United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services, Eastern North Carolina Field Office
3916 Sunset Ridge Rd.
Raleigh, North Carolina, 27607

September 30, 2024

Yolonda Jordan
Division Administrator
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, NC 27601

Subject: Addendum to Biological/Conference Opinion - Complete 540, Triangle Expressway Southeast Extension in Wake and Johnston Counties (STIP No. R-2829)
FWS Log #**:** 2024-0125170-S7

Dear Ms. Jordan:

This letter transmits the enclosed Addendum to Biological/Conference Opinion (BO/CO) of the U.S. Fish and Wildlife Service (Service) for the unfinished portion of Complete 540, Triangle Expressway Southeast Extension (the Action). Although the October 15, 2019 BO/CO remains in effect, the Service has subsequently proposed to list the Green Floater as a threatened species with designated critical habitat. This Addendum addresses the Green Floater and its proposed critical habitat for the unconstructed portion of the Action and is intended to be appended to the existing BO/CO.

The Service received on August 8, 2024 your letter requesting formal conference for the Action described in *Biological Assessment – Addendum, An Assessment of Potential Effects to the Proposed Federally Threatened Green Floater (Lasmigona subviridis)*. You determined that the Action is likely to adversely affect the Green Floater and its proposed critical habitat. The enclosed Addendum to BO/CO answers your request for formal conference and concludes that the Action is not likely to jeopardize the continued existence of the Green Floater or result in the destruction or adverse modification of proposed critical habitat for the Green Floater. This finding fulfills the requirements applicable to the Action for completing consultation under §7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended.

Reinitiating consultation is required if the Federal Highway Administration retains discretionary involvement or control over the Action (or is authorized by law) when:

a. the amount or extent of incidental take is exceeded;
b. new information reveals that the Action may affect listed species or designated critical habitat in a manner or to an extent not considered in this BO/CO;
c. the Action is modified in a manner that causes effects to listed species or designated critical habitat not considered in this BO/CO; or
d. a new species is listed or critical habitat designated that the Action may affect.

A complete administrative record of this conference is on file in our office at the letter-head address. If you have any questions about the CO, please contact Gary Jordan at gary_jordan@fws.gov .

Sincerely,

Pete Benjamin
Field Office Supervisor

Enclosure

Electronic copy provided to:

Clarence Coleman, FHWA, Raleigh, NC
Donnie Brew, FHWA, Raleigh, NC
Jared Gray, NCDOT, Raleigh, NC
Tyler Stanton, NCDOT, Raleigh, NC
Chris Murray, NCDOT, Durham, NC
Travis Wilson, NCWRC, Creedmoor, NC
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Addendum to Biological/Conference Opinion

Complete 540 – Triangle Expressway Southeast Extension
Wake and Johnston Counties
STIP Project No. R-2829

FWS Log #: 2024-0125170-S7

Prepared by:

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Raleigh Field Office
P.O. Box 33726
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Pete Benjamin, Field Supervisor

September 30, 2024

Date

CONSULTATION HISTORY

This section lists key events and correspondence during this consultation/conference. A complete administrative record is available from the U.S. Fish and Wildlife Service's (Service) Raleigh Field Office.

2018-04-10 – The Service issued *Biological Opinion: Complete 540, Triangle Expressway Southeast Extension in Wake and Johnston Counties, North Carolina (STIP Numbers R-2721, R-2828, R-2829)*

2019-10-15 – The Service issued *Biological/Conference Opinion - Revised: Complete 540, Triangle Expressway Southeast Extension in Wake and Johnston Counties, North Carolina (STIP Numbers R-2721, R-2828, R-2829)*

2023-07-26 – The Service proposed to list the Green Floater as a federally threatened species with proposed critical habitat.

2024-02-26 – The Service and North Carolina Department of Transportation (NCDOT) began discussions regarding Section 7 conferencing for the Green Floater.

2024-06-10 – NCDOT provided the Service with a Green Floater Density Estimate Analysis.

2024-07-25 – The Service commented on portions of a draft Biological Assessment Addendum.

2024-08-08 – The Service received the final Biological Assessment Addendum and a letter from the Federal Highway Administration (FHWA) requesting reinitiation of formal Section 7 consultation and conferencing for the unfinished portion of the action (R-2829).

2024-08-29 – The Service provided the NCDOT and FHWA with a draft Addendum to Biological/Conference Opinion.

ADDENDUM TO BIOLOGICAL/CONFERENCE OPINION

1. INTRODUCTION

On October 15, 2019 the U.S. Fish and Wildlife Service (Service) issued *Biological/Conference Opinion - Revised: Complete 540, Triangle Expressway Southeast Extension in Wake and Johnston Counties, North Carolina (STIP Numbers R-2721, R-2828, R-2829).* Much of the Action has already been constructed, with the R-2829 section remaining. Although the October 15, 2019 BO/CO remains in effect, the Service has subsequently proposed to list the Green Floater as a threatened species with designated critical habitat. This Addendum addresses the Green Floater and its proposed critical habitat for the unconstructed portion of the Action (R-2829, Figure 1) and is intended to be appended to the existing BO/CO. All references to Action Area in this Addendum refer to only the R-2829 portion of the original Action Area.

Although the description of the Action has not changed since the issuance of the October 15, 2019 BO/CO, there is now more detailed information regarding the bridge crossings over the Neuse River. The two concrete bridges will be approximately 1422 feet long and 75.25 feet wide (southbound) and 1422 feet long and 63.25 feet wide (northbound). Each bridge will have one bent in the channel. The in-channel bents will utilize 54-inch concrete drilled shafts/concrete columns for support – five for the southbound bridge and four for the northbound bridge. The columns will be aligned parallel to stream flow. Each bent and the erection of girders will take place from one temporary causeway between the bridges and from the riverbanks via cranes. The causeway will be made from cleaned large grade rip rap. The temporary causeway will leave more than half of the river free flowing with no obstructions. Approximately eight prefabricated concrete cross pipes will be installed under the causeway to maintain river flow. Geotechnical drilling may be performed at the project site and may require boring through the substrate. There would be two 3-inch diameter borings per in-channel bent. Each bent is expected to take two weeks to install and an additional four weeks to erect the girders. Total in-water work time is expected to take 25 weeks to complete.

2. GREEN FLOATER

2.1. Status of Green Floater

This section summarizes best available data about the biology and condition of the Green Floater (*Lasmigona subviridis*) throughout its range that are relevant to formulating a conference opinion about the Action. The Service published a Species Status Assessment Report for the Green Floater on February 10, 2021 (USFWS 2021). The Service published its proposed rule to list the Green Floater as threatened with designated critical habitat on July 26, 2023 (88 FR 48294–48349).

2.1.1. Species Description

Green Floaters are small freshwater mussels with auricular or ear-shaped shells with a broader, slightly more swollen posterior end and a narrower, less inflated anterior end. Their shells are yellow to umber and rayed with fine linear dark green rays most concentrated on the posterior

end. Adults may reach up to 5.5 centimeters, but smaller individuals are more common (Kendig 2014).

2.1.2. Life History

Green Floaters are typically found in small streams to large rivers with slow to moderate flows (not high currents), in areas that provide flow refugia (i.e., eddies and ponded areas in streams), with stable sand and gravel substrate and good water quality. Green Floaters are relatively short lived with variable annual recruitment, suggesting they maximize population growth during periods of favorable conditions. Green Floaters are hermaphroditic and can self-fertilize, which increases the probability of fertilization. Spawning and reproduction likely occur during the late summer or early fall. Over the winter months, they can directly metamorphose larvae (glochidia), releasing juveniles into the water column during the spring without requiring an intermediate host. Green Floaters can also use fish hosts such as Mottled Sculpin, Rock Bass, Central Stoneroller, Blacknose Dace, and Margined Madtom. In these cases, after being expelled into the water, glochidia attach to gills or fins of these fish where they undergo metamorphosis to the juvenile life stage. The Green Floater is an omnivore that presumably feeds on a wide variety of microscopic particulate matter (e.g., bacteria and algae). For more detailed information on Green Floater life history, see Sections 2.4 and 2.5 of the Species Status Assessment Report (USFWS 2021).

2.1.3. Numbers, Reproduction, and Distribution

The Green Floater is historically native to the District of Columbia and 10 states (Alabama, Georgia, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Tennessee, Virginia, and West Virginia). Green Floater populations are currently found in eight of the 10 states in their historical range and are considered extirpated in Alabama, Georgia, and the District of Columbia. They are also extirpated from multiple rivers across the rest of the range. Based on analysis of 179 analysis units (geographic units represented by 10-digit Hydrologic Unit Code watersheds in which there are recent or past Green Floater records), 84% of analysis units are currently considered to be in low or presumed extirpated condition and only 16% in high or medium condition. For more detailed information on numbers, reproduction, and distribution, see Chapters 5 and 6 of the Species Status Assessment Report (USFWS 2021).

2.1.4. Conservation Needs and Threats

The Green Floater needs multiple resilient populations distributed widely across its range, and connectivity between populations (free flowing streams and rivers without barriers) is necessary for periodic genetic exchange. The primary stressors for the species are habitat loss or fragmentation, changes in water flows, and degraded water quality. These stressors are assumed to be caused by multiple sources such as development, energy production, and agriculture - with development appearing to be the primary source. For more detailed information on conservation needs and threats, see Chapter 4 of the Species Status Assessment Report (USFWS 2021).

2.2. Environmental Baseline for Green Floater

This section describes the best available data about the condition of the Green Floater in the Action Area without the consequences caused by the proposed Action.

3.2.1. Action Area Numbers, Reproduction, and Distribution of Green Floater

The Action Area contains ~ 0.5 river mile of suitable habitat for the Green Floater. Although the Green Floater is known to occur in the Neuse River near the Action Area, none were found during the most recent mussel survey on May 3, 2024 (Appendix B, NCDOT 2024). The portion of the Neuse River within and near the Action Area has been surveyed multiple times in the past and is within the North Carolina Natural Heritage Program Element Occurrence (EO) # 28706 for the Green Floater. Based on the North Carolina Wildlife Resources Commission Aquatic Species Database (PAWS), 21 live Green Floaters have been observed within EO #28706 from 2013 – 2024, with specimens located upstream and downstream of the Action Area. Using available information and a statistical method approved by the Service, and assuming both a 10% and 25% detection probability, Three Oaks Engineering conducted a Green Floater Density Estimate Analysis (Appendix C, NCDOT 2024) and estimated 17 - 42 Green Floaters may occur in the Neuse River within the Action Area. Surveys of other smaller streams within the Action Area have been conducted, but none of these streams were considered likely to support Green Floaters.

3.2.2. Action Area Conservation Needs of and Threats to Green Floater

Although the land use adjacent to the Neuse River within the Action Area is primarily forested with ample forest buffers to protect the stream, water quality degradation from upstream is the primary threat to the species. The Neuse River within the Action Area is listed as impaired under Section 303(d) of the Clean Water Act (NCDEQ 2022). There are nine National Pollutant Discharge Elimination System (NPDES) dischargers 2-7 miles upstream of the Action Area which likely affect the water quality to some degree (NCDEQ 2024). Continued development and urbanization in the Neuse River watershed in Wake County, along with the resultant increase in impervious surface, is a major contributor to water quality degradation.

2.3. Effects of the Action on Green Floater

In a BO/CO for a listed species, the effects of the proposed action are all reasonably certain consequences to the species caused by the Action, including the consequences of other activities caused by the Action. Activities caused by the Action would not occur but for the Action. Consequences to species may occur later in time and may occur outside the action area.

<u>Work Outside the Channel</u>
Sedimentation and turbidity are detrimental to aquatic organisms (Ellis 1936, Hollis et al. 1964, Richter et al. 1997, Wood and Armitage 1997, Henley et al. 2000). Prolonged erosion and sediment runoff from construction areas during or after clearing/grubbing, excavation for abutments, and other earth moving activities is a concern. A major storm event could erode soil from within these disturbed areas and wash it into the Neuse River, causing harm by interfering

with respiration, feeding, or spawning and otherwise degrading habitat for Green Floaters and their host fish. However, to avoid or minimize potential sedimentation or turbidity effects, NCDOT has developed stringent erosion control measures (see Section 2.4 of the 2019 BO/CO) which greatly minimize sediment entering the streams. Assuming the proper installation and maintenance of these erosion control measures and full implementation of all conservation measures, the probability of effects from sedimentation or turbidity leading to mortality is low. Except in the most extreme and rare circumstances, it is the Service's experience that the modern erosion control methods employed by NCDOT are effective at minimizing sediment entering a stream. Only in a catastrophic failure of erosion control measures would effects be expected to be lethal. However, given the cryptic nature of Green Floaters, any effects would be difficult to detect and measure.

In-channel Work

The placement of drilled shafts and columns or rip rap for the temporary causeway could crush Green Floaters, although the probability of mortality is low due to the low density of Green Floaters within the Action Area. The noise and/or vibrations from the installation of such structures could disturb or alter the movements of Green Floater host fish. The placement of columns may disturb silt. However, isolating the work area around in-channel bents from the water column using sheet piling, coffer dams, or other methods will greatly minimize siltation. The removal of the causeway may disturb silt which can be redeposited downstream into Green Floater habitat and potentially harm individual Green Floaters and/or their host fish.

Although NCDOT employs BMPs to avoid contaminants from entering streams, there is always the chance of an accidental spill of petrochemicals, uncured concrete, or other toxic substances into a stream. Although such events are rare, they can cause significant harm to mussels (USDOI 2021).

2.4. Cumulative Effects on Green Floater

See Section 4.4 of the 2019 BO/CO for a discussion of cumulative effects, which also applies to the Green Floater.

2.5. Conclusion for Green Floater

In this section, we summarize and interpret the findings of the previous sections (status, baseline, effects, and cumulative effects) relative to the purpose of the CO for the Green Floater, which is to determine whether the Action is likely to jeopardize its continued existence.

Green Floater populations are currently found in eight of the 10 states in their historical range but are in low or presumed extirpated condition in 84% of 179 analysis units. The primary stressors for the species are habitat loss or fragmentation, changes in water flows, and degraded water quality. The Action Area contains ~ 0.5 river mile of suitable habitat for the Green Floater and an estimated 17 - 42 Green Floaters may occur in the Neuse River within the Action Area. Green Floaters could be killed by crushing during placement of bridge bents or causeway rip rap (low probability) or experience sub-lethal adverse effects from sedimentation or turbidity. However,

NCDOT will implement stringent erosion control BMPs to minimize sedimentation and turbidity effects.

After reviewing the status of the species, the environmental baseline for the Action Area, the effects of the Action and the cumulative effects, it is the Service's opinion that the Action is not likely to jeopardize the continued existence of the Green Floater.

3. PROPOSED CRITICAL HABITAT FOR GREEN FLOATER

3.1. Status of Green Floater Proposed Critical Habitat

This section summarizes best available data about the condition of all units of proposed critical habitat for Green Floater that are relevant to formulating a biological opinion about the Action. The Service published its proposed rule to designate critical habitat for the Green Floater on July 26, 2023 (88 FR 48294–48349).

3.1.1. Proposed Critical Habitat Description

Proposed critical habitat for Green Floater is comprised of approximately 1586 river miles in eight units. All the units are currently occupied by the species and contain one or more of the physical and biological features (PBFs) essential to the conservation of the species. See Table 2 of 88 FR 48294-48349 for more detailed information on individual units. The proposed critical habitat provides the following PBFs essential to the conservation of the Green Floater:

(1) Flows adequate to maintain both benthic habitats and stream connectivity, allow glochidia and juveniles to become established in their habitats, allow the exchange of nutrients and oxygen to mussels, and maintain food availability and spawning habitat for host fishes. The characteristics of such flows include a stable, not flashy, flow regime, with slow to moderate currents to provide refugia during periods of higher flows.

(2) Suitable sand and gravel substrates and connected instream habitats characterized by stable stream channels and banks and by minimal sedimentation and erosion.

(3) Sufficient amount of food resources, including microscopic particulate matter (plankton, bacteria, detritus, or dissolved organic matter).

(4) Water and sediment quality necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages, including, but not limited to, those general to other mussel species:
- adequate dissolved oxygen
- low salinity
- low temperature (generally below 86°F)
- low ammonia (generally below 0.5 parts per million total ammonia- nitrogen), PAHs, PCBs, and heavy metal concentrations
- no excessive total suspended solids and other pollutants, including contaminants of emerging concern

(5) The presence and abundance of fish hosts necessary for recruitment of the Green Floater (including, but not limited to, Mottled Sculpin, Rock Bass, Central Stoneroller, Blacknose Dace, and Margined Madtom).

3.1.2. Conservation Value

The current distribution of the Green Floater is much reduced from its historical distribution. We anticipate that recovery will require maintaining and, where necessary, improving habitat and habitat connectivity to ensure the long-term viability of the Green Floater. We have determined that the areas containing one or more of the essential PBFs and occupied by the Green Floater are sufficient to maintain the species' resiliency, redundancy, and representation and to conserve the species. With the eight units of proposed critical habitat dispersed over a wide geographic area, this strategy helps ensure that catastrophic events (e.g., droughts, large pollution events, hurricanes) cannot simultaneously affect all known populations.

3.1.3. Conservation Needs and Threats

The features essential to the conservation of the Green Floater may require special management considerations or protection to reduce the following threats: (1) land-disturbing activities associated with development, (2) agriculture and forestry activities that do not implement best management practices to minimize soil erosion and increased overland flow, (3) barriers that fragment streams and rivers (e.g., dams and improperly installed or maintained culverts), (4) contaminants from point and non-point sources, (5) impacts of climate change, and (6) potential effects of nonnative species.

Management activities that could ameliorate these threats include: (1) protecting and restoring streams and streambank habitats, including stable sand and gravel substrates, (2) maintaining and restoring slow to moderate, not flashy, water flows in streams that may support the species, (3) maintaining and restoring connectivity between streams, (4) reducing or removing contaminants from waterways and sediments, (5) coordinating with landowners and local managers to implement best management practices during agriculture and forestry activities, and (6) minimizing the likelihood that agriculture or energy development projects will impact the quality or quantity of suitable habitat (88 FR 48294–48349).

3.2. Environmental Baseline for Green Floater Proposed Critical Habitat

This section describes the best available data about the condition of proposed critical habitat for the Green Floater in the Action Area without the consequences caused by the proposed Action.

3.2.1. Action Area Conservation Value of Green Floater Proposed Critical Habitat

The Action Area occurs within proposed Critical Habit Unit 7: Neuse-Pamlico Watershed, which consists of 75 river miles. The Action Area also occurs within proposed Subunit 7a, which consists of 16.6 miles of the Neuse River within Wake and Johnston County, North Carolina. The Action Area constitutes ~ 0.5 mile (0.67%) of the total 75 river miles of Unit 7, and ~ 0.03%

of the total 1586 river miles of proposed critical habitat for the Green Floater. The Action Area contains one or more of the PBFs essential to the conservation of the species.

3.2.2. Action Area Conservation Needs for Green Floater Proposed Critical Habitat

Special management considerations or protection may be required within Subunit 7a to address excess nutrients, sediment, and pollutants that enter the river, as well as urban development. The Raleigh-Durham metro area is immediately upstream of the Action Area and influences water quality. Growth and development in the Raleigh-Durham area are expected to continue and special management protections may be required to address potential decreases of forest cover and increases of impervious surfaces.

3.3. Effects of the Action on Green Floater Proposed Critical Habitat

In a BO/CO for critical habitat, the effects of the proposed action are all reasonably certain consequences to its PBFs caused by the action, including the consequences of other activities caused by the action. Activities caused by the action would not occur but for the action. Consequences to proposed critical habitat features may occur later in time but are limited to portions of the designation that occur within the Action Area.

Placement of bridge bents into the Neuse River will directly and permanently impact 0.003 acre of proposed critical habitat and affect PBF #2 (see Section 3.1.1 above). Given the large amount of proposed critical habitat, 0.003 acre of permanent loss is discountable. The temporary placement of a work causeway will temporarily impact ~ 0.34 acre of proposed critical habitat and affect PBF #2. The removal of the causeway will likely resuspend some amount of sediment which will redeposit downstream. Although sediment transport is a normal process within a stream's flow regime (Poff et al. 1997), resuspension and deposition of sediment could temporarily affect PBF #2 and #4. Redeposited sediment can render substrates less suitable as habitat. Resuspended sediment also increases turbidity which generally reduces water quality. Earthwork outside the channel has the potential to erode sediment into the river and similarly affect PBF #2 and #4. However, NCDOT's use of BMPs (NCDOT 2003, NCDOT 2015) will greatly minimize these potential effects. As such, most of these effects to the PBFs are expected to be minor and temporary, and thus would not appreciably diminish the value of the PBFs.

3.4. Cumulative Effects on Green Floater Proposed Critical Habitat

See Section 4.4 of the 2019 BO/CO for a discussion of cumulative effects, which also applies to the Green Floater.

3.5. Conclusion for Green Floater Proposed Critical Habitat

In this section, we summarize and interpret the findings of the previous sections (status, baseline, effects, and cumulative effects) relative to the purpose of the BO/CO for Green Floater proposed critical habitat, which is to determine whether the Action is likely to result in its destruction or adverse modification.

The Action Area constitutes only ~ 0.67% of the total 75 river miles of Unit 7 and ~ 0.03% of the total 1586 river miles of proposed critical habitat for the Green Floater. There will be a permanent, albeit discountable, loss of 0.003 acre of Neuse River substrate and a temporary loss of ~ 0.34 acre of substrate, both affecting PBF #2. Within a small portion of the Action Area, the Action will likely temporarily affect PBF #2 and #4 through sedimentation and turbidity. However, the implementation of stringent erosion control measures and BMPs as part of the Action will greatly minimize these effects. After reviewing the status of the critical habitat, the environmental baseline for the Action Area, the effects of the Action, and the cumulative effects, it is the Service's biological opinion that the Action is not likely to result in the destruction or adverse modification of proposed critical habitat for the Green Floater.

4. INCIDENTAL TAKE STATEMENT

The Service previously provided an Incidental Take Statement (ITS) for the Action in Section 8 of the October 15, 2019 BO/CO. Although no additional Reasonable and Prudent Measures, Terms and Conditions, or Monitoring and Reporting Requirements are necessary, the ITS is modified to include the following:

4.1. Amount or Extent of Take of Green Floater

The Service anticipates that the Action is reasonably certain to cause incidental take of individual Green Floaters consistent with the definition of harm resulting from either being crushed during construction or more likely experiencing sub-lethal adverse effects from sedimentation and turbidity. Based on survey data and estimated detection probabilities, an estimated 17 - 42 Green Floaters may occur within the Action Area. Although it is unlikely that all the Green Floaters in the Action Area would experience take, we estimate take to be up to 42 Green Floaters in a worst-case scenario. Most take would likely be sublethal; however, given the cryptic nature of this species, incidental take will likely not be detectable.

5. REINITIATION NOTICE

Formal conference for the Action considered in the BO/CO Addendum regarding Green Floater and Green Floater proposed critical habitat is concluded. Reinitiating conference/consultation is required if the FHWA retains discretionary involvement or control over the Action (or is authorized by law) when:

a. the amount or extent of incidental take is exceeded;
b. new information reveals that the Action may affect listed species or designated critical habitat in a manner or to an extent not considered in the BO/CO and Addendum;
c. the Action is modified in a manner that causes effects to listed species or designated critical habitat not considered in the BO/CO and Addendum; or
d. a new species is listed or critical habitat designated that the Action may affect.

6. LITERATURE CITED

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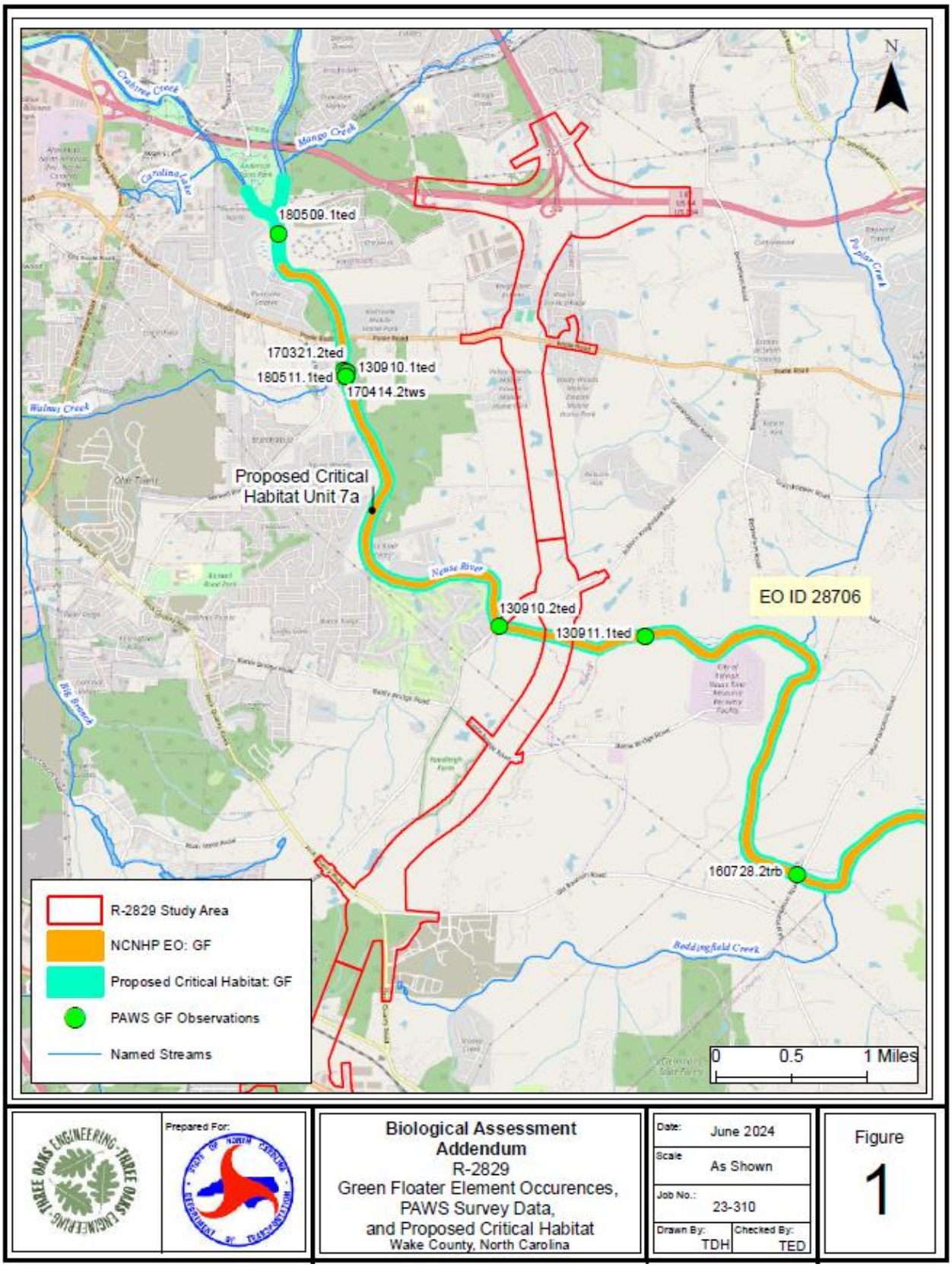
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Proposed Critical Habitat Unit 7a
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EO ID 28706
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R-2829 Study Area
NCNHP EO: GF
Proposed Critical Habitat: GF
PAWS GF Observations
Named Streams
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Prepared For:
Biological Assessment Addendum
R-2829
Green Floater Element Occurences, PAWS Survey Data, and Proposed Critical Habitat
Wake County, North Carolina
Date: June 2024
Scale: As Shown
Job No.: 23-310
Drawn By: TDH
Checked By: TED
Figure 1