



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

November 3, 2022

MEMORANDUM TO: Mr. Tim Anderson, P.E.
Division 13 Division Engineer

FROM: *mat* Michael Turchy, ECAP Group Leader
Environmental Analysis Unit

SUBJECT: Environmental Permits for the Replacement of Bridge 71 on Walnut Creek Road (SR 1395) over Big Laurel Creek in Madison County, Division 13, WBS No. 47845.1.1, **TIP: B-5989.**

Please find enclosed the following permits for this project:

Agency	Permit Type	Permit Expiration
US Army Corps of Engineers Section 404 Clean Water Act Permit	Regional General Permit 50	May 25, 2025
NC Division of Water Resources Section 401 Water Quality Certification	General Certification No. 4135[RGP50]	May 25, 2025

Please feel free to contact our Unit for any questions.

ec:

NCDOT Permit Website (<https://xfer.services.ncdot.gov/pdea/PermIssued/>)

PROJECT COMMITMENTS

T.I.P Project No. B-5989
Replacement of Bridge No. 560071 on Walnut
Creek Road (SR 1395) over Big Laurel Creek
Madison County
Federal Project No. BRZ-1395(007)
WBS Element 47845.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

FEMA Floodplains and Floodways (Division 13 Construction, NCDOT SMU)

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

Floodplain Mapping Coordination (NCDOT Hydraulic Design Unit)

The Hydraulics Unit has coordinated with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). *The Memorandum of Agreement was approved on February 3, 2020.*

Outstanding Resource Water (NCDOT Division 13, Roadside Environmental Unit)

Big Laurel Creek is located in a watershed designated as Outstanding Resource Waters (ORW). The NCDOT will implement Design Standards in Sensitive Watersheds.

Construction Moratoria (NCDOT Division 13 Construction)

~~The North Carolina Wildlife Resources Commission (NCWRC) identifies Big Laurel Creek as hatchery supported trout waters and has requested a moratorium prohibiting in-stream work and land disturbance within the 25-foot trout buffer from January 1 to April 15.~~

Since the completion of the ROW Consultation on 1/4/2022, the WRC area fish biologist has waived the trout moratorium for this project since the stream is hatchery supported and natural reproduction is most likely limited at such a low elevation (April 2022).

Northern long-eared bat and Gray bat (NCDOT Division 13)

Final design, tree clearing, and percussive activities information will be provided in the permit application, as noted in the project commitments.

After completion of the project, the contract administrator for construction must submit the actual amount of tree clearing reported in tenths of acres. This information should be submitted to Chris Manley in the EAU Biological Surveys Group (cdmanley@ncdot.gov).

Big Laurel Baptist Church (NCDOT Division 13)

Due to the location of the temporary signals to be used, NCDOT Division 13 staff will, prior to construction, coordinate with Big Laurel Baptist Church and the project's contractor regarding general public access restrictions (in the form of moveable barriers) to the church's property and parking lot.

Section 7 Biological Assessment (NCDOT Biological Surveys Group)

Based upon recent evidence of potential bat roosting on this bridge, NCDOT Biological Surveys Group anticipates preparing a Biological Assessment (BA) in 2022 to address species listed by the U.S. Fish and Wildlife Service (USFWS) for Madison County under the Endangered Species Act of 1973, including the Gray and Northern Long-Eared bats.

A BA was submitted to USFWS in May of 2022. The USFWS issued a subsequent Biological and Conference Opinion in September 2022.

NCDOT will ensure that the contractor understands and follows the measures listed in the "Conservation Measures", "Reasonable and Prudent Measures," and "Terms and Conditions" sections of the September 2022 Biological and Conference Opinion.

COMMITMENTS FROM PERMITTING

NCDOT Division 13 Construction

401 Special Condition #2: Provide advanced notice of construction to Dave McHenry with the North Carolina Wildlife Resources Commission so that he may advise the site contractor about ways to minimize possible impacts to the Eastern Hellbender (NC Special Concern). [15A NCAC 02H .0506(b)(1) and (2)]

404 Special Condition #3: This RGP 50 verification letter does not authorize you to take a federally listed species, specifically the gray bat (*Myotis grisescens* - Endangered) and/or the northern long-eared bat (NLEB) (*Myotis septentrionalis* - Threatened, Proposed Endangered). In order to legally take a federally listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). The U.S. Fish and Wildlife Service (Service) issued a combined Biological and Conference Opinion (BCO) for this project titled, "Biological and Conference Opinion, Replacement of Bridge 560071 on Walnut Creek Road (SR 1395) over Big Laurel Creek, Madison County, North Carolina," on September 26, 2022. For federally listed species (BO) - this document contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" of the gray bat and NLEB. Your authorization under this verification letter is conditional upon your compliance with all of the mandatory terms and

conditions associated with the incidental take specified in the BCO for these two federally listed species; the terms and conditions of this document are incorporated by reference. Failure to comply with the terms and conditions associated with the specified incidental take, when a take of the federally listed species occurs, would constitute an unauthorized take and non-compliance with the verification letter and RGP 50. For the Conference Opinion (CO) section of the BCO - as noted in the BCO, the prohibitions against taking tricolored bat (*Perimyotis subflavus* – Proposed Endangered) and little brown bat (*Myotis lucifigus* – Under Review) do not apply unless/until these species are listed. However, if the tricolored bat or little brown bat is listed, or critical habitat is designated, and the CO associated with these two species is adopted as a BO, compliance with the measures noted in the current BCO specific to these two species, with their implementing terms and conditions, would be nondiscretionary and would become a condition of this verification letter.

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action ID. **SAW-2022-02122 B-5989**

County: **Madison**

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Property Owner / Authorized Agent:

North Carolina Department of Transportation

Attn: Mr. Michael A. Turchy

Environmental Coordination and Permitting Group Leader

Address: **1598 Mail Service Center**

Raleigh, North Carolina 27699-1598

919-707-6157

Size and location of property (water body, road name/number, town, etc.): **The project is located at Bridge No. 71 on SR 1395 over Big Laurel Creek in Madison County, North Carolina.**

Description of project area and activity: **In order to replace the bridge, the permittee is authorized to impact waters of the U.S. as follows:**

Summary of Authorized Impacts and Required Mitigation

Impact ID #	NWP / GP #	Open Water (ac)		Wetland (ac)		Stream (lf)	
		Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Site 1 (Stream SC – UT to Big Laurel Creek)	<u>RGP 50</u>					10' (dewater)	
Site 2 (Stream SA – UT to Big Laurel Creek)	<u>RGP 50</u>					45' (pipe)	33' (pipe)
Site 3 (Big Laurel Creek)	<u>RGP 50</u>					23' (detour bridge)	
Site 4 (Big Laurel Creek)	<u>RGP 50</u>					40' (work bridge)	
Impact Totals		0	0	0	0	118'	33'
Total Loss of waters of the U.S. (wetlands and/or open waters in ac)			0	Total Loss of waters of the U.S. (streams in lf)			33'
Required Wetland Mitigation (ac)			0	Required Stream Mitigation (lf)			66'

Applicable Law: ☒ Section 404 (Clean Water Act, 33 USC 1344)

☐ Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: Regional General Permit Number: **RGP 50**

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached conditions, your submitted application, and the following special conditions:

Special Conditions

1. All work must be performed in strict compliance with (a) the description of work in the PCN dated October 3, 2022, and (b) the Wetland and Surface Water Impacts Permit Drawing(s) (Permit Plans) submitted by email on October 10, 2022. Any modification to the description of work and/or the permit plans must be approved by the USACE prior to implementation.
2. In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.
3. This RGP 50 verification letter does not authorize you to take a federally listed species, specifically the gray bat (*Myotis grisescens* - Endangered) and/or the northern long-eared bat (NLEB) (*Myotis septentrionalis* - Threatened, Proposed Endangered). In order to legally take a federally listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). The U.S. Fish and Wildlife Service (Service) issued a combined Biological and Conference Opinion (BCO) for this project titled, "Biological and Conference Opinion, Replacement of Bridge 560071 on Walnut Creek Road (SR 1395) over Big Laurel Creek, Madison County, North Carolina," on September 26, 2022. For federally listed species (BO) - this document contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" of the gray bat and NLEB. Your authorization under this verification letter is conditional upon your compliance with all of the mandatory terms and conditions associated with the incidental take specified in the BCO for these two federally listed species; the terms and conditions of this document are incorporated by reference. Failure to comply with the terms and conditions associated with the specified incidental take, when a take of the federally listed species occurs, would constitute an unauthorized take and non-compliance with the verification letter and RGP 50. For the Conference Opinion (CO) section of the BCO - as noted in the BCO, the prohibitions against taking tricolored bat (*Perimyotis subflavus* – Proposed Endangered) and little brown bat (*Myotis lucifugus* – Under Review) do not apply unless/until these species are listed. However, if the tricolored bat or little brown bat is listed, or critical habitat is designated, and the CO associated with these two species is adopted as a BO, compliance with the measures noted in the current BCO specific to these two species, with their implementing terms and conditions, would be nondiscretionary and would become a condition of this verification letter.

4. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this authorization letter in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this authorization letter, all conditions, and any authorized modifications. A copy of this authorization letter, all conditions, and any authorized modifications, shall be available at the project site during construction and maintenance of this project.

Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide and/or regional general permit authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide and/or regional general permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide and/or regional general permit. If the nationwide and/or regional general permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide and/or regional general permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide and/or regional general permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide and/or regional general permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 828-296-4500) to determine Section 401 requirements.

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the U.S. Army Corps of Engineers regulatory program, please contact Lori Beckwith at loretta.a.beckwith@usace.army.mil or 828-271-7980, ext. 4223.

USACE Regulatory Official: Monte Matthews

Monte Matthews

Date: 2022.11.02
16:45:06 -04'00'

Date: November 2, 2022

Expiration Date of Verification: May 25, 2025

Copy Furnish:

NCDOT, Ms. Erin Cheely

Action ID Number: SAW-2022-02122

County: Madison

Permittee: NCDOT, Mr. Michael Turchy

Project Name: NCDOT / B-5989 / Bridge 71 / Div 13

Regional General Permit OR Nationwide Permit: RGP 50

Date Verification Issued: November 2, 2022

Project Manager: Lori Beckwith

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT
Attn: Lori Beckwith
151 Patton Avenue
Room 208
Asheville, NC 28801-5006

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. Failure to comply with any terms or conditions of this authorization may result in the U.S. Army Corps of Engineers suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: North Carolina Department of Transportation
Project Name: B-5989, Bridge 71

Action ID: SAW-2022-02122
County: Madison

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*:			8-digit HUC and Basin: 06010105, French Broad River Basin			
Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
		33				

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements:			8-digit HUC and Basin: 06010105, French Broad River Basin			
Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
		66				

Mitigation Site Debited: Puncheon Fork Mitigation Site, part of the RES French Broad HUC 06010105 umbrella mitigation bank sponsored by EBX

List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the Wilmington District, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: Environmental Banc & Exchange, LLC

Name of Sponsor's Authorized Representative: Jennifer Hatchett


Signature of Sponsor's Authorized Representative

8/8/2023
Date of Signature

**USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2**

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the District is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the District is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. When NCDMS provides mitigation for authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by NCDMS must be provided to the District within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the District has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the District Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the District, the Sponsor must obtain case-by-case approval from the District Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the District administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

This form is not valid unless signed below by the District Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the District Project Manager at the address below, 3) the Bank Manager listed in RIBITS, and 4) the Wilmington District Mitigation Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (or by email to SAWMIT@usace.army.mil).***

Questions regarding this form or any of the permit conditions may be directed to the District Mitigation Office.

USACE Project Manager: Lori Beckwith
USACE Field Office: Asheville Regulatory Field Office
US Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

Email: loretta.a.beckwith@usace.army.mil

Loretta A. Beckwith Digitally signed by Loretta A. Beckwith
Date: 2022.11.02 14:24:54 -04'00'

Wilmington District Project Manager Signature

November 2, 2022

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at <http://ribits.usace.army.mil>.



◻ North Carolina Wildlife Resources Commission ◻

Cameron Ingram, Executive Director

October 14, 2022

Lori Beckwith
U.S. Army Corps of Engineers, Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801

Kevin Mitchell
NCDEQ, DWR
2090 U.S. Hwy. 70
Swannanoa, N.C. 28778

SUBJECT: Comments on GP/WQC Application for Replacement of Bridge 71 on Walnut Creek
Road (SR 1395) over Big Laurel Creek, Madison County (**B-5898**)
DWR 20221364 ver.1

Dear Ms. Beckwith and Mr. Mitchell,

The North Carolina Department of Transportation (NCDOT) applied for a General 404 Permit and 401 Certification for the subject project. I am familiar with the wildlife resources in the area and visited the project site on March 31, 2022. Comments on the application from the North Carolina Wildlife Resources Commission (NCWRC) are offered to help conserve wildlife resources affected by the project and to promote wildlife-based recreation in accordance with applicable provisions of the state and federal Environmental Policy Acts (G.S. 113A-1 through 113-10; 1 NCAC 25 and 42 U.S.C. 4332(2)(c), respectively), the Clean Water Act of 1977 (33 U.S.C. 466 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The project will impact Big Laurel Creek (C ORW) and an unnamed tributary. Temporary access and work bridges will be constructed. Multiple piers will be placed in the creek to support these temporary structures.

The project will affect a known roost for gray bat (*Myotis grisescens*, US Endangered). Section 7 coordination has been completed. The NCWRC appreciates, in part, inclusion of conservation measure 11 in the Biological Opinion and the opportunity to participate in the preconstruction meeting. I, and possibly other staff, intend to attend the meeting.

Big Laurel Creek at the project site is designated by the NCWRC as “hatchery supported”. In scoping comments, the NCWRC noted the need to adhere to a short trout moratorium for rainbow trout for the bridge construction. However, after additional coordination, NCWRC biologists determined that the trout moratorium can be waived for this project.

Big Laurel Creek supports eastern hellbender (*Cryptobranchus alleganiensis*), which is listed as an NC Special Concern species. There will be a considerable amount of temporary disturbance in the creek. Therefore, NCWRC biologists would appreciate advance notice of construction such as an invitation to the preconstruction meeting (noted above) so that hellbenders within the project footprint can be relocated before construction commences, as deemed necessary. Please contact Lori Williams (lori.williams@ncwildlife.org) and me in advance of construction and/or the preconstruction meeting.

As designed, the final road and bridge work will preserve a gravel pull-off near the north side of the bridge. The NCWRC appreciates NCDOT preserving the parking here because it is likely used by the NCWRC trout stocking crew (this bridge is a stocking point) and it is certainly used by fishermen.

The NCWRC does not recommend additional conditions for the 404/401 authorizations.

Thank you for the opportunity to review and provide recommendations on this project. Please contact me at david.mchenry@ncwildlife.org or (828)476-1966 if you have any questions about these comments.

Cordially,



Dave McHenry, NCWRC Western DOT Coordinator

cc: Michael Turchy, NCDOT ECAP
Roger Bryan, NCDOT Division 13 Environmental Officer
Lori A. Williams, NCWRC Wildlife Diversity Biologist
Katherine Etchison, NCWRC Wildlife Diversity Biologist

Biological and Conference Opinion

Replacement of Bridge 560071 on Walnut Creek Road (SR 1395) over Big Laurel Creek Madison County, North Carolina

TIP B-5989
Service Log #18-426
Service Project Code 2022-0060708



Prepared by:

U.S. Fish and Wildlife Service
Asheville Ecological Services Office
160 Zillicoa Street
Asheville, North Carolina 28801

**GARY
PEEPLER**

Digitally signed by
GARY PEEPLES
Date: 2022.09.26
13:13:34 -04'00'

Janet Mizzi
Field Supervisor
Asheville Ecological Services Field Office
Asheville, North Carolina

Date

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Suggested Citation: U.S. Fish and Wildlife Service. 2022. Biological and Conference Opinion for the Replacement of Bridge 560071 on Walnut Creek Road (SR 1395) over Big Laurel Creek, Madison County, North Carolina. TIP B-5989. Service Log #18-426. Service Project Code 2022-0060708. Asheville Ecological Services Field Office, Asheville, North Carolina. September. 49 pages.

1. INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service) biological and conference opinions (Opinions) based on the Service's review of the proposed bridge replacement located in Madison County, North Carolina, and its effects on the gray bat, northern long-eared bat, tricolored bat, and little brown bat in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). Your request for formal consultation was received on May 16, 2022.

These Opinions are based on information provided in responses to questions received on June 14, 2022 via e-mail, a field investigation by the Service on June 15, 2022, and the Revised Biological Assessment (BA; Three Oaks Engineering, 2022) received on June 16, 2022. A complete administrative record of this consultation is on file at the Asheville Ecological Services Field Office under the FWS Log Number 18-426 and Project Code 2022-0060708.

The North Carolina Department of Transportation (NCDOT) has proposed to replace Bridge 71 on Walnut Creek Road over Big Laurel Creek. The Service maintains the Information for Planning and Consultation Website (IPaC; Service 2022a), which lists two federally listed species and one candidate species potentially in the action area (Table 1). In addition, this BA includes the little brown bat (*Myotis lucifugus*) and the tricolored bat (*Perimyotis subflavus*), which also occur in Madison County (LeGrand et al. 2022) and may become federally listed in the future. There is no designated critical habitat within the action area for any of the five species (Table 1). Consultation is not required for monarch butterfly.

Table 1. Species List for B-5989

Common Name	Scientific Name	Federal Status	Suitable Habitat	Species Present in Action Area
Gray Bat	<i>Myotis grisescens</i>	Endangered	Present	Yes
Little Brown Bat	<i>Myotis lucifugus</i>	At-Risk Species	Present	Presence Assumed
Monarch Butterfly	<i>Danaus plexippus</i>	Candidate	NA	NA
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	Present	Presence Assumed
Tricolored Bat	<i>Perimyotis subflavus</i>	Proposed Endangered	Present	Yes

2. CONSULTATION HISTORY

August 8, 2018 – NCDOT consultant sends a Start of Study Letter to the Service requesting input.
September 5, 2018 – The Service provides NCDOT with a species list.
January 6, 2022 – NCDOT sends the Service a species list provided by IPaC and requests confirmation of its accuracy for use in a BA. The Service confirms the list.
January 11, 2022 – NCDOT notifies the Service of the let date and when the formal consultation request is expected (May 2022).
May 16, 2022 – NCDOT requests initiation of formal consultation.
May 17, 2022 – The Service acknowledges receipt of the request.
May 26, 2022 – The Service sends a list of questions to NCDOT and starts work on the Opinion.
June 14, 2022 – NCDOT sends shapefiles, figures, and responses to questions.
June 15, 2022 – The Service conducts a site visit to Bridge 71.
June 16, 2022 – The Service sends a note about the field visit to NCDOT, noting the presence of guano on the northwestern side of the bridge and additional trees that will likely need to be cleared. NCDOT submits the revised BA. The Services states that they have no further comments.
August 8, 2022 – The Service requested clarity on whether the new bridge will provide suitable roosting habitat.
August 11, 2022 – NCDOT provides more detail on new bridge design.
August 25, 2022 – The Service asks for an update on any 2022 survey results and NCDOT provides

- September 9, 2022 – them.
The Service sends this final Biological and Conference Opinion to NCDOT for review prior to signature.
- September 14, 2022 – NCDOT requests clarification on Term and Condition #3.
- September 19, 2022 – The Service elaborates on the intent behind Term and Condition #3 in an email to NCDOT.
- September 23, 2022 – NCDOT informs the Service they have no further comments on this Biological and Conference Opinion.

3. DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

As defined in the Service's section 7 regulations (50 CFR 402.02), "action" means *"all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas."* The "action area" is defined as *"all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action."* The direct and indirect effects of the actions and activities must be considered in conjunction with the effects of other past and present Federal, state, or private activities, as well as the cumulative effects of reasonably certain future state or private activities within the action area. Information in this section was taken from the BA (Three Oaks Engineering, 2022).

3.1 ACTION AREA

The action area includes the immediate project footprint as well as locations adjacent to the project that could be affected by project activities such as noise and light from project activities that could potentially result in effects in adjacent areas. To account for the effects in adjacent habitat, the action area extends 0.25 miles beyond the project footprint. The action area covers 186 acres (Figure 2). Forested habitat makes up most of the action area, along with maintained/disturbed habitat. The project footprint (Figure 3) extends approximately 480 feet from the south end of the existing bridge along Walnut Creek Road, approximately 300 feet from the north end of the existing bridge along Big Laurel Road toward Lewis Branch Road, and approximately 280 feet from the north end of the existing bridge on Big Laurel Road toward Buckner Branch Road. It includes temporary and permanent construction easements, areas for equipment access and staging, drainage easements, cut/fill slopes, and an on-site detour. The project disturbance footprint totals 1.7 acres. Three culverts occur within the project disturbance footprint though more culverts or small bridges with suitable roosting habitat may occur within the action area and may be impacted by noise.

The contractor may use areas outside the action area for borrow pits or spoil areas. Waste and borrow areas will likely be required to dispose of and obtain materials for earthwork and are also subject to clearing and grubbing. Since those locations are unknown at this time, activities associated with these locations are not part of this Opinion and are not discussed further. NCDOT has stated that no borrow/waste/staging area will be allowed that *may affect* federally listed species. Consultation will be re-initiated if NCDOT determines that borrow pit/spoil/waste/staging/storage areas and their use by the project *may affect* federally listed species.

3.2 GENERAL CONSTRUCTION ACTIVITIES

Construction activities associated with the project may include, but are not limited to clearing, grubbing, grading, installation of base material, bridge construction, and bridge removal. The project will include installation and removal of a temporary work bridge and a temporary detour bridge, bridge approaches, retaining wall, driven piles, drilled bridge footings, demolition of the existing bridge, civil site work, mobilization, maintenance of traffic, replacing highway barrier rails, and final pavement markings. Fill material will be placed along the southern approach to the new bridge, some of the existing stream bank will be excavated, riprap will be installed along one bank of Big Laurel Creek, and a retaining wall will be constructed along the other. Any temporary access locations will be regraded and vegetated. Construction will take approximately 18 months.

3.3 THREE BRIDGES

On-Site Temporary Detour Bridge

NCDOT will construct a new temporary bridge at the site to service as an on-site detour bridge located 50-55 feet west of the existing bridge within the project disturbance footprint and action area. Traffic will use this temporary detour bridge during the construction period. The bridge will be a single lane controlled with three temporary traffic lights. An off-site detour was not evaluated due to the length (21 miles) of the closest available off-site detour. The detour bridge may have temporary effects to Big Laurel Creek similar to those of the new bridge and temporary work bridge. If any temporary bridge footings must be drilled in Big Laurel Creek, they will be removed when the temporary bridge is dismantled.

New Bridge

The B-5989 project consists of replacing Bridge 71 on Walnut Creek Road over Big Laurel Creek with a new bridge in its existing location. The existing bridge, constructed in 1965, has three spans, with one bent in the creek. Bridge approaches will be widened to provide the new bridge with two 10-foot vehicular lanes, a 6-foot shoulder on the west side and a 4-foot shoulder on the east side. Based on a preliminary design, the replacement structure will be approximately 130 feet long with a 30-foot clear deck width. The roadway and new bridge will have a 40-mile per hour (mph) design speed and 35 mph speed limit. An approximately 140-foot long retaining wall is proposed along the east side of Big Laurel Road, beginning at the northern edge of the new bridge, to avoid impacts to Big Laurel Baptist Church's shelter and baptismal pool as much as possible. The retaining wall may require drilled-in elements that impact Big Laurel Creek.

The roadway grade of the new structure will be raised by one to two feet to provide a design that meets the project speed limit and helps ensure drainage does not pond on the bridge. The new bridge will be a two-span concrete girder structure. The new bridge will accommodate cyclists on paved shoulders and shall be compliant with the NCDOT Complete Streets Policy. The design includes bicycle-safe, 42-inch vertical concrete guardrails.

Drilling will be conducted for the footings of the new bridge at one end bent and one interior bent. Since the new bridge will span Big Laurel Creek, drilling will not take place within the creek itself for the bridge bents. For drilling, an auger will be used to drill down until it encounters rock and is unable to proceed further. The auger will remove loose material (spoils) from within the casing and deposit them in a watertight catch pan. A rock auger or down-the-hole hammer will then be used to continue excavation into the rock. As construction proceeds, the permanent steel casing will be twisted down into rock until the rock surrounding the casing creates a seal. After this, shaft excavation will continue several feet into rock. Spoils will continue to be removed using the watertight catch pan. As needed, the catch pan will be transported to an upland disposal area at least 30 feet from the edge of the river where the spoils will be treated through an approved North Carolina Department of Environmental Quality (NCDEQ) erosion control device. Once rock excavation is complete, remaining spoils and any residual water at the bottom of the shaft will be cleaned out using a flat bottom cleanout bucket and/or pumped through a hose to an upland disposal area at least 30 feet from the edge of the river and treated through an approved NCDEQ erosion control device. After steel reinforcement is placed in the shaft, concrete will be pumped directly into the watertight permanent steel casing lining the shaft. Drilling activity is anticipated to take up to 31 days and will occur during the day.

Temporary Work Bridge

The project will require a temporary work bridge, which is anticipated to be built at the existing bridge location once the existing superstructure is removed. The temporary work bridge will be wider than the existing bridge and will provide the contractor with access down to the creek. Access to the work bridge is expected to come from the south side approach. The work bridge may have temporary effects to Big Laurel Creek. If any temporary bridge footings must be drilled in Big Laurel Creek, they will be removed

when the bridge is dismantled. At this stage of the design process, it is not known what the extent of the temporary effects may be.

Bridge Demolition

Three bridges will be demolished for the project. Bridge demolition may occur any time of year and will occur at different times. Bridge deck demolition may require equipment such as a tractor-trailer truck, a crane, and a track hoe. The demolition will consist of scraping the asphalt from the existing bridge deck, sawing the remaining concrete deck into sections, and hauling away the deck sections. Removal of bents is the next step.

Once the deck of existing Bridge 71 is removed, the I-beams will be removed, and the temporary work bridge will be constructed, allowing access to the creek for bridge construction. The temporary work bridge will be used to remove the existing bent on the southern creek bank and then to install the foundations for the new bridge and retaining wall.

The existing interior bridge footings, which are at the edge of the creek banks, will most likely be removed by cutting them off at riverbed or ground elevation and leaving the base of the spread footing in place. The method of removal will be dependent on the foundation conditions present at the site. Exposed steel will be cut off. Once the interior bents are demolished and the new bridge foundations are constructed, the temporary work bridge will be removed, the new bridge will be completed, and the temporary detour bridge will be removed last.

3.4 STREAM IMPACTS AND CULVERTS

Three jurisdictional streams may be affected by the project, based on preliminary design (using slope stake limits plus 25 feet): approximately 87 linear feet of Big Laurel Creek, 52 linear feet of Stream SA (a perennial tributary), and 66 linear feet of Stream SC (an intermittent tributary). Stream SA currently runs through a 42-inch tall by 33-foot-long corrugated metal pipe culvert under Walnut Creek Road; the pipe will be replaced with a 54-inch pipe as part of the project. In addition, the pipe will temporarily be extended to allow traffic to access the temporary detour bridge. Stream SC runs parallel to Walnut Creek Road and joins Stream SA after crossing under a driveway through a 24-inch corrugated metal pipe culvert which will not be affected by the project. An 18-inch corrugated metal pipe culvert that is approximately 70 feet long is also in the project footprint but will not be replaced. No impacts to wetlands are anticipated from the project construction.

3.5 TREE REMOVAL

Replacement of Bridge 71 will require tree removal to allow for construction access, grading, and crane movements. Since Bridge 71 is in an area with steep terrain, adequate access to complete the necessary work may require vegetative clearing beyond the existing right-of-way limits along Walnut Creek Road and Big Laurel Road. A narrow strip of the project footprint overlaps the wooded east side of Walnut Creek Road and Big Laurel Creek (Figure 3), however, work in this area will be limited in order to avoid the Big Laurel Church shelter and baptismal pool. On the west/north side of Big Laurel Creek and the existing bridge, where most of the project footprint occurs, trees are sparsely scattered along the creek. Tree-clearing for the entire project will take place on 0.39 acres (up to 0.5 acres) of maintained/disturbed land that is sparsely wooded. Method II clearing will be used, which means trees will be removed to the slope stake or construction limits. Based on the current contract let date (January 2023), tree-clearing may start as early as March, with a possible completion date of April 1, and guaranteed completion date of May 15.

3.6 PERCUSSIVE ACTIVITIES

Noise/vibration will be generated primarily from equipment used to install guardrails, drive piles, drill bridge footings, and demolish the existing bridge. Equipment that may be used includes a tractor-trailer truck, a crane, and a track hoe. There may be infrequent and short-term percussive activities such as

hammering and sawing to remove old bridge decks and supports during bridge demolition. Drilling noise will vary depending on the depth of the drill bit, depth of the water, and whether any silt or other substrate is present above the bedrock. One end bent for the new bridge will require pile-driving, one of the loudest construction noises on highway projects. Pile-driving may take two to four weeks. There may be short-term percussive activities for installation of temporary and permanent guardrail posts. Noise associated with the project may take place any time year but only during the day.

3.7 NIGHT WORK AND LIGHTING

No night work will take place. No permanent lighting associated with the bridge or roadway is present in the project footprint currently, and none will be installed as part of this project. Existing lighting does occur at the adjacent church. Also, three temporary traffic lights will be used to direct traffic at the detour bridge. One light will be placed on Walnut Creek Road and two will be placed on Big Laurel Road, to cover all directions of approaching traffic. The traffic lights will be red, yellow, and green. They will be solar powered with backup generators and will be in place for up to 18 months.

3.8 UTILITIES

No underground utilities exist within the project footprint. There is one aerial power line being relocated, which may create a small amount of temporary ground disturbance within the project footprint.

3.9 LAND DISTURBANCE AND EROSION CONTROL

The proposed action includes land-disturbing activities that create bare soil conditions. The Federal Clean Water Act (CWA) and the National Pollutant Discharge Elimination System (NPDES) require that construction activities control the discharge of pollutants in stormwater runoff including sediment. Each is enforced by the U.S. Environmental Protection Agency (USEPA) and by the Division of Energy, Minerals and Land Resources (DEMLR) and the Division of Water Resources (DWR) within the North Carolina Department of Environmental Quality (NCDEQ) through delegation of authority from the USEPA. In North Carolina, NPDES General Permit NCG01 covers construction activities. The permit complies with State erosion and sediment control requirements along with other stormwater pollution prevention requirements. NCDOT will implement standard erosion control measures during construction consistent with the above permits and the NCDEQ's regulations at 15A NCAC 04B .0124 *Design Standards in Sensitive Watersheds*, which includes stringent ground cover requirements.

3.10 FACILITY OPERATION & POST-CONSTRUCTION STORMWATER MANAGEMENT

Facility operations include daily vehicle and bicycle use, stormwater runoff treatment, and inspection and maintenance activities. Traffic capacity and the speed limit of the bridge and improved roadway will not increase. Maintenance of the road and bridge will continue post-construction though is not expected to change from baseline conditions. NCDOT's Construction General Permit (NCG01) allows for stormwater discharge under the NPDES. NCDOT must comply with the NCDEQ's NPDES stormwater permit (NCS000250), which incorporates the requirements NCG01. The new bridge will not have scuppers that drain into the creek, as the existing bridge does (though they were clogged during the Service's site visit). Stormwater runoff from the proposed bridge will be discharged on riprap dissipater pads at non-erosive velocities. After leaving pads, vegetated swales will carry the water downgrade to the creek or its tributaries. NCDOT will implement *Design Standards in Sensitive Watersheds*, which includes a stormwater design for the 25-year storm event, instead of the 10-year storm.

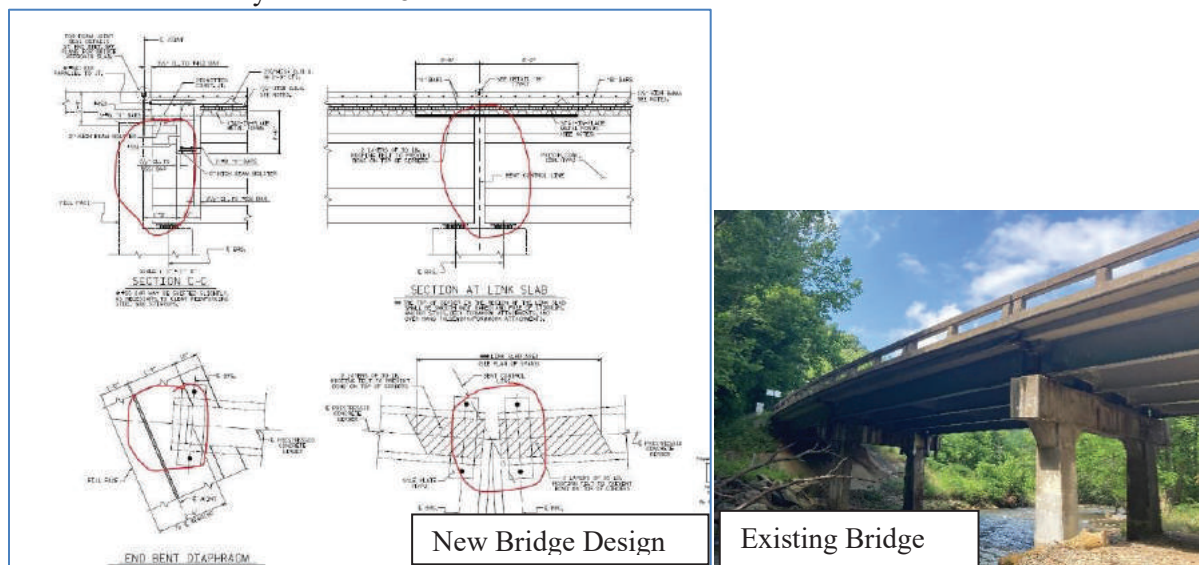
3.11 CONSERVATION MEASURES

Conservation measures "*are actions to benefit or promote the recovery of listed species that are included by the Federal agency as an integral part of the proposed action. These actions will be taken by the Federal agency...and serve to minimize or compensate for project effects on the species under review. Such measures should be closely related to the action and should be achievable within the authority of the action agency.*" (Service and NMFS 1998). We consider the beneficial effects of conservation measures

in making our determination of whether the project will jeopardize the species and in the analysis of incidental take. However, such measures must minimize impacts to listed species within the action area to be factored into the Service's incidental take analysis. NCDOT provided the following conservation measures (CMs) in the BA (Three Oaks Engineering, 2022).

- CM 1. Tree clearing will be conducted as early in the calendar year as possible. The let date is expected to be January 17, 2023. If time and funds allow, the contractor, or the NCDOT Division, will clear the trees prior to the April 1st bat active season; however, if time does not allow, then NCDOT will conduct an emergence survey, and the trees will be felled the following day. An emergence survey will require approval from the Asheville Field Office and will be consistent with Appendix E of the *Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines* (Melissa Miller, personal communication, June 16, 2022). Based on the current let date, all tree-clearing will be completed by May 15.
- CM 2. There will be no night work for the project. Three traffic lights will be used at the temporary detour bridge. The lights will be removed once the project is complete. No permanent lighting will be installed.
- CM 3. After inspecting the existing bridge to ensure no bats are present, roosting areas such as expansion joints and drain holes will be filled with backer rod or similar material to exclude bats prior to the start of the gray bat active season (March 15). Since bats can fit in tiny spaces, care will be taken to completely seal all places bats could roost, and work will be checked/overseen by a bat biologist. This work will be conducted prior to the start of B-5989 construction.
- CM 4. NCDOT or a permitted biologist will conduct a check of the existing bridge within 15 days of demolition to ensure no bats are present and exclusions are still in place.
- CM 5. If the temporary work bridge and detour bridge will be removed during the bat active season (March 15 – November 15) and are conducive to bat roosting, NCDOT will conduct a pre-demo check within 15 days of removal to ensure no bats are present.
- CM 6. If the pre-demolition check of any bridge determines pups are present, NCDOT will refrain from demolishing/removing the bridge where they are present until it can be determined by a biologist that the pups are volant. NCDOT will then notify the Service.
- CM 7. If the pre-demolition check determines adult bats are present in any of the bridges, a permitted biologist will hand-remove adult bats from the bridge immediately prior to the start of demolition work. NCDOT will contact the Service before removing any bats.
- CM 8. Big Laurel Creek is in a watershed designated as Outstanding Resource Waters (ORW). NCDOT will implement *Design Standards in Sensitive Watersheds*, which includes stringent ground cover requirements and a stormwater design for the 25-year storm event, instead of the 10-year storm.
- CM 9. If drilled piers are used for bridge construction, permanent watertight steel casings will contain all disturbed material, fresh concrete, and negligible water used to cool machinery, which will minimize effects to water quality. Material by-product (a mixture of bentonite and river water) will be pumped out of the shaft to an upland disposal area to the extent practicable and treated through a proper stilling basin or silt bag.
- CM 10. Construction of the new bridge will be accomplished in a manner that prevents uncured concrete from contacting water entering or flowing into Big Laurel Creek.
- CM 11. NCDOT will invite representatives from the Service, U.S. Army Corp of Engineers, and the North Carolina Wildlife Resources Commission to the pre-construction meeting for the proposed project, as well as to all subsequent field inspections prior to construction, to ensure compliance with all special project commitments.
- CM 12. All resource agencies will be notified prior to the start of Bridge 71 superstructure demolition so they may have a representative on site.
- CM 13. NCDOT will contact the Service if new information about gray bat or northern long-eared bat is discovered, as it relates to the project.
- CM 14. NCDOT will report any dead bats found on the construction site to the Service.

- CM 15. NCDOT will replant native riparian trees along the creek corridor in areas outside the maintained (mowed) right-of-way where they do not pose sight distance issues for vehicles.
- CM 16. NCDOT will inspect the 42-inch tall by 33-feet-long pipe culvert. A summer survey will occur within two years of replacement. If bats are found, NCDOT will contact the Service.
- CM 17. Long-term roosting habitat on the underside of the bridge will be maintained or improved. The new bridge will have concrete girders beneath the deck, instead of steel I-beams as with the existing bridge. The concrete girders should provide new roost areas for night-roosting bats in the form of concrete vertical surfaces. Concrete retains daytime warmth longer than steel and provides surface irregularities that allow bats to hang on a vertical surface. The new bridge will also provide new areas of suitable day-roosting habitat. The new bridge will have expansion joints at each end of the bridge though they will also have joint material intended to keep the joint sealed. However, there are many other openings between the girders at the interior bent and between the girders and the concrete backwall at the ends of the bridge. These areas are under the bridge deck and only accessible from below and are likely to offer ideal roosting habitat for bats. There are four girders in each span that are 45 inches tall that will provide at least 12 locations of confined space for potential roosting (see red circles on design photo). This ensures only temporary loss of a suitable day roost for 18 months.



3.12 INTERRELATED AND INTERDEPENDENT ACTIONS

A biological opinion evaluates the effects of a proposed Federal action. For purposes of consultation under ESA Section 7, the effects of a Federal action on listed species or critical habitat include the direct and indirect effects of the action, plus the effects of interrelated or interdependent actions. *“Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration”* (50 CFR §402.02). NCDOT did not identify any interrelated or interdependent actions for this project.

4. STATUS OF THE SPECIES

4.1 GRAY BAT

Scientific Name: *Myotis grisescens*

Status: Endangered

Date Listed: April 28, 1976

Critical Habitat: None Designated

This section summarizes best available data about the biology and current condition of the gray bat throughout its range that are relevant to formulating an opinion about the action.

4.1.1 Life History

Cave Roosting Behavior

Gray bats are one of the few species of bats in North America inhabiting caves year-round. The species occupies cold caves or mines in winter and warmer caves during summer (Tuttle 1976a, Harvey et al. 1981, Harvey 1994, Martin 2007). The species chooses hibernation sites where there are often multiple entrances, good air flow (Martin 2007), and where temperatures are approximately 5°-9° C, though 1°-4° C appears to be preferred (Tuttle and Kennedy 2005). Tuttle (1979) noted that an estimated 95% of the range-wide population was confined to only nine hibernacula.

Gray bats show strong philopatry to both summering and wintering sites (Tuttle 1976a, Tuttle 1979, Tuttle and Kennedy 2005, Martin 2007). Because of their highly specific roost and habitat requirements, only about 5% of available caves are suitable for occupancy by gray bats (Tuttle 1979, Harvey 1994). During all seasons, males and yearling females seem less restricted to specific cave and roost types (Tuttle 1976b). Bachelor males segregate in separate aggregations within a colony home range that usually includes several caves that may extend up to 70 kilometers along a particular river valley (Tuttle and Kennedy 2005).

Gray bat hibernacula are often comprised of individuals from large areas of summer range. Based on band recovery data, Hall and Wilson (1966) calculated that a gray bat hibernaculum in Edmonson County, Kentucky attracted individuals from an area encompassing 27,195 square kilometers in Kentucky, southern Illinois, and northern Tennessee (Hall and Wilson 1966). Gray bats are documented to regularly migrate from 17 to 437 kilometers between summer maternity sites and winter hibernacula (Tuttle 1976b, Hall and Wilson 1966), with some individuals moving as much as 689 to 775 kilometers (Tuttle 1976b, Tuttle and Kennedy 2005).

Other Roost Types

There are some exceptions to this cave-specific roosting strategy. Many bat species use bridges and culverts as roost sites (Keeley and Tuttle 1999) and the gray bat is no exception. Bridges provide a warm refuge for individuals either foraging far from their primary daytime roosts or can serve as primary roosts during summer months. Gray bats have been found roosting in bridges in Kentucky (Barbour and Davis 1969, Martin 2007), Virginia (Powers et al. 2016), and between concrete barriers on the sides of bridges in Arkansas (Sasse 2019). Summer bridge and culvert roosts have also been identified in North Carolina within the French Broad River (FBR) Basin (FBR) (Weber et al. 2020). Maternity colonies have also turned up in more unusual places, such as a barn in Missouri (Gunier and Elder 1971) and the gate room of a large dam in Tennessee (Lamb 2000). Weber et al. (2020) found 293 gray bats roosting in a building and tracked two gray bats to sycamore trees in which they roosted (Samoray et al. 2020). Wetzel and Samoray (2022) also tracked a gray bat to a shagbark hickory tree roost in Tennessee in April. Notably, gray bats had not previously been documented using trees as roost sites. The knowledge of where gray bats roost, especially during summer months, continues to expand.

Culverts

Culvert conditions can mimic those found in natural caves in terms of high levels of humidity and clear running water. Gray bat bachelor colonies, maternity colonies, and/or winter roosts have been found in culverts in Arkansas (Harvey and McDaniel 1988, Timmerman and McDaniel 1992), Virginia (Powers et al. 2016), Tennessee (Powers et al. 2016), Georgia (L. Pattavina, personal communication, March 13, 2022), and Kansas (Decher and Choate 1988). Weber et al. (2020) surveyed 31 culverts in the FBR Basin in North Carolina for the presence of gray bats. That study recorded gray bats in a concrete box culvert in Western North Carolina with a 4.3-ft (1.3 m) entrance height. This culvert has a secondary entrance height that is larger (8.5 ft or 2.6 m); bats were found roosting in parts of the culvert measuring 6 – 8 ft

tall. The shortest culvert Weber et al. (2020, pg. 28) documented gray bats in measured 320 ft (97.8 m) long. Records show that culverts used by gray bats are generally concrete; however, Weber et al. (2020) found gray bats using circular concrete lined corrugated metal pipe culverts and culverts with metal pipe entrances that open into a larger concrete box culvert interior. Powers et al. (2016) and Timpone et al. (2011) have documented a gray bat maternity roost in Washington County, Virginia. Georgia's smallest gray bat culvert roost is an 8-ft tall by 504-ft long triple box culvert. While both Indiana and tricolored bats in this culvert use a smaller 4-ft tall perpendicular pipe within the triple box culvert system, gray bats have not been found in the shorter sections (L. Pattavina, personal communications, February 23 and March 21, 2022; Photo 3). The only known gray bat roost located in a culvert in Arkansas (Timmerman and McDaniel 1992; Blake Sasse, personal communication, April 8, 2022) has two entrances: the inflow entrance is 5.6 ft (1.7 m) tall, and the outflow exit is 3.3 (1 m) ft tall. The culvert is 525 ft long. The heights in the culvert, from ceiling to the water, varied from 4.8 ft (1.45 m) to 2.9 ft (0.89 m) at the time of the survey. While summer use of culverts by gray bat is rare in Arkansas, use of culverts during migration may be higher based on evidence that the species uses the concrete barriers on the sides of bridges significantly more in the spring (Sasse, 2019). An instance of gray bat use of a storm sewer is also known from Kansas (Decher and Choate 1988, Decher 1989).

Diet and Foraging

Gray bats feed exclusively on insects, with flies (*Diptera*), beetles (*Coleoptera*), caddisflies (*Trichoptera*), moths (*Lepidoptera*), wasps (*Hymenoptera*), stoneflies (*Plecoptera*), leafhoppers (*Homoptera*), and mayflies (*Ephemeroptera*) being the most important orders of insect prey (Rabinowitz and Tuttle 1982, Clawson 1984, Brack 1985, Lacki et al. 1995, Best et al. 1997). Diet has been found to coincide most directly with the predominantly available prey species in the foraging area (Clawson 1984, Barclay and Bingham 1994), including both terrestrial and aquatic species (Clawson 1984). A study examining fecal remains conducted by Brack and LaVal (2006) indicates that gray bat diets fluctuate to a minor degree depending upon varying factors such as age, sex, and location.

Gray bat summer foraging is strongly correlated with open water of rivers, streams, lakes, or reservoirs, where insects are abundant (Tuttle 1976b, LaVal et al. 1977). Results of surveys conducted in Tennessee indicate that wetland depressions are also important foraging sites for gray bats (Lamb 2000). Although the species may travel up to 35 kilometers between prime feeding areas over lakes and rivers and occupied caves, (LaVal et al. 1977, Tuttle and Kennedy 2005, Moore et al. 2017), most maternity colonies are usually located between 1-4 kilometers from foraging locations (Tuttle 1976b). Newly volant gray bats travel 0.0 – 6.6 kilometers between roost caves and foraging areas (Tuttle 1976a, Tuttle 1976b). Joey Weber reported that two male gray bats captured and radio-tagged June 13, 2019 on the Davidson River, were found the next day at a bridge roost 18-19 miles [43 river miles] to the northeast. At foraging sites, Tuttle (1976b) estimated that gray bats forage within roughly three meters above the water's surface. Abbreviated instances of bad weather in early spring and late fall are generally the only times gray bats deviate from primarily feeding along local bodies of water, and then they are found foraging in forest canopies (LaVal et al. 1977, Stevenson and Tuttle 1981).

Gray bats are known to establish foraging territories as insect numbers drop after dusk. Territories are controlled by reproductive females, which annually return to preferred territories (Brady et al. 1982, Goebel 1996). Gray bats tend to have large home ranges. Thomas and Best (2000) reported non-reproductive gray bats (males and females) from one northern Alabama cave foraged over areas of approximately 97 square kilometers. Moore et al. (2017) found reproductive female gray bats in Arkansas had a larger home range than previously thought, with an average of 159 square kilometers, and they depend on water for foraging and traveling. The home range for reproductive females may change depending on reproductive status, but could also change based on colony size, insect abundance, habitat continuity, land use, or a combination of these factors (Moore et al. 2017). During times of limited food resources, males and pre-reproductive females may be excluded from foraging territories (Stevenson and Tuttle 1981).

Forested areas along the banks of streams and lakes serve as corridors for travel and as protective feeding cover for newly volant young (Tuttle 1979, Brady et al. 1982, Moore et al. 2017). Whenever possible, gray bats of all ages fly in the protection of forest canopy between roosts and feeding areas (Service 1982). Individuals may also fly overland from relatively land-locked roost sites to reach the main river channel or tributary systems that lead to open-water foraging sites (Thomas 1994, Best and Hudson 1996). Gray bats do not feed in areas along rivers or reservoirs where the forest has been cleared (LaVal et al. 1977). Weber et al. (2020) found that gray bats moving between the FBR Basin near Asheville, North Carolina, and caves they use in Tennessee commuted along the FBR but several overland flyways are evident from the GIS data.

Reproduction and Life Span

Gray bats are reproductively mature at two years of age (Miller 1939, Tuttle 1976a) and mate between September and October. Copulation occurs upon arrival at hibernating caves, whereupon females immediately enter hibernation. Mating males may take a few weeks to replenish fat stores but are typically in hibernation by early November (Tuttle 1976b, Tuttle and Stevenson 1978). Adult females store sperm throughout hibernation, a strategy known as delayed fertilization, and pregnancy begins following their spring emergence (Kruhn and Sealander 1972). After a gestation period of 60 to 70 days (Saughey 1978), females give birth to one pup between late May and early June. Newborn young are volant within 21-33 days (Tuttle 1976b, Harvey 1994, Tuttle and Kennedy 2005). In summer, female gray bats form maternity colonies of a few hundred to many thousands of individuals.

Young, non-volant gray bats experience healthy growth rates because their energy expenditure for thermoregulation is reduced by the roosting colony (Herreid 1963, 1967). In undisturbed colonies, young may take flight within 20 to 25 days after birth. However, young may not become volant for 30 to 35 days if disturbed (Tuttle 1975). Hunting is primarily learned by young on their own after learning to fly (Stevenson and Tuttle 1981), though lactating females will continue to nurse their offspring for a short time after they become volant. Survival and growth of volant young is inversely proportional to the distance traveled for shelter and food (Tuttle 1976a). Roosts are cool during this period of lactation and females are often required to feed continuously to sustain the high body temperatures required to nurse (Tuttle and Stevenson 1977). Distance traveled to feeding areas may also be correlated with adult mortality (Martin 2007).

Gray bats have been recorded as living up to 17 years (Harvey 1992, Tuttle and Kennedy 2005), with a mean annual survival rate of 70 percent in males and 73 percent in females (Gunier and Elder 1971). While survivorship among juveniles is relatively high (Saughey 1978), only 50 percent of gray bats reach maturity (Service 1980). Mortality rates are higher during the spring migration when fat stores have been expended and food resources can be scarce (Tuttle and Stevenson 1977).

4.1.2 Population Size

In the late 1970s, Tuttle (1979) estimated the total population of gray bats to be approximately 2.25 million. This was a net increase in population size of 11 percent between the 1970's and 2003, and an increase of 67 percent from the smallest population estimate. In 2007, a study was conducted examining gray bat hibernacula and maternity roosts across the established range to ascertain the effectiveness of current conservation steps. At that time, it was observed that populations had increased nearly 104 percent since 1982 (Martin 2007). More recently it has been reported that their populations appear to have remained stable within Tennessee (Bernard et al. 2017) and Virginia (Powers et al. 2015). In 2017, winter surveys of all Priority 1 hibernacula (as designated in the Gray Bat Recovery Plan) were conducted, including the largest hibernaculum, Fern Cave in Alabama. This coordinated, range-wide effort provided the best opportunity in decades to estimate the gray bat population, now estimated at approximately 4,358,263 (Service 2019).

4.1.3 Distribution

The gray bat is known to occur in fourteen southeastern and midwestern states including Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and Virginia. There is little variation between summer and winter ranges (NatureServe 2018) and population densities are highest in the limestone karst region (Hall and Wilson 1966, Barbour and Davis 1969, Tuttle 1976a, Harvey et al. 1981, Mitchell 1998).

North Carolina Natural Heritage Program (NCNHP) records (2022) confirm presence in thirteen western North Carolina counties: Ashe, Avery, Buncombe, Cherokee, Clay, Haywood, Henderson, Madison, McDowell, Surry, Swain, Transylvania, and Yancey. Records in North Carolina represent mist-net captures, North Carolina State Laboratory of Public Health records, and summer roost locations.

Gray bats were first discovered roosting in bridges in the FBR Basin (which includes the Pigeon River Basin) by NCWRC in 2016. There are four known gray bat primary roosts, all of which occur near the FBR, and several secondary roosts in the Asheville area (Weber et al. 2020). There are no known gray bat hibernacula located in North Carolina. The closest hibernaculum is a cave located near Newport, Tennessee, 0.2 miles from the Pigeon River (Weber et al. 2018).

4.1.4 Threats

The primary cause of gray bat population decline is human disturbance of their natural habitat (Barbour and Davis 1969, Mohr 1972, Harvey 1975, Tuttle 1979, Service 1982, Service 2009), with wintering sites and maternity roosts especially susceptible to disruption. Commercialization of caves, spelunking, and looting for archaeological artifacts are activities that most commonly result in disturbance to roosting bats (Service 1982, Service 2009). Disturbance in the hibernacula occurs when a human enters the cave and bats wake from hibernation, using vital energy stores that cannot be recovered before emerging in the spring (Tuttle 1976b). In addition, Stevenson and Tuttle (1981) found that banded gray bats tended to avoid roosts where they had been handled by researchers.

Humans are also impacting the environment in other ways that can negatively impact bats. Deforestation close to cave entrances, at foraging sites, and along commuting routes is likely to have negative effects due to the removal of prey abundance and reduced cover from natural predators (Tuttle 1979).

Insecticide use historically had a detrimental impact on gray bat populations (Clark et al. 1978, Clark et al. 1988), though many of the toxic substances are now banned from the market. While modern pesticides (e.g., organophosphates, neonicotinoids, pyrethroids, carbonates) aren't expected to bioaccumulate in tissues, they are still a concern, are highly toxic, and may kill bats from direct exposure (Shapiro and Hohmann 2005). The presence of other contaminants of concern that can bioaccumulate (e.g., pharmaceuticals, flame retardants) has been documented in bats (Secord et al. 2015), though additional research is needed to understand impacts. Additionally, pesticides and other pollutants could indirectly impact bats by reducing insect populations.

Siltation and nutrient loading of waterways where bats forage and drink may negatively affect the species. As previously stated, a large portion of the gray bat diet is comprised of adult aquatic insects such as mayflies, stoneflies, and caddisflies. These groups of aquatic insects are especially susceptible to degraded water quality. Any substantial declines in the populations of these insects may have a detrimental effect on gray bat populations as well (Service 1982). Tuttle (1979) presented a correlation between a decline in gray bat numbers and an increase in sedimentation in several Alabama and Tennessee waterways.

Gray bat populations could also be impacted by temperature and precipitation changes due to climate change. Climate change will likely affect the distribution of suitable hibernacula for bats (Humphries et al. 2002). Since gray bats are a cave-obligate species, requiring highly specific hibernacula and maternity caves, they are acutely at risk from fluctuating climate conditions.

Another potential threat to gray bat populations is the fungal disease white-nose syndrome (WNS). The disease is caused by the fungus *Pseudogymnoascus destructans*, which grows on the wings, ears, and muzzle of hibernating bats (Cryan et al. 2013). Since its discovery in New York in 2006, WNS has had an overwhelmingly negative effect on North American hibernating bats, eradicating millions of individuals. In 2012, the Service confirmed the first instance of WNS in gray bats (Service 2012). The full impact of WNS on overall gray bat populations is still being determined. As of spring 2017, the species has yet to experience any WNS-related declines and their populations appear to have remained stable within Tennessee (Bernard et al. 2017) and Virginia (Powers et al. 2016).

Studies have consistently shown that bat species richness decreases with the presence of artificial lighting in foraging and roosting areas, with *Myotis* species particularly vulnerable (Spoelstra et al. 2017, Stone et al. 2012, Downs 2003, Linley 2017). Lighting may exacerbate the barrier effect of roads, since those species reluctant to cross open spaces are also those most likely to avoid light. There are no data specific to gray bat for the use or avoidance of lighted areas that may occur along roadways. Research by Rydell and Baagøe (1996) indicates that bats in the genera *Eptesicus* (big brown bats, *Eptesicus fuscus*) and *Lasiurus* (red and hoary bats, *Lasiurus borealis* and *L. cinereus*, respectively) are the species typically noted foraging around artificial lights. In contrast, they noted that bats in the genus *Myotis* seem to avoid open spaces, preferring to feed in woodlands or low over water. Additional studies (e.g. Rydell 1992, Blake et al. 1994, Stone et al. 2009, 2012) have shown that road lighting deters many bat species, notably slow-flying, woodland-adapted species such as members of the genera *Rhinolophus*, *Myotis*, and *Plecotus*, from approaching the road. Therefore, artificial lighting may cause avoidance behavior in gray bat.

4.2 NORTHERN LONG-EARED BAT

Scientific Name: *Myotis septentrionalis*

Status: Threatened, Proposed Endangered

Date Listed: May 4, 2015

Date of Proposed Rule: March 23, 2022

Critical Habitat: None Designated

This section summarizes best available data about the biology and current condition of the northern long-eared bat throughout its range that are relevant to formulating an opinion about the action. A Species Status Assessment (SSA) was published March 22, 2022 (Service 2022c). There are no five-year reviews or recovery plans for this species. Information in this section comes from the Final Rule to list the species as Threatened (80 FR 17973 18033), the SSA (Service 2022c), the Proposed Rule to list the species as endangered (87 FR 16442 16452), and other Biological Opinions produced by the Asheville Ecological Services Field Office.

4.2.1 Life History

Northern long-eared bat typically overwinters in caves or mines and spends the remainder of the year in forested habitats. The bat active season for northern long-eared bats in Western North Carolina is April 1 through October 15. While information is lacking, short regional migratory movements between seasonal habitats (summer roosts and winter hibernacula) of 35-55 miles have been documented (Griffin 1940, Caire et al. 1979, Nagorsen and Brigham 1993) and occur during the first part and last part of the active season outside of the maternity season. The maternity season is May 15 through August 15 in Western North Carolina (Susan Cameron, personal communication). Adult females give birth to a single pup. Parturition (birth) may occur as early as late May or early June (Easterla 1968, Caire et al. 1979, Whitaker and Mumford 2009) and may occur as late as mid-July (Whitaker and Mumford 2009). Juvenile volancy (flight) often occurs by 21 days after birth (Kunz 1971; Krochmal and Sparks 2007).

Northern long-eared bats typically roost singly or in maternity colonies underneath bark or more often in

cavities or crevices of both live trees and snags (Sasse and Pekins 1996, Foster and Kurta 1999, Owen et al. 2002, Carter and Feldhamer 2005, Perry and Thill 2007, Timpone et al. 2010). Males' and non-reproductive females' summer roost sites may also include cooler locations, including caves and mines (Barbour and Davis 1969, Amelon and Burhans 2006). NLEBs switch tree roosts often (Sasse and Pekins 1996), typically every 2 to 3 days (Foster and Kurta 1999, Owen et al. 2002, Carter and Feldhamer 2005, Timpone et al. 2010). Suitable summer habitat is extensively defined in the *Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines*, which is updated annually (<https://www.fws.gov/library/collections/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>).

Maternity colonies, consisting of females and young, are generally small, numbering from about 30 (Whitaker and Mumford 2009, p. 212) to 60 individuals (Caceres and Barclay 2000, p. 3); however, larger colonies of up to 100 adult females have been observed (Whitaker and Mumford 2009, p. 212). Summer home range includes both roosting and foraging areas, and range size may vary by sex. Maternity roosting areas have been reported to vary from mean of 21 to 161 to 179 acres (Broders et al. 2006; Owen et al. 2003; Lacki et al. 2009) to a high of 425 acres (Lacki et al. 2009). Foraging areas are six or more times larger (Broders et al. 2006; Henderson and Broders 2008). The distance traveled between consecutive roosts varies widely from 20 ft (Foster and Kurta 1999) to 2.4 mi (Timpone et al. 2010). Likewise, the distance traveled between roost trees and foraging areas in telemetry studies varies widely, e.g., a mean of 1,975 feet (Sasse and Perkins 1996) and a mean of 3,609 feet (Henderson and Broders 2008). Circles with a radius of these distances have an area of 281 and 939 ac, respectively.

Northern long-eared bats are nocturnal foragers and use hawking (catching insects in flight) and gleaning (picking insects from surfaces) behaviors in conjunction with passive acoustic cues (Nagorsen and Brigham 1993, Ratcliffe and Dawson 2003). The northern long-eared bat has a diverse diet including moths, flies, leafhoppers, caddisflies, and beetles (Griffith and Gates 1985, Nagorsen and Brigham 1993, Brack and Whitaker 2001), with diet composition differing geographically and seasonally (Brack and Whitaker 2001). Most foraging occurs above the understory, 1 to 3 m (3 to 10 ft) above the ground, but under the canopy (Nagorsen and Brigham 1993) on forested hillsides and ridges, rather than along riparian areas (LaVal et al. 1977, Brack and Whitaker 2001). This coincides with data indicating that mature forests are an important habitat type for foraging northern long-eared bats (Caceres and Pybus 1997, White et al. 2017). Foraging also takes place over small forest clearings and water, and along roads (van Zyll de Jong 1985). Northern long-eared bats seem to prefer intact mixed-type forests with small gaps (i.e., forest trails, small roads, or forest-covered creeks) in forests with sparse or medium vegetation for forage and travel rather than fragmented habitat or areas that have been clear cut (Service 2015).

Artificial Roosts

To a lesser extent, northern long-eared bats have also been observed roosting in colonies in human-made structures, such as in buildings, barns, on utility poles, behind window shutters, in bridges, and in bat houses (Mumford and Cope 1964, Barbour and Davis 1969, Cope and Humphrey 1972, Burke 1999, Sparks et al. 2004, Amelon and Burhans 2006, Whitaker and Mumford 2009, Timpone et al. 2010, Bohrman and Fecske 2013, Feldhamer et al. 2003, Sasse et al. 2014, Service 2015, Dowling and O'Dell 2018). It has been hypothesized that use of human-made structures may occur in areas with fewer suitable roost trees (Henderson and Broders 2008, Dowling and O'Dell 2018). In northcentral West Virginia, NLEBs were found to more readily use artificial roosts as distance from large forests (greater than 494 acres) increased, suggesting that artificial roosts are less likely to be selected when there is greater availability of suitable roost trees (De La Cruz et al. 2018).

A July 2014 survey in Missouri found two northern long-eared bats in a culvert with an entrance measuring approximately 9 ft in diameter and 250 ft long (Droppelman 2014, L. Droppelman, personal communication, February 24, 2022). Winter 2014 surveys in Louisiana documented northern long-eared bats in seven concrete tube and box culverts ranging in size from 4.5 ft to 10.5 ft tall and 131 ft to 476 ft long. Northern long-eared bats co-occurred in these culverts with southeastern myotis, tricolored bats,

Rafinesque’s big-eared bat, and big brown bats (Nikki Anderson, unpublished data, March 23, 2022). The species has not been found in culverts in Georgia (Emily Ferrall, personal communication, April 7, 2022), North Carolina, or Mississippi (Katelin Cross, personal communication, March 23, 2022). Published culvert records are limited for this species.

4.2.2 Population Size

Prior to 2006 (i.e., before WNS was first documented), northern long-eared bat was abundant and widespread throughout much of its range (despite having low winter detectability) with 737 occupied hibernacula and a maximum count of 38,181 individuals (Table 2; Service 2022c). According to the SSA (Service 2022c), in 2020, the northern long-eared bat was projected to be detected in 139 hibernacula, with a median winter abundance of 19,356 individuals (Table 2; Service 2022c).

Available evidence, including both winter and summer data, indicates northern long-eared bat abundance has and will continue to decline substantially over the next 10 years under current demographic conditions. Winter abundance (from known hibernacula) has declined range-wide (49%) and across most Representation Units (RPU) (0–90%). In addition, the number of extant winter colonies declined range-wide (81%) and across all RPUs (40–88%). There has also been a noticeable shift towards smaller colony sizes, with a 96–100% decline in the number of large hibernacula (≥ 100 individuals). Declining trends in abundance and occurrence are also evident across much of northern long-eared bat’s summer range. Range-wide summer occupancy declined by 80% from 2010–2019. Data collected from mobile acoustic transects found a 79% decline in range-wide relative abundance from 2009–2019 and summer mist-net captures declined by 43–77% compared to pre-WNS capture rates (Service 2022c).

Table 2. Numbers of Northern Long-Eared Bat Adapted from Service (2022c) Tables in Appendix 3 (Service 2022c page 124).

Year	Range	# States	Spatial Extent	# Hibernacula	Winter Abundance
Prior to 2006 (Historical Condition)	Range-wide	29	1.2 billion	737	38,131 (max)
2020 (Projected)	Range-wide	18	644 million	139	19,356 (median)
Prior to 2006 (Historical Condition)	Southeast Unit			50	393 (max)
2020 (Projected)	Southeast Unit			1	Probability of population growth = 0

4.2.3 Distribution

Northern long-eared bats occur over much of the eastern and north-central U.S., and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia (Nagorsen and Brigham 1993, Caceres and Pybus 1997, Environment Yukon 2011). In the U.S., the species’ range reaches from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to South Carolina (Whitaker and Hamilton 1998, Caceres and Barclay 2000, Simmons 2005, Amelon and Burhans 2006). The species’ range includes all or portions of 37 states and the District of Columbia. The edge of the species’ range extends into the mountains of Western North Carolina and occurs in at least 27 coastal North Carolina counties (Jordan 2020; Gary Jordan, personal communication, July 6, 2022; Service 2022c).

4.2.4 Threats

Although there are countless stressors affecting northern long-eared bat, the primary factor influencing the viability of the species is WNS. Other primary factors that influence northern long-eared bat viability include wind energy mortality, effects from climate change, and habitat loss.

4.3 TRICOLORED BAT

Scientific Name: *Perimyotis subflavus*

Status: Proposed Endangered

Date Proposed for Listing: 14 September 2022

Critical Habitat: None Proposed

A petition to list the tricolored bat as threatened was received by the Service on June 16, 2016. On December 20, 2017, the Service found that the petition presented substantial scientific or commercial information indicating that the petitioned action may be warranted. The Service commenced a review (known as a 12-month finding) to determine if listing of the tricolored bat is warranted. The Service proposed to list the species at endangered under the Endangered Species Act on 14 September 2022. The Service completed an SSA (Service 2021) but no conservation or recovery plans yet exist for this species. Most of the information below is reproduced, without changes, from a Biological Opinion by the Missouri Field Office (Service 2022b), the Petition to List the Tricolored Bat (Center for Biological Diversity and Defenders of Wildlife 2016), the Programmatic Biological Opinion on the Revised Forest Plan for the Pisgah and Nantahala National Forests (Service 2022d), or the BA (Three Oaks Engineering, 2022).

4.3.1 Life History

Migration

Tricolored bats are an obligate hibernator with populations in subtropical regions hibernating even in the absence of severe winters (McNab 1974). In Missouri, tricolored bats enter hibernation with an average beginning date of mid-October and an average ending date of mid-April (LaVal and LaVal 1980). In addition to caves, tricolored bats use a wide variety of other hibernacula including mines (Whitaker and Stacy 1996, Brack 2007), storm sewers (Goehring 1954), box culverts (Sandel et al. 2001, Lutsch et al. 2022), and surge tunnels at quarries (Slider and Kurta 2011). Recent evidence indicates that tricolored bats also hibernate in rock faces in Nebraska (Lemen et al. 2016) and suggests that the species may have a wider winter range than previously suspected. Hibernating tricolored bats roost mostly singly but will form small clusters and often select a roost on the walls as opposed to the ceiling of the hibernaculum (Brack 1979, Kurta 2008). Throughout most of the range, they select relatively warm, stable sites often located further from the hibernaculum entrance than other bat species (Brack 2007). Individuals hibernate, on average, between about 15 and 25 days though may last longer (Brack and Twente 1985).

As previously noted, there is little information about tricolored bat movements, including swarming sites and hibernacula, but the species is currently believed to be a short distance regional migrant (Fraser et al. 2012; Fujita and Kunz 1984). Species engaging in regional migration travel annually from hibernaculum to summer roosting sites, and then move among swarming locations in the autumn (Fenton 1969; Fraser et al. 2012; Hitchcock 1965). Recent research has led to some speculations that some individuals migrate farther distances than previously suspected, and that migratory behavior may differ between males and females (Davis 1959; Fraser et al. 2012). Fraser et al. (2012) investigated tricolored bat migration by conducting stable hydrogen isotope analyses of 184 museum specimen fur samples and compared the results to published values of collection site growing season precipitation. Their results suggested that 33% of males and 16% of females collected during the postulated non-molt period were south of their location of fur growth. Fraser et al. (2012) also noted that if tricolored bats only engaged in regional migration, then evidence would be expected to show equal numbers of bats migrating north and south during the non-molt period. Respectively, Fraser et al. (2012) concluded that at least some tricolored bats, of both sexes, engage in latitudinal migration.

Summer Habitat Use

Tricolored bat roost trees may occur in a relatively small area. One study found that the average distance between roost trees was 86 m (range 5-482 m) and between capture locations and roost trees was 2.5 km (range 165 to 2,290 m) (Schaefer 2016). Roost home ranges were between 0.005 acres and 10.9 acres for seven individuals (Schaefer 2016) and 0.25 to 5.7 acres for four individuals (Veilleux and Veilleux 2004b). In Indiana, Veilleux and Veilleux (2004b) radio-tracked four tricolored bats to their respective roosts trees and found that minimum and maximum distances from roosts trees were between 21 meters (m) and 926 m. A study in Nova Scotia found that the average roosting area of maternity colonies using more than five trees (n=5; 12 to 31 trees) varied from 4 - 191 acres, with a mean of 67.5 acres (Table 4 in Poissant 2009). A study conducted in Arkansas radio-tagged 28 male and nine female tricolored bats and found that roosts trees varied from 1-3 roost trees for males and 1-5 roost trees for females (Perry and Thill 2007b). Seven of 14 female roosts were colonies and based on exit counts and visible pups, the estimated number of bats (adults and pups) in colonies was 3-13, with an average of 6.9 (± 1.5) (Perry and Thill 2007b). Other studies report maternity colony sizes of 3.7 individuals (Veilleux and Veilleux 2004b), 15 individuals (Whitaker and Hamilton 1998), and 18 individuals with an average of 10 individuals (Poissant 2009). Perry and Thill (2007b) found males roosting in forested habitats also occupied by females, but primarily in solitary roosts. One study found that individuals within a roosting area/colony did not switch or overlap other roost areas/colonies though all individuals from all colonies shared foraging space (Poissant 2009).

Maternity colonies are most likely to be found roosting in umbrella-shaped clusters of dead leaves, but may also be found in live leaf foliage, lichens, patches of pine needles caught in tree limbs, buildings, caves, bridges, culverts, and rock crevices (Humphrey 1975, Veilleux et al. 2003, Veilleux and Veilleux

2004a; b, Veilleux et al. 2004, Perry and Thill 2007, Newman et al. 2021). Perry and Thill (2007) suggest that tricolored bat's yellow-brown coloration allows them to blend in with brown, dead leaf clusters imparting protection from visual predators. Oak (genus *Quercus*) and maple (*Acer*) trees are preferred by maternity colonies of tricolored bats presumably because the ends of the branches tend to have many leaves (Veilleux et al. 2003; 2004, Perry and Thill 2007), and thus maternity colonies are more often associated with uplands than bottomland forest. O'Keefe (2009) found male tricolored bats primarily in hickories, maples, and birches and not oaks. Veilleux et al. (2003) found 27% of tricolored bat roosts in oak trees when oaks comprised only 3% of the available trees; others found at least 80% of tricolored bat roosts in oaks (Leput 2004, Perry and Thill 2007). Tricolored bats are known to forage near trees, as well as forest perimeters, and along waterways (Fujita and Kunz 1984).

In Indiana, female tricolored bat maternity roosts occurred mostly in upland habitats (9.4%) as opposed to riparian (0.8%) and bottomland (0.2%) habitats (Veilleux et al. 2003). Preferred upland habitat by this species could be related to the greater availability of preferred roost tree species: white oak (*Quercus alba*), bur oak (*Quercus macrocarpa*), and red oak (*Quercus rubra*) (Veilleux et al. 2003). O'Keefe (2009) found that non-reproductive tricolored bats in North Carolina only roosted in forest stands older than 72 years, and preferentially roosted at lower elevations, closer to non-linear openings, and closer to streams than expected by random chance. Other researchers have found that at the stand level or greater, tricolored bats seem to roost selectively in more mature forest within riparian buffers or corridors (Perry and Thill 2007, O'Keefe 2009), within a diversity of patch types, farther than expected from roads (Perry et al. 2008), and in unharvested 50–99-year-old stands of mixed pine–hardwood (22.4%) or hardwood (34.7%; Perry et al. 2007). One small study in the Nantahala National Forest in Macon County found male tricolored bat roosts were on average 136 m from roads or trails, and while the distance ranged from 4 to 285 meters, 75% of the roads in the study area were gated grass-covered U.S. Forest Service roads with virtually no vehicular traffic (O'Keefe 2009). Other studies found tricolored bat roosts on average 70m and 52m from edges (Leput 2004, Veilleux et al. 2003, respectively).

Tricolored bats vary their roost position in the canopy and landscape depending on reproductive conditions. Reproductive female bats roost lower in the canopy and farther from forest edges than non-reproductive females. Veilleux and Veilleux (2004b) speculated that lower position in the canopy and greater distances from the forest edge may reduce wind exposure and allow for more stable temperatures. Gestation is typically 44 days (Wimsatt 1945), and females produce twin pups whose mass is approximately 44–54 percent of the size of the mother, a higher ratio than most Vespertilionid bats (Kurta and Kunz 1987). Young are volant at 3 weeks and act as adults around 4 weeks old (Hoying and Kunz 1998). Post-natal growth rates slow during cold snaps because the mothers cannot eat, and available energy is used for thermoregulation (Hoying and Kunz 1998). As with other species of bats, some male tricolored bats remain at hibernacula year-round (Whitaker and Rissler 1992). Most males roost in the same types of leaf clusters used by female tricolored bats (Veilleux and Veilleux 2004a), although they return to the same roost for multiple days, with one individual in Arkansas roosting in the same cluster for 33 days (Perry and Thill 2007). Male bats also select roosts in the same species of trees, although males tend to use thinner and shorter trees (Veilleux and Veilleux 2004a). Males also tend to roost at lower heights than females; often 16.4 feet (5 m) from the ground (Perry and Thill 2007).

Culverts

Katzenmeyer (2016), conducting winter surveys in Mississippi over five years, found tricolored bats in culverts as small as 2 ft tall and 30 ft long. Tricolored bats use culverts in Florida as small as 3 ft tall by 60 ft long though smaller culverts are not surveyed. Preliminary analysis did not find an effect of culvert height or length on tricolored bat presence in Florida (Smith, L. personal communication, March 9, 2022). The Louisiana Department of Wildlife and Fisheries has surveyed more than 1,000 culverts over three winters and found tricolored bats in 21% of them. Summer surveys of a much smaller number of culverts found the species in about 4% of surveyed culverts. The shortest length culvert occupied by tricolored bats was 23.3 ft long. The culvert with the shortest height was 2.5 ft tall. The smallest culvert used by the species in Georgia is a 3 ft tall pipe culvert that is 388 ft long (Emily Ferrall, personal communication,

April 7, 2022; Photo 3). There are numerous culvert records for this species across multiple states (Walker et al., 1996; Martin et al., 2005; Katzenmeyer, 2016, L. Smith, personal communication, 2022, Nikki Anderson, unpublished data, March 24, 2022).

4.3.2 Population Size

WNS has recently decimated tricolored bat populations in several states. Before the onset of WNS, the tricolored bat was generally believed to be common and secure throughout most of its range in the eastern US, some even considering it the species to be rapidly increasing in population and range, especially in grassland areas (Benedict et al. 2000, Sparks and Choate 2000, Geluso et al. 2004). However subsequent analysis of survey data suggests that even prior to WNS, the tricolored bat, along with several other WNS-affected species, was in a state of gradual decline in the eastern US (Ingersoll et al. 2013). Correcting for biases inherent in hibernacula counts, Ingersoll et al. (2013) found that from 1999-2011, (i.e., both pre- and post-WNS), the tricolored bat declined by 34% in a multi-state study area (New York, Pennsylvania, West Virginia, and Tennessee). Capture rates of tricolored bats in Pennsylvania declined by 56 percent between pre-WNS years (2001-2008) and 2013 (Butchkoski and Bearer 2016), which is similar to the 53.8 percent decline observed in Missouri hibernacula (Colatskie 2017). Cheng et al. (2021) estimates range-wide declines of 93% from 1995 to 2018 and a 59% overlap of species and WNS occurrence ranges. The range-wide population of tricolored bats is estimated to be 67,898 individuals as of 2020 (Service 2022b).

4.3.3 Distribution

Tricolored bats are known from 39 States (from New Mexico north to Wyoming and all states to the east), Washington D.C., 4 Canadian Provinces (Ontario, Quebec, New Brunswick, Nova Scotia), and Guatemala, Honduras, Belize, Nicaragua, and Mexico. The species current distribution in New Mexico, Colorado, Wyoming, South Dakota, and Texas is the result of westward range expansion in recent decades (Geluso et al. 2005, Adams et al. 2018, Hanttula and Valdez 2021) as well as into the Great Lakes Basin (Kurta et al. 2007; Slider and Kurta 2011). This expansion is largely attributed to increases in trees along rivers and increases in suitable winter roosting sites, such as abandoned mines and other human-made structures (Benedict et al. 2000, Geluso et al. 2005, Slider and Kurta 2011).

4.3.4 Threats

WNS is a threat to many bat species throughout North America. While WNS has been assumed to be the sole driver of bat population declines, new research indicates that many factors are likely acting synergistically (Ingersoll et al. 2016). Bats are subject to a suite of severe threats (Hutson and Mickleburgh 1992 and 2001, Pierson 1998), including disturbance and altered microclimates of critical hibernacula and day roosts (Tuttle 1979, Neilson and Fenton 1994, Thomas 1995), loss and modification of foraging areas (Pierson 1998, Hein 2012, Jones et al. 2009), toxicity and changed prey composition and abundances from pesticide use and other chemical compounds (Shore and Rattner 2001, Clark 1988), climate change (Frick et al. 2010, Rodenhouse et al. 2009), and in-flight collisions with vehicles, buildings, and wind turbines (Russell et al. 2009, Arnett et al. 2008, Kunz et al. 2007). Bats are often subject to more than one of these threats simultaneously; such co-occurring threats may result in synergistic or interacting effects, with impacts more severe than from any single threat in isolation (Crain et al. 2008, Kannan et al. 2010, Laurance and Useche 2009, Harvell et al. 2002). The tendency of tricolored bats to occupy a wide variety of hibernacula makes them vulnerable to entombment during mine closures (Whitaker and Stacy 1996). As with other bats, chemical contamination may kill bats directly or lead to sublethal effects that eventually lead to death or reduced reproduction (Clark et al. 1978, Clark et al. 1980, Clark et al. 1982, Eidels et al. 2016). Climate change is also an emerging threat to the tricolored bat, primarily because temperature is an essential feature of both hibernacula and maternity roosts. Lastly, the tricolored bat (and other bat species) may be threatened by the recent surge in construction and operation of wind turbines across the species' range. Mortality of tricolored bats has been documented at multiple operating wind turbines/farms.

4.4 LITTLE BROWN BAT

Scientific Name: *Myotis lucifugus*

Status: Under Review

Date Listed: Not Applicable

Critical Habitat: Not Applicable

The little brown bat is not a federally listed, proposed, or candidate species, but it is currently undergoing a discretionary status review as listed on the Service's National Listing Workplan. The Service anticipates determining if the species warrants listing under the Endangered Species Act in 2023 (Service 2016c) and anticipates completion of a SSA in 2022. Currently, no conservation or recovery plans exist for this species. Most of the information below is reproduced, without changes, from a Biological Opinion written by the Missouri Field Office (Service 2022b) or from the BA (Three Oaks Engineering, 2022).

4.4.1 Life History

Migration

Little brown bats migrate between subterranean habitats in winter to trees, anthropogenic structures (Humphrey and Cope 1976) (e.g., buildings and woodpiles), and natural structures (e.g., under rocks, in caves) during summer (Fenton and Barclay 1980). Spring migration occurs in parallel with staging with most bats moving from the hibernacula to the summer range in April and May. In the late summer and fall, individual little brown bats depart from summer roosts and migrate to a variety of transient roosts (Fenton and Barclay 1980) before arriving at winter hibernacula, between September and October (Saunders 1988).

LaVal and LaVal 1980 found that of approximately 1,600 banded little brown bats, only eight were found at both the hibernacula and a summer roost. Six bats made short migrations of approximately 25 miles (40.23 Km), but two migrated approximately 150 miles (241.40 Km). Myers (1964) banded 4,427 little brown bats in Missouri and adjacent states, 20 of which provided information on migration. Average migration distance was 94.3 miles (151.76 Km) with extremes of 18 (28.97 Km) and 240 miles (386.24 Km). Several other studies found hibernacula located up to 186 miles from summer roosts (Davis and Hitchcock 1965; Fenton 1970; Griffin 1970; Humphrey and Cope 1976), or perhaps as far as 621 miles (Wilson and Ruff 1999). These and other studies (Griffin 1940, Griffin 1945, Barbour and Davis 1969) suggest many little brown bats migrate relatively short distances, but migrations of more than 100 miles are not unusual. Most little brown bats stay within 62 miles (100 km) of their hibernacula. This movement pattern produces an area of high summer density around important hibernacula, but scattered summer colonies in far-removed areas.

Summer Habitat

Most little brown bats roost in buildings, other anthropogenic structures such as bridges and bat boxes, tree cavities, and under exfoliating bark (Boyles et al. 2009). Maternity colonies typically contain 300 to 1200 individuals (adults and offspring) (Wisconsin DNR 2013 citing Humphrey and Cope 1976), though a colony of 6,700 little brown bats was found in a barn in Indiana (Whitaker and Hamilton 1998). No records of little brown bats using culverts are known at this time. The ability to use a variety of summer habitats is also key to understanding a large and diverse geographic range (Bergeson et al. 2015). Bats using the interface between developed lands (that provide roosts) and undeveloped lands and water (that provide foraging habitat) tend to be healthier and have higher reproductive rates (Coleman and Barclay 2011). Female little brown bats use warm roosts (Burnett and August 1981). Little brown bats select roost trees that are large, dead, or dying trees with substantial solar exposure (Crampton and Barclay 1998, Bergeson et al. 2015). Little brown bats make frequent use of cracks and hollows in trees as well as under sloughing bark (Crampton and Barclay 1998, Bergeson et al. 2015). Randall (2014) found that data collected during their telemetry study in 2007 agreed with Broders and Forbes (2004), who reported that all female little brown bats captured in forests were found to roost in nearby buildings, whereas the males roosted in nearby trees. Minimum roosting areas for little brown bats have a mean of 9.6 acres, minimum

foraging areas a mean of 129 acres (Broders et al. 2006). Other home range estimates differ by life stage, with pregnant little brown bat home ranges averaging 74 acres and lactating little brown bat home ranges averaging 44 acres (Henry et al. 2002). Coleman et al. (2014) estimated mean home range at 353 acres.

Barbour and Davis (1969) noted that females are pregnant when they arrive at maternity roosts in early- to mid-April, with individuals arriving throughout May and into June. In Indiana (Krochmal and Sparks 2007), females in one colony gave birth to a single pup between 3 June and 15 July. These pups began fluttering at 2 days of age, could complete coordinated wing strokes by 15 days and could fly by 21 days. Most pups are likely volant by the end of July or mid-August in North Carolina. Maternity colonies begin to break up as soon as the young are weaned; few remain by September (Barbour and Davis 1969).

4.4.2 Population Size

Long-term monitoring of 22 prominent little brown bat hibernacula in the core of their range provided the basis for cave survey data from 1985 to predict a population of 6.5 million little brown bats as of 2006 (Frick et al. 2010b). This estimate was presumed to account for the vast majority of the species' overall population at the time. As of 2006, regional mean growth suggested that the northeastern core population of this species was stable or slightly increasing (Frick et al. 2010b). Thus, the pre-WNS population of this species – both throughout its range and within its core northeastern range – was viable and did not face imminent risk of extinction.

The appearance of WNS in 2006 dramatically altered the population balance, which in turn has substantially impaired the ability of little brown bats to adapt to other cumulative threats looming against a rapidly declining species baseline. In four years, this lethal fungal pathogen summarily killed at least one million little brown bats in the northeastern core range, and all efforts undertaken thus far to contain its westward spread and rate of infection have proven ineffective. As the disease spreads geographically and regionally, population collapse has been observed and, in some cases, local species extinction has been predicted, suggesting that even limited take may have the potential for population-level effects (MidAmerican Energy Company [MEC] 2018, Frick et al. 2010, Ingersoll et al. 2013). Of winter hibernacula examined where WNS has been confirmed or suspected for two or more years, survey data indicates that winter populations at 36 of 38 sites had declined compared to their 10-year pre-WNS average estimates (Kuntz and Reichard 2010). Of hibernaculum that averaged greater than 50 little brown bats prior to the discovery of WNS, four hibernacula (North Carolina [3], Tennessee [1]) declined to zero little brown bats in the most recent post-WNS surveys (Kuntz and Reichard 2010). Moreover, 16 hibernacula (42%; 23 in total but 7 were smaller on average than 50 individuals prior to WNS) declined below 50 individuals in the most recent post-WNS survey estimate (Kuntz and Reichard 2010). Die-offs of little brown bats at hibernacula have been associated with declines in summer activity (Dzal et al. 2011). Cheng et al. (2021) estimates a 98% decline at hibernacula with WNS establishment from 1995 to 2018 and a 36% overlap of species and WNS occurrence ranges for little brown bat.

4.4.3 Distribution

The little brown bat is widely distributed across North America. Their geographic distribution ranges from central Alaska to northern Florida and into southern California and central Mexico (Harvey et al. 1999). They are absent from the middle plains region (e.g., New Mexico, Texas, and southern Florida). Prior to the arrival of WNS, the largest colonies were found in the northeastern and Midwestern U.S., where some hibernacula contained tens to hundreds of thousands of individuals (Kuntz and Reichard 2010). The southern edge of their distribution is limited by the lack of caves, whereas the northern edge of the range is likely defined by a limited number of suitable hibernacula and the longer length of the hibernation season (Humphries et al. 2002, Humphries et al. 2006).

4.4.4 Threats

Tinsley (2016) reviewed potential threats to the little brown bat and determined WNS as the greatest threat faced by the species; without WNS it is unlikely the little brown bat would be a conservation

priority. Other stressors of importance include deaths from other diseases, losses at wind energy sites, environmental contaminants, and loss and adverse modification of both summer and winter habitat. Like other bats, the little brown bat is frequently the subject of persecution by people. Because little brown bats can form large maternity colonies, they are often the target of exclusion efforts (Cope et al. 1991). Threats from chemical contamination, climate change, and wind turbines are the same as those reviewed above for tricolored bat. Mortality of little brown bats has been documented at multiple operating wind turbines/farms.

5. ENVIRONMENTAL BASELINE

The environmental baseline refers to the condition of the listed species in the action area, without the consequences to the listed species caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process [50 CFR §402.02].

The proposed project lies in the Southern Blue Ridge Mountain physiographic region of North Carolina, in Madison County in the FBR Basin. Elevations in the action area are approximately 2,040-2,240 feet above mean sea level. Forested habitat in various stages of growth makes up most of the action area. Aerial photographs from 2010 indicate that much of the hillside northwest of Bridge 71 had been logged in the recent past, while 2022 imagery shows the area as wooded. Big Laurel Baptist Church, located at the intersection of Big Laurel Road and Walnut Creek Road, maintains a parking area and mowed lawn. Other maintained/disturbed habitat in the action area includes roads, driveways, scattered houses, and mowed fields.

Within the action area, Big Laurel Road runs parallel to Big Laurel Creek. The canopy along Big Laurel Creek has been reduced in the immediate area around Bridge 71 and just to the west: hazardous trees have been removed from the roadside, and trees have been cleared by homeowners and on church property. While there is some human activity in the B-5989 action area especially immediately in and around Bridge 71 that may have reduced the quality of habitat for some bat species, most of the action area is completely forested with only a small amount of development and clearing. In general, the action area is likely to consist of high-quality forested habitat for bats.

Bridge 71 may enhance roosting habitat for cave-obligate bats in the area since caves and karst topography are limited in North Carolina. The bridge also provides suitable roosting habitat for tree-roosting species. Bridge 71 has a concrete deck, steel I-beams, and two expansion joints in the deck. Deck drains are present in the existing bridge; when these are clogged, as some were during a June 2022 site visit, they provide roosting habitat for bats. The guardrails are concrete, but do not provide crevices suitable for roosting. There is no permanent roadway lighting at the bridge though several lights exist on the adjacent church property.

According to the USGS mines database, there are no mines located within a half mile of Bridge 71 (<https://mrdata.usgs.gov/mrds/find-mrds.php>, accessed 1/25/2022).

5.1 GRAY BAT WITHIN THE ACTION AREA

Indiana State University (ISU) conducted studies from 2018-2020 and in 2021. These studies focused on gray bats in the FBR Basin, which includes Big Laurel Creek, in North Carolina. These studies incorporated acoustic monitoring, roost counts, captures, and radio telemetry to gather data on distribution, foraging, roosting ecology, and migratory pathways within the study area. Emergence counts conducted by ISU at known roosts in North Carolina estimated a conservative population size of 902-2,933 gray bats in the FBR Basin (Weber and Walters 2022). Importantly, ISU studies revealed bats regularly move back and forth across the North Carolina and Tennessee border documenting the

continuity of the population with those in other Tennessee basins.

Bat detectors indicate that gray bats are present in North Carolina from March 15 – November 15. During migratory periods, gray bats move to and from winter roosts out of state (NCDOT 2019). Acoustic data indicates a pattern of lower gray bat activity in the FBR Basin from May to July, evidence that at least a portion of the gray bat population leaves the Basin during summer (Weber et al. 2020). Most gray bat roosts were centered on the FBR and its tributaries. The FBR is approximately 7.2 miles from B-5989. Acoustic surveys indicated that gray bats are relatively widespread in the FBR Basin. Based on acoustic data, Weber et al. (2018 & 2020) suspected gray bats travel mainly via the major river corridors of the FBR and Pigeon River.

ISU staff observed a gray bat and a big brown bat roosting in crevices at Bridge 71 in April of 2020 (Table 3). Two unidentified bats were observed on a second occasion a few days later. No bats were found during subsequent surveys in May and June of that year, nor were bats observed during earlier inspections (Table 3). One gray bat was found roosting in the bridge in August 2022 (Table 3). Currently, there is no evidence that the bridge is being used as a maternity site. Moderate levels of gray bat foraging activity were recorded in 2020 at an acoustic recording station along Big Laurel Creek approximately 100 meters from the bridge. Activity was recorded mainly from July–October.

A review of North Carolina Natural Heritage Program (NCNHP) records (2022) indicates that there is a 2020 record of a gray bat roosting under a Big Laurel Road bridge approximately 2.2 miles east of Bridge 71. Another gray bat record occurs approximately seven miles south of the project site at Hayes Run. In total, there are ten gray bat records within a ten-mile radius of Bridge 71.

Table 3. Bridge 71 Survey Effort Summary

June 12, 2018	NCDOT inspected Bridge 71 for bats. No evidence of roosting bats.
June 18, 2019	ISU inspected Bridge 71 for bats. No evidence of roosting bats.
April 15, 2020	Bridge 71 inspected for bats by ISU. One gray bat and one big brown bat (<i>Eptesicus fuscus</i>) are found roosting in crevices of the bridge.
April 19, 2020	ISU observed two bats roosting in the bridge, although they could not be identified to species.
May 24, 2020	ISU staff inspected Bridge 71 for bats. No bats observed.
June 12, 2020	ISU staff inspected Bridge 71 for bats. No bats observed.
June 25, 2020	ISU staff inspected Bridge 71 for bats. No bats observed.
July 1 – Aug 15, 2022	NCDOT inspected Bridge 71 for bats, twice about a week apart. One gray bat was found in the outer expansion joint in the same spot on each visit.

5.2 NORTHERN LONG EARED BAT WITHIN THE ACTION AREA

NCDOT and ISU did not detect northern long-eared bats during bridge inspections conducted from 2018 - 2022. A review of NCNHP (2022) records indicates that the nearest northern long-eared bat record is a capture record of a lactating female in 2003 approximately six miles from Bridge 71 on Big Laurel Creek. The nearest northern long-eared bat hibernaculum record is 17 miles east of the project at the Upper Cane River, with observations in 1992 and 2014 (NCNHP 2022). NCDOT recorded *Myotis* sp. foraging activity in 2020 at an acoustic recording station along Big Laurel Creek approximately 100 meters from the bridge (Melissa Miller, NCDOT, pers. comm., June 14, 2022). Therefore, the species is assumed to be present.

To our knowledge, no known northern long-eared bat roost trees occur within the action area though no surveys have been conducted. As a worst-case scenario, based on life history information outlined in Section 4 of this Opinion and the size of the action area (186 acres), we assume that one maternity colony of northern long-eared bats containing 60 individuals could be using the action area.

5.3 TRICOLORED BAT WITHIN THE ACTION AREA

NCDOT and ISU did not detect any tricolored bats roosting on Bridge 71 during bridge inspections (Table 3). A review of NCNHP records (2022) indicates that there is a 2020 record of this species roosting under a Big Laurel Road bridge approximately 2.2 miles east of Bridge 71. NCDOT documented tricolored bat within the action area during acoustic surveys in 2020 along Big Laurel Creek approximately 100 meters from Bridge 71. Forested habitat, which could be used for roosting or foraging, is present in the action area. As a worse-case scenario, if we assume, based on life history information in Section 4.3.1, a maternity colony will occupy an area of 5 acres, and each colony has a mean of 7 bats, we estimate the presence of 38 maternity colonies ($=186\text{-acre action area} / 5\text{-acre maternity colony}$) or 266 bats.

5.4 LITTLE BROWN BAT WITHIN THE ACTION AREA

NCDOT and ISU did not detect any little brown bats roosting on Bridge 71 during bridge inspections (Table 3). The closest known record of little brown bat (NCNHP 2022) is approximately eight miles south of Bridge 71 on a Baileys Branch Road bridge over the FBR, dating from 2018. Also, while NCDOT has not documented little brown bat within the action area, they recorded *Myotis* sp. foraging activity in 2020 at an acoustic recording station along Big Laurel Creek approximately 100 meters from the bridge. Forested habitat, which could be used for roosting or foraging, is present in the action area. Therefore, due to the presence of suitable habitat, *Myotis* sp. acoustic detections in the action area, and nearby existing records, the species is assumed present during the bat active season. As a worst-case scenario, we assume one maternity colony of 1,200 little brown bats may occur in the 186-acre action area. This is based on the maximum number of little browns in a typical roost and highly variable, mean foraging and roosting home ranges presented in Section 4.4.1.

6. EFFECTS OF THE ACTION

In accordance with 50 CFR 402.02, effects of the action “*refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline. Indirect effects are those that are caused by the proposed action and are later in time, but still are reasonably certain to occur. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.*”

This section analyzes the direct and indirect effects of the Action on the gray bat, northern long-eared bat, tricolored bat, and little brown bat as summarized in Table 4. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action but are later in time and reasonably certain to occur. The effects of the action are added to the environmental baseline and, after taking into consideration the status of the species, serve as the basis for the determination in these Opinions (50 CFR 402.14(g)(4)).

Stressors are alterations of the environment that may result from the proposed action that are relevant to the species. Based on the description of the proposed action and the species’ biology, NCDOT and the Service have identified eight stressors to bats (

Table 4

Table 4. Stressors). Each section below describes a stressor, the species response to the stressor, and the rationale for the determination of effects. Gray bat are present in the action area and vulnerable to effects from construction taking place between March 15 and November 15. Northern long-eared bat, tricolored bat, and little brown bat are or may be present in the action area and vulnerable to effects from construction taking place between April 1 and October 15. Stressors from construction will last the length of the project while bats are active. Individual stressors will generally be short term in nature. We

have concluded that any adverse effects to gray bats, northern long-eared bats, tricolored bats, and little brown bats from several stressors will be insignificant or discountable with the implementation of conservation measures (

Table 4). Therefore, effects resulting from those stressors caused by the proposed action are discussed only briefly in these Opinions.

Table 4. Stressors, Project Activity, and Effects Summary

Where effect determinations are different for gray bat (MYGR), northern long-eared bat (MYSE), tricolored bat (PESU), and little brown bat (MYLU), an effect or effect determination is given for each species.

Project Activity / Stressor	Construction Phase Activities		Operations and Maintenance (O&M) Phase Activities		Summary Effect Determination
	Does Stressor Occur During Construction?	Effect to the Species	Does Stressor Occur during O&M?	Effect to the Species	
(1) loss of a bridge roost (bridge replacement)	Yes, permanent (but will be replaced)	MYGR: Insignificant MYSE/PESU/MYLU: No Effect	No (replacement of old bridge roost with new bridge roost)	All Species: No Effect (restores baseline over time)	MYGR: NLAA MYSE/PESU/MYLU: No Effect
(2) loss of potential roost trees (tree removal)	Yes, potential for unknown tree roosts	All Species: Discountable (Harm avoided by CM 1)	No	All Species: No Effect	All Species: NLAA
(3) alteration or loss of foraging/commuting habitat (tree removal)	Yes	All Species: Insignificant	No	All Species: No Effect	All Species: NLAA
(4) noise and vibration	Yes	MYGR: Insignificant (Harm avoided by CM 3) NLEB/PESU/MYLU: Harm (to bats in unknown tree roosts in a portion of the action area)	Same as baseline	All Species: No Effect	MYGR: NLAA MYSE/PESU/MYLU: LAA
(5) night lighting	Yes (tree removal causes increased lighting on the creek from exiting permanent lighting)	All Species: Insignificant (due to CM 2)	Yes (lack of trees)	All Species: Insignificant (improving over time due to CM 15)	All Species: NLAA
(6) aquatic resource degradation	Yes (In-water work)	All Species: Discountable (supported by CM 8)	Yes (Stormwater)	All Species: Discountable (supported by CM 8)	All Species: NLAA
(7) collision	Yes	All Species: Discountable	Reduced from baseline	All Species: No Effect	All Species: NLAA
(8) hand removal	Yes	MYGR: Harm	No	All Species: No Effect	MYGR: LAA

		NLEB/MYLU/PES U: No Effect			MYSE/PESU/M YLU: No Effect
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6.1 STRESSORS

6.1.1 Stressor 1: Loss of a Bridge Roost (Bridge Replacement)

Bats will be excluded from using Bridge 71 before the project commences. Therefore, the proposed project will cause the loss of preferred roost site for individual gray bats. This loss will be for up to 18 months as the new bridge will contain suitable roost crevices (CM 17) and will be completed during the 18-month construction window. The 18-month displacement may cause bats to have to commute further from new roost locations to preferred foraging sites, resulting in a loss of fitness and increased exposure to predation. Due to bridge exclusion prior to the bat active season, the abundance of alternative bridge roosts in the area (at least 11 bridges of unknown suitability on Big Laurel Creek within 2.5 miles), a known occupied alternative bridge roost (Bridge 76), and potential for the temporary bridges to provide suitable bat roosting habitat, we expect these effects will be insignificant and therefore not likely to adversely affect (NLAA) the gray bat. Loss of a bridge roost is not anticipated to affect northern long-eared bats, little brown bats, or tricolored bats, since none have been observed roosting at Bridge 71 over multiple surveys.

6.1.2 Stressor 2: Loss of Potential Roost Trees (Tree Removal)

Tree-clearing activities are anticipated to take place in March or April of 2023 (latest May 15, 2023). If tree-clearing cannot be completed prior to April 1, an emergence survey will be conducted the night before tree-clearing is carried out. Gray bat may be active in the area after March 15th, and other protected bats may be active slightly later (after April 1st), but the maternity season will not have begun, so nonvolant pups will not be present. Gray bats do not typically utilize trees for roosting and this behavior is highly unusual for the species; the effects from tree removal on gray bat are discountable and are therefore NLAA the species. Trees in the project footprint consist of medium-sized sycamores, walnuts, and a white pine, which may not have the flaking bark, but could have cracks, crevices, hollows, and leaf clusters preferred for roosting. Due to the limited amount of tree-clearing, the types of trees present, their location, the time of year in which tree removal will take place, and CM 1 (tree clearing timing restrictions/emergence surveys), the probability that any northern long-eared bat, little brown bat, or tricolored bats or occupied roost trees will be removed or affected by the project is discountable and therefore tree removal is NLAA these three species. Wooded vegetation in the remainder of the action area and surrounding landscape still provides suitable roosting habitat for tree-roosting bats.

6.1.3 Stressor 3: Alteration or Loss of Foraging / Commuting Habitat (Tree Removal)

Typical gray bat foraging locations are lakes, rivers, and other large, open water bodies (Tuttle 1976b, 1979, LaVal et al. 1977), and in riparian areas associated with these resources (Brack and LaVal 2006), therefore, clearing of woody vegetation associated with the project has some potential to affect gray bat foraging and commuting behavior. Little brown bats and tricolored bats may also use the creek for foraging. Any bats that travel or forage along Big Laurel Creek where tree-clearing has occurred may be more susceptible to predation. Since tree cover is currently sparse along the creek in the project footprint and the amount of tree clearing is very limited, we anticipate the removal of woody vegetation will have an insignificant effect on foraging/commuting gray bat, little brown bats, and tricolored bats post-construction and is therefore NLAA these species.

Most northern long-eared bat foraging occurs on forested hillsides and ridges, rather than along riparian areas (Brack and Whitaker 2001, LaVal et al. 1977). Therefore, we anticipate the removal of woody vegetation would have an insignificant effect on northern long-eared bat foraging and commuting behavior and is therefore NLAA this species.

Cleared areas may serve as ecological barriers for some species, including bats. If bats avoid areas where clearing is occurring/has occurred, this may lead to increased travel time/distance between their roosts

and foraging areas and could potentially result in diminished fitness of adults and/or reduced survivorship of pups and/or adults. It is not possible to determine if the removal of trees at Big Laurel Creek could contribute to a disruption in roosting at the bridge, post-construction. CM 15 (plant trees post-construction) will minimize the impacts of this stressor.

6.1.4 Stressor 4: Noise and Vibration

The use of construction equipment is anticipated to cause the following temporary and sporadic increased noise and vibration levels (West 2016) within the action area any time of year but only during the day:

- Pile-driving 74-103 decibels
- Guardrail installation 95-105 decibels
- Impact hammer 85-90 decibels
- Rock drill 85-98 decibels
- Track hoe 91-106 decibels
- Background traffic noise pre- and post-construction (approximately 44 vehicles/hour at 40 mph design speed) 57 decibels

Since no night work is anticipated, only day roosting bats may be affected by this stressor. As a worse-case scenario, construction noise/vibration may take place during the bat maternity season (May 15 - August 15). Drilling for bridge footings is estimated not to exceed one month and pile-driving for bridge footings is estimated to take from two weeks up to a month if there are adverse circumstances (weather or subsurface issues) but will not exceed a month.

Animal response to sound and vibration depends on a number of factors, including level and frequency, distance and event duration, equipment type and condition, frequency of disruptive events over time, slope, topography, weather conditions, previous exposure to similar events, time of day, behavior during the event, and the animal's location relative to the source (Delaney and Grubb 2003).

If any bats were present at the bridge during percussive activities, they may incur adverse effects. However, exclusion material will be used to prevent gray bats from roosting at Bridge 71 prior to construction (CM 3), therefore effects from noise and vibration will be insignificant to gray bat and therefore is NLAA the species.

Tree removal activities will remove potential roost trees adjacent to site work within the project footprint (Figure 3), so no tree-roosting bats should be in the immediate vicinity where construction noise and vibrations will be taking place. But they may be present in the surrounding action area (186 acres, Figures 2). Any bat tree-roosting in the action area could be exposed to levels of noise to which they are not accustomed. Bats exposed to noise and vibration may flush from their roosts. Bats that flush from their roost and/or avoid travel and foraging areas in response to this stressor will face increased energy expenditures, which can have significant impacts given the low body mass of bats. Because females require increased energy reserves during lactation (Kurta et al. 1989), an increased demand for energy in response to noise and vibrations could be especially detrimental to lactating females and, subsequently, their pups. Bats that flush during the daytime are at greater risk of harm due to predation (Mikula et al. 2016). No known tree roosts are present in the area; however, no tree roost surveys were conducted, and the presence of northern long-eared bat, tricolored bat, and little brown bat are assumed as tricolored bat and *Myotis* sp. calls were detected acoustically in the action area. Therefore, we assume that adverse effects from noise and vibration are possible in at least parts of the action area, and are likely to adversely affect (LAA) northern long eared bat, little brown bat, and tricolored bat at unknown roost trees. Therefore, we have included incidental take in these Opinions for these species.

As traffic capacity will not increase as a result of the project, traffic levels, including traffic noise and vibration, are not anticipated to change post-project. Any bats in the action area will be exposed to a

similar amount of noise and vibration as they would have been pre-construction. West (2016) noted that, “*some level of tolerance and habituation does occur in some species that colonize bridges and other highway structures.*”

6.1.5 Stressor 5: Night Lighting

No permanent lighting will be added for the project (CM 2). Several permanent light fixtures on the church already exist within the action area. Three temporary traffic lights will be placed at the site and will be red, yellow, and green. Red light (approximately 3,000 Kelvin [K]) has been shown to cause a minimum amount of disturbance for activity levels of *Myotis* sp. when compared to dark foraging areas (Downs et al. 2003).

Tree removal from the project may expose the creek corridor to additional light pollution from headlights, the temporary traffic lights, or any lights used at the adjacent church. Any bat flying through lit areas may be more vulnerable to predation. However, the existing trees in the project footprint are already few and scattered, so light may already be visible at the creek pre-construction. NCDOT has committed to replacing trees to help block any existing and future light from reaching the creek (CM 15).

Elevated light levels may affect gray bat, northern long-eared bat, little brown bat, or tricolored bat that forage or commute in or near the project footprint during construction. The presence of artificial lighting could force light-shy bats to use suboptimal flight routes or fly further to reach foraging sites and require them to expend more energy in the process (Stone et al. 2009, Stone et al. 2012); however, all lighting is in areas of open, maintained/disturbed habitat, where bat activity may already be limited. Gray bat and northern long-eared bat do not typically forage over areas of open, terrestrial habitat. Any bats that continue to forage or commute through areas with elevated light levels may be more susceptible to predation, although the detour bridge will provide some shaded cover along Big Laurel Creek.

The existing guardrails on the bridge are low, open concrete rails, which allows some headlights from trucks and other vehicles to shine over the railing and into adjacent airspace above the creek. They will be replaced with a 42-in. solid concrete “Jersey barrier” style guardrail, which will be more effective at blocking vehicle headlights post-project.

As described above, due to existing site conditions, minimal tree clearing, commitment to CMs 2 and 15, we believe effects from night lighting during construction and operations and maintenance activities will be insignificant and therefore is NLAA gray bat, northern long-eared bat, tricolored bat, or little brown bat.

6.1.6 Stressor 6: Aquatic Resource Degradation

Project construction activities have the potential to affect water quality within the action area and could degrade important aquatic foraging resources for bats. While post-construction operations and maintenance activities may affect water quality, several important design characteristics in the stormwater plan and the bridge design (reduced bents) are likely to benefit water quality. NCDOT will implement CM 8 (*Design Standards in Sensitive Watersheds*) which will help protect water quality both during and after construction. As a result, we expect aquatic resource degradation to be discountable for this project and, therefore, NLAA the four bat species under consideration.

6.1.7 Stressor 7: Collision

Bat mortality caused by impacts from passing vehicles is widely documented (Kiefer et al. 1995, Lesiński 2007, Gaisler et al. 2009, Russell et al. 2009, Lesinski et al. 2010, Medinas et al. 2013). The 2021 NCDOT I-26 FBR bridge annual monitoring used night vision video to observe bat movements. Results for that bridge showed that nearly double the number of bats choose to fly below that bridge (61%) compared to over (30%) (NCDOT 2021). Numbers of bats flying over versus under a bridge are expected to vary according to bridge height and other site-specific factors influencing bat’s flight behavior. It is

expected that some number of bats migrating or commuting through the action area will pass above the bridges and will therefore be at risk of injury or mortality due to vehicle collision.

During construction, the project will temporarily add an extra bridge and bents to the action area. While this may add obstacles to the flyway and change bat behavior, traffic will only occur on one of the bridges at any one time and the total number of lanes will drop from two to one. Post-construction, since traffic levels will not change, this potential stressor will not increase from baseline conditions. The posted speed limit is anticipated to be 35 mph post-project, which may limit vehicle-bat collisions. Also, the roadway grade of the new structure will be raised by one to two feet. This, and the reduction in the number of permanent bridge footings from two bents to one, may encourage bats flying along Big Laurel Creek to fly under the bridge, instead of over it. The bridge may serve as a protective underpass for foraging, commuting, or migrating bats. We find collision effects from construction to be discountable, that is, NLAA the four bat species under consideration. We also find that collision effects from operations and maintenance activities will have no effect to all four bat species since there will be either no change to the baseline condition or a reduction in collision risk from baseline conditions (Table 4).

6.1.8 Stressor 8: Hand Removal

If CM 3 (exclusion) fails and CM 4 (pre-demo bat survey) detects any gray bats roosting on Bridge 71, the gray bat(s) will be removed by hand. Per CM 7 (hand removal/relocation), NCDOT will contact the Service before the gray bat(s) are removed to coordinate a relocation plan. While we do not expect the incidental take to be lethal, it may harm the individual(s)(Table 4). This stressor will have no effect on northern long-eared bat, tricolored bat, and little brown bat as they are not expected to be roosting on the bridge based on past survey results.

6.3 CUMULATIVE EFFECTS

Cumulative effects are defined as *"those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation"* (50 CFR 402.02). Future federal actions unrelated to the proposed action are not considered because they require separate consultation pursuant to Section 7 of the Endangered Species Act.

Parcels in the action area are zoned as Residential-Agricultural or Vacant (Madison County 2009). While the potential exists for tree clearing, construction activities, and additional lighting to occur in the future associated with residential and agricultural lands and church activities, those activities are not considered reasonably certain to occur. Therefore, there are currently no anticipated cumulative effects for this action area.

6.4 SUMMARY OF EFFECTS

In summary, of the anticipated stressors and effects discussed above, construction-phase noise/vibration and construction-phase hand-removal of bridge-roosting bats are the stressors that are expected to adversely affect gray bat, northern long-eared bat, tricolored bat, and little brown bat. Take from these stressors is expected in the form of harm. The other stressors and the operation and maintenance phase discussed above are expected to have insignificant or discountable effects on gray bat, northern long-eared bat, tricolored bat, and little brown bat (Table 4).

7 CONCLUSION

After reviewing the current status of **gray bat** and **northern long-eared bat**, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of gray bat or northern long-eared bat. No critical habitat has been designated for these species; therefore, none will be affected. This opinion is based on the following:

1. Although the proposed action is expected to result in adverse effects to the gray bat and northern long-eared bat, we have determined that the species' reproduction, numbers, and distribution will

not be appreciably reduced as a result of the proposed action.

- a. The gray bat population utilizing the FBR Basin is estimated at 902-2,933 individuals, and the entire gray bat population is conservatively estimated at 4,358,263 individuals. While we do not know how many gray bats may be using the action area, we know that up to two gray bats have roosted on Bridge 71. Adverse effects caused by the project are expected on two bats, or 0.2% of the most conservative estimate of the FBR Basin population and an even smaller fraction of the range wide population and take is not expected to be lethal.
 - b. The Service projected the range-wide northern long-eared population to be 19,356 individuals in 2020. We do not know how many northern long-eared bats may be using the action area and thus susceptible to adverse affects from noise and vibration. Based on mean home-range sizes (21 – 179 acres), distances between roosts (20 feet to 2.4 miles), and the typical foraging range of northern long-eared bat maternity colony (1.5 miles = 4,522 acres), if we assume the presence of one maternity roost of up to 60 individuals within the 186-acre (0.25 radius circle) action area, the project will impact less than 0.31% of the range-wide population. Additionally, take is not expected to be lethal.
2. Effects of the action will only impact a very small portion of gray bat and northern long-eared bat roosting, foraging, and commuting habitat within their range.

After reviewing the current status of **tricolored bat** and **little brown bat**, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's conference opinion that the action, as proposed, is not likely to jeopardize the continued existence of the tricolored bat or little brown bat.

1. Although the proposed action is expected to result in adverse effects to the tricolored bat and little brown bat, we have determined that the species' reproduction, numbers, and distribution will not be appreciably reduced as a result of the proposed action.
 - a. If the tricolored bat range-wide population is 67,898 individuals (Service 2022b), then this project will impact less than 0.4% ($= 266 / 67,898$) of the range-wide population. Additionally, impacts are not expected to be lethal.
 - b. While the current range-wide population of little brown bat is unknown, populations within WNS-impacted areas (36% of the little brown population) have declined 98% (Cheng et al. 2021). Assuming the range-wide population of little brown bat is evenly distributed across its range, thirty-six percent of the 2006 estimated population of 6.5 million bats is 2.34 million individuals. If the 2.34 million bats declined by 98%, that leaves 46,800 bats in WNS-impacted areas. Based on home range sizes presented in Section 4.4.1, if we assume that one maternity colony with 1,200 little brown bats occurs within the 186-acre action area, adverse effects from noise and vibration would impact 2.6% of the WNS-impacted portion of the population ($= 1,200 / 46,800$) and a much smaller fraction of the range-wide population. Additionally, impacts are not expected to be lethal.
2. Effects of the action will only impact a very small portion of tricolored bat and little brown bat roosting, foraging, and commuting habitat within their range.

8. INCIDENTAL TAKE STATEMENT

Section 9 of the Endangered Species Act and Federal regulations pursuant to section 4(d) of the Endangered Species Act prohibit the taking of endangered and threatened species, respectively, without special exemption. Take “*means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct*” (16 U.S.C §1532). Harm in the definition of “take” in the Endangered Species Act “*means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering*” (50 CFR 17.3). Incidental taking “*means any taking otherwise prohibited, if such taking is incidental to, and not*

the purpose of, the carrying out of an otherwise lawful activity” (50 CFR 17.3). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be prohibited under the Endangered Species Act, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by the NCDOT so that they become binding conditions of any grant or permit issued to the NCDOT or its contractors, as appropriate, for the exemption in section 7(o)(2) to apply. The NCDOT has a continuing duty to regulate the activity covered by this incidental take statement. If the (agency) (1) fails to assume and implement the terms and conditions or (2) fails to require its contractors to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the NCDOT must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement (50 CFR §402.14(i)(3)).

8.1 AMOUNT OR EXTENT OF TAKE

Incidental take of gray bat, northern long-eared bat, tricolored bat, and little brown bat is anticipated to occur as a result of the replacement of Bridge 71, via the hand removal of gray bats roosting on Bridge 71 and noise and vibratory impacts on unknown tree roosts of northern long-eared bats, tricolored bats, and/or little brown bats within the action area. The take associated with this project is expected in the form of harm. The harm resulting from the proposed action is not expected to cause mortality of individuals within the action area but could reduce fitness and reproductive success of bats occurring within the action area over the duration of the 18-month project.

The Service anticipates that up to 2 gray bats could be taken as a result of the proposed action. Take of two gray bats is estimated based on the highest count of bats at Bridge 71 (Table 3). In this Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the gray bat.

The Service anticipates the incidental taking of northern long-eared bats, tricolored bats, and little brown bats associated with this project will be difficult to detect because: 1) the individuals are small, mostly nocturnal, and occupy trees where they are difficult to observe, 2) finding dead or injured bats during or following project implementation is unlikely, and 3) most incidental take is in the form of non-lethal harm and not directly observable. Also, there is no data from the action area that estimates the number of northern long-eared bats, tricolored bats, and little brown bats in the action area, and bat populations are known to fluctuate seasonally and annually in a given area, therefore, it is difficult to base the amount of incidental take on numbers of individual bats for these three species. Given this, the Service will monitor the extent of take for northern long-eared bats, tricolored bats, and little brown bats using two surrogate measures:

1. The location of construction operations. Construction operations will not occur outside the 1.7-acre project disturbance footprint (Figure 3), confining noise and vibration effects to the action area (Figure 2).
2. The duration of activities, which will not exceed 18 months or two maternity seasons (May 15 – August 15).

These surrogate measures are appropriate because the anticipated taking will result from noise and vibration effects to suitable roosting trees in the action area, and the timing of this activity. These surrogate measures serve to set a clear limit for determining when take has been exceeded for northern long-eared bat, tricolored bat, and little brown bat. In this Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to these three species.

8.2 REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures (RPMs) are necessary and

appropriate to minimize impacts of incidental take of **gray bat and northern long-eared bat**. These non-discretionary measures reduce the level of take associated with project activities, include only actions that occur within the action area, and involve only minor changes to the project.

- RPM 1. NCDOT will ensure that the contractor understands and follows the measures listed in the “Conservation Measures”, “Reasonable and Prudent Measures,” and “Terms and Conditions” sections of these Opinions.
- RPM 2. NCDOT will monitor and document the level of take and the surrogate measures of take and report them to the Service.

The prohibitions against taking **tricolored bat and little brown bat** found in section 9 of the Endangered Species Act do not apply until the species is listed. However, the Service advises the NCDOT to consider implementing the following RPMs. If this conference opinion is adopted as a biological opinion following a listing or designation, these measures, with their implementing terms and conditions, will be nondiscretionary.

- RPM 3. NCDOT will ensure that the contractor understands and follows the measures listed in the “Conservation Measures”, “Reasonable and Prudent Measures,” and “Terms and Conditions” sections of these Opinions.
- RPM 4. NCDOT will monitor and document the level of take and the surrogate measures of take and report them to the Service.

8.3. TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the Endangered Species Act, the NCDOT must comply with the following terms and conditions (T&C), which implement the RPMs above and outline required reporting and/or monitoring requirements. When incidental take is anticipated, the T&Cs must include provisions for monitoring project activities to determine the actual project effects on listed fish or wildlife species (50 CFR §402.14(i)(3)). These T&Cs are nondiscretionary.

- T&C 1. NCDOT will ensure that the procedures listed in the “Conservation Measures”, “Reasonable and Prudent Measures”, and “Terms and Conditions” sections of these Opinions are being implemented and that all project plans are being implemented in a manner that ensures the conditions of these Opinions are met.
- T&C 2. Project monitoring, carried out by the federal agency or non-federal designated representative, ensures the terms of these Opinions are carried out, provides the Service with information essential to assessing the effects of various actions on listed species, and allows the Service to track incidental take levels. NCDOT will monitor the project disturbance footprint to ensure surrogate measures of take are not exceeded.
- T&C 3. Once the project is complete, NCDOT will provide a short report by the end of the calendar or fiscal year in which the project is completed, whichever is more distant, that 1) indicates the actual level of incidental take (and/or surrogate measures) in comparison to those analyzed in these Opinions, 2) provides results/feedback/lessons-learned on the effectiveness of CMs, RPMs, and T&Cs, and 3) documents the start and end of the project.

The Service believes that no more than two gray bats will be incidentally taken as a result of the proposed action and that two surrogate measures of take limiting construction operations to the 1.7-acre project disturbance footprint and 18-month duration of activities will not be exceeded. The RPMs, with their implementing T&Cs, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring re-initiation of consultation and review of the RPMs provided. The federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the RPMs.

9. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Endangered Species Act directs Federal agencies to use their authorities to further the purposes of the Endangered Species Act by carrying out conservation programs for the benefit of endangered and threatened species. The following conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species, to help implement recovery plans, or to develop information.

The proposed action and its avoidance and minimization measures and conservation measures significantly reduce take; therefore, we are not providing any additional conservation recommendations.

10. REINITIATION/CLOSING STATEMENT

This concludes formal consultation and conference on the actions outlined in your revised BA (Three Oaks Engineering, 2022). As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in these Opinions; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in these Opinions; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

You may ask the Service to confirm this conference opinion as a biological opinion issued through formal consultation if the tricolored bat or little brown bat is listed or critical habitat is designated. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm this conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary. Re-initiation of the subsequent, confirmed biological opinion would be required for the same four reasons listed above.

The incidental take statement provided in this conference opinion does not become effective if or until the species are listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the tricolored bat or little brown bat has occurred. Modifications of the Opinion and incidental take statement may be appropriate to reflect that take. No take of the tricolored bat or little brown bat may occur between any final listing of the tricolored bat or little brown bat and the adoption of this Conference Opinion as a Biological Opinion through formal consultation or the completion of a subsequent formal consultation.

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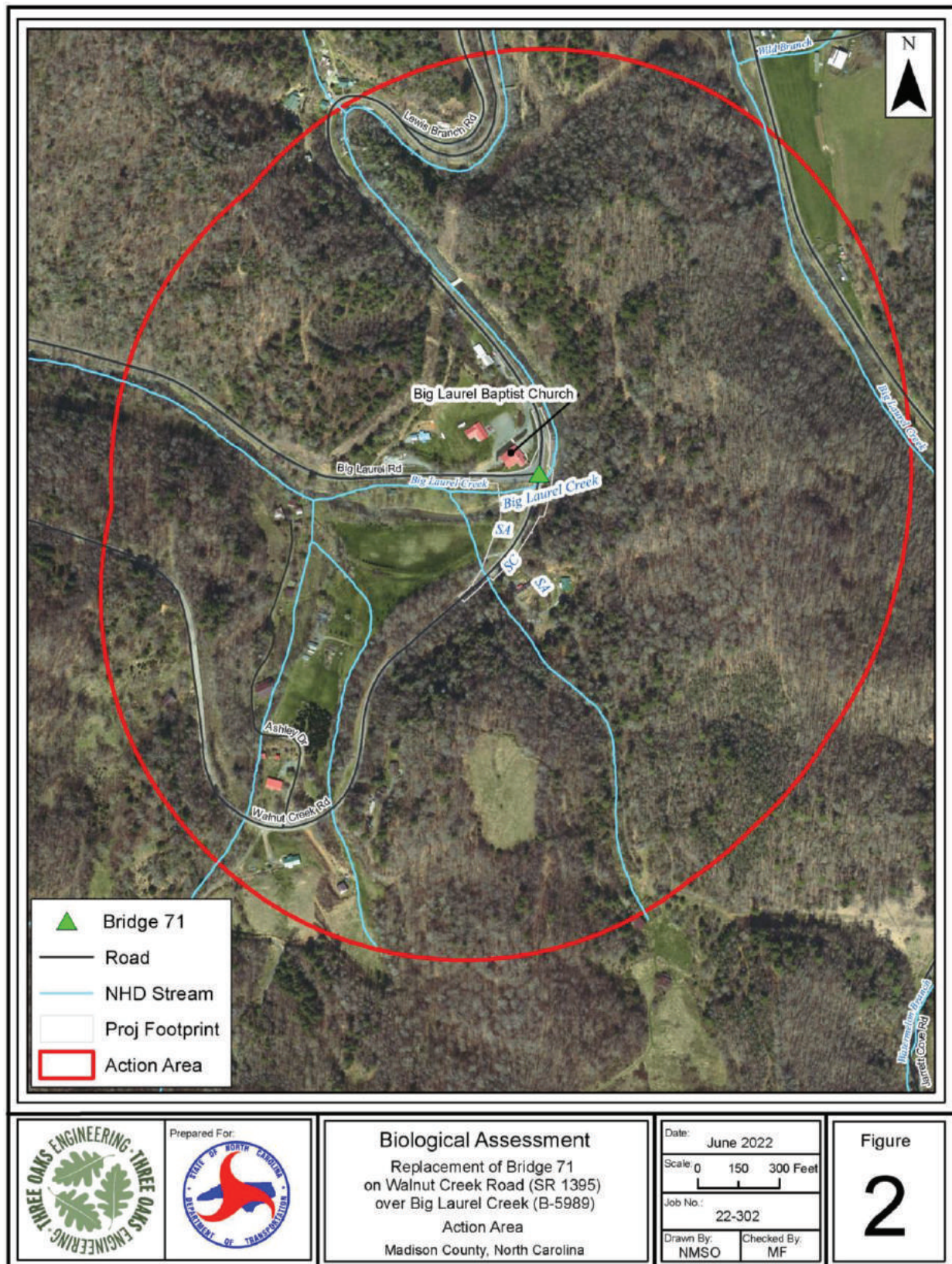
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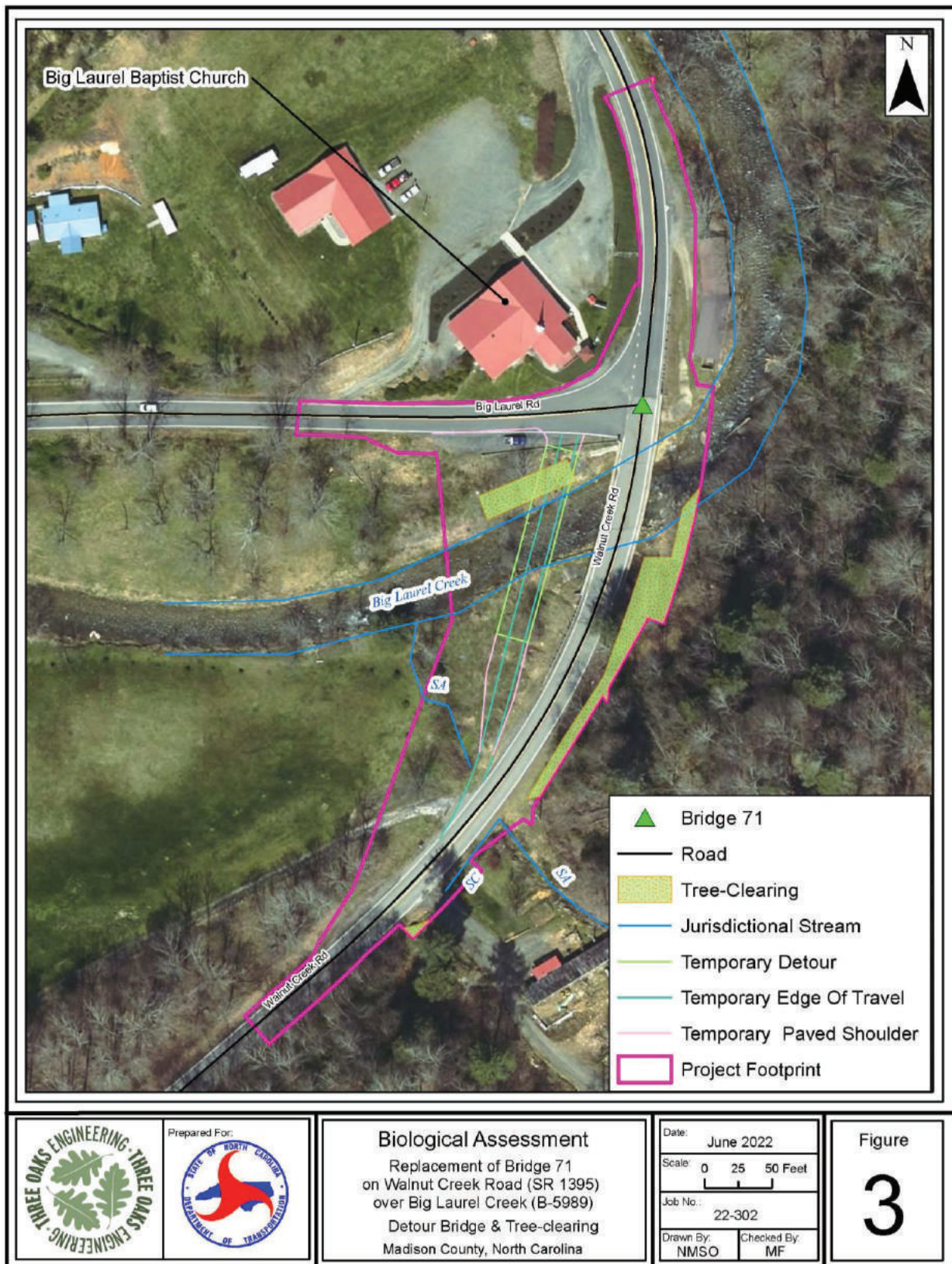
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12. FIGURES





DEPARTMENT OF THE ARMY
Wilmington District, Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343

Regional General Permit No. SAW-2019-02350 (RGP 50)
Name of Permittee: North Carolina Department of Transportation
Effective Date: May 26, 2020
Expiration Date: May 25, 2025

**DEPARTMENT OF THE ARMY
REGIONAL GENERAL PERMIT**

A regional general permit (RGP) to perform work in or affecting navigable waters of the United States and waters of the United States, upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344), is hereby issued by authority of the Secretary of the Army by the

District Commander
U.S. Army Engineer District, Wilmington
Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343

TO AUTHORIZE THE DISCHARGE OF DREDGED OR FILL MATERIAL IN WATERS OF THE UNITED STATES (U.S.), INCLUDING WETLANDS, ASSOCIATED WITH MAINTENANCE, REPAIR, AND CONSTRUCTION PROJECTS CONDUCTED BY THE VARIOUS DIVISIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT), INCLUDING THE NCDOT DIVISION OF HIGHWAYS, RAIL, BICYCLE/PEDESTRIAN, ETC.

Activities authorized by this RGP:

- a. (1) Road widening, and/or (2) construction, maintenance, and/or repair of bridges. For bridge projects, work can include the approaches.
- b. (1) Improvement of interchanges or intersections, or (2) construction of interchanges or intersections over, on, existing roads.

Full descriptions/terms of “a” and “b”:

a. (1) Road widening, and/or (2) construction, maintenance, and/or repair of bridges. For bridge projects, work can include the approaches.

Permanent impacts that result in a loss of waters of the U.S., excluding stream relocation(s), must be less than or equal to 500 linear feet (lf) of stream and/or one (1) acre of wetland/open water for each single and complete linear project.

Single and complete linear project. As noted in 33 CFR 330.2(i), for linear projects, the “single and complete project” (i.e., single and complete crossing) will apply to each crossing of a separate water of the U.S. (i.e., single waterbody) at that location; except that for linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies and crossing of such features cannot be considered separately.

Also authorized under “a”: (1) stream relocation(s) and (2) temporary impacts, such as those from temporary structures, fills, dewatering, and other work necessary to conduct the activities listed under “a”. Stream relocation(s) and temporary impacts will be evaluated independently and are not limited to the permanent loss limits of 500 lf of stream and/or 1 acre of wetland/open water (i.e., stream relocations and/or temporary impacts do not factor into these limits) for each single and complete linear project; however, if the Corps determines that the proposed stream relocation(s) and/or temporary impacts are of such magnitude that they cannot be authorized under this section (“a”) of RGP 50, even if the permanent losses from road widening, and/or construction, maintenance, and repair of bridges do not exceed the impact limits for this section (“a”) of RGP 50, an Individual Permit will be required.

If the Corps determines, on a case-by-case basis, that the concerns for the aquatic environment so indicate, he/she may exercise discretionary authority to override this RGP and require an Individual Permit.

b. (1) Improvement of interchanges or intersections, or (2) construction of interchanges or intersections, over or, on existing roads.

For activities authorized under “b”, the limits for permanent impacts that result in a loss of waters of the U.S. depend on the location of the impacts, as described below:

- In the coastal plain of North Carolina (both inner coastal plain and outer coastal plain) - permanent impacts that result in a loss of waters of the U.S., excluding stream relocation(s), must be less than or equal to 1,000 lf of stream and/or 3 acres of wetland/open water for the entire interchange or intersection project.

- All other areas of North Carolina - permanent impacts that result in a loss of waters of the U.S., excluding stream relocation(s), must be less than or equal to 1,000 lf of stream and/or 2 acres of wetland/open water for the entire interchange or intersection project.

Coastal plain – See http://saw-reg.usace.army.mil/JD/LRRs_PandT.pdf for Land Resource Areas LRRP (inner coastal plain) and LRRT (outer coastal plain).

When proposed impacts to waters of the U.S. are located both inside AND outside of the coastal plain, the Corps will determine, based on the location(s) of proposed impacts to waters of the U.S., if a project is a “coastal plain project”.

Single and complete project. For permitting purposes, each interchange or intersection is considered to be one single and complete project. For example, an interchange project cannot result in a permanent loss (excluding stream relocation), of (1) greater than 1,000 lf of stream and/or 3 acres of wetland/open water in the coastal plain OR (2) greater than 1,000 lf of stream and/or 2 acres of wetland/open water in all other areas of North Carolina.

Approach fills may be considered to be part of an interchange or intersection project if the Corps determines that inclusion of these areas meet the terms of this section (“b”) of RGP 50. Early coordination with the Corps is encouraged.

Intersections, regardless of the mode of transportation (e.g., railroad, other roadways, etc.), may be at grade or grade separated if the Corps determines that the project would meet the terms of this section (“b”) of RGP 50. Early coordination with the Corps is encouraged.

Also authorized under “b”: (1) stream relocation(s) and (2) temporary impacts, such as those from temporary structures, fills, dewatering, and other work necessary to conduct the activities listed under “b”. Stream relocation(s) and temporary impacts will be evaluated independently and are not limited to the permanent loss limits of (1) 1,000 lf of stream and/or 3 acres of wetland/open water in the coastal plain OR (2) 1,000 lf of stream and/or 2 acres of wetland/open water in all other areas of North Carolina (i.e., stream relocations and/or temporary impacts do not factor into these limits) for each interchange or intersection project; however, if the Corps determines that the proposed stream relocation(s) and/or temporary impacts are of such magnitude that they cannot be authorized under this section (“b”) of RGP 50, even if the permanent losses from improvement of interchanges or intersections, or construction of interchanges or intersections over, or on, existing roads do not exceed the impact limits for this section (“b”) of RGP 50, an Individual Permit will be required.

If the Corps determines, on a case-by-case basis, that the concerns for the aquatic environment so indicate, he/she may exercise discretionary authority to override this RGP and require an Individual Permit.

1. Special Conditions.

a. The prospective permittee must submit a pre-construction notification (PCN) and applicable supporting information to the District Engineer and receive written verification from the Corps that the proposed work complies with this RGP prior to commencing any activity authorized by this RGP.

b. If the project will not impact a designated “Area of Environmental Concern” (AEC) in the twenty* (20) counties of North Carolina covered by the North Carolina Coastal Area Management Act (CAMA) (“CAMA counties”), a consistency submission is not required. If the project will impact a designated AEC and meets the definition of “development”, the prospective permittee must obtain the required CAMA permit. Development activities shall not commence until a copy of the approved CAMA permit is furnished to the appropriate Corps Regulatory Field Office (Wilmington Field Office – 69 Darlington Avenue, Wilmington, NC 28403 or Washington Field Office – 2407 West 5th Street, Washington, NC 27889).

***The 20 CAMA counties in North Carolina include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington.**

c. No work shall be authorized by this RGP within the 20* CAMA counties without prior consultation with the National Oceanic and Atmospheric Administration’s (NOAA) Habitat Conservation Division. For each activity reviewed by the Corps where it is determined that the activity may affect Essential Fish Habitat (EFH) for federally managed species, an EFH Assessment shall be prepared by the prospective permittee and forwarded to the Corps and NOAA Fisheries for review and comment prior to authorization of work.

d. Culverts and pipes. The following conditions [(1)-(8)] apply to the construction of culverts/pipes, and work on existing culverts/pipes.

Additionally, if the proposed work would affect an existing culvert/pipe (e.g., culvert/pipe extensions), the prospective permittee must include actions (in the PCN) to correct any existing deficiencies that are located:

- At the inlet and/or outlet of the existing culvert/pipe, IF these deficiencies are/were caused by the existing culvert/pipe, or
- Near the inlet or outlet of the existing culvert/pipe, IF these deficiencies are/were caused by the existing culvert/pipe.

These deficiencies may include, but are not limited to, stream over-widening, bank erosion, streambed scour, perched culvert/pipes, and inadequate water depth in culvert(s). Also note if the proposed work would address the existing deficiency or eliminate it – e.g., bank erosion on left bank, but the culvert extension will be placed in this eroded area. If the prospective permittee is unable to correct the deficiencies caused by the existing culvert/pipe, they must document the reasons in the PCN for Corps consideration.

(1) No activity may result in substantial, permanent disruption of the movement of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. Measures will be included that will promote the safe passage of fish and other aquatic organisms.

(2) The dimension, pattern, and profile of the stream above and below a culvert/pipe shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. It is acceptable to use rock vanes at culvert/pipe outlets to ensure, enhance, or maintain aquatic passage. Pre-formed scour holes are acceptable when designed for velocity reduction. The width, height, and gradient of a proposed opening shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow will be determined from gauge data, if available. In the absence of such data, bankfull flow will be used as a comparable level.

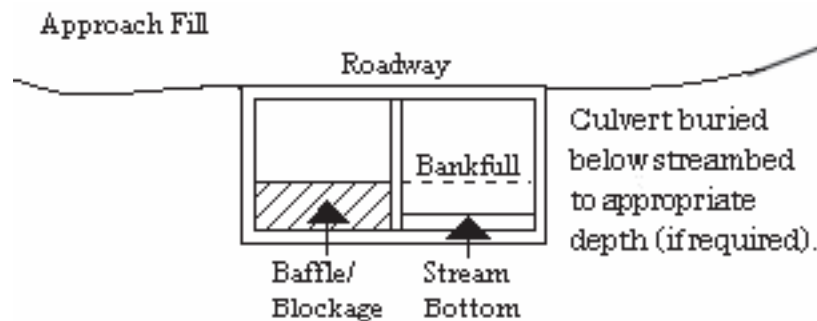
(3) Burial/depth specifications: If the project is located within any of the 20* CAMA counties, culvert/pipe inverts will be buried at least one foot below normal bed elevation when they are placed within the Public Trust AEC and/or the Estuarine Waters AEC as designated by CAMA. If the project is located outside of the 20* CAMA counties, culvert/pipe inverts will be buried at least one foot below the bed of the stream for culverts/pipes that are greater than 48 inches in diameter. Culverts/pipes that are 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, to include passage during drought or low flow conditions. Every effort shall be made to maintain the existing channel slope. A waiver from the burial/depth specifications in this condition may be requested in writing. The prospective permittee is encouraged to request agency input about waiver requests as early as possible, and prior to submitting the PCN for a specific project; this will allow the agencies time to conduct a site visit, if necessary, and will prevent time delays and potential project revisions for the prospective permittee. The waiver will only be issued by the Corps if it can be demonstrated that the impacts of complying with burial requirements would result in more adverse impacts to the aquatic environment.

(4) Appropriate actions to prevent destabilization of the channel and head cutting upstream shall be incorporated in the design and placement of culverts/pipes.

(5) Culverts/pipes placed within riparian and/or riverine wetlands must be installed in a manner that does not restrict the flow and circulation patterns of waters of the U.S. Culverts/pipes placed across wetland fills purely for the purposes of equalizing surface

water do not have to be buried, but must be of adequate size and/or number to ensure unrestricted transmission of water.

(6) Bankfull flows (or less) shall be accommodated through maintenance of the existing bankfull channel cross sectional area in no more than one culvert/pipe or culvert/pipe barrel. Additional culverts/pipes or barrels at such crossings shall be allowed only to receive flows exceeding the bankfull flow. A waiver from this condition may be requested in writing; this request must be specific as to the reason(s) for the request. The waiver will be issued if it can be demonstrated that it is not practicable to comply with this condition.



(7) Where adjacent floodplain is available, flows exceeding bankfull will be accommodated by installing culverts/pipes at the floodplain elevation. When multiple culverts/pipes are used, baseflow must be maintained at the appropriate width and depth by the construction of floodplain benches, sills, and/or construction methods to ensure that the overflow culvert(s)/pipe(s) is elevated above the baseflow culvert(s)/pipe(s).

(8) The width of the baseflow culvert/pipe shall be comparable to the width of the bankfull width of the stream channel. If the width of the baseflow culvert/pipe is wider than the stream channel, the culvert/pipe shall include baffles, benches and/or sills to maintain the width of the stream channel. A waiver from this condition may be requested in writing; this request must be specific as to the reason(s) for the request. The waiver will be issued if it can be demonstrated that it is not practicable or necessary to include baffles, benches or sills.

See the remaining special conditions for additional information about culverts/pipes in specific areas.

e. Discharges into waters of the U.S. designated by either the North Carolina Division of Marine Fisheries (NCDMF) or the North Carolina Wildlife Resources Commission (NCWRC) as anadromous fish spawning areas are prohibited during the period between February 15th and June 30th, without prior written approval from the Corps and the appropriate wildlife agencies (NCDMF, NCWRC, and/or the National Marine Fisheries Service (NMFS)). Discharges into waters of the U.S. designated by NCWRC as primary nursery areas in inland waters are prohibited during the period between February 15th and September 30th, without prior written approval from the Corps and the appropriate wildlife agencies. Discharges into waters of the U.S. designated by NCDMF as primary nursery areas shall be coordinated with NCDMF prior to being authorized by

this RGP. Coordination with NCDMF may result in a required construction moratorium during periods of significant biological productivity or critical life stages.

The prospective permittee should contact:

NC Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
Telephone 252-726-7021
or 800-682-2632

North Carolina Wildlife Resources Commission
Habitat Conservation Division
1721 Mail Service Center
Raleigh, NC 27699-1721
Telephone (919) 707-0220

f. This permit does not authorize the use of culverts in areas designated as anadromous fish spawning areas by the NCDMF or the NCWRC.

g. No in-water work shall be conducted in Waters of the U.S. designated as Atlantic sturgeon critical habitat during the periods between February 1st and June 30th. No in-water work shall be conducted in Waters of the U.S. in the Roanoke River designated as Atlantic sturgeon critical habitat during the periods between February 1st and June 30th, and between August 1st to October 31st, without prior written approval from NMFS.

h. Before discharging dredged or fill material into waters of the U.S. in designated trout watersheds in North Carolina, the PCN will be sent to the NCWRC and the Corps concurrently. See <https://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout.aspx> for the designated trout watersheds. The PCN shall summarize alternatives to conducting work in waters of the U.S. in trout watersheds that were considered during the planning process and detail why alternatives were or were not selected. For proposals where (1) a bridge in a trout stream will be replaced with a culvert, or (2) a culvert will be placed in a trout stream, the PCN must also include a compensatory mitigation plan for all loss of stream bed, and details of any on-site evaluations that were conducted to determine that installation of a culvert will not adversely affect passage of fish or other aquatic biota at the project site. The evaluation information must include factors such as the proposed slope of the culvert and determinations of how the slope will be expected to allow or impede passage, the necessity of baffles and/or sills to ensure passage, design considerations to ensure that expected baseflow will be maintained for passage and that post-construction velocities will not prevent passage, site conditions that will or will not allow proper burial of the culvert, existing structures (e.g., perched culverts, waterfalls, etc.) and/or stream patterns up and downstream of the culvert site that could affect passage and bank stability, and any other considerations regarding passage. The level of detail for this information shall be based on site conditions (i.e., culverts on a slope over 3% will most likely require more information than culverts on a slope that is less than 1%, etc.). Also, in order to evaluate potential impacts, the prospective permittee will describe bedforms that will be impacted by the proposed culvert – e.g., pools, glides, riffles, etc. The NCWRC will respond to both the prospective permittee and the Corps.

i. For all activities authorized by this RGP that involve the use of riprap material for bank stabilization, the following measures shall be applied:

(1) Where bank stabilization is conducted as part of an activity, natural design, bioengineering, and/or geoengineering methods that incorporate natural durable materials, native seed mixes, and native plants and shrubs are to be utilized, as appropriate to site conditions, to the maximum extent practicable.

(2) Filter cloth must be placed underneath the riprap as an additional requirement of its use in North Carolina waters; however, the prospective permittee may request a waiver from this requirement. The waiver request must be in writing. The Corps will only issue a waiver if the prospective permittee demonstrates that the impacts of complying with this requirement would result in greater adverse impacts to the aquatic environment. Note that filter fabric is not required if the riprap will be pushed or “keyed” into the bank of the waterbody.

(3) The placement of riprap shall be limited to the areas depicted on submitted work plan drawings.

(4) Riprap shall not be placed in a manner that prevents or impedes fish passage.

(5) Riprap shall be clean and free from loose dirt or any pollutant except in trace quantities that will not have an adverse environmental effect.

(6) Riprap shall be of a size sufficient to prevent its movement from the authorized alignment by natural forces under normal conditions.

(7) Riprap material shall consist of clean rock or masonry material such as, but not limited to, granite, marl, or broken concrete.

j. Discharges of dredged or fill material into waters of the U.S., including wetlands, must be minimized or avoided to the maximum extent practicable.

k. Generally, off-site detours are preferred to avoid and minimize impacts to the human and natural environment; however, if an off-site detour is considered impracticable, then an on-site detour may be considered as a necessary component of the actions authorized by this RGP. Impacts from the detour may be considered temporary and may not require compensatory mitigation if the impacted area is restored to pre-construction elevations and contours after construction is complete. The permittee shall also restore natural hydrology and stream corridors (if applicable), and reestablish native vegetation/riparian corridors. If the construction of a detour (on-site or off-site) includes standard undercutting methods, removal of all material and backfilling with suitable material is required. See special condition “s” for additional information.

l. All activities authorized by this RGP shall, to the maximum extent practicable, be

conducted "in the dry", with barriers installed between work areas and aquatic habitat to protect that habitat from sediment, concrete, and other pollutants. Where concrete is utilized, measures will be taken to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with waters of the U.S. until the concrete has set and cured. All water in the work area that has been in contact with concrete shall only be returned to waters of the U.S. when it no longer poses a threat to aquatic organisms (concrete is set and cured).

m. In cases where new alignment approaches are to be constructed and the existing approach fill in waters of the U.S. is to be abandoned and no longer maintained as a roadway, the abandoned fill shall be removed and the area will be restored to pre-construction elevations and contours. The permittee shall also restore natural hydrology and stream corridors (if applicable), and reestablish native vegetation/riparian corridors, to the extent practicable. This activity may qualify as compensatory mitigation credit for the project and will be assessed on a case-by-case basis in accordance with Special Conditions "q" and "r" in this document. Any proposed on-site wetland restoration area must be void of utility conflicts and/or utility maintenance areas. A restoration plan detailing this activity will be required with the submittal of the PCN.

n. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

o. The project must be implemented and/or conducted so that all reasonable and practicable measures to ensure that equipment, structures, fill pads, and work associated with the project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, scour, flooding, and/or shoreline/streambank erosion. During construction, the permittee shall routinely monitor for these effects, cease all work if/when detected, take initial corrective measures to correct actively eroding areas, and notify the Corps immediately. Permanent corrective measures may require additional authorization from the Corps.

p. All PCNs will describe sedimentation and erosion control structures and measures proposed for placement in waters of the U.S. To the maximum extent practicable, structures and measures will be depicted on maps, surveys or drawings showing location and impacts to jurisdictional wetlands and streams. In addition, appropriate soil and erosion control measures must be established and maintained during construction. All fills, temporary and permanent, must be adequately stabilized at the earliest practicable date to prevent erosion of fill material into adjacent waters or wetlands.

q. Compensatory mitigation will be required for permanent impacts resulting in a loss of waters of the U.S. due to culvert/pipe installation and other similar activities. Mitigation may be required for stream relocation projects (see Special Condition “r” below). When compensatory mitigation is required, the prospective permittee will attach a proposed mitigation plan to the PCN. Compensatory mitigation proposals will be written in accordance with currently approved Wilmington District guidance and Corps mitigation regulations, unless the purchase of mitigation credits from an approved mitigation bank or the North Carolina Division of Mitigation Services (NCDMS) is proposed to address all compensatory mitigation requirements. The Corps Project Manager will make the final determination concerning the appropriate amount and type of mitigation.

r. Stream Relocations (non-tidal only) - for the purposes of permitting, stream relocations are considered a loss of waters of the U.S. Depending on the condition and location of (1) the existing stream, and (2) the relocated channel, stream relocation(s) may provide a functional uplift. The Corps will determine if an uplift is possible based on the information submitted with the PCN. If the anticipated uplift(s) occurs, it may offset, either partially or fully, the loss associated with a stream relocation(s) - (i.e., due to the uplift, either no compensatory mitigation would be required for the stream relocation itself, or compensatory mitigation would be required at a reduced ratio).

Because the amount of potential uplift is dependent upon the condition (or quality) of the channel to be relocated, there is no pre-determined amount of uplift needed to satisfy the requirements for a successful relocation project. After performing the evaluation(s) noted in this document, the prospective permittee will propose a certain amount of uplift potential and the Corps project manager will make the final determination. Baseline conditions and subsequent monitoring must show that the relocated channel is providing/will provide aquatic function at, or above, the level provided by the baseline (pre-project) condition. If the required uplift is not achieved, the work will not be in compliance with this special condition of RGP 50 and remediation will be required through repair (and continued monitoring), or by the permittee providing compensatory mitigation (e.g., mitigation credit through an approved bank, mitigation credit through NCDMS, etc.).

Compensatory mitigation, in addition to the stream relocation activity, may be required if the Corps determines that (a) no uplift in stream function is achievable, (b) the proposed uplift in stream function is not sufficient, by itself, (c) the risks associated with achieving potential uplifts in stream function are excessive, and/or (d) the time period for achieving the potential uplifts/functional success is too great.

On-site compensatory mitigation is not the same as stream relocation. While stream relocation simply moves a stream to a nearby, geographically similar area, it does not generate mitigation credits. If NCDOT proposes to generate compensatory mitigation on a project site, NCDOT must submit a mitigation plan that complies with 33 CFR 332.4.

The prospective permittee is required to submit the following information for any proposed project that involves stream relocation, regardless of the size/length of the stream relocation (note that 1-5 below only apply to stream relocations and not to compensatory mitigation):

- (1) A statement detailing why relocating the stream is unavoidable. In order to ensure that this action is separate from a compensatory mitigation project, the need for the fill must be related to road/interchange/intersection construction or improvement, and the project must meet the requirements set forth in the full descriptions/terms of “a” and “b” on pages 2 and 3 of this permit.
- (2) An evaluation of effects on the relocated stream and buffer from utilities, or potential for impact from utility placement in the future.
- (3) An evaluation of the baseline condition of the stream to be relocated. In order to demonstrate a potential uplift, the prospective permittee must provide the baseline (pre-impact) condition of the stream that is proposed for relocation. The prospective permittee will document the baseline condition of the stream by using the Corps’ (Wilmington District’s) current functional assessment method - e.g., the North Carolina Stream Assessment Method (NCSAM). The functional assessment must be used to identify specific areas where an uplift would reasonably be expected to occur, and also show important baseline functions that will remain after the relocation.
- (4) An evaluation of the potential uplifts to stream function for the relocated channel. The amount of detail required in the plan will be commensurate with the functional capacity of the original stream and proposed uplift(s). Low functional capacity will warrant less monitoring and less detail in the plan in order to ensure that the relocated channel provides the same, or better/increased, suite of aquatic functions as the existing channel.
- (5) A proposed monitoring plan for the relocated channel (and buffer, if applicable), will be prepared in accordance with current District guidance. The level of detail needed in the plan will be directly related to the quality of baseline functions and the anticipated uplift, therefore it is recommended that a pre-application discussion occur with the Corps Project Manager as early as possible. For example, if the risk for achieving the anticipated functional uplift is moderate or low, or if there is a low amount of proposed uplift, less information and monitoring will be required in the proposed relocation plan; similar to the requirements found in the "2003 Stream Mitigation Guidelines". If the risk for uplift is higher, or if there is a high amount of proposed uplift, additional monitoring and information will be required, trending toward the prescriptions found in the most recent Wilmington District Compensatory Mitigation Guidance – e.g., the 2016 Wilmington District Stream and Wetland Compensatory Mitigation Update. All monitoring will be for at least 5 years unless the Corps project manager determines that (a) a specific project requires less than 5 years due to site conditions or limited risk/uplift potential, and/or complexity (or simplicity) of the existing channel and/or the

relocation work, or (b) the Corps project manager determines (during the monitoring period) that the 5 years of monitoring may be reduced (or that no further monitoring is required) based on monitoring information received once the stream relocation has been completed.

s. Upon completion of any work authorized by this RGP, all temporary fills (to include culverts, pipes, causeways, etc.) will be completely removed from waters of the U.S. and the areas will be restored to pre-construction elevations and contours. The permittee shall also restore natural hydrology and stream corridors (if applicable), and reestablish native vegetation/riparian corridors. This work will be completed within 60 days of completion of project construction. If this timeframe occurs while a required moratorium of this permit is in effect, the temporary fill shall be removed in its entirety within 60 days of the moratorium end date. If vegetation cannot be planted due to the time of the year, all disturbed areas will be seeded with a native mix appropriate for the impacted area, and vegetation will be planted during the next appropriate time frame. A native seed mix may contain non-invasive small grain annuals (e.g. millet and rye grain) to ensure adequate cover while native vegetation becomes established. The PCN must include a restoration plan showing how all temporary fills and structures will be removed and how the area will be restored to pre-project elevations and contours.

t. Once the authorized work in waters of the U.S. is complete, the permittee shall sign and return the compliance certificate that is attached to the RGP verification letter.

u. The District Engineer will consider any comments from Federal and/or State agencies concerning the proposed activity's compliance with the terms and conditions of this RGP.

v. The Corps may place additional special conditions, limitations, or restrictions on any verification of the use of RGP 50 on a project-by-project basis.

2. General Conditions.

a. Except as authorized by this RGP or any Corps approved modification to this RGP, no excavation, fill or mechanized land-clearing activities shall take place within waters or wetlands, at any time during construction or maintenance of the project. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with the project.

b. Authorization under this RGP does not obviate the need to obtain other federal, state, or local authorizations.

c. All work authorized by this RGP must comply with the terms and conditions of the applicable CWA Section 401 Water Quality Certification for this RGP issued by the North Carolina Division of Water Resources (NCDWR).

d. The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside of the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

e. The activities authorized by this RGP must not interfere with the public's right to free navigation on all navigable waters of the U.S. No attempt will be made by the permittee to prevent the full and free use by the public of all navigable waters at, or adjacent to, the authorized work for a reason other than safety.

f. The permittee understands and agrees that if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

g. The permittee, upon receipt of a notice of revocation of this RGP for the verified individual activity, may apply for an individual permit, or will, without expense to the U.S. and in such time and manner as the Secretary of the Army or his/her authorized representative may direct, restore the affected water of the U.S. to its former conditions.

h. This RGP does not authorize any activity that would conflict with a federal project's congressionally authorized purposes, established limitations or restrictions, or limit an agency's ability to conduct necessary operation and maintenance functions. Per Section 14 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. 408), no project that has the potential to take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, or obstruct a federally constructed work or project, including, but not limited to, levees, dams, jetties, navigation channels, borrow areas, dredged material disposal sites, flood control projects, etc., shall be permitted unless the project has been reviewed and approved by the appropriate Corps approval authority. Permittees shall not begin the activity authorized by this RGP until notified by the Corps that the activity may proceed.

i. The permittee shall obtain a Consent to Cross Government Easement from the appropriate Corps District's Land Use Coordinator prior to any crossing of a Corps easement and/or prior to commencing construction of any structures, authorized dredging, or other work within the right-of-way of, or in proximity to, a federally designated disposal area.

j. The permittee will allow the Wilmington District Engineer or his/her representative to inspect the authorized activity at any time deemed necessary to ensure that the activity is being performed or maintained in strict accordance with the Special and General Conditions of this permit.

k. This RGP does not grant any property rights or exclusive privileges.

l. This RGP does not authorize any injury to the property or rights of others.

m. This RGP does not authorize the interference with any existing or proposed federal project.

n. In issuing this permit, the Federal Government does not assume any liability for the following:

(1) Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

(2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest.

(3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

(4) Design or construction deficiencies associated with the permitted work.

(5) Damage claims associated with any future modification, suspension, or revocation of this permit.

o. Authorization provided by this RGP may be modified, suspended or revoked in whole, or in part, if the Wilmington District Engineer, acting for the Secretary of the Army, determines that such action would be in the best public interest. The term of this RGP shall be five (5) years unless subject to modification, suspension, or revocation. Any modification, suspension, or revocation of this authorization will not be the basis for any claim for damages against the U.S. Government.

p. No activity may occur in a component of the National Wild and Scenic Rivers System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or "study river" (e.g., National Park Service, U.S. Forest Service, etc.).

q. Endangered Species.

(1) No activity is authorized under this RGP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under this RGP which “may affect” a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(2) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal prospective permittees (and when FHWA is the lead federal agency) must provide the District Engineer with the appropriate documentation to demonstrate compliance with those requirements. The District Engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the RGP activity, or whether additional ESA consultation is necessary.

(3) Non-federal prospective permittees - for activities that might affect federally-listed endangered or threatened species or designated critical habitat, the PCN must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The District Engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat. In cases where the non-federal prospective permittee has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the prospective permittee shall not begin work until the Corps has provided notification that the proposed activities will have “no effect” on listed species or critical habitat, or until Section 7 consultation has been completed.

(4) As a result of formal or informal consultation with the U.S. Fish and Wildlife Service (USFWS) or NMFS, the District Engineer may add species-specific endangered species conditions to the RGP verification letter for a project.

(5) Authorization of an activity by a RGP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the USFWS or the NMFS, the ESA prohibits any person subject to the jurisdiction of the U.S. to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(6) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS in North Carolina at the addresses provided below, or from the USFWS and NMFS via their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

USFWS offices in North Carolina:

The Asheville USFWS Office covers all NC counties west of, and including, Anson, Stanly, Davidson, Forsyth and Stokes Counties.

US Fish and Wildlife Service
Asheville Field Office
160 Zillicoa Street
Asheville, NC 28801
Telephone: (828) 258-3939

The Raleigh USFWS Office covers all NC counties east of, and including, Richmond, Montgomery, Randolph, Guilford, and Rockingham Counties.

US Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Telephone: (919) 856-4520

r. The Wilmington District, USFWS, NCDOT, and the FHWA have conducted programmatic Section 7(a)(2) consultation for a number of federally listed species and habitat, and programmatic consultation concerning other federally listed species and/or habitat may occur in the future. The result of completed programmatic consultation is a Programmatic Biological Opinion (PBO) issued by the USFWS. These PBOs contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with “incidental take” of whichever species or critical habitat is covered by a specific PBO. Authorization under RGP 50 is conditional upon the permittee’s compliance with all the mandatory terms and conditions associated with incidental take of the applicable PBO (or PBOs), which are incorporated by reference in RGP 50. Failure to comply with the terms and conditions associated with incidental take of an applicable PBO, where a take of the federally listed species occurs, would constitute an unauthorized take by the permittee, and would also constitute permittee non-compliance with the authorization under RGP 50. If the terms and conditions of a specific PBO (or PBOs) apply to a project, the Corps will include this/these requirements in any RGP 50 verification that may be issued for a project. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its PBO, and with the ESA.

s. Northern long-eared bat (NLEB) (*Myotis septentrionalis*). Standard Local Operating Procedures for Endangered Species (SLOPES) for the NLEB have been approved by the Corps and the U.S. Fish and Wildlife Service. See <http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/ESA/>. This SLOPES details how the Corps will make determinations of effect to the NLEB when the Corps is the lead federal agency for an NCDOT project that is located in the western 41 counties of North Carolina. This SLOPES does not address NCDOT projects (either federal or state funded) in the eastern 59 counties in North Carolina. Note that if another federal agency is the lead federal agency for a project in the western 41 counties, procedures for satisfying the requirements of Section 7(a)(2) of the ESA will be dictated by that agency and will not be applicable for consideration under the SLOPES; however, information that demonstrates the lead federal agency's (if other than the Corps) compliance with Section 7(a)(2) / 4(d) Rule for the NLEB, will be required in the PCN. Note that at the time of issuance of RGP 50, the federal listing status of the NLEB as "Threatened" is being litigated at the National level. If, as a result of litigation, the NLEB is federally listed as "Endangered", this general condition ("s") will no longer be applicable because the 4(d) Rule, and this NLEB SLOPES, will no longer apply/be valid.

t. For proposed activities the sixteen (16) counties listed below, prospective permittees must provide a copy of the PCN to the USFWS, 160 Zillicoa Street, Asheville, North Carolina 28801. This PCN must be sent concurrently to the USFWS and the Corps Project Manager for that specific county.

The 16 counties with tributaries that drain to designated critical habitat that require notification to the Asheville USFWS are: Avery, Cherokee, Forsyth, Graham, Haywood, Henderson, Jackson, Macon Mecklenburg, Mitchell, Stokes, Surry, Swain, Transylvania, Union and Yancey.

u. If the permittee discovers or observes any live, damaged, injured or dead individual of an endangered or threatened species during construction, the permittee shall immediately notify the Wilmington District Engineer so that required coordination can be initiated with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service.

v. Historic Properties.

(1) In cases where the District Engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places (NRHP), the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(2) Federal prospective permittees (or when FHWA is the lead federal agency) should follow their own procedures for complying with the requirements of Section 106 of the NHPA. Federal prospective permittees must provide the District Engineer with the appropriate documentation to demonstrate compliance with those requirements; this includes copies of correspondence sent to all interested, federally recognized tribes and a summary statement about

tribal consultation efforts or, if the Corps enters into a Programmatic Agreement (PA) with the FHWA/NCDOT, documentation that the FHWA/NCDOT has complied with PA requirements. The District Engineer will review the documentation and determine whether it is sufficient to address Section 106 compliance for this RGP activity, or whether additional Section 106 consultation is necessary.

(3) Non-federal prospective permittees - the PCN must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), as appropriate, and the NRHP (see 33 CFR 330.4(g)). When reviewing PCNs, the District Engineer will comply with the current procedures for addressing the requirements of Section 106 of the NHPA. The District Engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the District Engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties.

(4) Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)).

(5) Section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to a prospective permittee who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit will relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the prospective permittee. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the prospective permittee, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

w. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this general permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

x. Permittees are advised that development activities in or near a floodway may be subject to the National Flood Insurance Program that prohibits any development, including fill, within a floodway that results in any increase in base flood elevations. This general permit does not authorize any activity prohibited by the National Flood Insurance Program.

y. The permittee must install and maintain, at his/her expense, any signal lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on authorized facilities. For further information, the permittee should contact Coast Guard Sector North Carolina at (910) 772-2191 or email Coast Guard Fifth District at cgd5waterways@uscg.mil.

z. The permittee must maintain any structure or work authorized by this general permit in good condition and in conformance with the terms and conditions of this general permit. The permittee is not relieved of this requirement if the permittee abandons the structure or work. Transfer in fee simple of the work authorized by this general permit will automatically transfer this general permit to the property's new owner, with all of the rights and responsibilities enumerated herein. The permittee must inform any subsequent owner of all activities undertaken under the authority of this general permit and provide the subsequent owner with a copy of the terms and conditions of this general permit.

aa. At his or her sole discretion, any time during the processing cycle, the Wilmington District Engineer may determine that this general permit will not be applicable to a specific proposal. In such case, the procedures for processing an individual permit in accordance with 33 CFR 325 will be available.

bb. Except as authorized by this general permit or any Corps approved modification to this general permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.

cc. Except as authorized by this general permit or any Corps approved modification to this general permit, all excavated material will be disposed of in approved upland disposal areas.

dd. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon this general permit will remain authorized provided the activity is completed within twelve months of the date of the general permit's expiration, modification, or revocation. Activities completed under the authorization of this general permit that were in effect at the time the activity was completed continue to be authorized by the general permit.

ee. The permittee is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity.

ff. The activity must comply with applicable FEMA approved state or local floodplain management requirements.

gg. There will be no unreasonable interference with navigation or the right of the public to riparian access by the existence or use of activities authorized by this RGP.

hh. Unless authorization to fill those specific wetlands or mudflats has been issued by the Corps, heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

ii. This RGP will not be applicable to proposed construction when the Wilmington District Engineer determines that the proposed activity will significantly affect the quality of the human environment and determines that an EIS must be prepared.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

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Robert J. Clark
Colonel, U. S. Army
District Commander

ROY COOPER

Governor

ELIZABETH S. BISER

Secretary

RICHARD E. ROGERS, JR.

Director

NORTH CAROLINA
Environmental Quality

October 18, 2022

DWR # 20221364
Madison County

Mr. Michael Turchy
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, NC 27699

Subject: APPROVAL OF 401 WATER QUALITY CERTIFICATION WITH ADDITIONAL CONDITIONS

Replace Bridge 71 on SR-1395 (B-5989)

Big Laurel Creek [French Broad River Basin, 06010105, C;Tr,ORW]

Dear Mr. Turchy:

You have our approval for the impacts listed below for the purpose described in your application dated October 2, 2022 and received by the Division of Water Resources (Division) on October 2, 2022. These impacts are covered by the attached Water Quality General Certification Number 4135 and the conditions listed below. This certification is associated with the use of General Permit Number 201902350 once it is issued to you by the U.S. Army Corps of Engineers. Please note that you should get any other federal, state, or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.

The Division has determined that the proposed project will comply with water quality requirements provided that you adhere to the conditions listed in the enclosed certification and to the additional conditions itemized below.

The following proposed impacts are hereby approved. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b)]

Stream Impacts in the French Broad River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
S1		10			10	
S2			33		33	
S3				45	45	
S4				23	23	
S5				40	40	
Total		10	33	108	151	

Total Stream Impact for Project: 33 linear feet of permanent and 118 linear feet of temporary.



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1617 Mail Service Center | Raleigh, North Carolina 27699-1617
919.707.9000

This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)].

If you are unable to comply with any of the conditions of the attached Water Quality General Certification or with the additional conditions itemized below, you must notify the Asheville Regional Office within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.

The permittee shall report to the Asheville Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200] including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances.

Condition(s) of Certification:

Project Specific Conditions

1. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand potential issues at the permitted site. NCDWR staff shall be invited to the pre-construction meeting. [15A NCAC 02H.0506(b)(2) and (b)(3)]
2. Provide advanced notice of construction to Dave McHenry with the North Carolina Wildlife Resources Commission so that he may advise the site contractor about ways to minimize possible impacts to the Eastern Hellbender (NC Special Concern). [15A NCAC 02H .0506(b)(1) and (2)]
3. For projects impacting waters classified by the NC Environmental Management Commission as Trout (Tr), High Quality Waters (HQW), or Water Supply I or II (WSI, WSII) stormwater shall be directed to vegetated buffer areas, grass-lined ditches or other means appropriate to the site for the purpose of pre-treating storm water runoff prior to discharging directly into streams. Mowing of existing vegetated buffers is strongly discouraged.
4. The permittee shall use Design Standards in Sensitive Watersheds (15A NCAC 4B.0124[a]-[e]) in areas draining to Outstanding Resource Waters. However, due to the size of the project, the NCDOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres.
5. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species. [15A NCAC 02H .0506(b)(2)]
6. As a condition of this 401 Water Quality Certification, the bridge demolition and construction must be accomplished in strict compliance with the most recent version of NCDOT's Best Management Practices for Construction and Maintenance Activities. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]
7. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. To meet the requirements of NCDOT's NPDES permit NCS000250, please refer to the most recent version of the *North Carolina Department of Transportation Stormwater Best Management Practices Toolbox* manual for approved measures. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]



8. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly. [15A NCAC 02H .0506(b)(3)]

General Conditions

1. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]
2. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]
3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S. or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]
4. The dimension, pattern, and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]
5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]
6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]
8. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]
9. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]
10. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]
11. Discharging hydroseed mixtures and washing out hydro seeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]



12. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]
13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]
14. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]
16. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
17. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]
18. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]
19. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0506(b)(2)]
20. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities. [15A NCAC 02H.0506(b)(3) and (c)(3)]
21. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3)]:
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.



- d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

22. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]

This approval and its conditions are final and binding unless contested. [G.S. 143-215.5] This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at <http://www.ncoah.com/> or by calling the OAH Clerk's Office at (919) 431-3000.

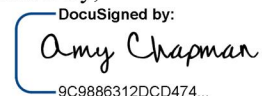
One (1) copy of the Petition must also be served to the North Carolina Department of Environmental Quality:

William F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

This letter completes the review of the Division under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Please contact Kevin Mitchell at 828-296-4650 or kevin.mitchell@ncdenr.gov if you have any questions or concerns.

Sincerely,

DocuSigned by:



9C9886312DCD474...

Richard E. Rogers, Jr., Director
Division of Water Resources

cc: Lori Beckwith, US Army Corps of Engineers Asheville Regulatory Field Office (via email)
Dave McHenry, NC Wildlife Resources Commission (via email)
Holland Youngman, US Fish and Wildlife Service (via email)
Erin Cheely, NC Department of Transportation (via email)

File Copy



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1617 Mail Service Center | Raleigh, North Carolina 27699-1617
919.707.9000

**STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES**

WATER QUALITY GENERAL CERTIFICATION NO. 4135

GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR US ARMY CORPS OF ENGINEERS

- **NATIONWIDE PERMIT NUMBER 14 (LINEAR TRANSPORTATION PROJECTS), AND**
- **REGIONAL GENERAL PERMIT 198200031 (NCDOT BRIDGES, WIDENING PROJECTS, INTERCHANGE IMPROVEMENTS)**

Water Quality Certification Number 4135 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to surface waters and wetland areas as described in 33 CFR 330 Appendix A (B) (14) of the US Army Corps of Engineers regulations and Regional General Permit 198200031.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Effective date: December 1, 2017

Signed this day: December 1, 2017

By

A handwritten signature in black ink, appearing to read 'Linda Culpepper', is written over a horizontal line.

for Linda Culpepper
Interim Director

Activities meeting any one (1) of the following thresholds or circumstances require written approval for a 401 Water Quality Certification from the Division of Water Resources (DWR):

- a) If any of the conditions of this Certification (listed below) cannot be met; or
- b) Any temporary or permanent impacts to wetlands, open waters and/or streams, except for construction of a driveway to a single family residential lot that is determined to not be part of a larger common plan of development, as long as the driveway involves a travel lane of less than 25 feet and total stream impacts of less than 60 feet, including any topographic/slope stabilization or in-stream stabilization needed for the crossing; or
- c) Any stream relocation or stream restoration; or
- d) Any high-density project, as defined in 15A NCAC 02H .1003(2)(a) and by the density thresholds specified in 15A NCAC 02H .1017, which:
 - i. Disturbs one acre or more of land (including a project that disturbs less than one acre of land that is part of a larger common plan of development or sale); and
 - ii. Has permanent wetland, stream or open water impacts; and
 - iii. Is proposing new built-upon area; and
 - iv. Does not have a stormwater management plan reviewed and approved under a state stormwater program¹ or a state-approved local government stormwater program².

Projects that have vested rights, exemptions, or grandfathering from state or locally-implemented stormwater programs and projects that satisfy state or locally-implemented stormwater programs through use of community in-lieu programs **require written approval**; or

- e) Any permanent impacts to waters, or to wetlands adjacent to waters, designated as: ORW (including SAV), HQW (including PNA), SA, WS-I, WS-II, or North Carolina or National Wild and Scenic River.
- f) Any permanent impacts to waters, or to wetlands adjacent to waters, designated as Trout except for driveway projects that are below threshold (b) above provided that:
 - i. The impacts are not adjacent to any existing structures
 - ii. All conditions of this General Certification can be met, including adherence to any moratoriums as stated in Condition #10; and
 - iii. A *Notification of Work in Trout Watersheds Form* is submitted to the Division at least 60 days prior to commencement of work; or
- g) Any permanent impacts to coastal wetlands [15A NCAC 07H .0205], or Unique Wetlands (UWL); or
- h) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), NC Surface Water or Wetland Standards (15A NCAC 02B .0200), or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200); or

¹ e.g. Coastal Counties, HQW, ORW, or state-implemented Phase II NPDES

² e.g. Delegated Phase II NPDES, Water Supply Watershed, Nutrient-Sensitive Waters, or Universal Stormwater Management Program

- i) Any impacts to subject water bodies and/or state regulated riparian buffers along subject water bodies in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman Lake, Jordan Lake or Goose Creek Watersheds (or any other basin or watershed with State Regulated Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless*:
 - i. The activities are listed as “EXEMPT” from these rules; or
 - ii. A Buffer Authorization Certificate is issued by the NC Division of Coastal Management (DCM); or
 - iii. A Buffer Authorization Certificate or a Minor Variance is issued by a delegated or designated local government implementing a state riparian buffer program pursuant to 143-215.23

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval.

I. ACTIVITY SPECIFIC CONDITIONS:

1. If this Water Quality Certification is used to access residential, commercial or industrial building sites, then all parcels owned by the applicant that are part of the single and complete project authorized by this Certification must be buildable without additional impacts to streams or wetlands. If required in writing by DWR, the applicant shall provide evidence that the parcels are buildable without requiring additional impacts to wetlands, waters, or state regulated riparian buffers. [15A NCAC 02H .0506(b)(4) and (c)(4)]
2. For road and driveway construction purposes, this Certification shall only be utilized from natural high ground to natural high ground. [15A NCAC 02H .0506(b)(2) and (c)(2)]
3. Deed notifications or similar mechanisms shall be placed on all lots with retained jurisdictional wetlands, waters, and state regulated riparian buffers within the project boundaries in order to assure compliance with NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), and/or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200). These mechanisms shall be put in place at the time of recording of the property or individual parcels, whichever is appropriate. [15A NCAC 02H .0506(b)(4) and (c)(4)]
4. For the North Carolina Department of Transportation, compliance with the NCDOT’s individual NPDES permit NCS000250 shall serve to satisfy this condition. All other high-density projects that trigger threshold item (d) above shall comply with one of the following requirements: [15A NCAC 02H .0506(b)(5) and (c)(5)]

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- a. Provide a completed Stormwater Management Plan (SMP) for review and approval, including all appropriate stormwater control measure (SCM) supplemental forms and associated items, that complies with the high-density development requirements of 15A NCAC 02H .1003. Stormwater management shall be provided throughout the entire project area in accordance with 15A NCAC 02H .1003. For the purposes of 15A NCAC 02H .1003(2)(a), density thresholds shall be determined in accordance with 15A NCAC 02H .1017.
- b. Provide documentation (including calculations, photos, etc.) that the project will not cause degradation of downstream surface waters. Documentation shall include a detailed analysis of the hydrological impacts from stormwater runoff when considering the volume and velocity of stormwater runoff from the project built upon area and the size and existing condition of the receiving stream(s).

Exceptions to this condition require application to and written approval from DWR.

II. GENERAL CONDITIONS:

1. When written authorization is required, the plans and specifications for the project are incorporated into the authorization by reference and are an enforceable part of the Certification. Any modifications to the project require notification to DWR and may require an application submittal to DWR with the appropriate fee. [15A NCAC 02H .0501 and .0502]
2. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized in the written approval from DWR; or beyond the thresholds established for use of this Certification without written authorization. [15A NCAC 02H .0501 and .0502]

No removal of vegetation or other impacts of any kind shall occur to state regulated riparian buffers beyond the footprint of impacts approved in a Buffer Authorization or Variance or as listed as an exempt activity in the applicable riparian buffer rules. [15A NCAC 02B .0200]

3. In accordance with 15A NCAC 02H .0506(h) and Session Law 2017-10, compensatory mitigation may be required for losses of greater than 300 linear feet of perennial streams and/or greater than one (1) acre of wetlands. Impacts associated with the removal of a dam shall not require mitigation when the removal complies with the requirements of Part 3 of Article 21 in Chapter 143 of the North Carolina General Statutes. Impacts to isolated and other non-404 jurisdictional wetlands shall not be combined with 404 jurisdictional wetlands for the purpose of determining when impact thresholds trigger a mitigation requirement. For linear publicly owned and maintained transportation projects that are not determined to be part of a larger common plan of development by the US Army Corps of Engineers, compensatory mitigation may be required for losses of greater than 300 linear feet per perennial stream.

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Compensatory stream and/or wetland mitigation shall be proposed and completed in compliance with G.S. 143-214.11. For applicants proposing to conduct mitigation within a project site, a complete mitigation proposal developed in accordance with the most recent guidance issued by the US Army Corps of Engineers Wilmington District shall be submitted for review and approval with the application for impacts.

4. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2 of Title 15A.
5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0200]

Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual*.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

6. Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0501 and .0502]
7. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02B .0201]

8. An NPDES Construction Stormwater Permit (NCG010000) is required for construction projects that disturb one (1) or more acres of land. The NCG010000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506(b)(5) and (c)(5)]

The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit. [15A NCAC 02H .0506(b)(5) and (c)(5)]

9. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the *NC Sediment and Erosion Control Manual*, or the *NC DOT Construction and Maintenance Activities Manual*, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(3) and (c)(3)]
10. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. [15A NCAC 02H .0506 (b)(2) and 15A NCAC 04B .0125]

All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers), or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

11. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)]

Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross vanes, etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 60 calendar days prior to the installation of the culvert.

When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as, a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 60 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application to and written approval from DWR.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable (e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(5)]

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13. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. [15A NCAC 02B .0200 and 15A NCAC 02B .0231]
14. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]
15. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, planform pattern, and longitudinal bed profile. For projects that receive written approval, no temporary impacts are allowed beyond those included in the application and authorization. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]
16. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams shall be installed as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* or the *North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities* so as not to restrict stream flow or cause dis-equilibrium during use of this Certification. [15A NCAC 02H .0506(b)(2) and (c)(2)]
17. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original stream elevation and streambank contours are restored and maintained. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or in a manner that precludes aquatic life passage. [15A NCAC 02H .0506(b)(2)]
18. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. [15A NCAC 02H .0506(b)(2)]
19. Applications for rip-rap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Rip-rap Groins in Estuarine and Public Trust Waters) shall meet all the specific conditions for design and construction specified in 15A NCAC 07H .1405.

20. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211 (12)]
21. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506(b)(3) and (c)(3)]
22. In accordance with 143-215.85(b), the applicant shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.
23. If an environmental document is required under the State Environmental Policy Act (SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse. If an environmental document is required under the National Environmental Policy Act (NEPA), then this General Certification is not valid until a Categorical Exclusion, the Final Environmental Assessment, or Final Environmental Impact Statement is published by the lead agency. [15A NCAC 01C .0107(a)]
24. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.
25. The applicant and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If DWR determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then DWR may revoke or modify a written authorization associated with this General Water Quality Certification. [15A NCAC 02H .0507(d)]
26. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Certification. A copy of this Certification, including all conditions shall be available at the project site during the construction and maintenance of this project. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

GC4135

27. When written authorization is required for use of this Certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website <https://edocs.deq.nc.gov/Forms/Certificate-of-Completion>). [15A NCAC 02H .0502(f)]
28. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards. [15A NCAC 02H .0507(c)]
29. If the property or project is sold or transferred, the new permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]

III. GENERAL CERTIFICATION ADMINISTRATION:

1. In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. An applicant for a CAMA permit under Article 7 of Chapter 113A of the General Statutes for which a Water Quality Certification is required shall only make one payment to satisfy both agencies; the fee shall be as established by the Secretary in accordance with 143-215.3D(e)(7).
2. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.
3. This Certification grants permission to the Director, an authorized representative of the Director, or DWR staff, upon the presentation of proper credentials, to enter the property during normal business hours. [15A NCAC 02H .0502(e)]
4. This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide Permit and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification. This General Certification is rescinded when the US Army Corps of Engineers reauthorizes any of the corresponding Nationwide Permits and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Resources.

GC4135

5. Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.
6. The Director of the North Carolina Division of Water Resources may require submission of a formal application for Individual Certification for any project in this category of activity if it is deemed in the public's best interest or determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the water or downstream waters are precluded.

History Note: Water Quality Certification (WQC) Number 4135 issued December 1, 2017 replaces WQC Number 4088 issued March 3, 2017; WQC 3886 issued March 12, 2012; WQC Number 3820 issued April 6, 2010; WQC Number 3627 issued March 2007; WQC Number 3404 issued March 2003; WQC Number 3375 issued March 18, 2002; WQC Number 3289 issued June 1, 2000; WQC Number 3103 issued February 11, 1997; WQC Number 2732 issued May 1, 1992; WQC Number 2666 issued January 21, 1992; WQC Number 2177 issued November 5, 1987.



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: 47845.1.1 TIP/Proj No: B-5989 County(ies): Madison Page 1 of 2

General Project Information

WBS Element:	47845.1.1	TIP Number:	B-5989	Project Type:	Bridge Replacement	Date:	6/27/2022
NCDOT Contact:	David Stutts, PE			Contractor / Designer:	Patrick Hartnett, PE		
	Address: Structures Management Unit 1000 Birch Ridge Drive Raleigh, NC 27610				Address: Summit Design and Engineering Services 1110 Navaho Dr #600 Raleigh, NC 27609		
	Phone: (919) 707-6442				Phone: (919) 322-0115		
	Email: dstutts@ncdot.gov				Email: patrick.hartnett@summitde.com		
City/Town:	Town of Marshall			County(ies):	Madison		
River Basin(s):	French Broad			CAMA County?	No		
Wetlands within Project Limits?	No						

Project Description

Project Length (lin. miles or feet):	0.16	Surrounding Land Use:	Rural Area with Residential Land Use					
		Proposed Project		Existing Site				
Project Built-Upon Area (ac.)	0.70	ac.	0.54	ac.				
Typical Cross Section Description:	Proposed Road and Bridge will be a 2-lane facility with 10' wide travel lane. The total proposed bridge length is 130 ft with an out-to-out width of 32.25 ft.			Existing road and bridge is a 2 lane facility with 10' wide travel lanes. The total bridge length of 150 ft and width of 28.1 ft				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	900	Year:	2040	Existing:	740	Year:	2020

General Project Narrative:
(Description of Minimization of Water
Quality Impacts)

State Project involves the replacement of NCDOT Bridge 560071 over Big Laurel Creek on SR 1395 in Madison County. The existing structure is a 150 feet long, 3 span (1@49.8 ft, 1@50 ft, 1@49.8 ft) reinforced concrete floor and I-beams structure with a sufficiency rating of 32.64. The proposed structure will be a 2 span (1@80', 1@50') 45 inch girder bridge with an out-to-out deck width of 32.25 feet. The existing structure has deck drains. The proposed bridge will not have deck drains. The proposed bridge will maintain the existing level of service. The construction of the proposed bridge will utilize a work bridge with no more than 25 12" by 12" piles which will cause some temporary impacts. This bridge replacement will utilize a detour bridge to maintain traffic while construction is ongoing. The detour structure will be 145' in length with superstructure and deck not to exceed 4 feet. The detour bridge will be located downstream of the proposed bridge and will not have deck drains. For purposes of calculating the temporary bridge foundations, three 3' diameters piers will be use. The detour structure including the type of foundation and location of any interior bents is designed by the contractor. Construction of the Detour structure is likely to cause some temporary impacts. There is one proposed outfall on the end of bridge left side. Rip Rap outlet pads will be utilized to dissipate the flow and minimize erosion. Existing ditch will be retained with toe protection. The sole impact is due to the replacement of the existing 42" CMP before the begin of bridge side. Due to the detour structure, the pipe must be lengthened during the construction and will cause temporary impacts. The pipe will be shortened after the removal of the detour structure to minimize permanent impacts.



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 3.00; Released August 2021)

WBS Element: 47845.1.1

TIP/Proj No.: B-5989

County(ies): Madison

Page 2 of 2

General Project Information

Waterbody Information

Surface Water Body (1):	Big Laurel Creek	NCDWR Stream Index No.:	6-112		
NCDWR Surface Water Classification for Water Body		Primary Classification:	Class C		
		Supplemental Classification:	Trout Waters (Tr)	Waters (ORW)	
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	Big Laurel Creek		Buffer Rules in Effect:	N/A	
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	No
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

09/08/2019

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON COUNTY

LOCATION: BRIDGE NO. 71 ON SR 1395 (WALNUT CREEK RD)
OVER BIG LAUREL CREEK

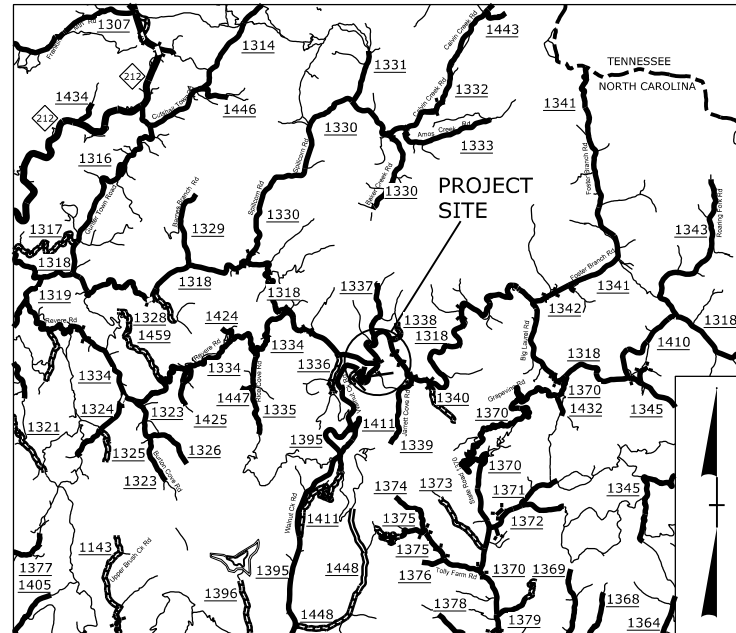
TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5989	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47845.1.1	N/A	PE	
47845.2.1	BRZ-1395(007)	ROW&UTIL	
47845.3.1	BRZ-1395(007)	CONST.	

90% PLANS

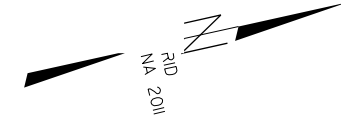
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SHEET 1 OF 11

TIP PROJECT: B-5989

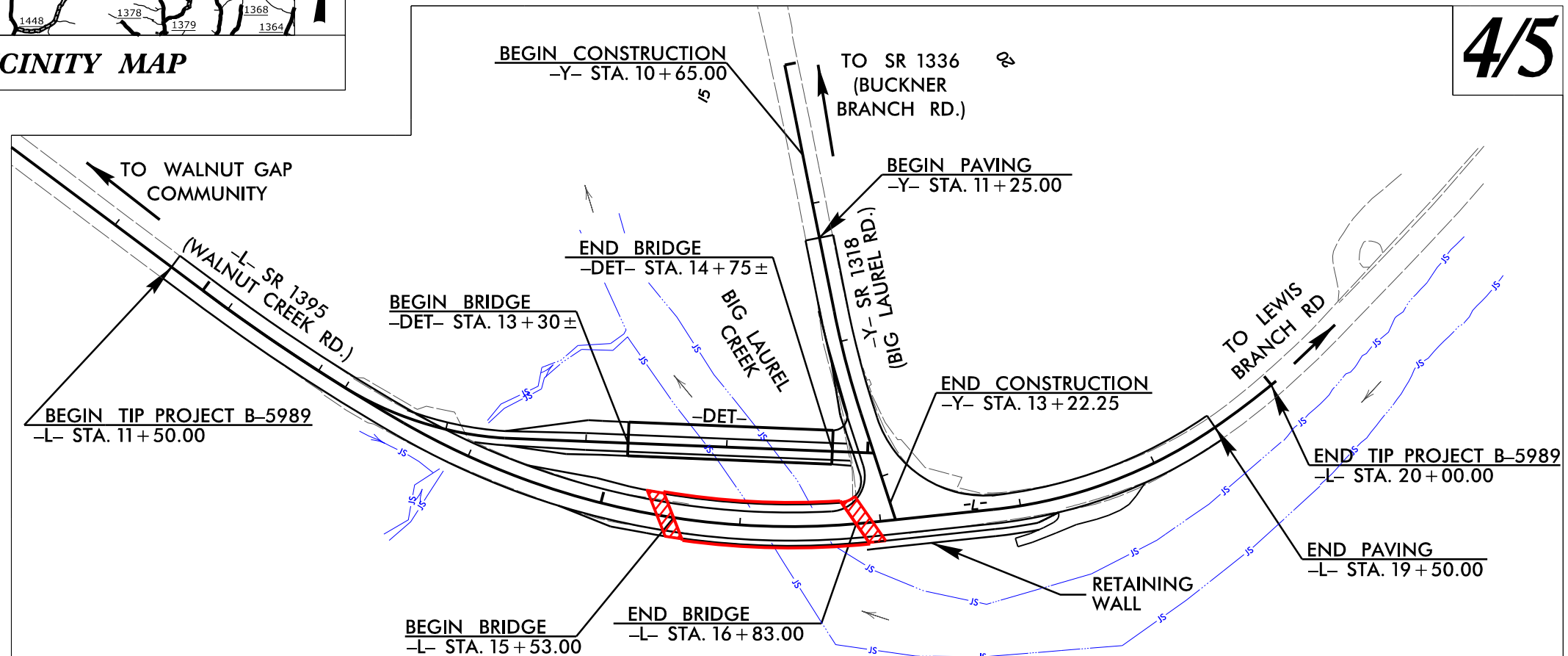


VICINITY MAP

WETLAND AND SURFACE
WATER IMPACTS PERMIT



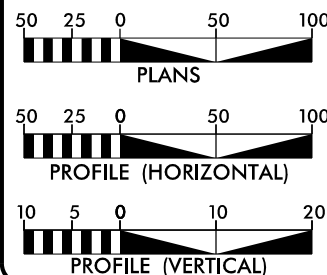
4/5



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2020 = 740
ADT 2040 = 900
K = 10 %
D = 60 %
T = 3 % *
V = 40 MPH
* TTST =1% DUAL 2%
FUNC CLASS =
MINOR COLLECTOR
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT = 0.136 MILES
LENGTH STRUCTURES PROJECT = 0.025 MILES
TOTAL LENGTH PROJECT = 0.161 MILES

NCDOT CONTACT: DAVID STUTTS, PE
PROJECT MANAGER



2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 20, 2020

LETTING DATE:
JANUARY 17, 2023

JAMES A. SPEER, PE
PROJECT ENGINEER

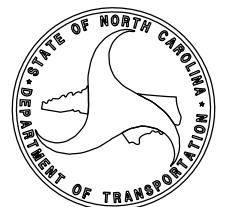
SPENCER MERRITT, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: P.E.

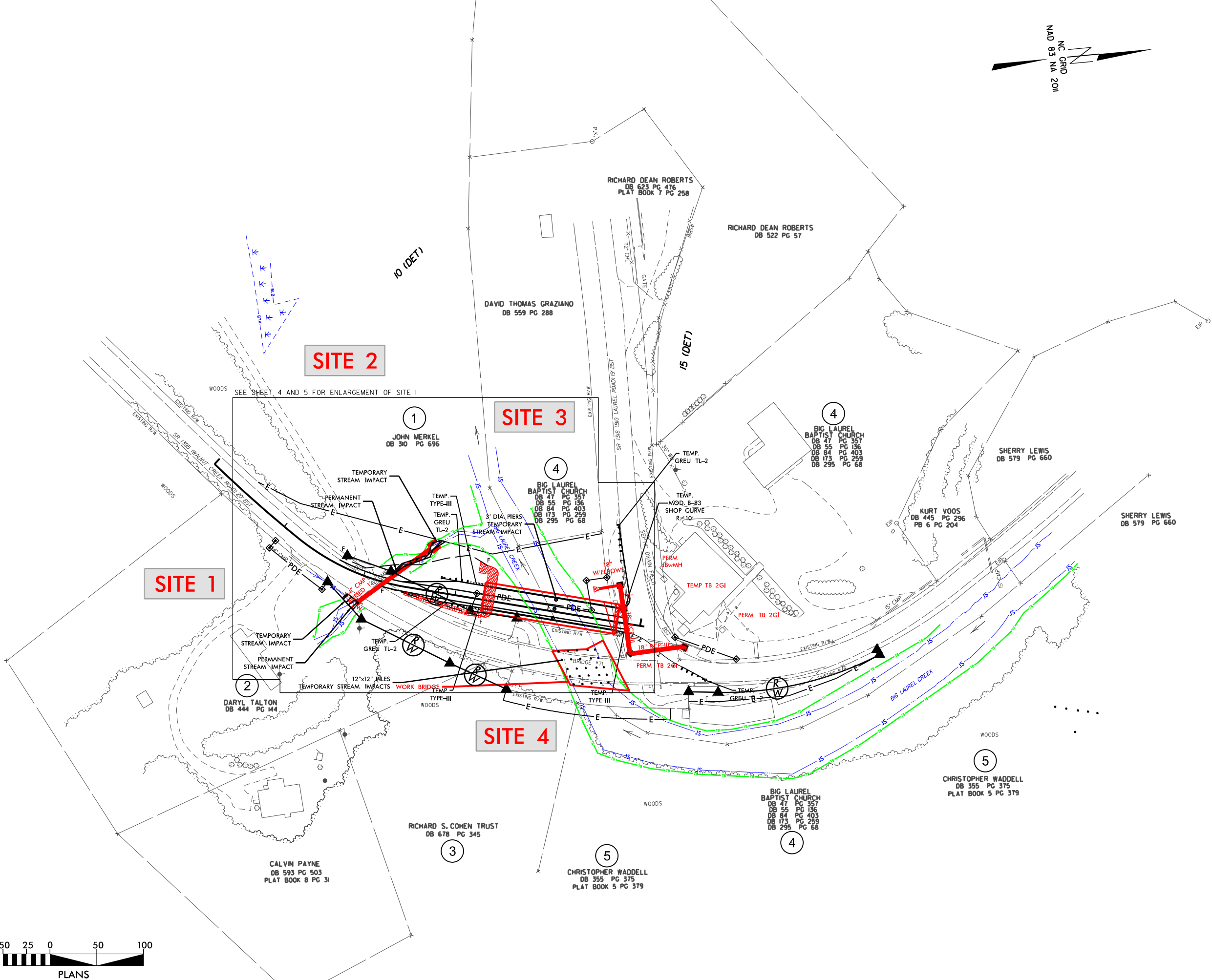


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8/17/99

REVISIONS
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ADDED PARCEL Q05 WITH NEW NAME, DEED BOOK NUMBER, PAGE NUMBER, AND TCE AREA, 06-14-22 JL

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

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B-5989		5	
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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
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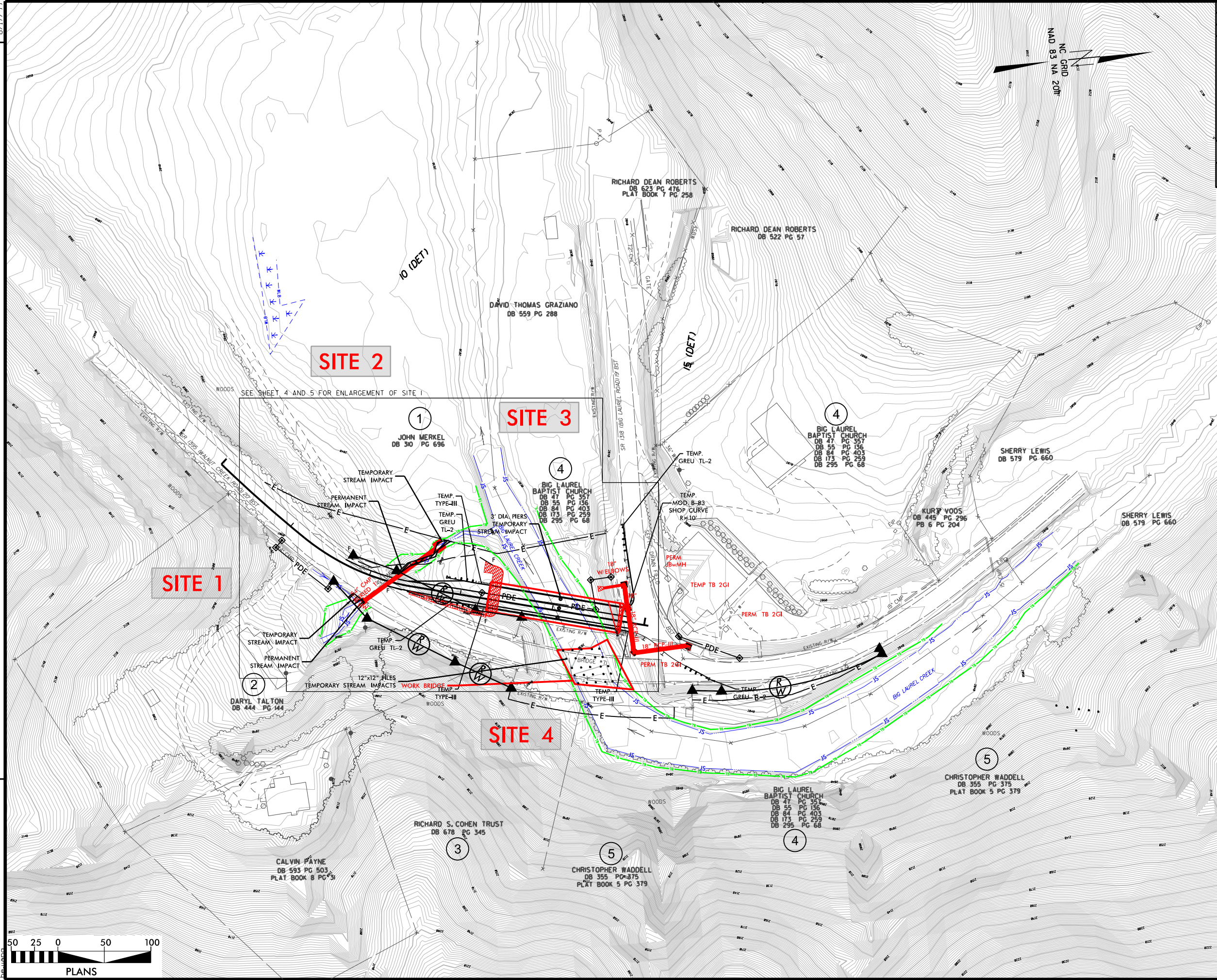
PERMIT DRAWING
SHEET 2 OF 11

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

PROJECT REFERENCE NO.		SHEET NO.	
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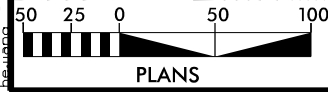
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SHEET 3 OF 11

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

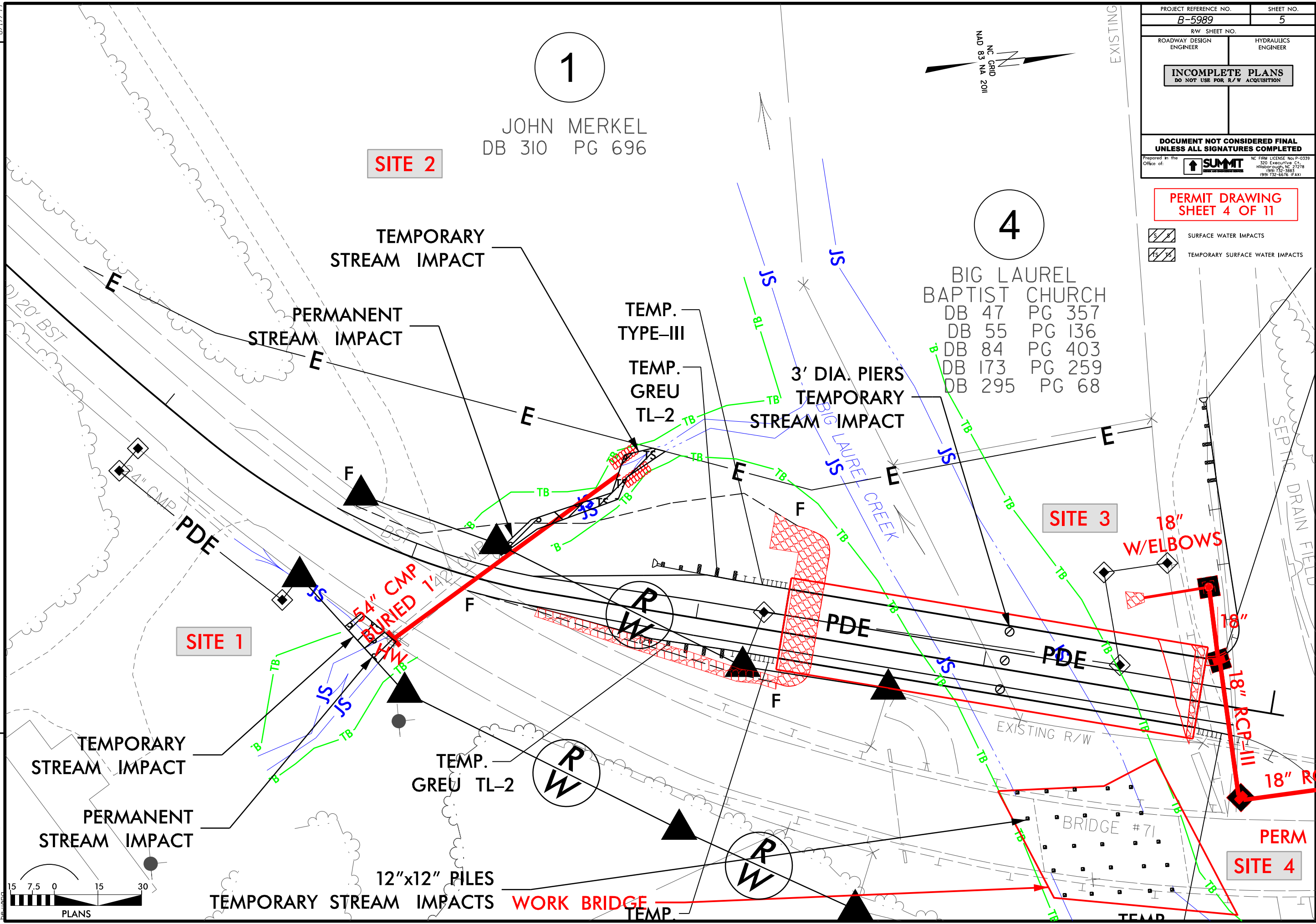


REVISIONS

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ADDED PARCEL Q05 WITH NEW NAME, DEED BOOK NUMBER, PAGE NUMBER, AND TCE AREA, 06-14-22 JLJ



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REVISIONS



1

JOHN MERKEL
DB 310 PG 696

4

BIG LAUREL
BAPTIST CHURCH
DB 47 PG 357
DB 55 PG 136
DB 84 PG 403
DB 173 PG 259
DB 295 PG 68

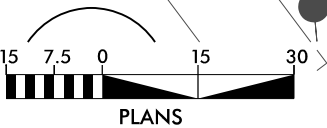
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PERM
SITE 4

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ROADWAY DESIGN ENGINEER		
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PERMIT DRAWING
SHEET 4 OF 11

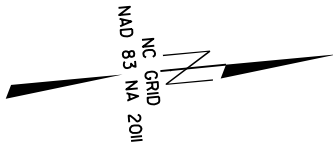
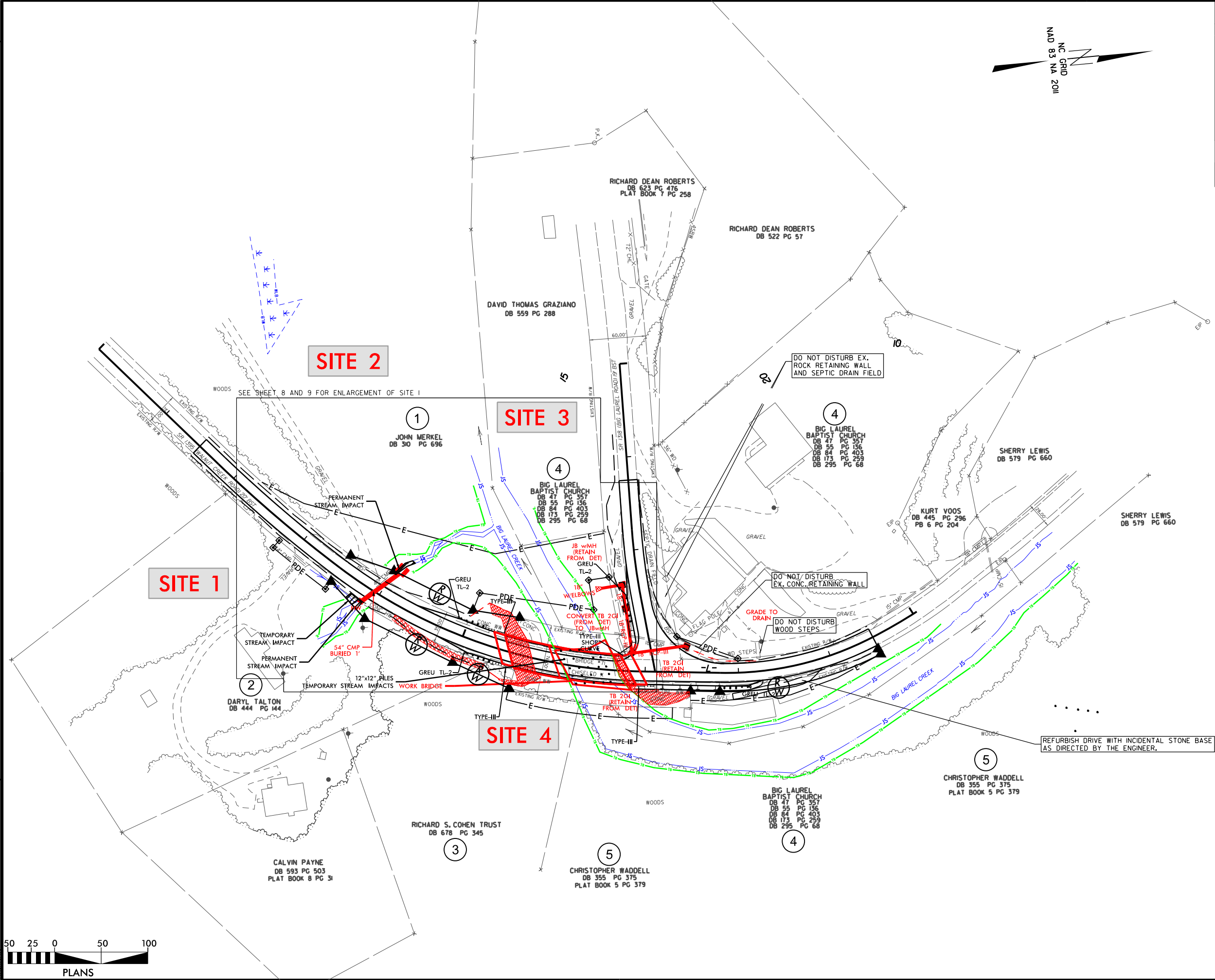
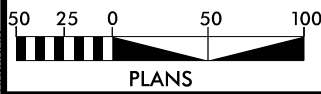
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS



8/17/99

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PERMIT DRAWING
SHEET 6 OF 11

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

PROJECT REFERENCE NO.
B-5989

SHEET NO.
4

RW SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

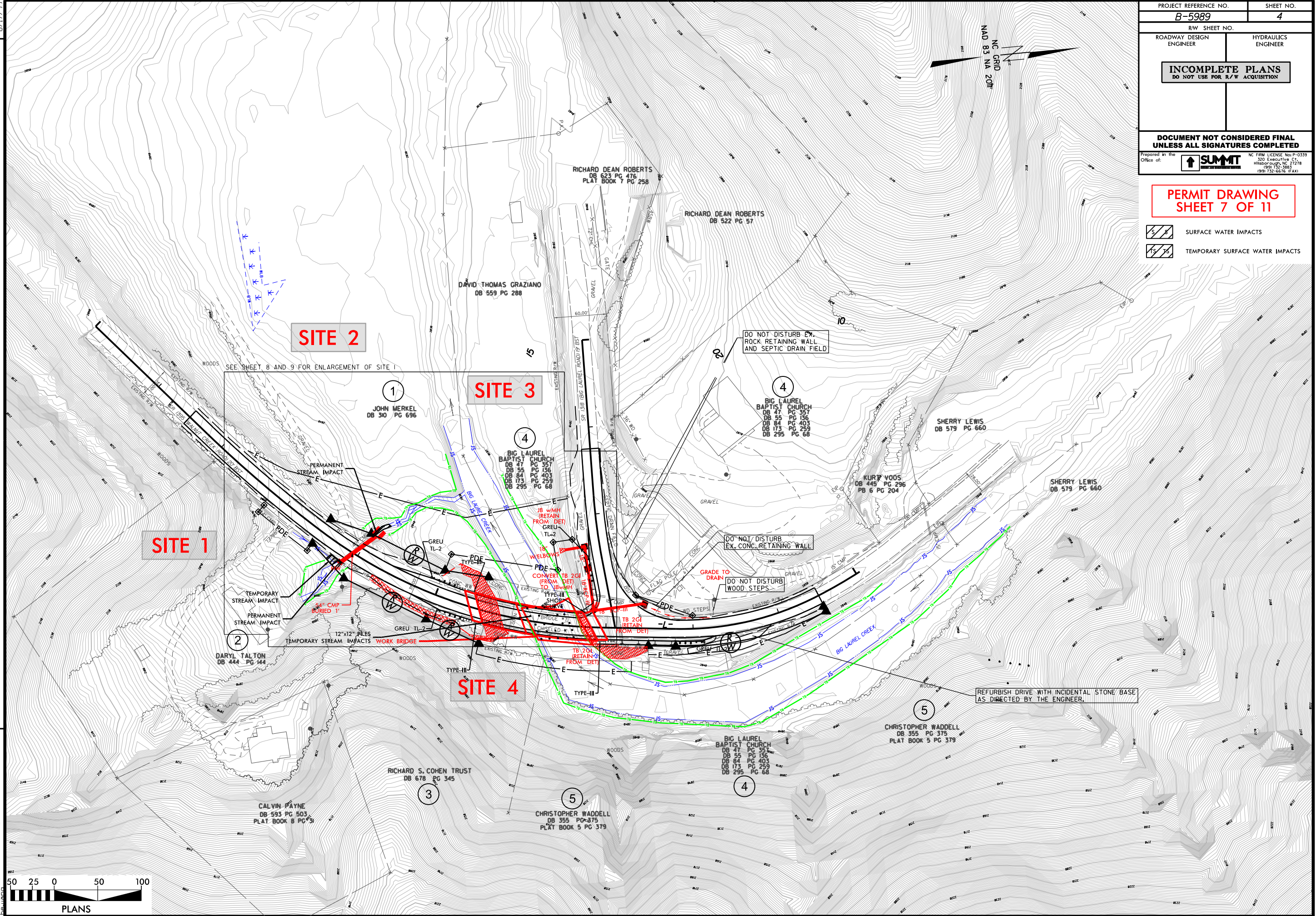
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DO NOT USE FOR R/W ACQUISITION

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ENGINEERING & CONSTRUCTION, INC.
NC FIRM LICENSE No. P-0339
320 Executive Ct.
Hillsborough, NC 27278
(919) 332-3883
(919) 732-6676 (FAX)

PERMIT DRAWING
SHEET 7 OF 11

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS



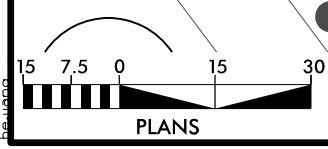
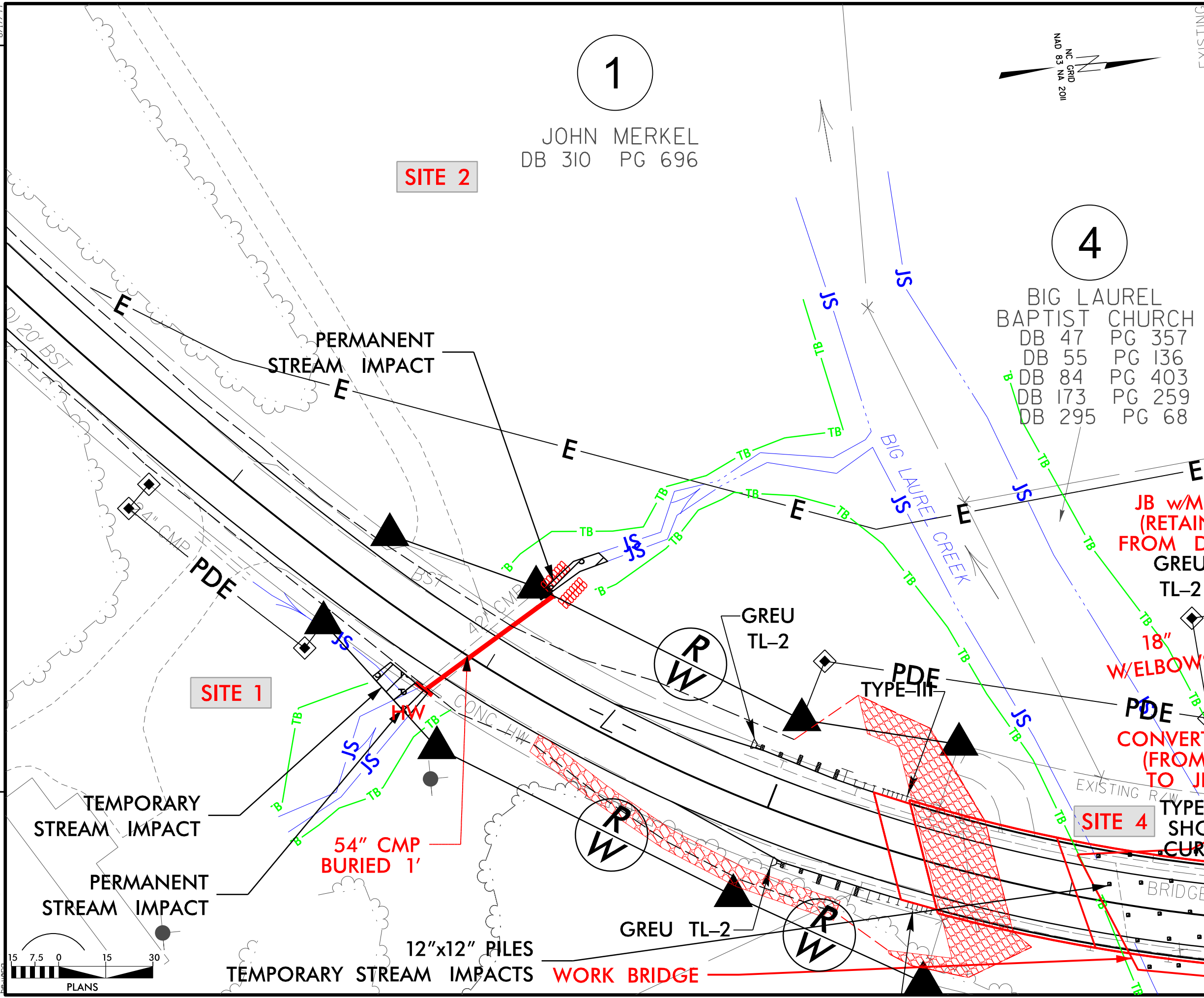
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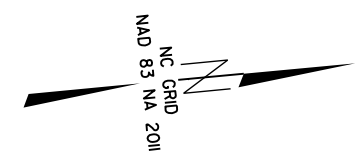
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8/17/99
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REVISIONS



1
JOHN MERKEL
DB 310 PG 696



4
BIG LAUREL
BAPTIST CHURCH
DB 47 PG 357
DB 55 PG 136
DB 84 PG 403
DB 173 PG 259
DB 295 PG 68

EXISTING

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PERMIT DRAWING
SHEET 8 OF 11

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

JB w/MH
(RETAIN FROM DET)
GREU TL-2

18" W/ELBOWS

CONVERT TB 2GI
(FROM DET) TO JBwMH


SITE 4
TYPE-III SHOP CURVE


18" RCP-III

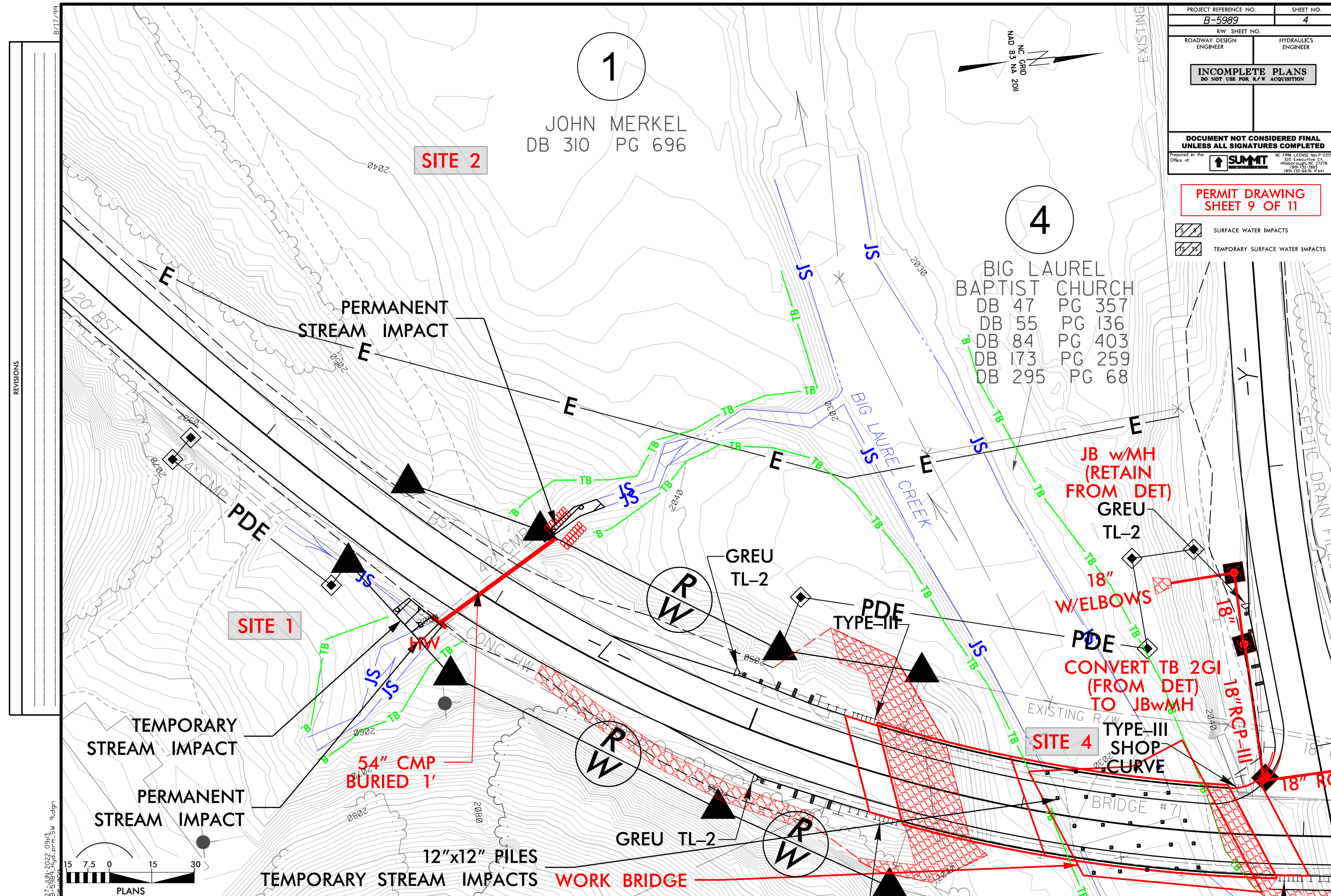
BRIDGE #71

WORK BRIDGE

PERMIT DRAWING
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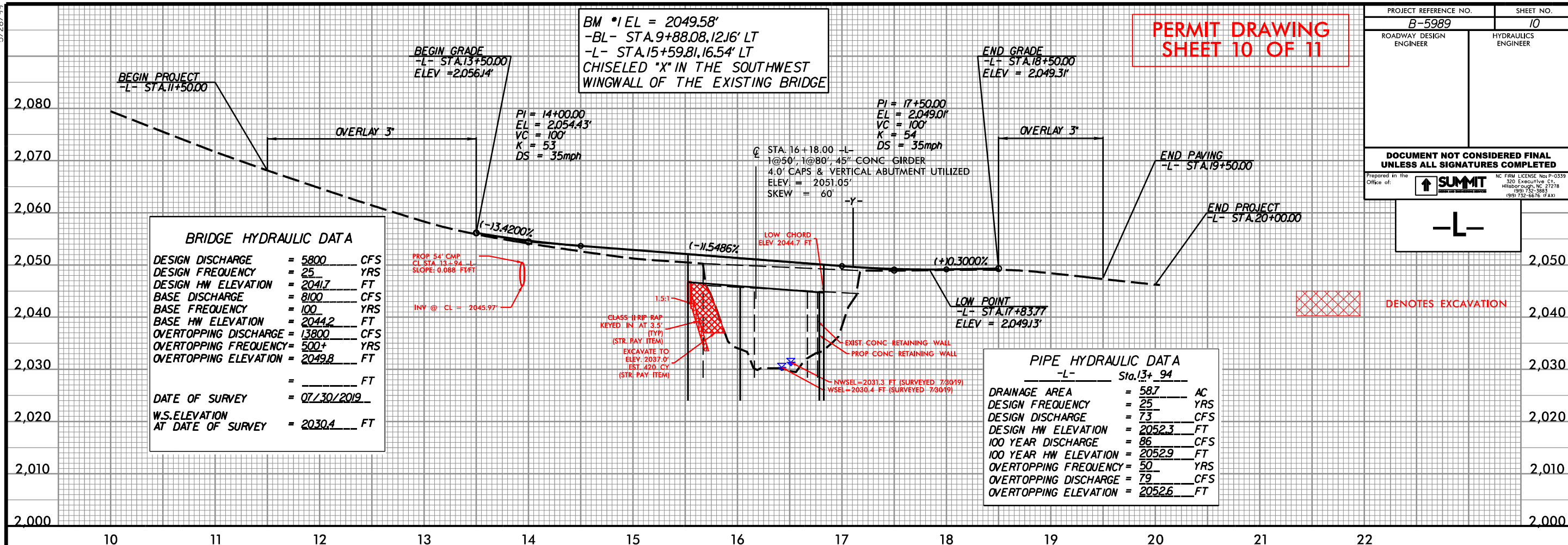
 SURFACE WATER IMPACTS

 TEMPORARY SURFACE WATER IMPACTS



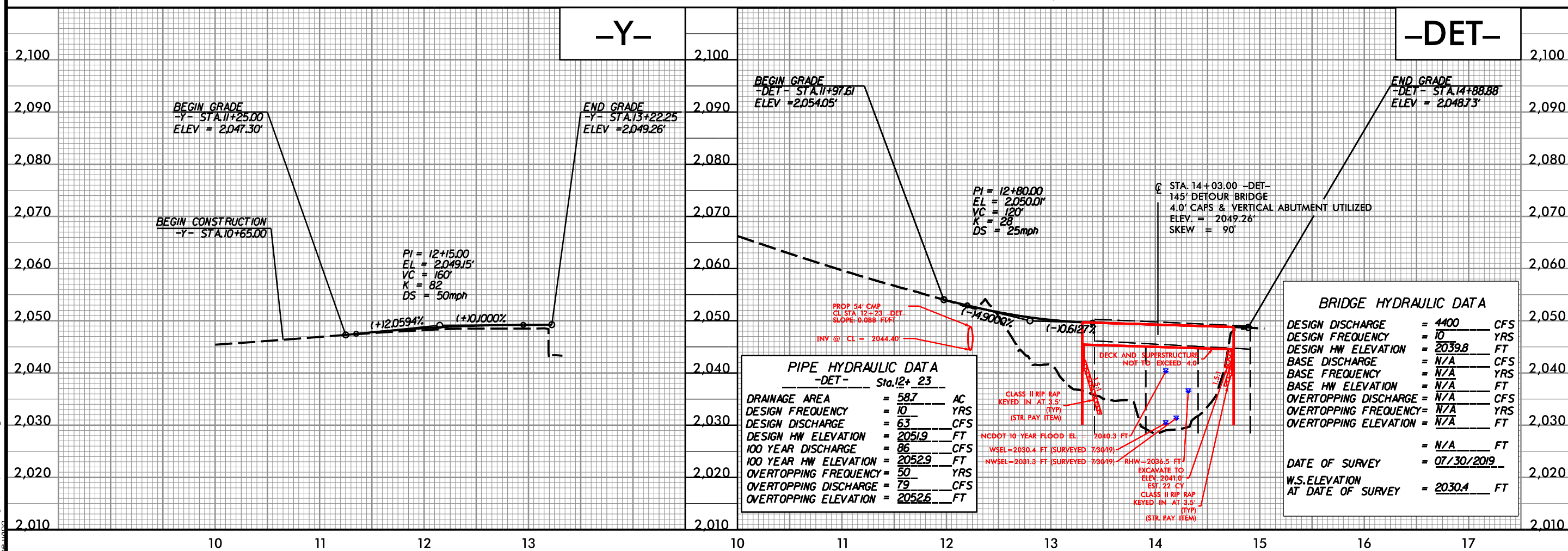
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Prepared in the Office of:	NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-3863 (919) 732-6676 (FAX)

**PERMIT DRAWING
SHEET 10 OF 11**



—L—

—DET—



WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	13+71 TO 13+84 -L- RT	PROPOSED PIPE REPLACEMENT							0.002		10	
2	13+81 TO 14+39 -L- LT & RT	PROPOSED PIPE REPLACEMENT						0.003	0.004	33	45	
3	14+05 TO 14+09 -DET- LT & RT	DETOUR BRIDGE							0.001		23	
4	16+06 TO 16+65 -L- LT & RT	WORKBRIDGE							0.001		40	
TOTALS*:			0.00	0.00	0.00	0.00	0.00	0.003	0.007	33	118	0

*Rounded totals are sum of actual impacts
 NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 6/27/2022
 MADISON COUNTY
 B-5989
 BRIDGE REPLACEMENT ON SR 1395 OVER BIG LAUREL CREEK
 SHEET 11 OF 11