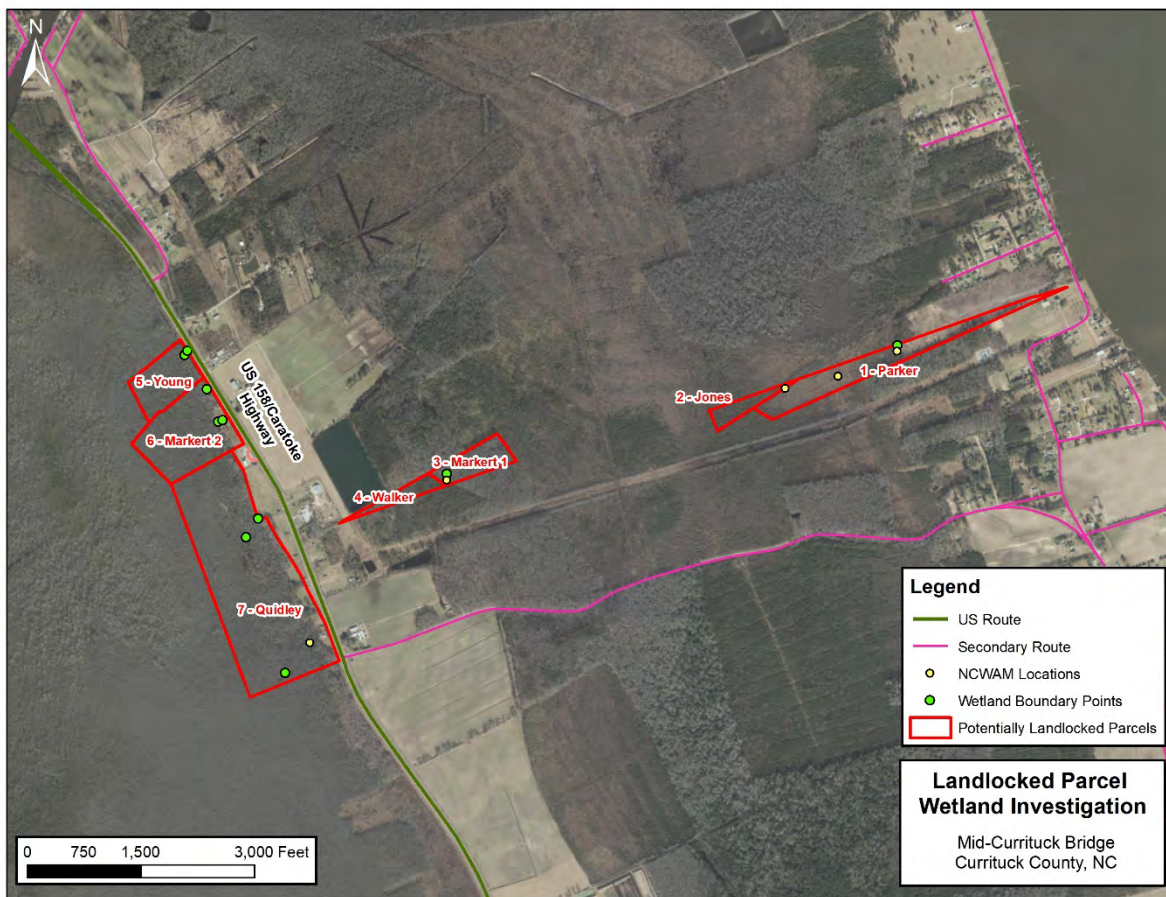
#### **Great Swamp/US 158 parcels (sites 5, 6, and 7)**

These three parcels are located along the west side of US 158 (Figure 1). Two of the three (sites 6 and 7) are immediately adjacent to NC Wildlife Resources North River Gamelands. This wetland is a non-riverine swamp forest in fairly uniform condition and rates as overall High with all the functions and subfunctions also rated as High. Therefore, this wetland is in reference condition although the black gum and cottonwood trees are relatively small which probably reflects past logging many decades ago. There is one small area (about one-half acre total for the fill as well as its adjacent ditches) located in Site 7 with an old abandoned road with adjacent ditches that could be removed for wetland restoration credit.

All three of these parcels were determined to contain non-riparian wetland types since they are located along the side of the ridge with US 158. There is ponded water throughout the wetland up to three feet deep. However, there are no obvious signs of surface water flow and no channels present in the wetland and the soils were mapped as soils of marine terraces and depressions. This non-riverine swamp forest gradually changes westward toward the North River and Bumplanding Creek to a more riparian system (on Wasda muck) but this transition appears to occur off site.

Site characteristics		Site Owner and Number					
		Parker <sup>1</sup> (Site 1)	Parker (Site 1)	Jones Lumber Company (Site 2)	Walker (Site 3)	Markert- 1 (Site 4)	US 158 Wetlands (Young, Markert- 2, Quidley) (Sites 5,6,7, respectively)
Date of site visit		7-Aug-19	7-Aug-19	7-Aug-19	8-Aug-19	8-Aug-19	5-June-19 and 8-Aug- 19
Wetland Type		Hardwood Flat	Pine Flat	Non-riverine Swamp Forest	Hardwood Flat	Non- riverine Swamp Forest	Non-riverine Swamp Forest
Site description		Semi- mature forest	Semi- mature forest	Cutover about 10 years ago	Mature forest	Mature forest	Mature forest mostly adjacent to WRC land
Function	Sub-function	RATING					
Hydrology		High	High	High	High	High	High
	Surface Water and Storage Retention	Medium	Medium	High	Medium	High	High
	Subsurface Water Storage and Retention	High	High	High	High	High	High
Water Quality		High	High	High	High	High	High
	Pollution Change – Opportunity Only	High	High	High	High	High	High
	Pollution Change – Condition/Opportunity	High	High	High	High	High	High
Habitat		Medium	High	Low	High	High	High
	Physical Structure	Medium	Medium	Low	Medium	High	High
	Landscape Patch Structure	High	High	High	High	High	High
	Vegetation Composition	Low	N/A	Low	Medium	Medium	High
Overall		High	High	High	High	High	High
<sup>1</sup> Note that this site was evaluated as both a Hardwood Flat and as a Pine Flat since it can be classified as either wetland type.							

Table 1. NCWAM Ratings



**Figure 1. Landlocked Parcels Map and Sampling Locations**

**Summary of Mitigation Potential for Parcels**

We found that for the three westernmost sites adjacent to US158, wetlands within the parcels are high-quality and therefore may be appropriate for wetland preservation mitigation opportunities for the North Carolina Turnpike Authority (NCTA) if the landowners are willing to sell at a reasonable price. Data collected in the field such as NCWAM forms and GIS mapping are available as needed. Table 2 provides a summary of the field investigation with respect to mitigation opportunities.

Parcel	Wetland Type	Site drains to:	Mitigation Opportunity	Wetland Acreage Estimate
1-PARKER	Pine Flat	Maple Swamp	Limited preservation potential	5.05
1-PARKER	Hardwood Flat	Maple Swamp	Limited preservation potential	7.80
2-JONES	Hardwood Flat	Maple Swamp	Limited preservation potential	4.15
3-MARKERT 1	Non-Riverine Swamp Forest	Maple Swamp	Moderate preservation potential	7.77
4-WALKER	Non-Riverine Swamp Forest	Maple Swamp	Moderate preservation potential	2.79
5-YOUNG	Non-Riverine Swamp Forest	Great Swamp	High Preservation potential	11.20
6-MARKERT 2	Non-Riverine Swamp Forest	Great Swamp	High Preservation potential	23.01
7-QUIDLEY	Non-Riverine Swamp Forest	Great Swamp	High Preservation potential with small area of Restoration (0.5 acres)	72.24

**Table 2 – Landlocked Parcel Wetlands: Summary of Mitigation Opportunities**

### Mitigation Implications

The sites west of US 158 provide an excellent opportunity for NCTA to secure on-site mitigation that could include preservation of approximately 106.46 acres within a relatively unique wetland type. The Non-Riverine Swamp located within sites 5, 6, and 7 are high, reference quality wetlands according to NCWAM as described above and shown on Table 2. Landowners for sites 5, 6, and 7 may be open to NCTA purchasing their property since most of the land is “unusable” swamp and wetland habitat. Parcels 1 and 2 are rated as Limited Preservation potential since they are cutover. However, these areas would recover given enough time for succession to occur. Parcels 3 and 4 are rated as Moderate Preservation potential since they are not cut over but are missing some expected species (mainly wetland oaks) and are not adjacent to already protected public property.

Additionally, the parcels along US 158 are adjacent to or near large state-owned game lands to the west, further enhancing their significance if used for preservation. A small area of roadbed (approximately 0.25 acres) along with adjacent ditches (an additional 0.25 acres) was located within site 7 and provides an opportunity for potential restoration within the larger preservation area if the road is graded out smooth and the adjacent ditches are filled. Given the proximity to future bridge construction, these wetlands may also be able to provide stormwater treatment for the new road and adjacent development since stormwater discharges from these areas could be directed towards these wetlands. It is likely that site elevations would allow this drainage since several ditches already run from US 158 into the wetlands.