Appendix J
Wetlands Findings Report

Wetlands Findings Report

Hooper Road (LA 408) Capacity Improvements – Blackwater Road to Sullivan Road

June 2015

East Baton Rouge Parish, LA

East Baton Rouge Parish
Department of Public Works

CDM Smith

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Hooper Road (LA 408) Capacity Improvements – Blackwater Road to Sullivan Road

Wetlands Findings Report

Executive Summary

East Baton Rouge Parish is evaluating the areas alongside Hooper Road as part of the Hooper Road Capacity Upgrades project. The purpose of this project is to develop alternatives that would improve the capacity of Hooper Road by widening the existing two-lane roadway to four lanes along a 3.3-mile segment between Blackwater Road and Sullivan Road. Initially, three alternatives were developed as part of an Environmental Assessment needed to satisfy National Environmental Policy Act (NEPA) documentation requirements. The initial three alternatives were supplemented by additional alternatives, including the selected alternative, Alternative E. Alternative E is a hybrid alternative that includes components of the initial three alternatives. It does not expand the footprint beyond that evaluated for the initial three alternatives. The Environmental Assessment includes an evaluation of wetlands within the proposed project corridor. Additionally, wetlands must be delineated to determine if the proposed project would affect wetland areas, thus initiating the wetlands permitting process.

On May 27-30, 2014, CDM Smith conducted wetland delineations in East Baton Rouge Parish, Louisiana in support of the proposed project. Wetlands were delineated in conformance with the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (Technical Report Y-87-1) and the 2010 Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). The *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin System) was used to classify observed wetlands and watercourses (Cowardin et al, 1979). This classification was reprinted in 1992 and is now the U.S. Fish & Wildlife Service (USFWS) standard for describing wetland habitat types.

Three vegetated wetland types were delineated and classified during field investigations:

- Forested Wetlands with Broad-leaved Deciduous Trees (Cowardin class PFO1)
- Emergent Wetlands with Persistent Vegetation (Cowardin class PEM1)
- Wet Ditches (Cowardin class PEM1)

In addition to the vegetated wetlands described above, several channels were observed that convey waters through the project corridor. Of the eight documented channels with flowing water, all eight exhibited characteristics of perennial streams. A few small, very shallow channels were also observed; however, additional investigations revealed they were ditches that were excavated to drain land for development or for stormwater conveyance and had no observable connection to natural streams or wetlands.

The purpose of this report is to describe streams and wetlands in the project corridor in order to satisfy NEPA requirements and obtain required wetland permits from the appropriate regulatory agencies. Once stream and wetland boundaries have been confirmed by USACE, Sigma Consulting Group will incorporate avoidance and/or minimization efforts into roadway design. Impacts to streams and wetlands should be avoided if possible. If impacts cannot be avoided, all attempts should be made to minimize both permanent and temporary construction impacts to waters of the U.S.

A. Introduction

The following is a Wetland Finding for the East Baton Rouge Department of Public Works Hooper Road (LA 408) Blackwater – Sullivan project. CDM Smith was contracted by Sigma Consulting Group, Inc. (Engineer) to delineate wetlands and prepare this document in compliance with Executive Order 11990 "Protection of Wetlands", 23 CFR 771, 23 CFR 777, and Federal Highway Administration (FHWA) Technical Advisory T6640.8A.

Wetland resources are protected under Section 404 of the Clean Water Act (CWA) and Executive Order 11990. Many wetlands and open water features are considered jurisdictional Waters of the U.S. by the U.S. Army Corps of Engineers (USACE). Wetlands and Waters of the U.S. are regulated by the USACE, and projects that will discharge dredged or fill materials into these features are subject to permitting by the USACE. Non-jurisdictional wetlands are not subject to permitting by USACE under Section 404; however, all federal agencies are required to avoid and minimize wetland impacts to the extent possible per Executive Order 11990.

On May 27-30, 2014, CDM Smith conducted wetland delineations in East Baton Rouge Parish, Louisiana. The delineations were conducted in support of the planned widening of a 3.3-mile segment of Hooper Road. The results of these wetland delineations, summarized within this Wetlands Findings Report, were obtained following a review of the existing literature (e.g., National Wetlands Inventory [NWI] wetlands and Natural Resources Conservation Service [NRCS] soils mapping) and field investigations to determine wetland boundaries and describe wetland conditions within the project area that could be affected by the proposed action. The information provided within this report will be included in an Environmental Assessment, and will be used to coordinate with regulatory agencies when acquiring permits for those wetlands that will be affected by the proposed action.

The project corridor parallels existing Hooper Road and runs through residential/commercial properties, previously-disturbed vacant fields, pine-hardwood mixed forests, and riparian forests located west of Central, Louisiana (**Figure 1**). The project corridor is bounded on the west by Blackwater Road and on the east by Sullivan Road, and extends to the north and south on either side of Hooper Road up to the environmental boundary. The environmental boundary is a conservative estimate of the maximum extent of potential impacts associated with planned road widening activities, including all those areas potentially impacted by the selected alternative (Alternative E), and serves as the limit of investigation. It extends 150 feet from the existing centerline of Hooper Road, producing a project corridor that is 300 feet wide.

Wetlands were delineated in conformance with the USACE Wetland Delineation Manual (Technical Report Y-87-1) and the 2010 Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). Wetland boundaries were surveyed and recorded using a Trimble GeoXH handheld GPS unit with sub-meter accuracy.

B. Project Description and Location

B.1 Project Alternatives

East Baton Rouge Parish is evaluating the areas alongside Hooper Road as part of the Hooper Road Capacity Upgrades project. The purpose of this project is to develop alternatives that would improve the capacity of Hooper Road by widening the existing two-lane roadway to four lanes between Blackwater Road and Sullivan Road. Initially, three alternatives were developed as part of an Environmental Assessment needed to satisfy the NEPA process.
The initial three proposed project alternatives include:

- Alternative A – North Widening
- Alternative B – South Widening
- Alternative C – Centered Rebuild

Alternative A would involve construction of a new, two-lane westbound roadway to the north of the existing Hooper Road roadway. Alternative A would also involve re-building the existing two-lane roadway, so that traffic on these lanes would proceed only in the eastbound direction. The area of disturbance would extend 82 feet from the existing roadway north to the limits of the new, conceptual required right-of-way.

Alternative B would involve construction of a new, two-lane eastbound roadway to the south of the existing Hooper Road roadway. Alternative B would also involve re-building the existing two-lane roadway, so that traffic on these lanes would proceed only in the westbound direction. The area of disturbance would extend 82 feet from the existing roadway south to the limits of the new, conceptual required right-of-way.

Alternative C would involve adding a single new lane north of the existing, westbound lane of Hooper Road and also a single new lane to the south of the existing, eastbound lane of Hooper Road. The existing roadway would remain relatively unchanged, apart for minor modifications within the existing median. The area of disturbance would extend 50 feet north and 50 feet south of the existing roadway to the limits of the new, conceptual required right-of-way, for a total area of disturbance of 100 feet.

After evaluating the initial three alternatives, the project team developed two additional alternatives, D and E. Both are hybrid alternatives that use components of original alternatives A, B, and C. The footprint of the selected alternative, Alternative E, does not extent outside the limits of the original three alternatives. It occupies generally the same footprint as Alternative C, except for a 0.63-mile portion between Joor Road and Shoe Creek Drive, where the alignment has a northern offset. All proposed alternatives would add nine potential median openings, with three located east of Joor Road, four located between Joor Road and Lovett Road, and two located between Lovett Road and Blackwater Road. All U-turn median openings will have a dedicated left turn lane. Partial median openings for side streets are to be determined in the traffic study phase. At this stage, 30-foot median offsets are being incorporated into the design. The Environmental Assessment includes an evaluation of wetlands within the proposed project corridor, including all areas potentially impacted by the selected alternative, Alternative E.

B.2 Environmental Setting

The Hooper Road project area is located in the Southern Mississippi Valley Loess (Major Land Resource Area [MLRA] 134) in the Inner Coastal Plain subregion (Land Resource Region [LRR] P) within the larger Atlantic and Gulf Coastal Plain Region. The Region consists of the nearly level to hilly topography primarily of sedimentary rocks of marine origin up to 65 million years old and alluvial sediments of Pleistocene and more recent age (USACE 2010). The Hooper Road project area sits on the western edge of the Inner Coastal Plain, approximately 6.6 miles east of the Mississippi River.

Within the Mississippi Valley Loess plains, the Hooper Road project area is located in the Baton Rouge Terrace. The Baton Rouge Terrace is a flat, coastal plain deeply dissected along its centers and southern margins by partially filled valleys. These valleys contain wetlands and low-gradient streams with silt and sand bottoms. The Baton Rouge Terrace is lower in elevation and has flatter topography than the neighboring Southern Rolling Plains to the north. Elevations range from 10-140 feet above sea level with 10-30 feet of local relief. The geology is characterized by Quaternary loess overlaying alluvial and deltaic sand, silt, clay, and gravel. The soils are mostly Alfisols with brown or grayish-brown, silt loam surfaces that developed in the loess parent materials (Daigle *et al.* 2006).

The relatively high average annual precipitation (63-65 in.) and quantity of frost-free days (255-260) supports diverse forests, flatwoods, prairies, and wetlands where undisturbed. Potential natural vegetation in the subregion was historically classified as oak-hickory-pine forest. Forest composition varies with latitude and proximity to the coast. Today, pines tend to predominate in large areas that once were farmed or cleared but later abandoned or allowed to regenerate. Typical pine species include shortleaf (*Pinus echinata*), loblolly (*Pinus taeda*), and spruce (*Pinus glabra*) pines (USACE 2010). Hardwood forests often contain cherrybark (*Quercus pagoda*), swamp chestnut (*Q. Michauxii*), and water oaks (*Q. nigra*), sweetgum (*Liquidambar styraciflua*), yellow poplar (*Liriodendron tulipifera*), sycamore (*Platanus occidentalis*), southern magnolia (*Magnolia grandifolia*), beech (*Fagus grandifolia*), and elm (*Ulmus* spp.). Spruce pine-hardwood flatwoods with some loblolly pine are also present. Dogwoods (*Cornus* spp.) and hollies (*Ilex* spp.) are often found in the understory. These forests have been largely fragmented and replaced by pine plantations, pasture, hayland, urban and industrial development, and oil and gas production. Urban uses now cover about fifty percent of the region (Daigle *et al.* 2006).

The Atlantic and Gulf Coastal Plain Region has a relatively high percentage of wetlands that dominate some landscapes. Palustrine Emergent Wetlands (PEM) are common in landscape depressions and along the margins of streams and lakes and support arrowhead (*Sagittaria* spp.), pickerel weed (*Pontederia cordata*), arrow arum (*Peltandra virginica*), sweetflag (*Acorus calamus*), sawgrass (*Cladium* spp.), wild rice (*Zizania aqatica*), giant cutgrass (*Zizaniopsis miliacea*), cattails (*Typha* spp.), and bulrushes (*Scirpus* spp.) (USACE 2010). On the Louisiana and Texas coastal plain, depressional wetlands are part of the coastal prairie landscape and are known locally as platins, marias, and prairie potholes. In addition to species mentioned previously, these depressional wetlands often support assesmblages of grass-like plants, including switchgrass (*Panicum virgatum*), maidencane (*Panicum hemitomon*), eastern gama grass (*Tripsacum dactyloides*), and beaksedges (*Rhynchospora* spp.) (USACE 2010).

Wet flats are also present throughout the coastal plain region and can be dominated by either herbaceous plants, hardwoods, pines, or a mixture of pines and hardwoods. Wet flat hydrology is occasionally highly seasonal and varies from direct precipitation, high water tables, and shallow overland flow. Wet flats in the Gulf coast are often pine savannas, with frequent fires, low soil

nutrients, and abundant sunlight which produce highly diverse understories (USACE 2010).

Bottomland hardwood forests occupy the floodplains of larger streams and rivers. Under normal conditions, these floodplains are often seasonally inundated by overbank or backwater flooding. Typical dominant trees include various species of oaks, sugarberry (*Celtis laevigata*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and sweetgum. On the inner coastal plain, riparian wetlands are associated with the floodplains of smaller rivers and streams. These relatively narrow floodplains or branch bottoms have species composition similar to the bottomland hardwood forests and swamps of larger rivers, but more upland species may invade higher terraces (USACE 2010).

Throughout the region, wetlands of all types have been impacted by clearing, grading, drainage, stream channel alteration, and other disturbances, and many wetlands are in agricultural use for crop and hay production or pasture (USACE 2012). Within the Hooper Road project area, primary disturbances associated with human actions include residential and commercial development and linear projects like roads and utility easements. Herbaceous species that may dominate in these disturbed systems include turf grasses (e.g., St. Augustine grass), clover (*Trifolium* spp.), thistle (*Sonchus* spp.), milkweed (*Asclepias* spp.), rushes (*Juncus* spp.), cattails (*Typha* spp.), bentgrasses (*Agrostis* spp.), blackberries (*Rubus* spp.), and various goldenrods (*Solidago* spp.). If left unmanaged, many of these areas would transition to shrubland and forests dominated by woody vegetation (USACE 2010).

C. Wetland Descriptions

An initial desktop delineation was conducted to identify likely stream and wetland locations within the environmental boundary. Topographic contours (**Figure 2**), NWI mapping (**Figure 3**), and NRCS soils mapping (**Figure 4**) were evaluated. While NWI mapping does not identify any wetlands within the Hooper Road project area, it does document three streams within 150 feet of Hooper Road. The stream farthest to the west is Blackwater Bayou; the other two streams are un-named and are located between Joor Road and Sullivan Road. NWI mapping also identifies several wetlands located adjacent to the project area, but outside expected limits of disturbance. There are seven freshwater ponds (PUBF) located more than 150 feet from Hooper Road, and one Palustrine Forested Wetland (PFO1A) associated with Blackwater Bayou is located approximately 425 feet south of Hooper Road.

Despite being useful preliminary site evaluation tools, desktop delineations often significantly underestimate the total number of streams and wetlands actually present. Therefore, wetlands and stream systems within the environmental boundary were delineated in the field. A total of 14 streams and wetlands were identified, delineated, and characterized. Of these 14, six were forested or emergent wetlands and eight were perennial streams and associated floodplain wetlands. The locations of delineated wetlands and wetland determination plots are provided in **Appendix A**. Representative photographs of each stream and wetland type are provided in **Appendix B**.

Site Hydrology

Hydrologic conditions found during the site visits were used in the wetland delineation. The site experienced heavy rainfall, with totals exceeding 5 inches, the week of the wetland delineations, While multiple wetland hydrology indicators were recorded, the boundary between wetland and upland areas was often determined by the presence of surface water or soil saturation; however, special care was taken in an effort to distinguish between naturally inundated/saturated areas and those that were likely saturated from the heavy rain. Secondary indicators such as saturation on aerial imagery, drainage patterns, and geomorphic position were also important since most wetland areas are associated with stream channels and associated floodplains.

The majority of the roadside ditches paralleling Hooper Road are dry, ephemeral systems containing non-hydric soils. They were created during road construction and convey stormwater following storm events. However, some ditches did possess wetland hydrology, and contained standing water that was often flowing down-gradient towards jurisdictional streams. In wet ditches that did not contain standing water, most had soils that were saturated to the surface. However, the recent heavy rainfall likely caused some of the observed hydrology. Dry ditches did not possess hydrology indicators, primarily lacked hydric soils, and often consisted of maintained vegetation.

Streams and wet ditches within the environmental boundary are often hydrologically connected to freshwater ponds or naturally occurring vegetated wetlands. Naturally occurring vegetated wetlands were most frequently located in the floodplains of streams or were supplied by ditches and swales, and are at least partially dependent on storm flows and flood events. Standing water and soils saturated to the surface were also frequently observed in vegetated wetlands, likely due to restrictive clay layers slowing infiltration or the presence of a high water table.

In addition to surface water (A1) and saturation (A3), primary indicators of hydrology found in wetland portions of the project area include water marks (B1), inundation visible on aerial imagery (B7), water-stained leaves (B9), aquatic fauna (B13), and oxidized rhizospheres on living roots (C3).

In addition to drainage patterns (B10), saturation on aerial imagery (C9), and geomorphic position (D2), observed secondary indicators of hydrology include sparsely vegetated concave surface (B8), moss trim lines (B16), crayfish burrows (C8), and the passing of the FAC-neutral test (D5). Site hydrology was documented in detail at four locations, as recorded on USACE wetland determination data forms provided in **Appendix C**.

Site Soils

NRCS soil mapping (**Figure 4**) indicates that approximately 66 percent of the project area within the environmental boundary consists of predominantly nonhydric and nonhydric soils. Predominantly nonhydric and nonhydric soils include Deerford-Verdun complex, 0 to 2 percent slopes (33.5 percent of project area), Oprairie silt, 0 to 1 percent slopes (14.5 percent), Urban land (13.6 percent), and Scotlandville silt, 1 to 3 percent slopes (4.2 percent). Deerford-Verdun complex and Oprairie silt are somewhat poorly drained, while Scotlandville silt is moderately well drained. Of the nonhydric soils, the depth to the water table is shallowest for the Deerford-Verdun complex (6-18 inches), with the water table generally located deeper for Oprairie silt (12-30 inches) and Scotlandville silt (24-36 inches).

Approximately 34 percent of the project area consists of partially hydric, predominatly hydric, and hydric soil map units. Gilbert silt loam (0 to 1 percent slopes) covers 31.9 percent of the area, Ouachita, Ochlockonee, and Guyton soils (nearly level to undulating, frequently flooded) cover 2.4 percent of the area, and Pits cover 0.1 percent of the area. Gilbert silt loam is a poorly drained soil (Hydrologic Soil Group D) with the depth to water table between 0 and 18 inches. While the Ouachita, Ochlockonee, and Guyton soils map unit consists of the well-drained Ouachita and Ochlockonee with a depth to water table between 36 and 80 inches, the Guyton soil series is poorly drained and has a depth to water table between 0 and 18 inches. Soil characteristics for the area of investigation are summarized in **Table 1**.

Hydric soils within the project area are often associated with stream crossings. Ouachita, Ochlockonee, and Guyton soils are associated with Blackwater Bayou and its riparian forests, and Gilbert silt loam is associated with the stream crossing Hooper Road 775 feet west of Sullivan Road. Nonhydric soils are most often associated with residential and commercial parcels, previously-disturbed vacant fields, and dry, mixed forests. Soils were examined at numerous locations during the site visit in order to perform the wetland delineation and establish the wetland boundary. While multiple hydric soil indicators were recorded, the boundary between wetland and upland areas was often determined by the presence of low-chroma, depleted matrix and redox concentrations. Soil characteristics were documented in detail at four locations, as recorded on USACE wetland determination data forms provided in **Appendix C**.

Table 1: NRCS Soil Survey Mapping Units and Component Soil Characteristics (NRCS 2014)

Map Unit	Component and Percent	Drainage	Depth to Water Table, Upper Limit (in)	Flooding/ Ponding	Hydrologic Soil Group	Percent Hydric
Deerford-Verdun complex, 0 to 2 percent slopes	Deerford and similar soils 45%	Somewhat poorly drained	6-18	None	D	2
	Verdun and similar soils 40%	Somewhat poorly drained	6-12	Rare/ None	D	
	Oprairie 9% Gilbert 2% Scotlandville 2% Frost 2%					
Gilbert silt loam, 0 to 1 percent slopes	Gilbert and similar soils 85%	Poorly drained	0-18	Rare/ None	D	85
	Other similar soils 5% Oprairie 4% Satsuma 3% Dexter 3%					
Oprairie silt, 0 to 1 percent slopes	Oprairie and similar soils 85%	Somewhat poorly drained	12-30	None	C	2
	Scotlandville 7% Deerford 3% Calhoun 3% Gilbert 2%					
Urban land	Urban land 85% Miscellaneous 5% Artificial fill 5% Lawns 5%					0
Scotlandville silt, 1 to 3 percent slopes	Scotlandville and similar soils 90%	Moderately well drained	24-36	None	C	0
	Oprairie 7% Feliciana 3%					
Ouachita, Ochlockone and Guyton soils, nearly level to undulating, frequently flooded	Ouachita and similar soils 45%	Well drained	>80	Frequent/ None	C	65
	Ochlockonee and similar soils 20%	Well drained	36-60	Frequent/ None	B	
	Guyton and similar soils 20%	Poorly drained	0-18	Frequent/ None	D	
	Dexter 5% Satsuma 4% Cahaba 3% Gilbert 3%					
Pits	Pits 100%					100

Site Vegetation and Wetland Classification

In this report the Cowardin System (Cowardin et al, 1979) was used to classify observed wetlands and watercourses. This classification was reprinted in 1992 and is now the USFWS standard for describing wetland habitat types. Definitions of each observed wetland habitat are provided below.

C.1 Forested Wetlands with Broad-leaved Deciduous Trees (PFO1)

Forested Wetlands with Broad-leaved Deciduous Trees (PFO1) are characterized by deciduous, woody vegetation that is 6 m tall or taller. While represented throughout the United States, PFO1 wetlands are most common in the South and East and are often referred to as bottomland hardwood forests when located in floodplains. Wetlands in this subclass generally occur on mineral soils or highly decomposed organic soils (Cowardin et al, 1979). Due to the length of time required for the establishment of a mature forested wetland, and the significant ecological and hydrological benefits they provide, forested wetlands are considered more valuable within the landscape occupied by the project area than emergent wetlands.

A total of five wetlands within the project corridor were identified as bottomland hardwood forested wetlands. Forested wetlands along Hooper Road are typically associated with stream systems, and to a lesser extent, depressions within the landscape. The majority of the project area has been cleared, largely for residential or commercial development; therefore, forested wetlands are relatively uncommon. Most forested wetlands occur north of Hooper road and west of Lovett Road within the Blackwater Bayou (Stream 8) floodplain and the floodplain of the perennial Stream 6. The following are descriptions of each forested wetland located within the project area:

<u>Stream 6 – Forested Wetlands</u>

Stream 6 is an un-named perennial stream located approximately 475 feet east of Carmel Drive. It flows slowly from north-to-south through the project corridor, eventually turning sharply to the west and converging with Stream 8 – Blackwater Bayou approximately 0.1-miles north of Hooper Road. To the north of Hooper Road along the eastern right bank of Stream 6 is a bottomland hardwood Palustrine Forested Wetland. This section provides details on this forested wetland. Additional information on Stream 6 is provided in **Section D.6 Stream 6**.

The forested wetland sits approximately 40 feet north of the existing roadway and does not include the blackberry-dominated berm that lies directly adjacent to Hooper Road. It extends approximately 200 feet in the east-west direction from the eastern bank of Stream 6 to a maintained grass easement associated with a residential property. Historically, this forested wetland was connected to Wetland 3; however, residential development has created an upland island that separates the two wetland areas along Hooper Road. The two wetlands are connected farther to the north, approximately 500-feet from the existing roadway.

The canopy of the Stream 6 forested wetland consists primarily of water oak, Shumard oak (*Quercus shumardii*), sweetgum, and Chinese tallow (*Triadica sebifera*), with American elm, sugarberry, red maple, green ash, boxelder (*Acer negundo*), Chinese privet (*Ligustrum sinense*), and hollies also present in the understory and shrub layers. Ground cover is sporadic and is clustered in the few areas where sunlight reaches the forest floor. The herbaceous and vine layers contain poison ivy (*Toxicodendron radicans*), Virginia chain fern (*Woodwardia virginica*), roundleaf greenbrier (*Smilax rotundifolia*), trumpet creeper (*Campsis radicans*), peppervine (*Ampelopsis arborea*), blue-flag iris (*Iris virginica*), and a few wetland sedges and grasses.

Primary and secondary indicators of hydrology observed included standing water, saturated soils, water-stained leaves, and moss trim lines. The depth to water table was often between 6-12 inches. Soils were typically 10YR 4/1 or 10YR 5/1 with 10YR 6/8 redox concentrations.

Approximately 30 feet east of the eastern right bank of Stream 6 and 50 feet north of Hooper Road is a 1,000-square foot freshwater pond located within the larger forested wetland. The pond is separated from Stream 6 by a small berm, but likely is connected to the stream during flood events. The shoreline is heavily forested with American elm, red maple, boxelder, and Chinese tallow. Due to the presence of more sunlight along the shoreline, the ground layer is denser than that typically found in the interior of the forested wetland. Common species include trumpet creeper, blue-flag iris, lurid sedge (*Carex lurida*), eastern gama grass, and Virginia chain fern. The entire water surface was covered with a thick layer of green algae during the field visit.

The upland berm located between the forested wetland and Hooper Road is dominated by blackberry and goldenrod. A narrow, maintained easement to the east of the forested wetland is located at the transition from wetland to upland. Upland areas to the east of the forested wetland are associated with residential development and contain turf grasses (e.g., St. Augustine grass), dwarf palmetto (*Sabal minor*), and winged elm (*Ulmus alata*). The presence of blackberry often marked the upland-wetland boundary.

Stream 8 – Blackwater Bayou Forested Wetlands

Stream 8 (Blackwater Bayou) is a large perennial stream located approximately 500 feet east of Shady Bluff Drive. It flows largely north-to-south and converges with the Comite River approximately 1.25 miles south of the project corridor. North of Hooper Road, there are Palustrine Forested Wetlands along both banks. This section provides details on these forested wetlands. Additional information on Stream 8 is provided in **Section D.8 Stream 8**.

The Palustrine Forested Wetland located on the eastern left bank of Blackwater Bayou is smaller, more disturbed, and possesses fewer large, mature trees than the forested wetland located on the western right bank. The wetland on the left bank is located approximately 40 feet north of Hooper Road and is separated from the roadway by a maintained field dominated by goldenrod and upland grasses. The wetland extends from Blackwater Bayou approximately 225 feet to the east before ending at a commercial gravel parking lot. The canopy is dominated by water oak and sweetgum. The subcanopy and shrub layers are dense with red maple, American elm, Chinese tallow, inkberry, and yaupon (*Ilex vomitoria*) present. The dense shrub layer has prohibited the establishment of a robust herbaceous layer, with most herbaceous species consisting of facultative grasses on the wetland fringes or along a drainage ditch at the southern boundary of the wetland.

The Palustrine Forested Wetland located on the western right bank of Blackwater Bayou is a mature bottomland hardwood forest located approximately 30 feet north of Hooper Road. It is separated from the roadway by a maintained grass easement dominated by upland grasses. The wetland extends from Blackwater Bayou approximately 350 feet to the west before being interrupted by residential development. The canopy consists largely of water oak, sweetgum, sycamore, and Chinese tallow with Shumard oak, willow oak (*Quercus phellos*), and water hickory (*Carya aquatica*) also present. In addition to those canopy species, the subcanopy contains red maple, black willow (*Salix nigra*), loblolly pine, sugarberry, and American hornbeam (*Carpinus caroliniana*). The shrub layer is dominated by small trees of species listed previously, and deciduous hollies including gallberry (*Ilex coriacea*), possumhaw (*Ilex decidua*), and inkberry (*Ilex glabra*) with wax myrtle (*Morella cerifera*)

also present. Ground cover is sparse and sporadic with only a few communities of soft rush (*Juncus effusus*), switchgrass, cutgrass (*Leersia* spp.), maidencane, and sedges (*Carex* spp.) occupying areas where sunlight reaches the forest floor.

For the forested wetlands on both banks, primary and secondary indicators of hydrology include moss trim lines, drainage patterns, crayfish burrows, surface water, saturated soils, and water-stained leaves. Oxidized rhizospheres were often encountered on living roots. The depth to water table was anywhere from 8-14 inches. Soils were typically silt loams, and soil color was often 10YR 4/1 or 10YR 5/1 with 10YR 6/8 or 7.5YR 5/8 redox concentrations.

Wetland 3

Wetland 3 is a Palustrine Forested Wetland located north of Hooper Road opposite of Tanglewood Drive. The wetland is bounded by a residential drainage ditch to the west and a roadside ditch alongside Hooper Road to the south. A 15-foot wide, blackberry-dominated berm/utility easement separates Wetland 3 from the roadside ditch that runs parallel to Hooper Road. To the east, the wetland transitions to an upland pine-hardwood mixed forest. Spruce and shortleaf pines, winged elm, multiflora rose (*Rosa multiflora*), and thistle tend to mark the upland boundary. Along Hooper Road, this mixed forest has been previously-disturbed and exists as a vacant field dominated by early-successional species.

The canopy of Wetland 3 consists of water oak, Shumard oak, overcup oak (*Quercus lyrata*), black willow, and honey locust (*Gleditsia triacanthos*) with American elm and red maple present in the understory. Along the wetland edges, Chinese tallow becomes dominant in the canopy with sweetgum dominant in the subcanopy. Throughout the wetland, hollies such as inkberry and possumhaw and wax myrtle are common in the shrub layer. Ground cover is sparse with only a few rushes and sedges occupying areas where sunlight reaches the forest floor. Primary and secondary indicators of hydrology include moss trim lines, crayfish burrows, standing water, saturated soils, and water-stained leaves. The depth to water table was 14 inches. Soils are typically 10YR 4/1 with 10YR 6/8 redox concentrations.

Additional information on Wetland 3 can be found in the USACE Wetland Determination Plot 2 ("Wet Plot 2") field data form provided in **Appendix C**.

Wetland 4

Wetland 4 is a Palustrine Forested Wetland located north of Hooper Road, approximately 650 feet west of Lansdowne Road. It is bounded by a residential drainage ditch to the east, which drains the adjacent Tanglewood Apartments complex, and a roadside ditch along Hooper Road to the south. The open field to the west possesses non-hydric soils (i.e., 10YR 5/3) and is upland. The same is true of the utility easement that largely separates the forested wetland from the roadside ditch wetland. Only the 4-foot wide drainage ditch running north-to-south behind the apartment complex connects the two wetlands. The drainage ditch ponds at a double-barrel culvert at Hooper Road. It is not connected to the south side of Hooper Road due to improper culvert installation resulting in a one-foot drop from the pipe to the water's surface.

Within Wetland 4, primary and secondary indicators of hydrology include drainage patterns, crayfish burrows, surface water, saturated soils, and water-stained leaves. Oxidized rhizospheres were often encountered on living roots. The depth to water table was anywhere from 6-12 inches.

Wetland 4 is dominated by water oak and Chinese tallow in the canopy with American elm and hollies in the understory. Sweetgum, mockernut hickory (*Carya tomentosa*), purpletop vervain (*Verbena incompta*), peppervine, and trumpet creeper are also present. Loblolly pine, turkey oak (*Quercus laevis*), giant ragweed (*Ambrosia trifida*), and blackberry are present along the upland-wetland boundary. Along the roadside ditch portion of Wetland 4, black willow is dominant in the canopy with green bulrush (*Scirpus atrovirens*) dominant in the ground layer. The bulrush continues to the west along a 10-15 foot wide ditch before terminating at a restaurant driveway. Aquatic fauna including Gulf Coast toad, American bullfrog, mosquitofish, and eastern mud turtle were readily observed.

Wetland 5

Wetland 5 is a Palustrine Forested Wetland located south of Hooper Road, approximately 500 feet east of Blackwater Bayou. It is bounded on the east by a small, 3-foot wide and 6”-deep ditch draining residential properties. The wetland consists not only of bottomland hardwoods, but also a roadside, emergent wetland that includes a ditch that parallels Hooper Road. The emergent wetland is connected to the forested wetland by the drainage ditch to the east. For the most part, the emergent wetland is separated from the forested wetland by a 10-foot wide upland berm consisting largely of mimosa (*Albizia julibrissin*) trees.

The forested wetland consists of several tree species including overcup oak, sweetgum, water oak, laurel oak (*Quercus laurifolia*), Chinese tallow, and American elm. Hollies are dominant in the shrub layer with peppervine, trumpet creeper, and a few sedges present in the vine and ground layers. The ground layer is very sparse due to the coverage provided by a dense canopy and subcanopy. The roadside ditch wetland consists largely of knotweed (*Polygonum* spp.) and bulltongue (*Sagittaria lancifolia*) with elderberry (*Sambucus nigra* spp. *canadensis*) and golden tickseed (*Coreopsis tinctoria*) on the wetland fringe. Indicators of wetland hydrology include standing water, saturated soils, drainage patterns, and water-stained leaves. Soils consist of a reduced matrix (10YR 4/1) with orange redox concentrations (10YR 6/8).

C.2 Emergent Wetlands with Persistent Vegetation (PEM1)

Emergent Wetlands with Persistent Vegetation (PEM1) are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years and is usually dominated by perennial plants. Persistent Emergent Wetlands are dominated by species that normally remain standing at least until the beginning of the next growing season (Cowardin et al, 1979).

The majority of emergent herbaceous wetland systems along the project corridor are typically associated with previously-disturbed vacant fields, ditches, and swales. The establishment of woody vegetation is often prevented by active land management such as routine mowing of the road right-of-way. However, some pockets of emergent wetlands are interspersed within forested wetlands, particularly in stream floodplains near culverts and along utility easements. Common wetland vegetation includes asters (*Aster* spp.), soft rush, switchgrass, blunt spikerush (*Eleocharis obtusa*), broadleaf cattail (*Typha latifolia*), purpletop vervain, maidencane, umbrella sedge (*Cyperus strigosus*), beaksedge (*Rhynchospora corniculata*), grassleaf rush (*Juncus marginatus*), green bulrush, bulltongue, Virginia chain fern, milkweed, and other wetland sedges, rushes, and grasses. Blackberry, giant ragweed, goldenrod, and yellow foxtail (*Setaria pumila*) are common in adjacent drier areas.

The following are descriptions of each emergent wetland located within the project area:

Wetland 1

Wetland 1 is a Palustrine Emergent Wetland located south of Hooper Road, approximately 500 feet west of Shoe Creek Drive. The wetland is located in a previously-disturbed, vacant lot. The old asphalt access road and cul-de-sac still exists in a degraded condition and bisects the wetland in the north-south direction. An upland "island" also exists in the middle of the wetland, and likely marks where a former building once stood. Upland areas are generally dominated by thistles, goldenrods, panicgrass, and grassleaf rush, and possess non-hydric soils (10YR 4/3).

Wetland 1 has unique microtopography, characterized by 6"-wide shallow tracks and ditches that run perpendicular to Hooper Road. These features were observed to hold standing water prior to the storm events encountered later in the week, and provide suitable conditions that enable the growth of obligate wetland plants. Wetland 1 is also connected to a roadside ditch that parallels Hooper Road. This ditch possesses wetland hydrology, hydrophytic vegetation, and hydric soils; therefore, it has been included within the boundaries of Wetland 1. The roadside ditch also appears to be relatively permanent given the presence of aquatic organisms (i.e., fish, frogs, and crayfish).

Wetland 1 consists of almost entirely herbaceous plants, including milkweed, lurid sedge, yellowfruit sedge (*Carex annectens*), blue flag iris, purpletop vervain, blunt spikerush, and grassleaf rush. While trees are largely absent, one large water oak is located in the western corner of Wetland 1 and a few small black willows are also present.

Wetland 2

Wetland 2 is a Palustrine Emergent Wetland located south of Hooper Road in the vacant field adjacent to and east of Lovett Road. Dominant vegetation on the east side of Wetland 2 consists of broadleaf cattail and blunt spikerush. The western side of Wetland 2 becomes somewhat drier with umbrella sedge, grassleaf rush, erect centella (*Centella erecta*), panicgrass, goldenrod, milkweed, and blackberry becoming more common. Wetland 2 becomes forested approximately 200 feet south of Hooper Road with Chinese tallow, black willow, American sycamore, and water oak present as dominant canopy species. To the west of Wetland 2, broomsedges (*Andropogon* spp.) and blackberry mark the upland boundary.

Additional information on Wetland 2 can be found in the USACE Wetland Determination Plot 2 ("Wet Plot 1") field data form provided in **Appendix C**.

Wetland 6

Wetland 6 is a Palustrine Emergent Wetland located at the southeast corner of Blackwater Road and Hooper Road. Water to this wetland is largely supplied by stormwater conveyed through a double-barrel culvert that drains grass swales on the opposite (northern) side of Hooper Road. Farther to the south, the emergent wetland transitions to moist flatwoods. The flatwoods are not considered forested wetlands due to lack of hydrology, but likely transition to forested wetlands to the south, outside of the project area. A 20-foot wide upland berm, consisting largely of blackberry, separates Wetland 6 from the flatwoods.

Wetland 6 consists largely of broadleaf cattail, alligator weed (*Alternanthera philoxeroides*), bulltongue, sedges, switchgrass, green bulrush, blunt spikerush, and Virginia chain fern. Some small saplings and shrubs exist on the southern side of Wetland 6 consisting largely of wax myrtle, sweetgum, and Chinese tallow. Field investigations largely determined that Wetland 6 is isolated;

however, a hydrologic connection to jurisdictional waters may occur outside of the area of investigation.

As noted previously, the majority of forested wetlands and streams within the project area also contain small areas of emergent wetland. These areas of emergent wetlands are often due to human alteration that resulted in the removal of woody vegetation. Emergent wetlands can be found along utility easements, roadsides, and other clearings within larger stream and wetland complexes.

C.3 Roadside Wet Ditches (PEM1)

The project corridor includes roadside ditches that parallel Hooper Road along its entire route. Numerous roadside ditches and swales are present within the environmental boundary, the majority of which flow ephemerally during storm events and collect drainage water between storms. Some ditches likely contain standing water throughout much of the year. Ditches within the project corridor are largely shallow and vegetated and are isolated (i.e., do not connect to jurisdictional waters). However, several met all three wetland criteria and possessed a surface water connection to jurisdictional waters. For the purpose of wetland permitting, only wet ditches possessing all three wetland indicators and a hydrologic connection to waters of the United States were considered jurisdictional and would require a permit.

Roadside ditches that were delineated as wetlands include those associated with Stream 2, Stream 3, Stream 5, and Wetland 4 (as illustrated in **Appendix A**). Roadside wetland ditches within the project area possess characteristics of Palustrine Emergent Wetlands (PEM). They are dominated by herbaceous species include sedges (*Carex* spp.), rushes (*Juncus* spp.), and cattails with some small trees (e.g., black willow, sweetgum, and American elm) infrequently present.

While ditches were delineated in the field based on hydric soil, hydrophytic vegetation, and hydrologic criteria in accordance with the USACE Manual and Regional supplement, jurisdictional status of these drainage features may be subject to verification with USACE during the permitting process.

D. Streams

A total of eight perennial channels transect the project corridor between Blackwater Road and Sullivan Road. However, the majority of these channels have been highly modified; largely excavated to drain properties for residential and commercial development and for stormwater conveyance. These channels are relatively easy to identify because they are straight with few meanders and are often located alongside roads or property boundaries. Most of these systems are narrow (5-10 feet across) and run perpendicular to Hooper Road. Where they cross the roadway, it is often via small circular or box culverts. Several smaller channels running largely parallel to Hooper Road are also present within the project area. Due to their morphology, hydrology, and anthropogenic origins, these channels have been characterized as wet ditches and are discussed in Section C.6.

Due to the extensive modification of the perennial channels, it was often difficult to determine if they are streams or artificial drainage ditches. Determinations between the two types were made following completion of the field work using field observations, aerial photography, and USGS topographic maps and National Hydrography Dataset (NHD). All eight perennial channels within the project corridor were determined to possess natural stream characteristics. Within the project area, streams generally flow perpendicular to Hooper Road, eventually draining into Blackwater Bayou, a large tributary of the Comite River. Representative photographs of each stream are provided in **Appendix B**.

D.1 Stream 1

Stream 1 is the easternmost un-named perennial stream within the project corridor, and is located between Lazy Lake Drive and Sullivan Road. The stream has been extensively excavated and channelized. The Stream 1 crossing of Hooper Road appears to have been re-routed, as the stream parallels the north side of Hooper Road for approximately 100 feet through a system of large, circular culverts. The current crossing consists of four box culverts; however, base flow only utilizes two of the four. While the stream has been straightened within the project area, it does possess some natural sinuosity to the south of Hooper Road.

The stream channel is approximately 10 feet wide with a wetted with of 4 feet and an average water depth of 0.5 feet. Flow within the channel is largely stagnant, with water moving slowly to the south. However, eroded banks and significant sediment deposition provide evidence that the stream carries significant volume following storm events. Vegetation within the stream channel largely consists of knotweed and maidencane. Attached and floating green algae are also present. The riparian area and stream banks are mowed to the top of bank, with mowing extending down within the channel in several areas. Crayfish burrows are extremely common along stream banks. Other observed wildlife included mosquitofish, turtles, tadpoles, and a cottonmouth.

D.2 Stream 2

Stream 2 is an un-named perennial stream located approximately 575 feet west of Lazy Lake Drive. Typical of streams within the project corridor, Stream 2 has been extensively excavated and channelized. Channel widths average approximately 6 feet with an average wetted width of 2.5 feet. Stream 2 crosses Hooper Road via a single box culvert. Flows are largely stagnant, but following storm events, the stream flows north-to-south, eventually converging with Stream 1 to the south of the project corridor. The stream system is flashy, with infrequent, high flows resulting in severe

erosion, particularly south of Hooper Road. Almost no floodplain is present and the channel is moderately incised.

Vegetation within the stream channel largely consists of duckweed (*Lemna* spp.), American bur-reed (*Sparganium americanum*), and bulltongue, with sedges and grasses also present. In places, herbaceous vegetation completely chokes the stream channel. Due to the presence of stagnant water, floating green algae is present throughout. Vegetation is mowed to the top of bank, and the riparian area is devoid of large trees save for a few large water oaks on the south side of Hooper Road. Crayfish burrows are extremely common along stream banks. Other observed wildlife included southern leopard frog, banded water snake, and mosquitofish.

A system of wet roadside ditches flows into Stream 2. On the north side of Hooper Road, these ditches begin at Shoe Creek Drive and flow parallel to Hooper Road to the east approximately 785 feet before reaching Stream 2. To the south of Hooper Road, a wet roadside ditch begins at a residential driveway and flows approximately 300 feet west before crossing Hooper Road via a small, circular culvert and connecting to the north ditch. The culvert crossing is located approximately 50 feet east of Shoe Creek Drive. These wet ditches are approximately 3 feet wide and contain standing water or saturated soils. They are largely herbaceous and are regularly mowed. They possess wetland hydrology, hydric soils, and hydrophytic vegetation and are connected to Stream 2. Therefore, they have been delineated as emergent wetlands (PEM1) associated with Stream 2.

D.3 Stream 3

Stream 3 is an un-named perennial stream located approximately 1,400 feet west of Shoe Creek Drive. It begins as a drainage channel flowing north-to-south perpendicular to Hooper Road. As the channel nears the roadbed, it turns west and runs parallel to Hooper Road for approximately 625 feet. Approximately 100 feet east of its Hooper Road crossing, the channel begins to take on characteristics of a natural stream channel, including baseflow, alluvial deposits, channel sinuosity, and in-channel structure (e.g., riffle-pool). It is at this point that it is classified as perennial Stream 3. Stream 3 crosses Hooper Road via a single box culvert. North of Hooper Road, the stream takes a sharp turn south prior to the crossing and continues to flow perpendicular to the road on the south side of the crossing. Stream 3 eventually flows into a pond located to the south of the project corridor.

The stream channel is approximately 12 feet wide with a wetted width of one foot. Flow within the channel is largely stagnant, with water moving slowly to the south. However, eroded banks and significant sediment deposition, particularly to the south of Hooper Road, provide evidence that the stream carries significant volume following storm events. Little vegetation and active scouring is present on the south side of Hooper Road, and severe erosion threatens the AA Mini Storage parking lot located on the stream's left bank.

Stream 3 to the north of Hooper Road is maintained but well vegetated; whereas, the stream to the south of Hooper Road is largely devoid of any vegetation. Vegetation within the stream channel and within the riparian area consists largely of herbaceous species including purpletop vervain, blunt spikerush, and green bulrush. Blackberry is common at the top of bank, and American elm and red maple saplings are scattered throughout. Crayfish burrows are extremely common along stream banks. Other observed wildlife included bluegill, snapping turtle, common garter snake, glossy crayfish snake, northern cricket frog, northern mockingbird, tufted titmouse, northern rough-winged swallow, common grackle, and blue jay.

D.4 Stream 4

Stream 4 is an un-named perennial stream located approximately 1,125 feet east of Joor Road. It flows slowly from north-to-south through the project corridor, eventually converging with Stream 1 approximately 1-mile south of Hooper Road. The stream channel is 10 feet wide with a wetted width of 2 feet. The channel has been straightened and channelized, and crosses Hooper Road at a perpendicular angle. The crossing is a triple-barrel culvert; however, only two barrels appear to be actively conveying the stream. While banks on both sides of Hooper Road are largely un-vegetated, erosion is minor. This suggests that the stream system is not subject to the extreme volume fluctuations afflicting other streams in the project corridor.

Vegetation within the stream channel has been significantly reduced by frequent mowing. Stream banks are largely devoid of vegetation with evidence suggesting historical spraying and removal. To the north of Hooper Road, mowing and vegetation removal has occurred down to the channel. No woody vegetation is present and the remaining vegetation consists of cropped turf grasses and knotweed. To the south of Hooper Road, the banks are un-vegetated and mowing occurs to the top of bank. Large trees, spaced far apart, remain within the riparian area and include laurel oak, sweetgum, black gum (*Nyssa sylvatica*), and shortleaf pine. On both sides of Hooper Road, the channel contains attached and floating green algae. Evidence of aquatic organisms is plentiful and crayfish burrows are common along stream banks. Other observed wildlife included northern cardinal, American robin, red-shouldered hawk, and European starling.

D.5 Stream 5

Stream 5 is an un-named perennial stream located at Recreation Boulevard at the entrance to BREC Central Community Sports Park. It initially flows east-to-west for approximately 350 feet before turning to the south. This initial east-west segment parallels Hooper Road and is bisected by Recreation Boulevard, which the stream crosses via a triple-barrel culvert. Once the stream turns south, it flows through the Sports Park and empties into several ponds to the south of the project corridor.

The stream channel is 15 feet wide with a wetted width of 6 feet. The average water depth is one foot and the stream flows very slowly down gradient. The stream channel contains very little open water, with dense stands of knotweed present within the channel and other emergents, including soft rush, blunt spikerush, green bulrush, and umbrella sedge, growing at the margins. At the top of bank, vegetation is dominated by blackberry, multiflora rose, goldenrod, and broomsedge. Vegetation within the riparian area is mowed to top of bank; however, vegetation remains undisturbed on stream banks and small floodplain terraces. Crayfish burrows are plentiful on stream banks, and observed wildlife included Mississippi kite, Carolina chickadee, mourning dove, red-winged blackbird, eastern meadowlark, great egret, barred owl, and white-footed mouse.

Stream 5 obtains most of its flow from wet roadside ditches that parallel Hooper Road to the north and south. The wet ditch to the north connects to Stream 5 via a single box culvert crossing Hooper Road. The wet ditch to the south has its own feeder ditch, which flows in from the south and possesses thick stands of broadleaf cattail. These wet roadside ditches are 3 feet wide and contain standing water or saturated soils. They are largely herbaceous and are regularly mowed. They possess wetland hydrology, hydric soils, and hydrophytic vegetation and are connected to Stream 5. Therefore, they have been delineated as emergent wetlands (PEM1) associated with Stream 5.

D.6 Stream 6

Stream 6 is an un-named perennial stream located approximately 475 feet east of Carmel Drive. It flows slowly from north-to-south through the project corridor, eventually turning sharply to the west and converging with Stream 8 – Blackwater Bayou approximately 0.1-miles north of Hooper Road. The stream channel is 10 feet wide with a wetted width of 6 feet. Average water depth is 2 feet with deep pools reaching almost 4 feet. The channel has been straightened and channelized, but retains more sinuosity than other streams within the project corridor. Stream 6 crosses Hooper Road via a large, double box culvert, which was undergoing repairs at the time of the assessment. On the north side of Hooper Road, the channel is incised and possesses nearly vertical four-foot tall banks. To the south of Hooper Road, the channel widens and bank heights are less steep. Minor erosion is present on outside channel bends.

Vegetation along Stream 6 differs dramatically between the north and south sides of Hooper Road. To the south of Hooper Road, vegetation is frequently maintained and consists largely of turf grasses mowed to the top of bank. A few large elm, sweetgum, and water oak, spaced far apart, remain along the top of bank, but are largely not close enough to the channel to provide much shading. To the north of Hooper Road, Stream 6 possesses densely vegetated stream banks and is largely shaded. These riparian forests include a bottomland hardwood, forested wetland along the eastern right bank and a dry, mixed forest along the western left bank. The dry, mixed forest extends approximately 50 feet to the west of the stream channel before transitioning to a maintained field adjacent to Carmel Drive. The mixed forested contains red oaks, water oak, sweetgum, shortleaf pine, and Chinese tallow in the canopy with American elm, sugarberry, Chinese privet (*Ligustrum sinense*), and hollies also present in the subcanopy. The species composition of the mixed forest is similar to that of the bottomland hardwood forest on the eastern bank. However, the mixed forest possesses upland pines, and lacks the hydrology and hydric soils present within the bottomland hardwood forest.

Wildlife was abundant along Stream 6 and within its riparian forests. Several reptiles and amphibians were observed including spring peeper, cottonmouth, eastern hog-nosed snake, ring-necked snake, river cooter, and eastern mud turtle. Mammals were identified using tracks or roadkill and included Virginia opossum, white-tailed deer, nine-banded armadillo, and raccoon. While most of the other streams possessed a bird community dominated by birds of open fields, the forests of Stream 6 provided habitat for white-eyed vireo, brown thrasher, and downy woodpecker. Great blue heron and red-winged blackbird were also observed. Unlike most of the other streams within the project corridor, crayfish burrows were not observed along Stream 6.

D.7 Stream 7

Stream 7 is a very small, un-named perennial stream located approximately 125 feet west of Lansdowne Road. It flows slowly from south-to-north through the project corridor before converging with Stream 6 approximately 500 feet north of Hooper Road. Historically, Stream 7 was likely an artificial drainage ditch created to drain surrounding land and convey stormwater. However, the channel now possesses characteristics of a natural stream, including baseflow, channel sinuosity, and in-channel structure (e.g., riffle-pool).

The stream channel is 4 feet wide with a wetted width of 2 feet. Stream 7 crosses Hooper Road via a double-barrel culvert. To the north of Hooper Road, the channel loses some of its definition resulting in a very narrow floodplain. This floodplain supports a riparian wetland composed largely of Chinese tallow, sweetgum, American elm, and smooth sumac (*Rhus glabra*). Blackberry and giant ragweed are dominant in the adjacent upland. To the south of Hooper Road, the channel widens and banks are

very shallow. However, the riparian area is mowed to the top of bank and the stream does not possess the narrow riparian wetland found on the north side. The riparian area is largely composed of St. Augustine grass and white clover, with a few large sweetgum trees dotting the stream bank. Observed wildlife included northern cricket frog, ring-necked snake, common musk turtle, and nine-banded armadillo.

D.8 Stream 8 – Blackwater Bayou

Stream 8 (Blackwater Bayou) is a large perennial stream located approximately 500 feet east of Shady Bluff Drive. It flows largely north-to-south and converges with the Comite River approximately 1.25 miles south of the project corridor. The stream channel is approximately 30 feet wide with a wetted width of 20 feet. Hooper Road currently crosses Blackwater Bayou using a 160-foot, four-lane bridge. Stream banks are relatively steep, but contain multiple terraces in most locations. Cement burlap bags armor the bank and extend approximately 20 feet from the bridge to the north and the south on both banks. These bags extend from the water's edge to the top of bank and contain no vegetation except for small grasses in cracks between the bags.

South of Hooper Road, there is very little vegetation on the right bank and the left bank is dominated by bamboo. The bamboo surrounds a nearby home as well and was likely planted and rapidly expanded. There is recent evidence that extensive vegetation removal has occurred on the right bank. Aerial imagery from 2013 confirms that the right bank was once forested; however, only a few large trees remained amidst a weedy field at the time of investigation. To the south of the project corridor, the forest is classified by NWI mapping as forested wetland (PFO1A). However, no hydrology or hydric soils found within project corridor to the south of Hooper Road. Soils in this area were typically light brown and contained a significant gravel-rock fragment component. North of Hooper Road, there are forested wetlands on both banks. The forested wetland is similar in species composition to Wetland 3 and the forested wetland found along Stream 6.

E. Project Impacts

In determining the potential impacts to streams and wetlands within the Hooper Road project corridor, the project's effects on the stability and quality of the streams and wetlands are evaluated. The evaluation considers the direct and indirect project impacts on streams and wetlands, particularly as it pertains to any loss such as: (1) flood control capacity, (2) shoreline anchorage potential, (3) water pollution abatement capacity, and (4) fish and wildlife habitat value. Knowing the importance the degree of the impact assists in determining the mitigation efforts necessary to minimize harm to streams and wetlands. Mitigation measures which should be considered include preservation and improvement of existing wetlands and creation of new wetlands, as discussed in **Section F**.

E.1 Direct Impacts

Due to the proximity of wetland areas to the proposed project area, direct impacts to these wetlands from proposed project activities are likely. Since the majority of wetland areas extend to the toe of slope of the existing roadway, any construction activities located outside of the existing roadway would likely require a wetlands permit from USACE. Likewise, permits would be needed for streams that intersect the proposed project area. To quantify wetland impacts, the delineated stream and wetland boundaries provided in **Appendix A** were overlaid over the project area.

Areas of potential direct project impacts to wetlands (i.e., wetland areas within the existing Hooper Road right-of-way or within the conceptual required right-of-way of one or more of the project alternatives) are provided in **Table 2**.

Table 2: Wetland Summary Table – Direct Wetland Impacts from Initial Proposed Alternatives and Selected Alternative

Wetland	Wetland Type	Cowardin Classification	Direct Project Impacts (Acres)			
			Alternative A	Alternative B	Alternative C	Alternative E (Selected Alt.)
Wetland 1	Emergent	PEM1	0.01	0.17	0.09	0.08
Wetland 2	Emergent	PEM1	0.13	0.60	0.40	0.35
Wetland 3	Forested	PFO1	0.67	0	0.26	0.18
Wetland 4	Forested	PFO1	0.30	0	0.01	0.01
Wetland 5*	Forested	PFO1	0.07	0.07	0.07	0.07
Wetland 6	Emergent	PEM1	0	0	0	0
Stream 2**	Emergent	PEM1	0.38	0.23	0.23	0.23
Stream 5**	Emergent	PEM1	0.04	0.02	0.05	0.05
Stream 6	Forested	PFO1	0.28	0	0.08	0.13
Stream 8	Forested	PFO1	0	0	0	0
		Total	1.88	1.09	1.19	1.10

*Wetland 5 is located within the existing right-of-way, but is not within the conceptual required ROWs of the proposed alternatives
**Wetlands associated with Stream 2 and Stream 5 are emergent wet ditches – USACE to determine jurisdictional status
Note: Wetland 6 and forested wetlands along Stream 8 – Blackwater Bayou are located within the area of investigation but are not impacted by the proposed project

Direct wetland impacts anticipated from the initial three proposed alternatives and the selected alternative:

- Alternative A – 1.88 acres

- Alternative B – 1.09 acres
- Alternative C – 1.19 acres
- Alternative E (selected alternative) – 1.10 acres

The lengths of potential project impacts to streams (i.e., where stream areas intersect the environmental boundary) are provided in Table 3.

Table 3: Stream Summary Table – Direct Stream Impacts from Initial Proposed Alternatives and Selected Alternative

Stream	Classification	Direct Project Impacts (Linear Feet)			
		Alternative A	Alternative B	Alternative C	Alternative E (Selected Alt.)
Stream 1	Perennial	519	287	518	502
Stream 2	Perennial	131	139	137	137
Stream 3	Perennial	199	275	237	250
Stream 4	Perennial	130	107	107	107
Stream 5	Perennial	276	715	526	526
Stream 6	Perennial	177	188	207	295
Stream 7	Perennial	130	111	131	131
Stream 8	Perennial	0	0	0	0
	Total	1,562	1,822	1,863	1,948

Note: Stream 8 – Blackwater Bayou is located within the area of investigation but is not impacted by the proposed project limits

Direct stream impacts anticipated from the initial three proposed alternatives and the selected alternative:

- Alternative A – 1,562 linear feet
- Alternative B – 1,822 linear feet
- Alternative C – 1,863 linear feet
- Alternative E (selected alternative) – 1,948 linear feet

The alternative with the fewest wetland impacts is Alternative B with 1.09 acres of impacts, followed closely by the selected alternative, Alternative E, at 1.10 acres of impacts. The alternative with the fewest stream impacts is Alternative A with 1,562 linear feet of stream impacts. The selected alternative, Alternative E has the greatest impact on streams (1,948 linear feet). When taking permitting and mitigation factors into account, Alternative B would result in the fewest combined impacts to streams and wetlands. However, during alternative evaluations, Alternative B was determined to be infeasible from a cost and constructability standpoint. Therefore, components of the three initial proposed alternatives were combined to create hybrid alternatives, including the most practicable, selected alternative, Alternative E, which minimizes wetland impacts.

The final roadway designs and construction plans are not yet finalized; therefore, the quantity of direct stream and wetland impacts may increase or decrease. If the USACE determines that the above stream and wetland features are jurisdictional, then a Section 404 permit would be required. Due to the nature of the project and its impacts, it is possible that the project would qualify for Nationwide Permit 13 – Linear Transportation Projects. Direct impacts to jurisdictional stream and wetland areas will likely require compensatory mitigation.

E.2 Indirect Impacts

All proposed Hooper Road capacity upgrades alternatives, including the selected alternative, would likely result in some indirect impacts. Indirect impacts to streams and wetlands typical of linear road widening projects include loss of habitat for wildlife, sedimentation, erosion, and noxious weed invasion. At this stage in design, indirect impacts are not quantifiable. Designs and construction plans are currently in development stages; therefore, it is not known precisely the extent of indirect impacts that would result from proposed project activities. Indirect impacts would be minimized through the implementation of a sediment and erosion control plan, stormwater management plan, and best management practices. Following construction, the planting of native vegetation in disturbed areas would further minimize indirect impacts.

F. Avoidance, Minimization & Mitigation

Impacts to streams and wetlands should be avoided if possible. If impacts cannot be avoided, all attempts should be made to minimize both permanent and temporary construction impacts to waters of the U.S. During the planning and design stages, avoidance and/or minimization efforts should be taken using the results of the field wetland delineations to select a route with the fewest wetland impacts. Avoidance is the first step in the sequencing process by which it is determined whether or not the proposed project is the least environmentally damaging practicable alternative. Avoidance may include alternative alignments or minor alterations to the project design to avoid sensitive natural areas and jurisdictional waters.

When avoidance of stream and wetland resources is not feasible, minimization efforts should be implemented to reduce impacts to aquatic resources to the extent practicable. Minimization can occur during planning and design stages, as well as during construction and implementation stages of the project. Minimization generally includes limiting the degree or magnitude of the action and effectively rectifying temporary impacts by repairing, rehabilitating, or restoring the affected environment to pre-construction or pre-disturbance conditions. For linear projects such as the Hooper Road Capacity Upgrades project, minimization is often accomplished by evaluating options which reduce the number and length of wetland and stream crossings. Minimization also includes sediment and erosion control measures, which should be implemented for any work conducted adjacent to wetlands or open waters.

Three main alternatives have been initially identified and a hybrid alternative selected, all of which seek to avoid and minimize wetland and stream impacts during design. The selected preferred alternative route offers the design flexibility to avoid streams and wetlands where they occur. The location and geometry of the adjacent wetlands should be considered when determining the exact location and construction methods of the road widening. When the design is finalized, further avoidance, minimization, and mitigation measures will be assessed, and the wetland finding will be amended, if necessary.

After maximum avoidance and minimization of project impacts has been demonstrated, coordination with USACE will occur to obtain a wetlands permit for unavoidable impacts. All USACE jurisdictional streams and wetlands will be mitigated in accordance with current USACE mitigation policies, and the conditions of the Section 404 permit. Additionally, provisions in NEPA may also require non-jurisdictional waters, wetlands, or other aquatic features to be mitigated. Any such mitigation efforts will be identified in the Environmental Assessment.

There are two types of mitigation: on-site and off-site. In some cases, mitigation can occur on-site with the creation or enhancement of wetland areas within the project corridor. The project area was evaluated for the potential to complete on-site mitigation for permanent impacts to wetlands. Most of the immediate area is not suitable for wetland mitigation because it is primarily located in upland habitat and soil. In addition, several wetlands are supplied primarily by storm water inputs, which will be permanently altered by road widening activities. Therefore, on-site mitigation would likely result in a costly and time consuming process, with no guarantee of the successful establishment of a sustainable wetland community.

Wetland impacts that cannot be mitigated on-site would require off-site compensatory mitigation. Compensatory mitigation often involves purchasing credits at a local mitigation bank. Mitigation

banking is often the preferred method to compensate for unavoidable losses to wetlands or other natural habitats caused by transportation projects, as noted in guidance and legislation including the Transportation Equity Act for the 21st Century (TEA-21), for projects that receive Federal assistance (FHWA 2003). A compensatory mitigation plan will outline suitable mitigation banks, the number of credits to be purchased, wetland type, and documentation required by USACE. Often, USACE requires the use of a mitigation bank within the watershed in which the project occurs. Therefore, one potential mitigation bank that could be used is the Ash Slough Headwaters Mitigation Bank in East Baton Rouge Parish. This mitigation bank is located in the Comite River watershed and proposes to re-establish, rehabilitate and enhance a total of 385.28 acres of bottomland hardwood forest associated with the Ash Slough.

G. Conclusion Statement

The Wetland Finding concludes that, of the three initial proposed alternatives, Alternative B would result in the fewest direct impacts to streams and wetlands. In addition to impacting fewer wetlands overall, Alternative B impacts fewer of the more valuable wetland resources (i.e., forested wetlands [PFO1]). However, during the preliminary stages of design, it was determined that this alternative was not feasible from a cost and constructability standpoints. Therefore, a combination of components of the initial alternatives into a hybrid alternative resulted in the most practicable alternative, Alternative E, which minimizes wetland impacts. The feasibility and cost of alternating the location of road widening activities to either side of the road to avoid stream and wetland impacts was evaluated and factored into the selection of the hybrid Alternative E as the preferred alignment.

Based upon the considerations described in this report, it is determined that there is no practicable alternative to the proposed construction that would avoid all impacts to wetlands. However, the selected proposed action will include all practicable measures to minimize harm to wetlands which may result from such use.

H. References

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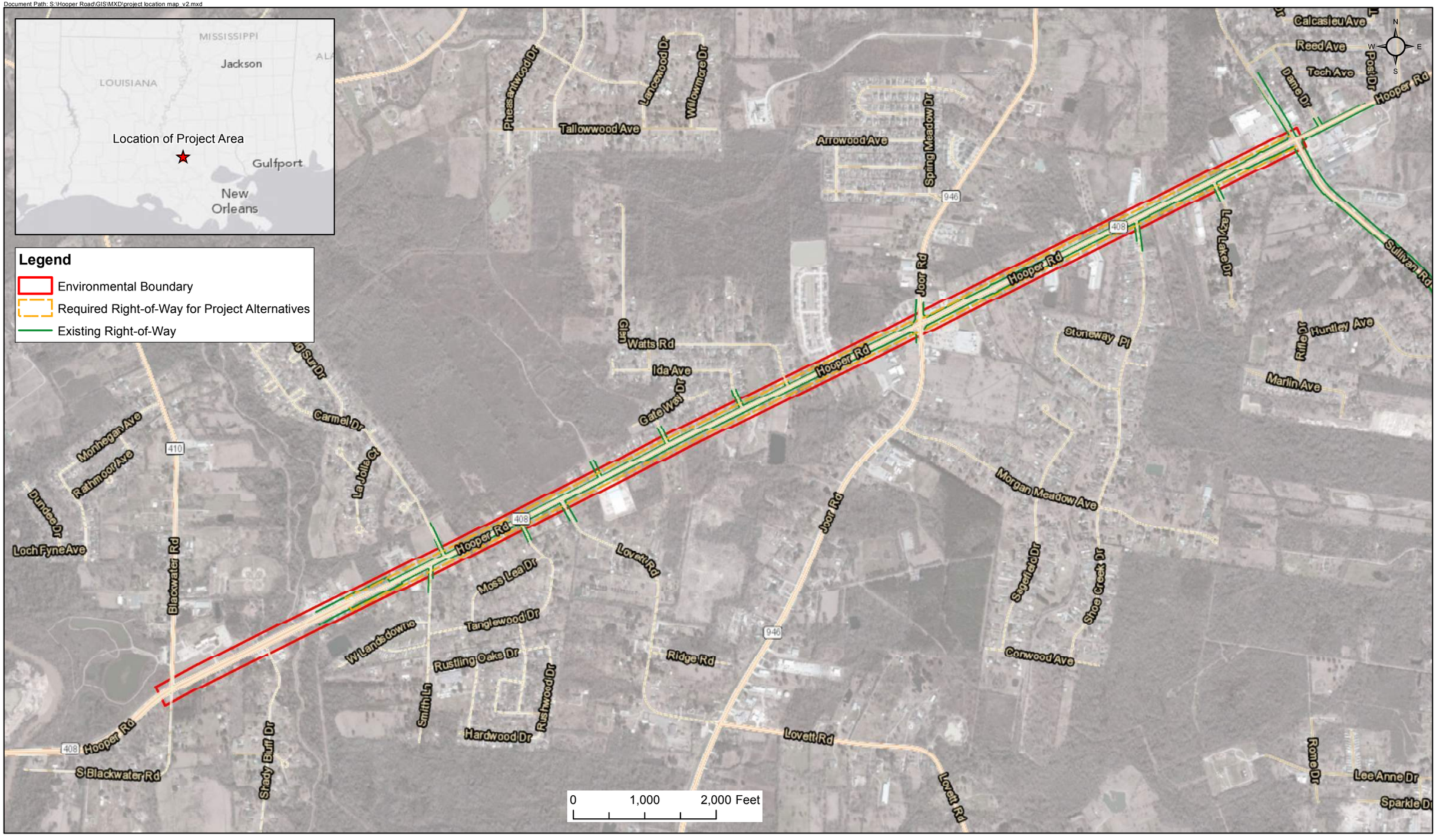
I. Figures

- Figure 1 – Project Location
- Figure 2 – USGS Topographic Map
- Figure 3 – USFWS NWI Map
- Figure 4 – NRCS Soil Survey Map

Document Path: S:\Hooper Road\GIS\MXD\project location map_v2.mxd



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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 1
Project Location Map

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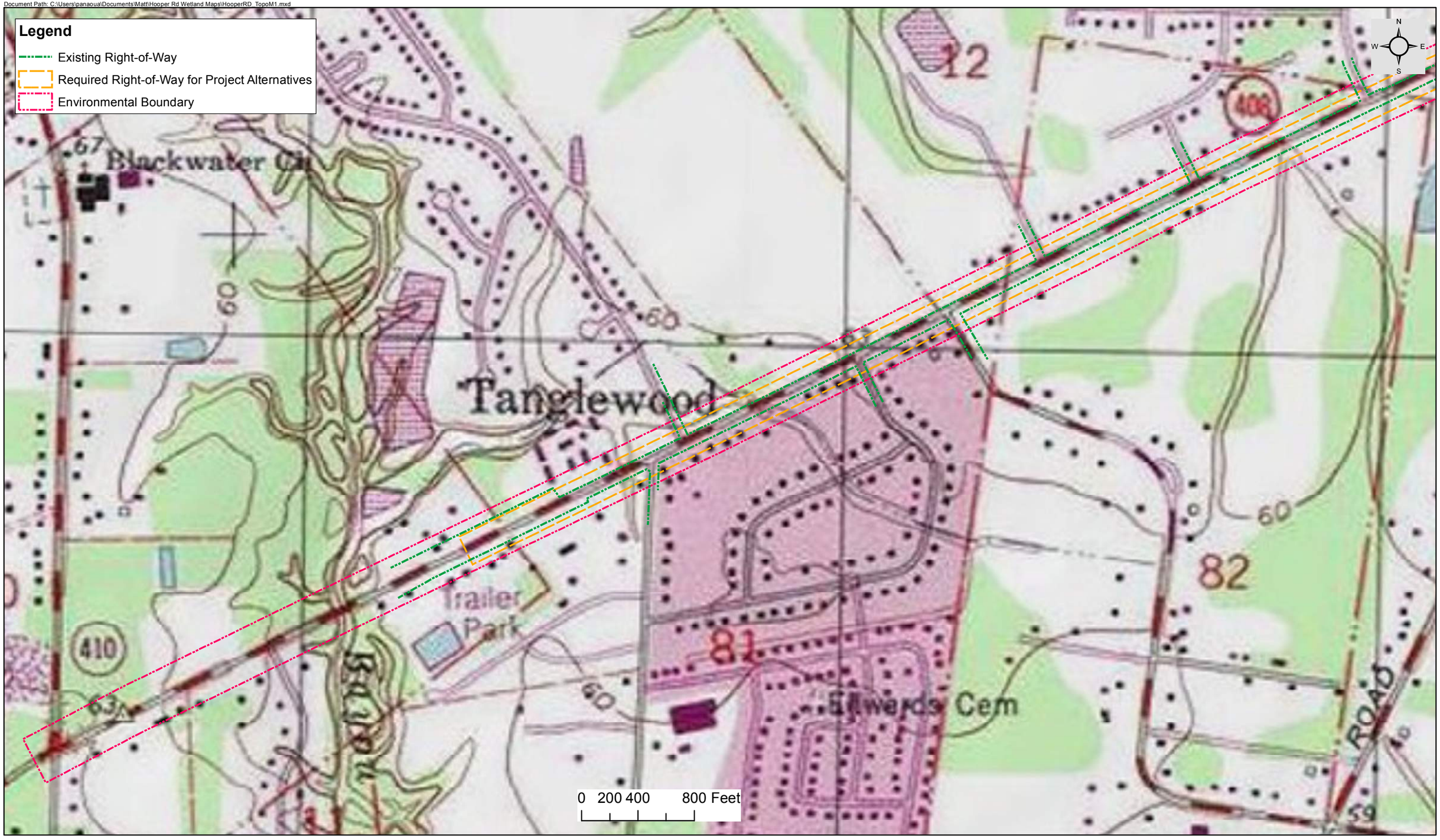

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 2
USGS Topographic Map 1

Document Path: C:\Users\panaoua\Documents\Matt\Hooper Rd Wetland Maps\HooperRD_TopoM2.mxd

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 2
USGS Topographic Map 2

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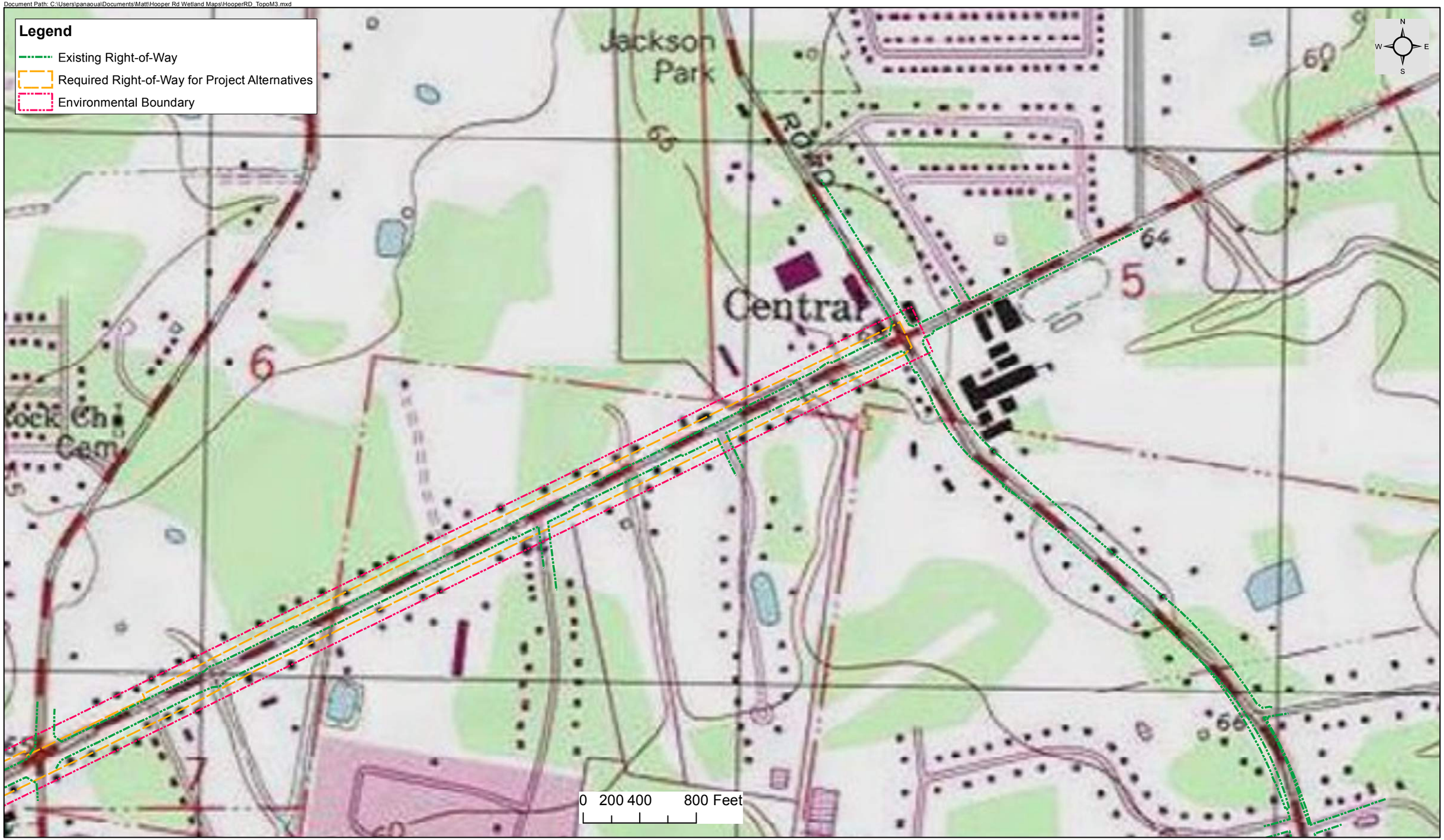

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 2
USGS Topographic Map 3

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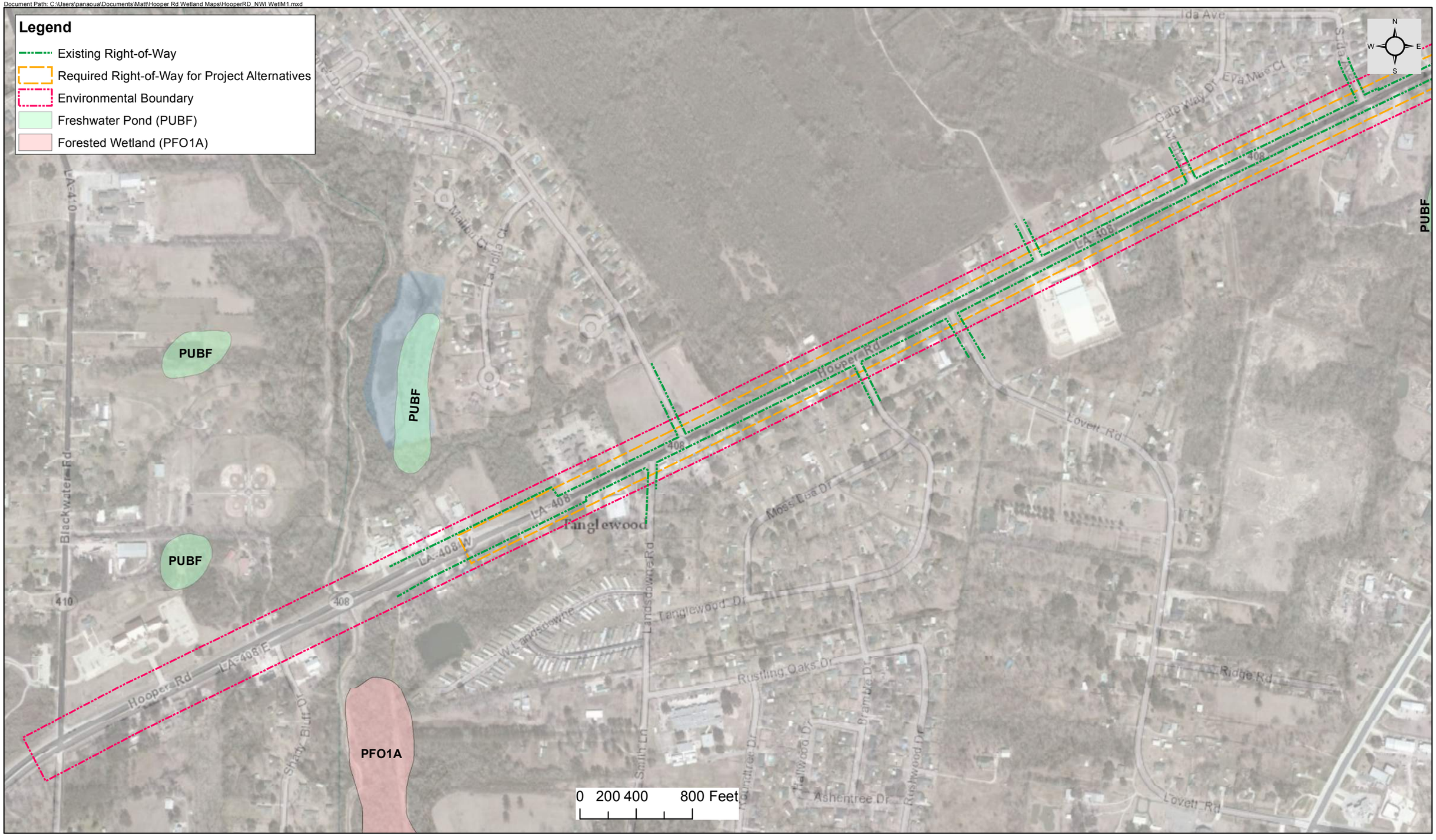

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 3
USFWS NWI Wetlands Map 1

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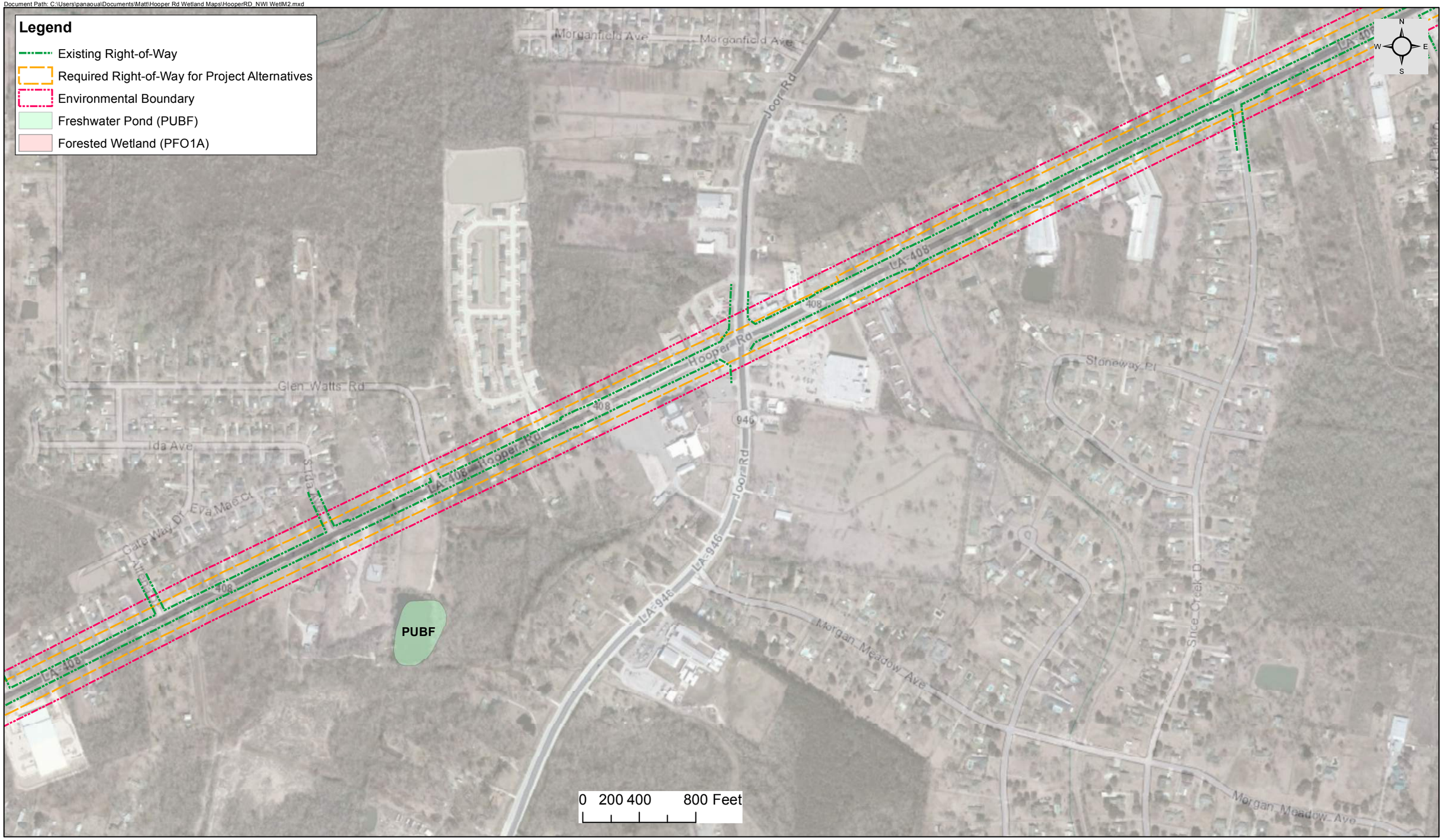

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 3
USFWS NWI Wetlands Map 2

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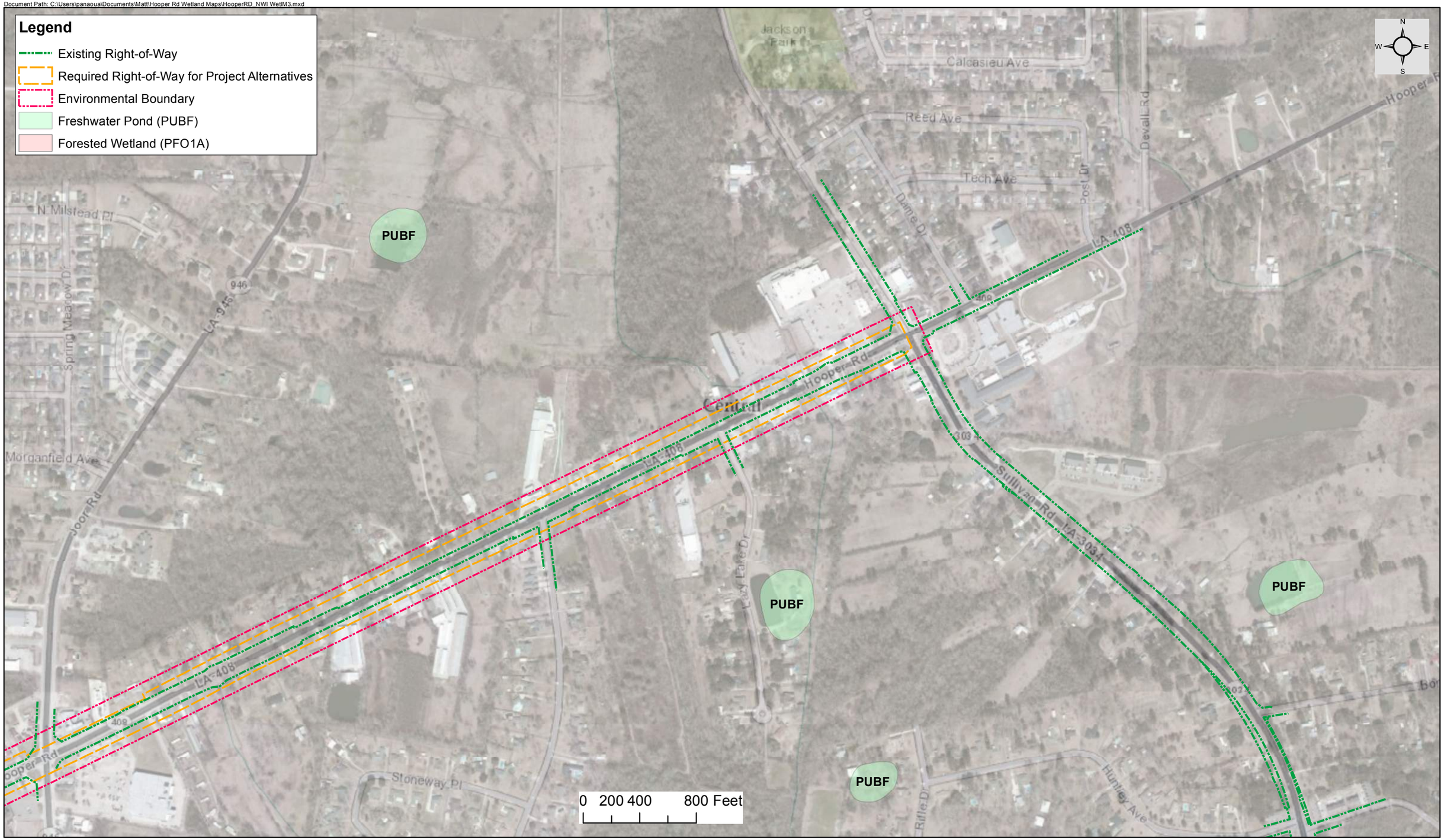

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 3
USFWS NWI Wetlands Map 3

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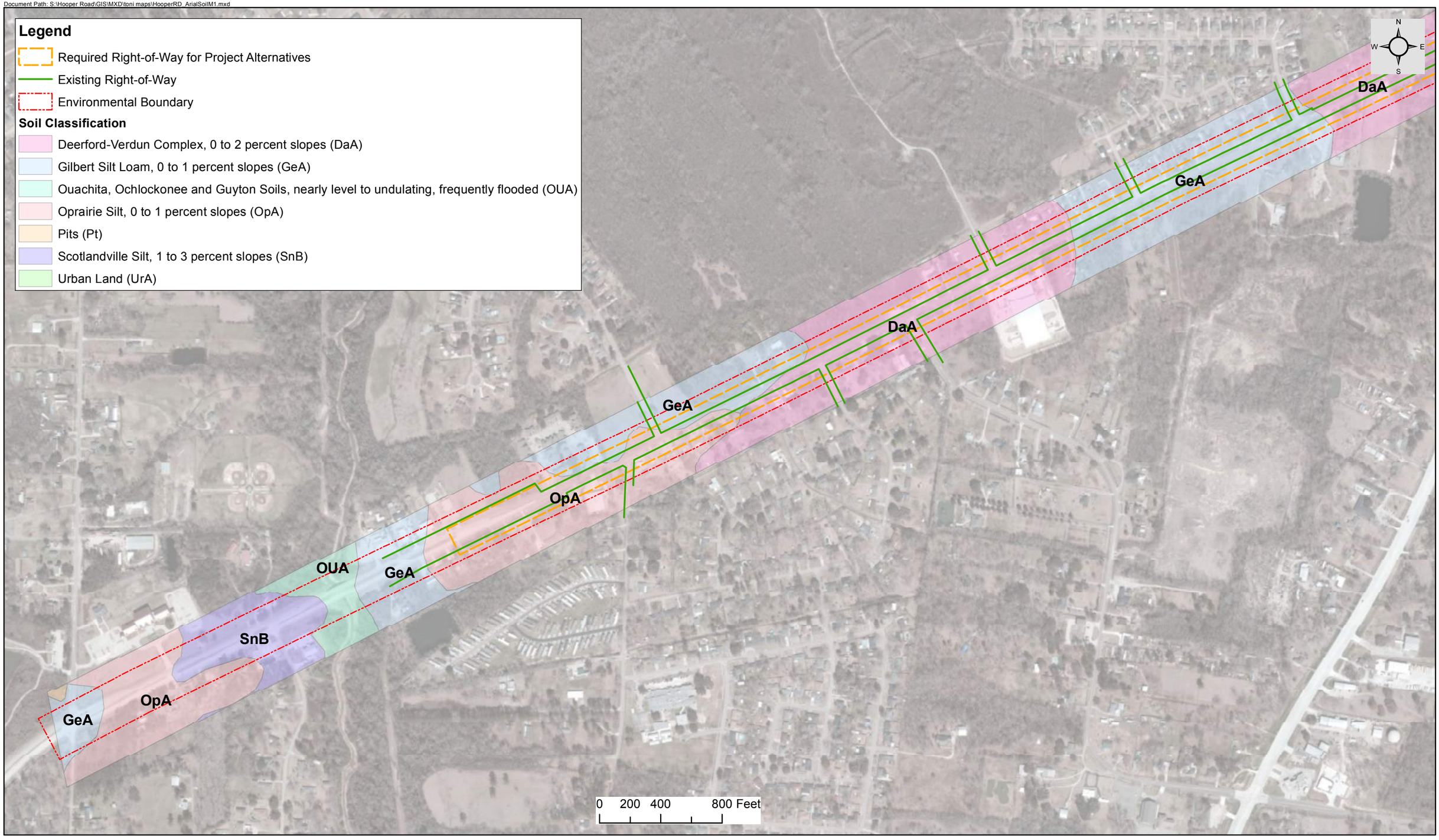

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 4
NRCS Soils Map 1

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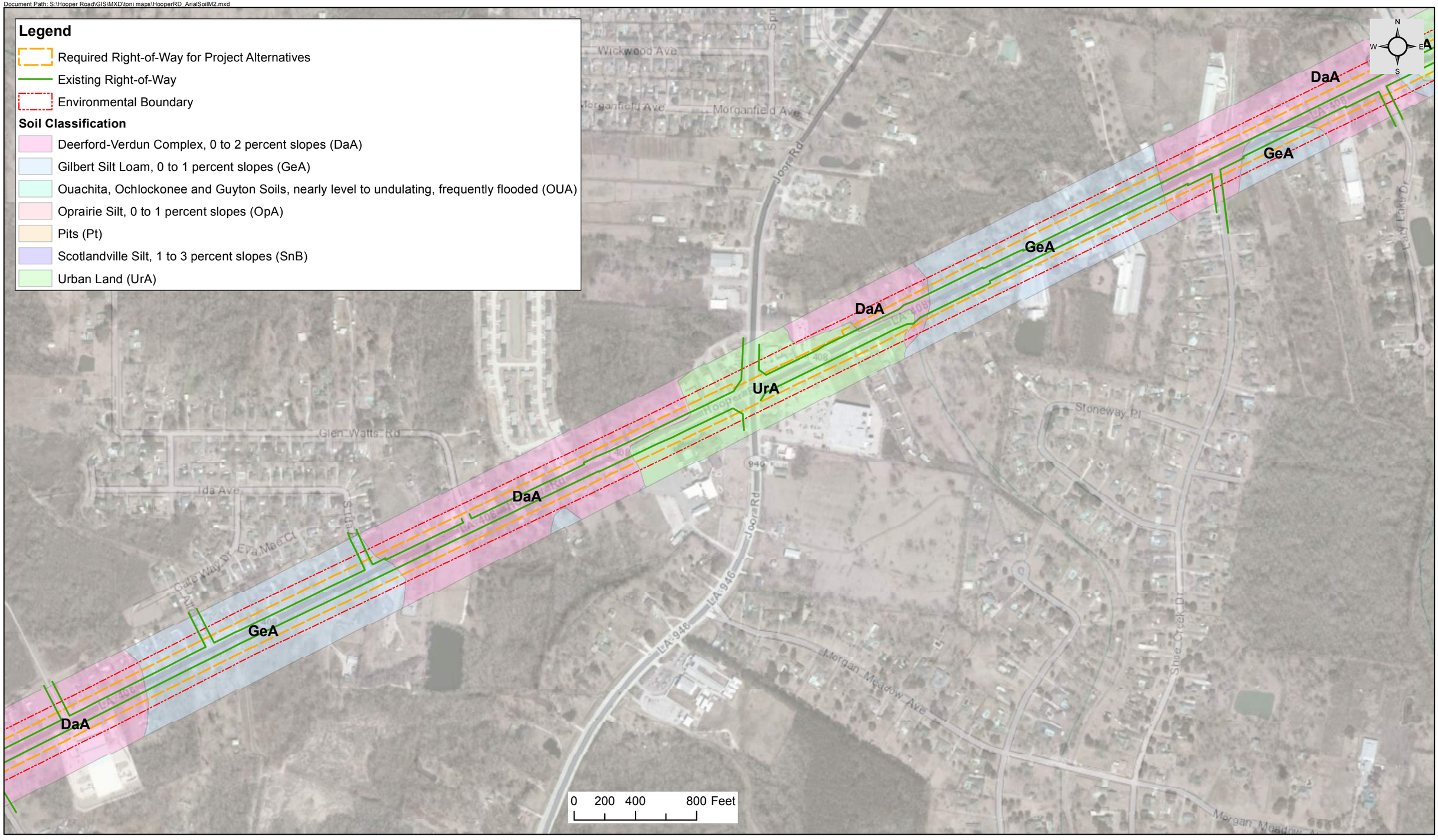

CDM Smith

Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 4
NRCS Soils Map 2

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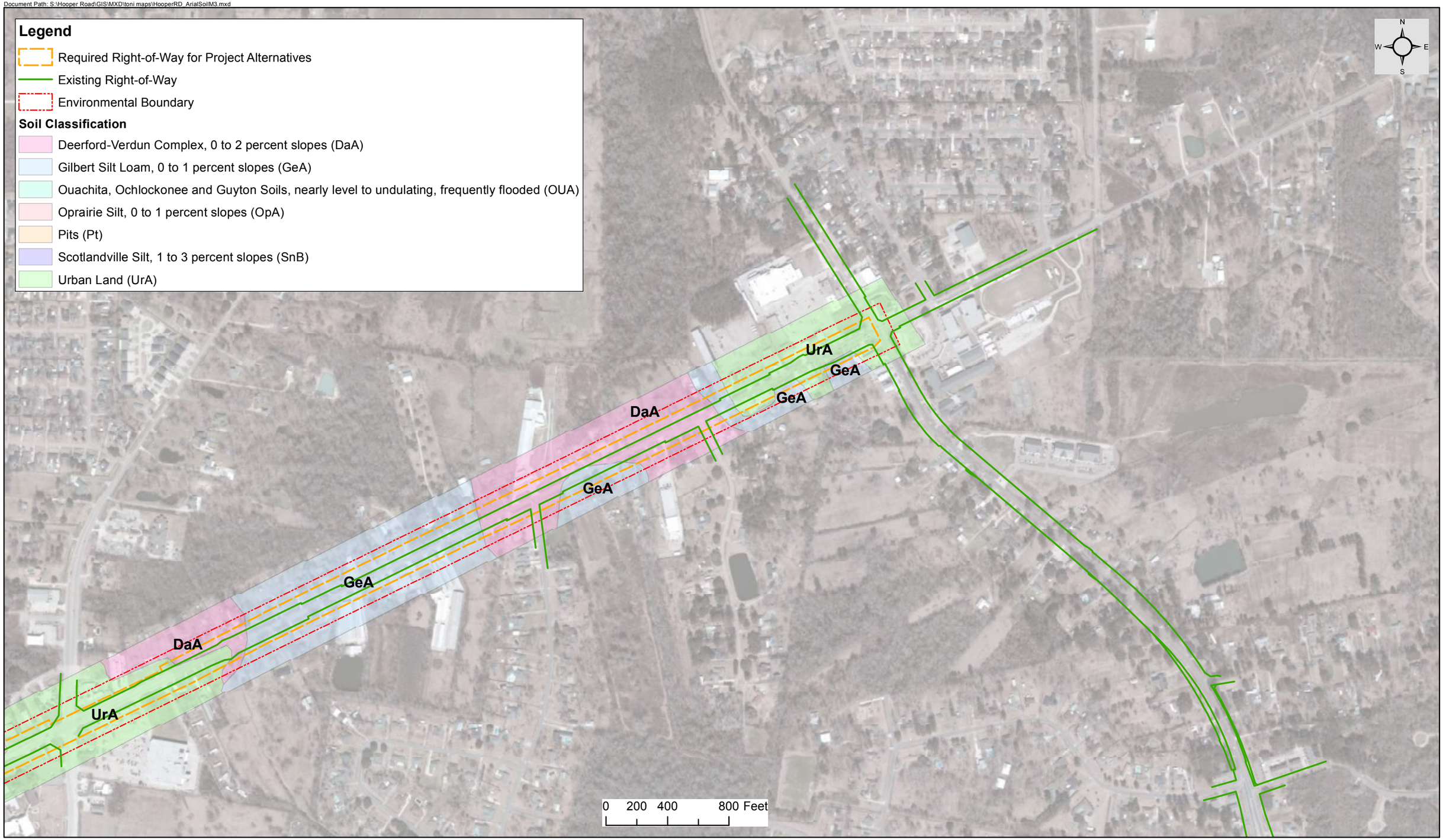

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Figure 4
NRCS Soils Map 3

Appendix A
Wetland Exhibits

Document Path: S:\Hooper Road\GIS\MXD\wetland map overview.mxd

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetlands Map - Overview

Document Path: S:\Hooper Road\GIS\MXD\wetland map 1.mxd

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 1

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 2

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CDM Smith

Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 3

Document Path: S:\Hooper Road\GIS\MXD\wetland map 4.mxd

CDM Smith

Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 4

Document Path: S:\Hooper Road\GIS\MXD\wetland map 5.mxd

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 5

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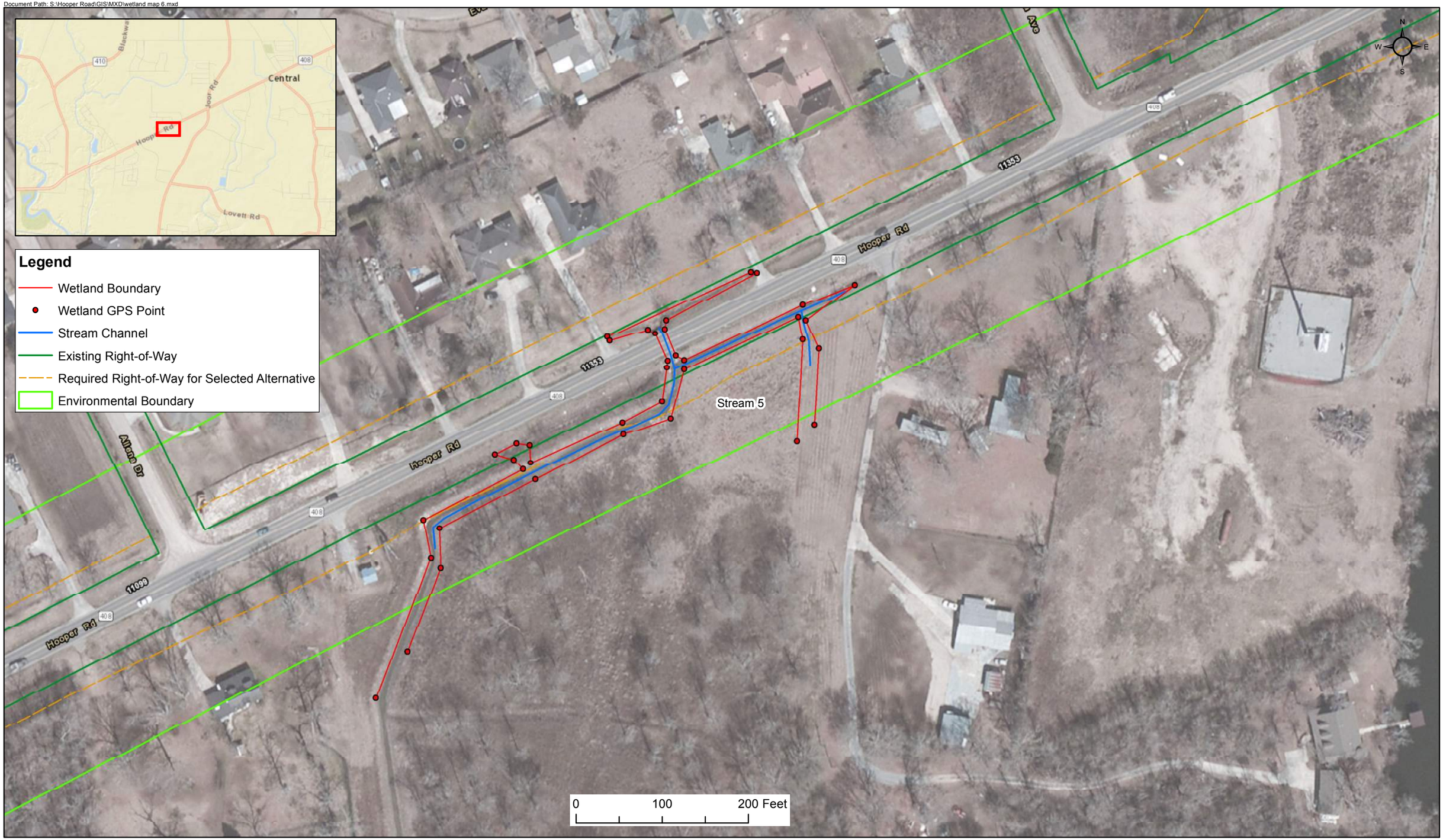

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 6

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 7

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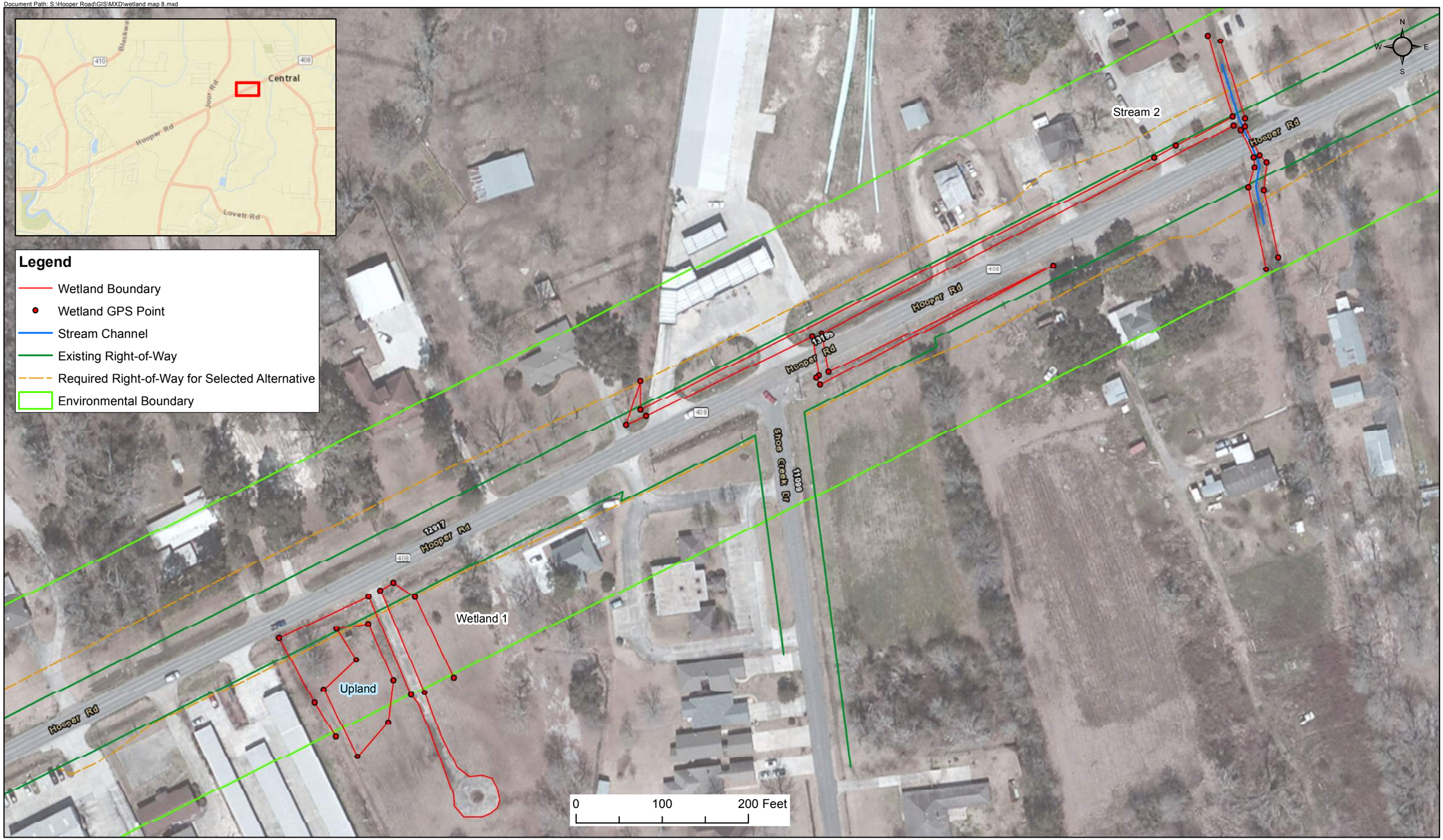

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 8

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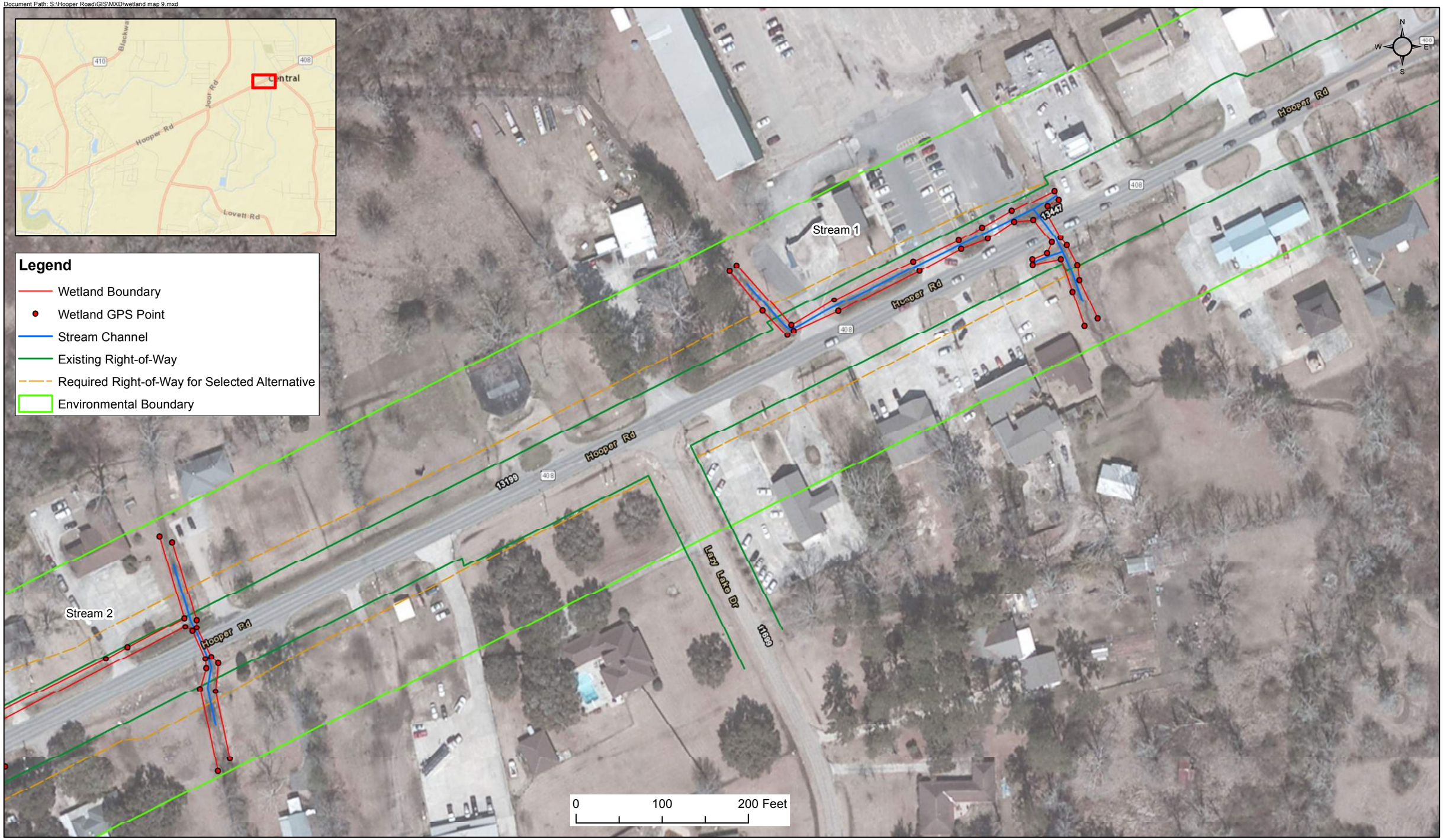

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Hooper Road (LA 408) Blackwater - Sullivan Project Area
East Baton Rouge Parish, LA

Wetland Map 9

Appendix B
Site Photographs

Appendix B

Site Photographs

Streams

Stream 1

Photo 1: North of Hooper Road looking upstream

Photo 2: North of Hooper Road upstream of box culvert crossing

Photo 3: South of Hooper Road looking downstream

Photo 4: Hooper Road crossing via box culvert – south of Hooper Road looking upstream

Stream 2

Photo 5: North of Hooper Road looking downstream at box culvert crossing

Photo 6: North of Hooper Road looking upstream

Photo 7: Wet roadside ditch north of and paralleling Hooper road prior to flowing east into Stream 2

Photo 8: South of Hooper Road looking downstream

Stream 3

Photo 9: North of Hooper Road looking downstream at double-barrel culvert crossing

Photo 10: South of Hooper Road looking downstream from road crossing

Stream 4

Photo 11: North of Hooper Road looking upstream

Photo 12: South of Hooper Road looking downstream

Stream 5

Photo 13: South of Hooper Road standing on left bank looking downstream towards BREC Central Community Sports Park

Photo 14: South of Hooper Road looking upstream at triple-barrel crossing of Recreation Blvd.

Photo 15: South of Hooper Road looking upstream at box culvert crossing of Hooper Road

Photo 16: Cattail dominated wetland located at eastern extent of Stream 5 and running perpendicular to Hooper Road

Stream 6

Photo 17: North of Hooper Road looking east at Hooper Road crossing

Photo 18: South of Hooper Road looking upstream

Photo 19: Approximately 150 feet north of Hooper Road looking upstream back towards Hooper Road crossing

Photo 20: Emergent wetland located within a maintained easement approximately 150 feet east of Stream 6 and 65 feet north of Hooper Road

Photo 21: Freshwater pond located approximately 55 feet northeast of Stream 6 Hooper Road crossing looking southeast at Hooper Road

Photo 22: Freshwater pond and forested wetland located on the right bank of Stream 6 north of Hooper Road

Stream 7

Photo 23: North of Hooper Road looking downstream

Photo 24: South of Hooper Road looking upstream

Stream 8 – Blackwater Bayou

Photo 25: North of Hooper Road at the Blackwater Bayou bridge crossing looking upstream

Photo 26: North of Hooper Road looking east at the small forested wetland on the left bank

Photo 27: South of Hooper Road at the Blackwater Bayou bridge crossing looking east

Photo 28: Underneath Blackwater Bayou bridge looking downstream

Wetlands

Wetland 1

Photo 29: View from south side of Hooper Road looking south

Photo 30: View from center of Wetland 1 looking east

Photo 31: South of Hooper Road looking west at roadside ditch portion of Wetland 1

Photo 32: Looking north at Hooper Road from abandoned driveway that bisects Wetland 1

Wetland 2

Photo 33: View from the eastern extent of Wetland 2 looking north towards Hooper Road

Photo 34: View from eastbound Hooper Road looking south at Wetland 2

Wetland 3

Photo 35: Forested wetland located north of Hooper Road across from Tanglewood Drive

Photo 36: Forested wetland located north of Hooper Road to the west of Photo 35

Photo 37: Eastern extent of Wetland 3 located north of Hooper Road and across from Lovett Road

Photo 38: View from eastern extent of Wetland 3 to the west with Hooper Road to the south and forested wetland to the north

Wetland 4

Photo 39: Eastern extent of Wetland 4 north of Hooper Road at Tanglewood Apartments

Photo 40: Ditch that runs alongside Tanglewood Apartments at eastern extent of Wetland 4

Photo 41: Roadside ditch component of Wetland 4 located north of and parallel to Hooper Road. Connected to forested wetland via the ditch in Photo 40

Photo 42: Western extent of Wetland 4 – black willows in Photo 41 can be seen in the distance

Wetland 5

Photo 43: Small ditch at the eastern extent of Wetland 5 located south of and perpendicular to Hooper Road

Photo 44: Forested wetland south of Hooper Road looking to the west

Wetland 6

Photo 45: Emergent wetland located at on the south side of the intersection of Hooper Road and Blackwater Road looking to the west

Photo 46: Western extent of Wetland 6 alongside Blackwater Road looking south

USACE Wetland Determination Plots

Wetland Plot 1 – Typical Emergent Wetland (Located in Wetland 2)

Photo 47: Center of Wetland Plot 1 looking to the north and Hooper Road

Photo 48: Center of Wetland Plot 1 looking to the west

Photo 49: Center of Wetland Plot 1 looking to the south

Photo 50: Center of Wetland Plot 1 looking to the east

Upland Plot 1 – West of Wetland 2

Photo 51: Center of Upland Plot 1 looking to the west and Lovett Road

Photo 52: Center of Upland Plot 1 looking to the north and Hooper Road

Photo 53: Center of Upland Plot 1 looking to the east

Photo 54: Center of Upland Plot 1 looking to the south

Wetland Plot 2 – Typical Forested Wetland (Located in Wetland 3)

Photo 55: Center of Wetland Plot 2 looking to the east

Photo 56: Center of Wetland Plot 2 looking to the west

Upland Plot 2 – West of Wetland 3

Photo 57: Typical upland – residential maintained yard; eastern edge of Upland Plot 2 looking north

Photo 58: Eastern edge of Upland Plot 2 looking south at Hooper Road

Appendix C
USACE Wetland Determination Field Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hooper Rd. (LA 408) Widening City/County: East Baton Rouge Parish Sampling Date: 5/29/14

Applicant/Owner: CDM Smith State: LA Sampling Point: Wet Plot 1

Investigator(s): M. Petty, R. Haydel Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage / Depression Local relief (concave, convex, none): Concave Slope (%): 2%

Subregion (LRR or MLRA): LRR P MLRA 134 Lat: 30°32'26.84" N Long: 91°04'05.20" W Datum: WGS84

Soil Map Unit Name: Deerford-Verdun Complex, 0 to 2 Percent Slopes (DaA) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
Significant rainfall (>5") over the last two days has resulted in atypical climatic/hydrologic conditions. Standing water present in most low-lying areas.

The location of Wet Plot 1 was chosen b/c it is representative of the emergent wetlands found within the proj corridor

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 2"
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
The depth to water table is undetermined b/c surface water would immediately fill the soil auger hole.

VEGETATION – Use scientific names of plants.

Sampling Point: Wet Plot 1

Tree Stratum (Plot sizes: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Platanus occidentalis *	5	N	FACW
2. Salix nigra *	5	N	OBL
3.			
4. * located just outside plot			
5.			
6.			
7.			
	10 = Total Cover		
Sapling Stratum (30 ft. radius)			
1. Triadica Sebifera	2	N	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	2 = Total Cover		
Shrub Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (30 ft. radius)			
1. Eleocharis obtusa	60	Y	OBL
2. Typha latifolia	30	Y	OBL
3. Juncus marginatus	10	Y	FACW
4. Scirpus atrovirens	5	N	OBL
5. Panicum virgatum	5	N	FAC
6. Cyperus strigosus	5	N	FACW
7. Rhynchospora corniculata	2	N	OBL
8. Carex lurida	2	N	OBL
9. Centella erecta	10	Y	FACW
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	104	x 1 =	104
FACW species	30	x 2 =	60
FAC species	7	x 3 =	21
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	141 (A)		185 (B)

Prevalence Index = B/A = 1.31

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (If observed, list morphological adaptations below).

Typical Typha-Eleocharis emergent wetland transitioning to Salix nigra-Triadica Sebifera forested wetland approximately 200 ft South of Hooper Road.

SOIL

Sampling Point: WX-Plot 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/1	80	7.5YR 5/6	20			L. Clay	Dense root mass
5-9	10YR 3/1	70	10YR 5/1	25			L. Clay	
			7.5YR 6/8	5				
9-17	10YR 4/1	60	10YR 2/1	20			Clay	
			10YR 5/1	10				
			7.5YR 6/8	10				
17-24	10YR 5/1	50	10YR 2/1	10			L. Clay	
			7.5YR 6/8	40				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: Clay

Depth (inches): 9"

Hydric Soil Present? Yes ✓ No ___

Remarks:

Standing water to depth of 2" which rapidly fills soil auger hole.

Orange mottling present beginning just below surface (redox concentrations).

Matrix characterized by low chroma (i.e. chroma=1).

Texture characterized as loamy clay but similar to silty loam.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hooper Rd. (LA408) Widening City/County: East Baton Rouge Parish Sampling Date: 5/29/14

Applicant/Owner: CDM Smith State: LA Sampling Point: UP PLOT 1

Investigator(s): M. Petty, R. Haudel Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Flat Fallow Field Local relief (concave, convex, none): None Slope (%): <1%

Subregion (LRR or MLRA): LRR P MLRA 134 Lat: 30°32'25.57" N Long: 91°04'08.53" W Datum: WGS 84

Soil Map Unit Name: Deerford-Verdun Complex, 0 to 2 Percent Slopes (DaA) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
Significant rainfall (>5") over the last two days has resulted in atypical climatic/hydrologic conditions. Some standing water present in low-lying areas.
Typical unmaintained field transitioning from historical disturbance.

HYDROLOGY

Wetland Hydrology Indicators: None *

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1) *
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): <1"
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓ *

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
* Some surface water present in low-lying areas of plot due to significant recent rainfall. Under typical conditions, no wetland hydrology indicators would be present.

VEGETATION – Use scientific names of plants.

Sampling Point: UP PLOT 1

Tree Stratum (Plot sizes: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Shrub Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Herb Stratum (30 ft. radius)			
1. Rubus arvensis	20	Y	FAC
2. Sesuvia pumila	5	N	FAC
3. Sonchus asper	5	N	FACU
4. Panicum Virgatum	40	Y	FAC
5. Andropogon Virginicus	20	Y	FAC
6. Asclepias spp.	5	N	
7. Juncus marginatus	5	N	FACW
8. Solidago spp.	10	N	
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	90	x 3 =	270
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No __

Remarks: (If observed, list morphological adaptations below).

* Although Dominance Test is >50%, all dominants are facultative and lack of hydrology and hydric soils suggests this area is not a wetland
* Microtopography allows for some isolated pockets of wetland vegetation

SOIL

Sampling Point: UP PLOT 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					Loam	
2-8	10YR 5/3	80	10YR 4/3	20			S. Loam	
8-14	10YR 5/2	50	10YR 6/3	40			L. Clay	
			10YR 6/8	10				
14-20	10YR 5/3	50	10YR 6/3	40			Clay	
			10YR 5/2	10				
20-24	10YR 5/3	40	10YR 6/3	30			Clay	
			10YR 6/8	30				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

None

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

Soils not saturated and water table not encountered (>24").

Soils do not meet Depleted Matrix (F3) indicator but comes close:

- 60% Chroma of 2 or less
  - ↳ 2" thick within top 6"
  - ↳ 6" thick starting within top 10"

Clay layer beginning at a depth of 14" likely prevents infiltration enough that soils above show some signs of frequent saturation.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hooper Rd. (LA408) Widening City/County: East Baton Rouge Parish Sampling Date: 5/29/14

Applicant/Owner: CDM Smith State: LA Sampling Point: Wet Plot 2

Investigator(s): M. Petty, R. Haudel Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR or MLRA): LRRP MLRA 134 Lat: 30° 32' 23.41" N Long: 91° 04' 18.77" W Datum: WGS84

Soil Map Unit Name: Gilbert Silt Loam, 0 to 1 Percent Slopes (GeA) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
Significant rainfall (>5") over the past couple of days has resulted in atypical climatic / hydrologic conditions. Surface water present in most low-lying areas.

The location of Wet Plot 2 was selected b/c it is representative of forested wetlands found within the project corridor

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ✓ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ✓ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ✓ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 2"
Water Table Present?	Yes ✓	No ____	Depth (inches): 14"
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 5"

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
This forested wetland likely historically drained to the creek to the west. Small drainage ditches have interrupted this flow to drain parcels for residential use.

VEGETATION – Use scientific names of plants.

Sampling Point: Wet Plot 2

Tree Stratum (Plot sizes: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus nigra	30	Y	FAC
2. Salix nigra	10	N	OBL
3. Quercus shumardii	30	Y	FAC
4. Triadica sebifera	20	Y	FAC
5. Quercus phellos	5	N	FACW
6. Gleditsia triacanthos	5	N	FAC
7.			
	70	= Total Cover	
Sapling Stratum (30 ft. radius)			
1. Ulmus americana	50	Y	FAC
2. Liquidambar styraciflua	30	Y	FAC
3. Triadica sebifera	10	N	FAC
4. Quercus lyrata	10	N	OBL
5. Acer rubrum	10	N	FAC
6.			
7.			
	50	= Total Cover	
Shrub Stratum (30 ft. radius)			
1. Ilex glabra	30	Y	FACW
2. Ilex decidua	10	N	FACW
3. Morella cerifera	20	Y	FAC
4. Ulmus americana	30	Y	FAC
5. Liquidambar styraciflua	10	N	FAC
6.			
7.			
	20	= Total Cover	
Herb Stratum (30 ft. radius)			
1. Juncus marginatus	5	Y	FACW
2. Juncus effusus	2	N	OBL
3. Smilax rotundifolia	2	N	FAC
4. Carex annectens	2	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5	= Total Cover	
Woody Vine Stratum (30 ft. radius)			
1. Campsis radicans	60	Y	FAC
2. Vitis spp.	20	N	
3.			
4.			
5.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	22	x 1 =	22
FACW species	50	x 2 =	100
FAC species	307	x 3 =	921
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	379 (A)		1043 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (If observed, list morphological adaptations below).

Water marks and moss trim lines on trees. Most dominant species are FAC but several observed species are FACW or OBL.

SOIL

Sampling Point: Wet Plot 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/1	80	10YR 6/8	20			Loam	
5-14	10YR 6/1	70	10YR 6/8	20			c. Loam	Soil Saturated at 5"
			10YR 3/1	10				oxidized Rhizo present on roots
14-24	10YR 6/1	70	10YR 6/8	30			L. Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: Clay

Depth (inches): 24"

Hydric Soil Present? Yes ✓ No ___

Remarks:

1" of leaf litter on top of soil surface.

At a depth of 10", a muck component was observed. Soil texture was like cookie dough.

At a depth of 24", a hard clay layer was encountered which likely slows infiltration.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hooper Rd. (LA408) Widening City/County: East Baton Rouge Parish Sampling Date: 5/29/14

Applicant/Owner: CDM Smith State: LA Sampling Point: UP PLOT 2

Investigator(s): M. Petty, R. Haugel Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Residential Lawn Local relief (concave, convex, none): None Slope (%): < 1%

Subregion (LRR or MLRA): LRR P MLRA 134 Lat: 30°32'22.90" N Long: 91°04'19.52" W Datum: WGS84

Soil Map Unit Name: Gilbert Silt Loam, 0 to 1 Percent Slopes (GeA) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
Significant rainfall (>5") over the last few days have resulted in atypical climatic / hydrologic conditions, with some standing water in low-lying areas.

Vegetation is routinely mowed and consists of species typical of residential lawns

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply) None

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Maintained turf grass lawn that has been drained by small ditches around periphery. Some standing water in low-lying areas outside of plot due to abnormally-high rainfall.

VEGETATION – Use scientific names of plants.

Sampling Point: UP PLOT 2

Tree Stratum (Plot sizes: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Shrub Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (30 ft. radius)			
1. Stenotaphrum secundatum	80	Y	FAC
2. Trifolium repens	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (30 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	100 (A)		320 (B)

Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (If observed, list morphological adaptations below).

Typical residential lawn : maintained turf grass

SOIL Sampling Point: UP PLOT 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					Loam	
2-6	10YR 5/3	70	10YR 5/2	20			C. Loam	
			10YR 6/8	10				
6-13	10YR 5/3	80	10YR 6/2	15			L. Clay	
			10YR 6/8	5				
13-24	10YR 7/1	70	10YR 6/8	20			Clay	white-gray clay w/ brown + orange minor components
			10YR 5/3	10				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

None

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

Potential relict hydric soils at depth. Could also be a component of fill material.

Plot has been drained for residential use.

Clay layer at 13" could be considered restrictive, but no ponding present even after recent heavy rains.

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