

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): April 8, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: JD Form 1 of 3; SAC #2015-1676-1JC Limehouse Tract/ Highway 78

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: South Carolina County/parish/borough: **Berkeley** City: **Ladson**
Center coordinates of site (lat/long in degree decimal format): Lat. **33.006157° N**, Long. **-80.119412° W**.
Universal Transverse Mercator: **17S / 582263.71m E / 3652328.45 mN**

Name of nearest waterbody: **Unnamed Tributary to Ancrum Swamp (Limehouse Branch)**

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **Goose Creek Reservoir**

Name of watershed or Hydrologic Unit Code (HUC): **0305020107 Cooper River/ Charleston Harbor Watershed**

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: **2/15/2016**

Field Determination. Date(s): **01/21/2016**

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

TNWs, including territorial seas

Wetlands adjacent to TNWs

Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs

Non-RPWs that flow directly or indirectly into TNWs

Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs

Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs

Impoundments of jurisdictional waters

Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: **2,113** linear feet: **4** width (ft) (Tributary 1= **945** lf, Tributary 2=**613** lf, Tributary 3/ 4= **555** lf) and **Jurisdictional Impoundment=0.68** acres.

Wetlands: **12.9** acres. (Wetland A= **1.35** acres, Wetland B=**10.78** acres, Wetland F= **0.27** acres, Wetland G= **0.06** acres, Wetland H= **0.44** acres)

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual, Established by OHWM, Pick List

Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable):³ [Including potentially jurisdictional features that upon assessment are NOT waters or wetlands]:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **There is a portion of Tributary 1 (297 linear feet) that was determined to be non-jurisdictional upstream of Wetland G. The tributary was dug from upland and drains only uplands upstream of Wetland G. From wetland G to the terminus of the tributary, it conveys only stormwater runoff. Therefore, it is determined to be non-jurisdictional.**

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**

Identify TNW: .

Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**

Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

****Tributaries (sRPWs) 1, 2, & 3/ 4****

(i) **General Area Conditions:**

Watershed size: 206,457 acres ;

Drainage area: 0.25 square miles (160 acres) Drainage areas were approximated as part of the Significant nexus determination performed for this JD. This area was drawn based on apparent flow pathways and drainage areas associated with the subject relevant reach using USGS quad mapping, aerial photography, and observations of connectivity and direction of flow made in the field.

Average annual rainfall: 50 inches

Average annual snowfall: 1 inches

(ii) **Physical Characteristics:**

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 4 tributaries before entering TNW.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Project waters are **5-10** river miles from TNW.
 Project waters are **1 (or less)** river miles from RPW.
 Project waters are **5-10** aerial (straight) miles from TNW.
 Project waters are **1 (or less)** aerial (straight) miles from RPW.
 Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW⁵: The unnamed seasonal tributaries on site (Tributary 1= 945 lf, Tributary 2=613 lf, Tributary 4= 50 lf, Tributary 3= 505 lf) all flow offsite to Ancrum Swamp, (Limehouse Branch), a perennial RPW, which then flows to Bluehouse Swamp which is one of the main tributaries to Goose Creek Reservoir (TNW). Tributary 3 and 4 are the same tributary.
 Tributary stream order, if known: **First order**.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: **All of the tributaries have been incised (ditched).**

Tributary properties with respect to top of bank (estimate):

Average width: **3** feet
 Average depth: **3** feet
 Average side slopes: **2:1**.

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Stable.
 Presence of run/riffle/pool complexes. Explain: **There were no riffle pool complexes witnessed in the project vicinity.**
 Tributary geometry: **Relatively straight.**
 Tributary gradient (approximate average slope): **1 %**

(c) Flow: **sPRWs 1, 2, & 3/4**

Tributary provides for: **Seasonal flow**
 Estimate average number of flow events in review area/year: **6-10**
 Describe flow regime: **Discrete and confined.**
 Other information on duration and volume:

Surface flow is: **Discrete and confined.** Characteristics: **Surface flow is confined to the channel with inputs from surrounding defined wetland drainages.**

Subsurface flow: **Unknown.** Explain findings:
 Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
⁶ A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
⁷Ibid.

- fine shell or debris deposits (foreshore)
- physical markings/characteristics
- tidal gauges
- other (list):
- physical markings;
- vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
 Explain: **Water color is clear to dark with some evidence of algae and inputs of iron and organics.**
 Identify specific pollutants, if known: **There is no direct evidence of unnatural pollutants on site. There is highway runoff downstream.**

(iv) Biological Characteristics. Channel supports (check all that apply):

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: **The tributary provides habitat for aquatic species that would utilize tributaries throughout the low country such as insects and amphibians along with the predators which feed upon them such as snakes, birds, mammals; even though it has been manipulated.**

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:
 Wetland size: **12.9 acres. (Wetland A= 1.35 acres, Wetland B=10.78 acres, Wetland F= 0.27 acres, Wetland G= 0.06 acres, and Wetland H= 0.44 acres)**
 Wetland type. Explain: **The wetlands within the review area were either scrub shrub or forested wetlands.**
 Wetland quality. Explain: **Moderate. The site has been disturbed.**
 Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Wetland A Flow is: **Intermittent flow.** Explain: **Wetland A is adjacent to but not abutting the jurisdictional impoundment by means of a culvert. Flow from Wetland A to the jurisdictional impoundment is intermittent and may occur seasonally and/or after rain events when surface in the wetland may be present.**

Wetland B Flow is: **Intermittent flow.** Explain: **Tributary 2 (sRPW) flows out of wetland B. Flow from wetland B to Tributary 2 is intermittent and may occur seasonally and/or after rain events when surface water in the wetland may be present.**

Wetland F Flow is: **Intermittent flow.** Explain: **Wetland F is adjacent to but not abutting Tributary 1 (sRPW). Flow from wetland F to Tributary 1 is intermittent and may occur seasonally and/or after rain events when surface water in the wetland may be present.**

Wetland G Flow is: **Intermittent flow.** Explain: **Tributary 1 (sRPW) flows out of Wetland G. Flow from wetland G to Tributary 1 is intermittent and may occur seasonally and/or after rain events when surface water in the wetland may be present.**

Wetland H Flow is: **Intermittent flow.** Explain: **Tributary 3/ 4 (sRPW) flows out of Wetland H. Flow from Wetland H to Tributary 3/ 4 is intermittent and may occur seasonally and/or after rain events when surface water in the wetland may be present.**

Surface flow is: **Discrete and confined for directly abutting wetlands (Wetlands B, G, and H).**

Surface flow from **Discrete and unconfined for non-abutting wetlands (Wetland A and F).**

Characteristics:

****ALL the Wetlands**** Subsurface flow: **Unknown.** Explain findings:

- Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting:
 - Wetland B directly abuts Tributary 2**
 - Wetland G directly abuts Tributary 1**
 - Wetland H directly abuts Tributary 3/ 4**
- Not directly abutting

Discrete wetland hydrologic connection. Explain:

Wetland A is adjacent to but not abutting the jurisdictional impoundment by means of a culvert.

Wetland F appears to be at a similar elevation as the narrow upland area that separates it from Tributary 1 based on a review of LIDAR. In addition, both Wetland F and adjacent uplands drain to Wetland G which is has a direct hydrologic connection with Tributary 1. Although discrete flow from the wetlands through the uplands to Tributary 1 was not observed, discrete and unconfined flow is possible due to the similar elevation of the wetlands and uplands as well as the overall slope in elevation towards Tributary 1.

Ecological connection. Explain: .

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **5-10** river miles from TNW.

Project waters are **5-10** aerial (straight) miles from TNW.

Flow is from: **Wetland to navigable waters.**

Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **Water color is clear to dark with some evidence of algae and inputs of iron and organics.**

Identify specific pollutants, if known: **There is no direct evidence of unnatural pollutants.**

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

Riparian buffer. Characteristics (type, average width):

Vegetation type/percent cover. Explain: **Forested and Scrub shrub species/ 50-100% FAC or wetter.**

Habitat for:

Federally Listed species. Explain findings:

Fish/spawn areas. Explain findings:

Other environmentally-sensitive species. Explain findings:

Aquatic/wildlife diversity. Explain findings: **Emergent and forested wetlands are transitional habitats between terrestrial and aquatic habitats, and as such generally have high wildlife abundance and diversity. Numerous wading birds and mammals feed and spawn in these wetlands. In addition, these habitats support great numbers of insects, which attract insect-feeding birds, amphibians, reptiles and mammals.**

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **5**

Approximately (**12.9**) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
Wetland A, N	1.35	Wetland B, Y	10.78
Wetland F, N	0.27	Wetland G, Y	0.06
Wetland H, Y	0.44		

Summarize overall biological, chemical and physical functions being performed: **The review area contains the headwaters of a large stream system that is comprised of perennial and seasonal tributaries, as well as abutting and adjacent wetlands, which is discussed as a whole on this JD Basis Form 1 of 3. The scrub shrub and forested palustrine wetlands which are similarly situated and adjacent (both directly abutting and non-abutting) to the RPW are collectively performing functions consistent with the following: Biological – wetlands adjacent to the RPWs include bay forest and emergent wetlands. As such, a broad variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species, foraging areas for wetland dependent species, and in particular, floodplain wetlands provide important spawning areas for species that inhabit the main channel as adults. These wetlands are essential in providing organic carbon in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemical – Wetlands in the review area are providing the important collective functions of removal of excess nutrients which are contributed by runoff from the surrounding uplands and developed areas, reducing nitrogen and phosphorus loading downstream, and effectively preventing oxygen depletion that can result from eutrophication. Some of the adjacent wetlands in this review area have been ditched which likely has reduced the effectiveness of some of the wetlands’ nutrient removal function. Physical – Wetlands in the review area are collectively performing flow maintenance functions, including retaining runoff inflow and storing flood water temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of Goose Creek,**

this office has determined that there is a Significant Nexus between the review area Relevant Reach and its adjacent wetlands and the downstream TNW.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
4. **Documentation for the Record only: Significant nexus findings for seasonal RPWs and/or wetlands abutting seasonal RPWs:** The review area of approximately 88.54 acres contains the headwaters of a large stream system that consists of approximately 2,113 linear feet of seasonal RPWs, 12.9 acres of abutting and adjacent wetlands, and 0.68 acres of jurisdictional pond. As discussed previously throughout this JD Basis Form 1 of 3 some of the wetlands are adjacent to a seasonal RPW by means of discrete and confined culverts, some directly abut seasonal RPWs, and some are adjacent by discrete unconfined hydrologic surface connections through uplands. Regardless of the type of hydrologic connection, these wetlands and RPWs are part of a headwater stream system that provides a variety of functions that are important for the downstream waters and the watershed as a whole. Although the seasonal RPWs (sRPWs 1, 2, & 3/4) appear to be man made and were likely excavated to remove surface water from surrounding uplands and wetlands, they appear to have similar functions as natural RPWs. Because the seasonal RPWs (sRPWs 1, 2, & 3/4) are shallow features that likely have slow and low volumes of flow, they can provide some water quality benefits to downstream waters by allowing for sediments and any pollutants that may be present to settle out of or be filtered from the water column. The scrub shrub and forested palustrine wetlands which are similarly situated and adjacent (both directly abutting and non-abutting) to the RPWs are collectively performing functions consistent with the following: Biological – wetlands adjacent to the RPWs include scrub shrub and emergent wetlands. As such, a broad variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species, foraging areas for wetland dependent species, and in particular, floodplain wetlands provide important spawning areas for species that inhabit the main channel as adults. These wetlands are essential in providing organic carbon in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemical – Wetlands in the review area are providing the important collective functions of removal of excess nutrients which are contributed by runoff from the surrounding uplands and developed areas, reducing nitrogen and phosphorus loading downstream, and effectively preventing oxygen depletion that can result from eutrophication. Some of the adjacent wetlands in this review area have been ditched which likely has reduced the effectiveness of some of the wetlands' nutrient removal function. Physical – Wetlands in the review area are collectively performing flow maintenance functions, including retaining runoff inflow and storing flood water temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to

maintain seasonal flow volumes. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of Goose Creek, this office has determined that there is a Significant Nexus between the review area Relevant Reach and its adjacent wetlands and the downstream TNW.

According to the SCDHEC Watershed Assessment information available online, this watershed (03050201-07) includes Berkeley, Charleston, and Dorchester Counties and consists primarily of the Cooper River and its tributaries training to the Charleston Harbor. Future growth is expected and is occurring in the watershed. There are two monitoring stations along Goose Creek. At the first one downstream of the project site (MD-114) aquatic life uses are not supported due to dissolved oxygen excursions. Significant decreasing trends in five-day biological oxygen demand, turbidity, and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are fully supported at this site. There are eight monitoring stations along the Goose Creek Reservoir and recreational uses are fully supported at all sites. At the last monitoring station in Goose Creek (MD-039), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported here due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform suggests improving conditions for this parameter. The project area is located within an area of Berkeley County that is being developed. Recent and ongoing development is visible in areas surrounding the project review area. Currently, the wetlands located within this drainage area are likely performing many of the services that wetlands and tributaries provide; however, when wetlands and tributaries are filled or altered, the services they provide may be compromised and the loss of those services affects downstream waters and TNWs, including Goose Creek. The wetlands within the review area have a significant nexus to downstream TNWs as they provide a source of carbon and nutrients, can provide water quality functions, can store excess water minimizing flooding impacts downstream, can maintain seasonal flow volumes, and can transport organisms, carbon, and nutrients. In addition, the wetlands within the review area are contributing to the relatively good water quality and integrity of the downstream TNW.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .

Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: **The unnamed seasonal tributaries on site (Tributary 1= 945 lf, Tributary 2=613 lf, Tributary 4= 50 lf, Tributary 3= 505 lf) all flow offsite to Ancrum Swamp, (Limehouse Branch), a perennial RPW, which then flows to Bluehouse Swamp which is one of the main tributaries to Goose Creek Reservoir (TNW). Tributary 3 and 4 are the same tributary. These tributaries exhibit flow during winter months for at least 3 months out of the year. All four tributaries exhibit an OHWM and are excavated in hydric soils and seasonally intercept groundwater.**

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: **2,113** linear feet **4** width (ft). (**Tributary 1= 945 lf, Tributary 2=613 lf, Tributary 3/ 4= 555 lf**)
 Other non-wetland waters: **0.68** acres. (Impoundment acreage)

Identify type(s) of waters: **The impoundment on site appears to be an impoundment created from waters of the U.S. It is connected to Wetland A on the west side via a culvert and connected to Tributary 3/ 4, both seasonal RPWs, on the east side.**

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**

Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.

Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is

⁸See Footnote # 3.

directly abutting an RPW: .

- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetlands B, G, and H all share direct hydrologic connections with the tributaries on-site and off-site. Wetland H has a direct hydrologic connection to Tributary 3/4, which flows through wetland H, and continues offsite into the perennial RPW. Wetland B is directly abutting Tributary 2, which flows through Wetland B, connects with Tributary 3/4, and then continues off-site. Wetland G is directly abutting Tributary 1 that continues off-site to also flow into the perennial RPW.**

Provide acreage estimates for jurisdictional wetlands in the review area: **12.9** acres. (Wetland B, G & H)

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: **1.62** acres. (Wetland A & F)

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: . acres.

7. **Impoundments of jurisdictional waters.⁹**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

Explain: The 0.68 acre impoundment on site appears to be an impoundment created from waters of the U.S. It is connected to Wetland A on the west side via a culvert and connected to Tributary 3/4, both seasonal RPWs, on the east side.

E. **ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰**

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
 from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
 which are or could be used for industrial purposes by industries in interstate commerce.
 Interstate isolated waters. Explain: .
 Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: . linear feet . width (ft).
 Other non-wetland waters: . acres.
Identify type(s) of waters: .
 Wetlands: . acres.

F. **NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
 Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
 Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
 Other: (explain, if not covered above): **There is a portion of Tributary 1 (297 linear feet) that was determined to be non-jurisdictional upstream of Wetland G. The tributary was dug from upland and drains only uplands upstream of Wetland**

⁹ To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

G. From Wetland G to the terminus of the tributary, it conveys only stormwater runoff. Therefore, it is determined to be non-jurisdictional.

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): **297** linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Land Management Group, Wes Fryar.**
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: **Figure 2: Topographic Map**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Figure 4: Soils Map**
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): .
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): **Figure 5 & Figure 6: Aerial Photography**
or Other (Name & Date): .
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: Based on the above information it has been determined by this office that Wetlands A, B, F, G, and H, as well as Tributaries 1-4, and the jurisdictional pond (impoundment) on the subject property are all jurisdictional and subject to the Clean Water Act regulation. A small portion of Tributary 1 was determined to be non-jurisdictional and not subject to the Clean Water Act regulations.

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): April 8, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: JD Form 2 of 3; SAC #2015-1676-1JC Limehouse Tract/ Highway 78

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: South Carolina County/parish/borough: **Berkeley** City: **Ladson**
Center coordinates of site (lat/long in degree decimal format): Lat. **33.006157° N**, Long. **-80.119412° W**.
Universal Transverse Mercator: **17S / 582263.71m E / 3652328.45 mN**

Name of nearest waterbody: **Unnamed Tributary to Ancrum Swamp (Limehouse Branch)**

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **Goose Creek Reservoir**

Name of watershed or Hydrologic Unit Code (HUC): **0305020107 Cooper River/ Charleston Harbor Watershed**

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: **2/15/2016**

Field Determination. Date(s): **01/21/2016**

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Pick List** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: **0.83** acres. (Wetland E= 0.54 & Wetland I= 0.29 acres)

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual, Pick List, Pick List

Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable):³ [Including potentially jurisdictional features that upon assessment are NOT waters or wetlands]

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: .

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”: .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 206,457 acres;

Drainage area: 0.25 square miles (160 square miles) Drainage areas were approximated as part of the Significant nexus determination performed for this JD. This area was drawn based on apparent flow pathways and drainage areas associated with the subject relevant reach using USGS quad mapping, aerial photography, and observations of connectivity and direction of flow made in the field.

Average annual rainfall: 50 inches

Average annual snowfall: 1 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 4 tributaries before entering TNW.

Project waters are 5-10 river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 5-10 aerial (straight) miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: .

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Identify flow route to TNW⁵: **The unnamed tributary (pRPW) is offsite. It flows to Ancrum Swamp (Limehouse Branch), which then flows to Bluehouse Swamp which is one of the main tributaries to Goose Creek Reservoir (TNW).**

Tributary stream order, if known: **1.**

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain: .
 Manipulated (man-altered). Explain: **The offsite RPW appears to be natural but is likely manipulated along a portion(s) of it's length.**

Tributary properties with respect to top of bank (estimate): **The tributary channel was not observed as it is located offsite.**

Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply): **Although the tributary channel was not observed as it is located offsite, the composition is likely similar to other tributaries in the area potentially consisting of the following**

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: **The tributary channel was not observed as it is located offsite. Based on aerial photography, the tributary appears to be located within forested wetlands with channel banks that are likely vegetated; therefore, the tributary is likely stable.**

Presence of run/riffle/pool complexes. Explain: .

Tributary geometry: **Pick List.** [redacted]

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Perennial flow** **The tributary channel was not observed as it is located offsite, but it appears as a named blue line tributary on topo maps, has a drainage area of approximately 160 acres that includes wetlands and upstream tributaries, and is at a lower elevation than surrounding areas. For these reasons, it was concluded that the offsite RPW is perennial.**

Estimate average number of flow events in review area/year: **20 (or greater)**

Describe flow regime: .

Other information on duration and volume: .

Surface flow is: **Confined.** Characteristics: .

Subsurface flow: **Unknown.** Explain findings: .

Dye (or other) test performed: .

Tributary has (check all that apply): **Although the tributary channel was not observed as it is located offsite, an OHW mark is likely present and similar to other tributaries in the area**

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

- | | |
|--|--|
| <input type="checkbox"/> High Tide Line indicated by: | <input type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: **The tributary channel was not observed as it is located offsite, but the water quality is likely good to fair as the drainage area and surrounding area are partially developed. Based on aerial photographs, the area surrounding the relevant reach drainage area consists of forested uplands and wetlands, roads, residential subdivisions, and areas under construction.**

Identify specific pollutants, if known:

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: **The tributary likely provides habitat for aquatic species that would utilize tributaries throughout the low country such as insects and amphibians along with the predators which feed upon them such as snakes, birds, mammals; even though it has been manipulated.**

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: **0.83** acres. (**Wetland E= 0.54 & Wetland I= 0.29** acres)

Wetland type. Explain: **The wetlands within the review area were either scrub shrub or forested wetlands.**

Wetland quality. Explain: **Moderate. The site has been disturbed.**

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Wetland E Flow is: **Intermittent flow**. Explain: **Wetland E is adjacent to but not abutting the offsite RPW by means of a culvert through wetland I to the pRPW. Flow from Wetland E to the offsite pRPW is intermittent and may occur seasonally and/or after rain events when surface in the wetland may be present.**

Wetland I Flow is: **Intermittent flow**. Explain: **Wetland I is directly abutting the offsite pRPW. It is part of a larger wetland that extends offsite and has a direct hydrological connection with the offsite pRPW.**

Surface flow is: **Discrete and Confined for directly abutting wetlands (Wetland I) and tending toward discrete and unconfined for non-abutting wetlands (Wetland E).**

Characteristics:

Subsurface flow: **Unknown**. Explain findings:

- Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting (**Wetland I**)
- Not directly abutting (**Wetland E**)
- Discrete wetland hydrologic connection. Explain: **Wetland E is adjacent to but not abutting the offsite RPW by means of a culvert through wetland I to the pRPW.**
- Ecological connection. Explain:
- Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **5-10** river miles from TNW.

Project waters are **5-10** aerial (straight) miles from TNW.

Flow is from: **Wetland to navigable waters.**

Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **Water color is clear to dark with some evidence of algae and inputs of iron and organics.**

Identify specific pollutants, if known: **There is no direct evidence of unnatural pollutants.**

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain: **Forested and Scrub shrub species/ 50-100% FAC or wetter.**
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: **Emergent and forested wetlands are transitional habitats between terrestrial and aquatic habitats, and as such generally have high wildlife abundance and diversity. Numerous wading birds and mammals feed and spawn in these wetlands. In addition, these habitats support great numbers of insects, which attract insect-feeding birds, amphibians, reptiles and mammals.**

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **2**
Approximately **(0.83)** acres in total are being considered in the cumulative analysis.
For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
Wetland E, N	0.54	Wetland I, Y	0.29

Summarize overall biological, chemical and physical functions being performed: **The review area contains the headwaters of a large stream system that is comprised of perennial and seasonal tributaries, as well as abutting and adjacent wetlands, which is discussed as a whole on this JD Basis Form 2 of 3. The scrub shrub and forested palustrine wetlands which are similarly situated and adjacent (both directly abutting and non-abutting) to the RPW are collectively performing functions consistent with the following: Biological – wetlands adjacent to the RPWs include bay forest and emergent wetlands. As such, a broad variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species, foraging areas for wetland dependent species, and in particular, floodplain wetlands provide important spawning areas for species that inhabit the main channel as adults. These wetlands are essential in providing organic carbon in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemical – Wetlands in the review area are providing the important collective functions of removal of excess nutrients which are contributed by runoff from the surrounding uplands and developed areas, reducing nitrogen and phosphorus loading downstream, and effectively preventing oxygen depletion that can result from eutrophication. Some of the adjacent wetlands in this review area have been ditched which likely has reduced the effectiveness of some of the wetlands’ nutrient removal function. Physical – Wetlands in the review area are collectively performing flow maintenance functions, including retaining runoff inflow and storing flood water temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of Goose Creek, this office has determined that there is a Significant Nexus between the review area Relevant Reach and its adjacent wetlands and the downstream TNW.**

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?

- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: **The review area of approximately 88.54 acres contains the headwaters of a large stream system that consists of 0.83 acres of abutting and adjacent wetlands. As discussed previously throughout this JD Basis Form 2 of 3 some of the wetlands are adjacent to a perennial RPW by means of discrete and confined culverts while some directly abut the perennial offsite RPWs. Regardless of the type of hydrologic connection, these wetlands and offsite RPW are part of a headwater stream system that provides a variety of functions that are important for the downstream waters and the watershed as a whole. The scrub shrub and forested palustrine wetlands which are similarly situated and adjacent (both directly abutting and non-abutting) to the RPW are collectively performing functions consistent with the following: Biological – wetlands adjacent to the RPWs include bay forest and emergent wetlands. As such, a broad variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species, foraging areas for wetland dependent species, and in particular, floodplain wetlands provide important spawning areas for species that inhabit the main channel as adults. These wetlands are essential in providing organic carbon in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemical – Wetlands in the review area are providing the important collective functions of removal of excess nutrients which are contributed by runoff from the surrounding uplands and developed areas, reducing nitrogen and phosphorus loading downstream, and effectively preventing oxygen depletion that can result from eutrophication. Some of the adjacent wetlands in this review area have been ditched which likely has reduced the effectiveness of some of the wetlands' nutrient removal function. Physical – Wetlands in the review area are collectively performing flow maintenance functions, including retaining runoff inflow and storing flood water temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of Goose Creek, this office has determined that there is a Significant Nexus between the review area Relevant Reach and its adjacent wetlands and the downstream TNW.**

According to the SCDHEC Watershed Assessment information available online, this watershed (03050201-07) includes Berkeley, Charleston, and Dorchester Counties and consists primarily of the Cooper River and its tributaries training to the Charleston Harbor. Future growth is expected and is occurring in the watershed. There are two monitoring stations along Goose Creek. At the first one downstream of the project site (MD-114) aquatic life uses are not supported due to dissolved oxygen excursions. Significant decreasing trends in five-day biological oxygen demand, turbidity, and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are fully supported at this site. There are eight monitoring stations along the Goose Creek Reservoir and recreational uses are fully supported at all sites. At the last monitoring station in Goose Creek (MD-039), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported here due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform suggests improving conditions for this parameter. The project area is located within an area of Berkeley County that is being developed. Recent and ongoing development is visible in areas surrounding the project review area. Currently, the wetlands located within this drainage area are likely performing many of the services that wetlands and tributaries provide; however, when wetlands and tributaries are filled or altered, the services they provide may be compromised and the loss of those services affects downstream waters and TNWs, including Goose Creek. The wetlands within the review area have a significant nexus to downstream TNWs as they provide a source of carbon and nutrients, can provide water quality functions, can store excess water minimizing flooding impacts downstream, can maintain seasonal flow volumes, and can transport organisms, carbon, and nutrients. In addition, the wetlands within the review area are contributing to the relatively good water quality and integrity of the downstream TNW.

4. **Documentation for the Record only: Significant nexus findings for seasonal RPWs and/or wetlands abutting seasonal RPWs:**

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. TNWs and Adjacent Wetlands. Check all that apply and provide size estimates in review area:

- TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. RPWs that flow directly or indirectly into TNWs.

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **The perennial RPW was not observed as it is located offsite, but it appears as a named blue line tributary on topo maps, has a drainage area of approximately 160 acres that includes wetlands, and is at a lower elevation than surrounding areas. It flows to Ancrum Swamp (Limehouse Branch), which then flows to Bluehouse Swamp which is one of the main tributaries to Goose Creek Reservoir (TNW). For these reasons, it was concluded that the offsite RPW is perennial.**

- Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetland I (0.29 acres) directly abuts and share a direct hydrologic connection with a perennial RPW offsite that flows into Ancrum Swamp. The RPW is an unnamed tributary that shows up as a blue line on USGS topographic maps.**

- Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: **0.29** acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: **0.54** acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from “waters of the U.S.,” or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

Demonstrate that water is isolated with a nexus to commerce (see E below).

Explain:

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Land Management Group, Wes Fryar.**
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: **Figure 2: Topographic Map**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Figure 4: Soils Map**
- National wetlands inventory map(s). Cite name: .

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- State/Local wetland inventory map(s): .
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): **Figure 5 & Figure 6: Aerial Photography**
or Other (Name & Date): .
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: Based on the above information it has been determined by this office that Wetlands E & I on the subject property are all jurisdictional and subject to the Clean Water Act regulation.

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): April 8, 2016

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: JD Form 3 of 3; SAC #2015-1676-1JC Limehouse Tract/ Highway 78

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: South Carolina County/parish/borough: **Berkeley** City: **Ladson**
Center coordinates of site (lat/long in degree decimal format): Lat. **33.006157° N**, Long. **-80.119412° W**.
Universal Transverse Mercator: **17S / 582263.71m E / 3652328.45 mN**

Name of nearest waterbody: **Unnamed Tributary to Ancrum Swamp (Limehouse Branch)**

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **Goose Creek Reservoir**

Name of watershed or Hydrologic Unit Code (HUC): **0305020107 Cooper River/ Charleston Harbor Watershed**

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: **2/15/2016**

Field Determination. Date(s): **01/21/2016**

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Pick List** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: **8.89** acres. (Wetland C= 2.02 acres & Wetland D= 6.87 acres)

c. Limits (boundaries) of jurisdiction based on: **1987 Delineation Manual, **Pick List**, **Pick List****

Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable):³ [Including potentially jurisdictional features that upon assessment are NOT waters or wetlands]

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**

Identify TNW: .

Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**

Summarize rationale supporting conclusion that wetland is “adjacent”: .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

(i) **General Area Conditions:**

Watershed size: 206,457 acres;

Drainage area: 0.26 square miles (166 square miles) Drainage areas were approximated as part of the Significant nexus determination performed for this JD. This area was drawn based on apparent flow pathways and drainage areas associated with the subject relevant reach using USGS quad mapping, aerial photography, and observations of connectivity and direction of flow made in the field.

Average annual rainfall: 50 inches

Average annual snowfall: 1 inches

(ii) **Physical Characteristics:**

(a) Relationship with TNW:

Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 4 tributaries before entering TNW.

Project waters are 5-10 river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 5-10 aerial (straight) miles from TNW.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW⁵: **The unnamed tributary (pRPW) is offsite. It flows to Ancrum Swamp (Limehouse Branch), which then flows to Bluehouse Swamp which is one of the main tributaries to Goose Creek Reservoir (TNW).**

Tributary stream order, if known: **1.**

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain: .
 Manipulated (man-altered). Explain: **The offsite RPW appears to be natural but is likely manipulated along a portion(s) of it's length.**

Tributary properties with respect to top of bank (estimate): The tributary channel was not observed as it is located offsite.

Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: **The tributary channel was not observed as it is located offsite. Based on aerial photography, the tributary appears to be located within forested wetlands with channel banks that are likely vegetated; therefore, the tributary is likely stable.**

Presence of run/riffle/pool complexes. Explain: .

Tributary geometry: **Pick List.**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Perennial flow** **The tributary channel was not observed as it is located offsite, but it appears as a named blue line tributary on topo maps, has a drainage area of approximately 160 acres that includes wetlands and upstream tributaries, and is at a lower elevation than surrounding areas. For these reasons, it was concluded that the offsite RPW is perennial.**

Estimate average number of flow events in review area/year: **20 (or greater)**

Describe flow regime: .

Other information on duration and volume: .

Surface flow is: **Confined.** Characteristics: .

Subsurface flow: **Unknown.** Explain findings: .

Dye (or other) test performed: .

Tributary has (check all that apply): **Although the tributary channel was not observed as it is located offsite, an OHW mark is likely present and similar to other tributaries in the area**

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain: .

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input type="checkbox"/> High Tide Line indicated by: | <input type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: **The tributary channel was not observed as it is located offsite, but the water quality is likely good to fair as the drainage area and surrounding area are partially developed. Based on aerial photographs, the area surrounding the relevant reach drainage area consists of forested uplands and wetlands, roads, residential subdivisions, and areas under construction.**

Identify specific pollutants, if known:

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: **The tributary likely provides habitat for aquatic species that would utilize tributaries throughout the low country such as insects and amphibians along with the predators which feed upon them such as snakes, birds, mammals; even though it has been manipulated.**

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: **8.89** acres. (**Wetland C= 2.02 acres & Wetland D= 6.87 acres**)

Wetland type. Explain: **The wetlands within the review area were either scrub shrub or forested wetlands.**

Wetland quality. Explain: **Moderate. The site has been disturbed.**

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Wetland C Flow is: **Intermittent flow**. Explain: **Wetland C is directly abutting the offsite pRPW. It is part of a larger wetland that extends offsite and has a direct hydrological connection with the offsite pRPW.**

Wetland D Flow is: **Intermittent flow**. Explain: **Wetland D is adjacent to but not abutting the offsite RPW by means of a ditch that connects to the pRPW offsite. Flow from Wetland D to the offsite pRPW is intermittent and may occur seasonally and/or after rain events when surface in the wetland may be present.**

Surface flow is: **Discrete and Confined** for directly abutting wetlands (Wetland C) and tending toward discrete and unconfined for non-abutting wetlands (Wetland D).

Subsurface flow: **Unknown**. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting (Wetland C)

Not directly abutting (Wetland D)

Discrete wetland hydrologic connection. Explain: **Wetland D is adjacent to but not abutting the offsite RPW by means of a ditch that connects to the pRPW offsite.**

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are **5-10** river miles from TNW.

Project waters are **5-10** aerial (straight) miles from TNW.

Flow is from: **Wetland to navigable waters.**

Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: **Water color is clear to dark with some evidence of algae and inputs of iron and organics.**

Identify specific pollutants, if known: **There is no direct evidence of unnatural pollutants.**

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain: **Forested and Scrub shrub species/ 50-100% FAC or wetter.**
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings: **Emergent and forested wetlands are transitional habitats between terrestrial and aquatic habitats, and as such generally have high wildlife abundance and diversity. Numerous wading birds and mammals feed and spawn in these wetlands. In addition, these habitats support great numbers of insects, which attract insect-feeding birds, amphibians, reptiles and mammals.**

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **2**

Approximately (**8.89**) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
Wetland C, Y	2.02	Wetland D, N	6.87

Summarize overall biological, chemical and physical functions being performed: **The review area contains the headwaters of a large stream system that is comprised of perennial and seasonal tributaries, as well as abutting and adjacent wetlands, which is discussed as a whole on this JD Basis Form 3 of 3. The scrub shrub and forested palustrine wetlands which are similarly situated and adjacent (both directly abutting and non-abutting) to the RPW are collectively performing functions consistent with the following: Biological – wetlands adjacent to the RPWs include bay forest and emergent wetlands. As such, a broad variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species, foraging areas for wetland dependent species, and in particular, floodplain wetlands provide important spawning areas for species that inhabit the main channel as adults. These wetlands are essential in providing organic carbon in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemical – Wetlands in the review area are providing the important collective functions of removal of excess nutrients which are contributed by runoff from the surrounding uplands and developed areas, reducing nitrogen and phosphorus loading downstream, and effectively preventing oxygen depletion that can result from eutrophication. Some of the adjacent wetlands in this review area have been ditched which likely has reduced the effectiveness of some of the wetlands’ nutrient removal function. Physical – Wetlands in the review area are collectively performing flow maintenance functions, including retaining runoff inflow and storing flood water temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of Goose Creek, this office has determined that there is a Significant Nexus between the review area Relevant Reach and its adjacent wetlands and the downstream TNW.**

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?

- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: **The review area of approximately 88.54 acres contains the headwaters of a large stream system that consists of 8.89 acres of abutting and adjacent wetlands. As discussed previously throughout this JD Basis Form 3 of 3 some of the wetlands are adjacent to a perennial RPW by means of a ditch while some directly abut the perennial offsite RPWs. Regardless of the type of hydrologic connection, these wetlands and offsite RPW are part of a headwater stream system that provides a variety of functions that are important for the downstream waters and the watershed as a whole. The scrub shrub and forested palustrine wetlands which are similarly situated and adjacent (both directly abutting and non-abutting) to the RPW are collectively performing functions consistent with the following: Biological – wetlands adjacent to the RPWs include bay forest and emergent wetlands. As such, a broad variety of biological functions are being performed which include providing breeding grounds and shelter for aquatic species, foraging areas for wetland dependent species, and in particular, floodplain wetlands provide important spawning areas for species that inhabit the main channel as adults. These wetlands are essential in providing organic carbon in the form of their collective primary productivity to downstream waters, resulting in the nourishment of the downstream food web. Chemical – Wetlands in the review area are providing the important collective functions of removal of excess nutrients which are contributed by runoff from the surrounding uplands and developed areas, reducing nitrogen and phosphorus loading downstream, and effectively preventing oxygen depletion that can result from eutrophication. Some of the adjacent wetlands in this review area have been ditched which likely has reduced the effectiveness of some of the wetlands’ nutrient removal function. Physical – Wetlands in the review area are collectively performing flow maintenance functions, including retaining runoff inflow and storing flood water temporarily. Flow maintenance results in the reduction of downstream peak flows (discharge and volume), helping to maintain seasonal flow volumes. Based on the collective functions described above and their importance to the biological, chemical, and physical integrity of the traditional navigable waters of Goose Creek, this office has determined that there is a Significant Nexus between the review area Relevant Reach and its adjacent wetlands and the downstream TNW.**

According to the SCDHEC Watershed Assessment information available online, this watershed (03050201-07) includes Berkeley, Charleston, and Dorchester Counties and consists primarily of the Cooper River and its tributaries training to the Charleston Harbor. Future growth is expected and is occurring in the watershed. There are two monitoring stations along Goose Creek. At the first one downstream of the project site (MD-114) aquatic life uses are not supported due to dissolved oxygen excursions. Significant decreasing trends in five-day biological oxygen demand, turbidity, and total phosphorus concentration suggest improving conditions for these parameters. Recreational uses are fully supported at this site. There are eight monitoring stations along the Goose Creek Reservoir and recreational uses are fully supported at all sites. At the last monitoring station in Goose Creek (MD-039), aquatic life uses are fully supported. There is a significant decreasing trend in pH. Significant decreasing trends in turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported here due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform suggests improving conditions for this parameter. The project area is located within an area of Berkeley County that is being developed. Recent and ongoing development is visible in areas surrounding the project review area. Currently, the wetlands located within this drainage area are likely performing many of the services that wetlands and tributaries provide; however, when wetlands and tributaries are filled or altered, the services they provide may be compromised and the loss of those services affects downstream waters and TNWs, including Goose Creek. The wetlands within the review area have a significant nexus to downstream TNWs as they provide a source of carbon and nutrients, can provide water quality functions, can store excess water minimizing flooding impacts downstream, can maintain seasonal flow volumes, and can transport organisms, carbon, and nutrients. In addition, the wetlands within the review area are contributing to the relatively good water quality and integrity of the downstream TNW.

4. **Documentation for the Record only: Significant nexus findings for seasonal RPWs and/or wetlands abutting seasonal RPWs:**

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- TNWs: linear feet width (ft), Or, acres.
- Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: **The perennial RPW was not observed as it is located offsite, but it appears as a blue line tributary on topo maps, has a drainage area of approximately 166 acres that includes wetlands, and is at a lower elevation than surrounding areas. It flows to Ancrum Swamp (Limehouse Branch), which then flows to Bluehouse Swamp which is one of the main tributaries to Goose Creek Reservoir (TNW). For these reasons, it was concluded that the offsite RPW is perennial.**

- Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 - Other non-wetland waters: acres.
- Identify type(s) of waters: .

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 - Other non-wetland waters: acres.
- Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 - Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetland C (2.02 acres) continues offsite where it directly abuts and shares a direct hydrologic connection with an RPW offsite that flows into Ancrum Swamp. The perennial RPW is an unnamed tributary that shows up as a blue line on USGS topographic maps.**
 - Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: **2.02** acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: **6.87** acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.⁹**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from “waters of the U.S.,” or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

Explain:

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Land Management Group, Wes Fryar.**
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas: .
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: **Figure 2: Topographic Map**
- USDA Natural Resources Conservation Service Soil Survey. Citation: **Figure 4: Soils Map**
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): .
- FEMA/FIRM maps: .

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- 100-year Floodplain Elevation is: _____ (National Geodectic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): **Figure 5 & Figure 6: Aerial Photography**
or Other (Name & Date): _____
- Previous determination(s). File no. and date of response letter: _____
- Applicable/supporting case law: _____
- Applicable/supporting scientific literature: _____
- Other information (please specify): _____

B. ADDITIONAL COMMENTS TO SUPPORT JD: Based on the above information it has been determined by this office that Wetlands C& D on the subject property are all jurisdictional and subject to the Clean Water Act regulation.