

## Type I or II Categorical Exclusion Action Classification Form

STIP Project No.	<b>BR-0031</b>
WBS Element	67031.1.1
Federal Project No.	N/A

### A. Project Description:

The North Carolina Department of Transportation (NCDOT) proposes to replace Macon County Bridge #226 along Wayah Road (SR 1310) over the Nantahala River (Vicinity Map and Environmental Features Map, attached). The proposed replacement structure will be a two-span bridge approximately 113 feet long using prestressed concrete cored slab units and providing 29.5 feet of clear roadway width. The proposed improvements to the approach roadways will extend approximately 300 feet from both the north end and the south end of the new bridge. The approaches will include a 20-foot pavement width providing two 10-foot lanes with both expressway gutter and grass shoulder sections with guardrail. The roadway is classified as a major collector and will be designed using the Regional Tier Classification, with a design speed of 40 miles per hour and a posted speed of 35 miles per hour.

Right-of-way acquisition is scheduled to begin in mid-2022, and construction is scheduled to begin in late 2023.

### B. Description of Need and Purpose:

NCDOT Bridge Management Unit - Bridge Inspection Report, indicates that Bridge No. 226 has a sufficiency rating of 65.78; the bridge is classified as functionally obsolete. The existing two-lane bridge was built in 1950 (superstructure reconstructed in 2017) and is 106 feet long with a timber floor atop steel beams/girders. The bridge deck consists of two travel lanes with a roadway width of 19 feet. Maintenance has been recently performed to improve safety and extend the life of the bridge; however, the maintenance is considered temporary. Based on the aged substructure and the on-going need for maintenance, the bridge is considered at the end of its useful life and is in need of replacement.

The purpose of this project is to replace an aged structure with a new bridge that complies with current AASHTO Greenbook guidelines.

### C. Categorical Exclusion Action Classification:

**Type I(A) - Ground Disturbing Action**

### D. Proposed Improvements:

28. Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings, if the actions meet the constraints in 23 CFR 771.117(e)(1-6).

E. Special Project Information:**Estimated Costs:**

The estimated costs, based on 2022 prices, are as follows\*:

Right of Way and Utilities:	\$ 283,020
Construction:	\$ 2,050,000
<b>Total (including prior costs):</b>	<b>\$ 2,333,020</b>

\*Costs subject to change

**Estimated Traffic:**

SR 1310 - AADT (2020): 550 vpd

**Design Exception:**

Due to the existing constraints of the area, a design exception for design speed was required on BR-0031. The proposed design is compatible with and will provide a design speed equal to or better than the existing conditions within the project limits.

**Maintenance of Traffic:**

On-site staging will be utilized during construction of the project, shifting traffic in both directions to a single lane. Construction has the potential to temporarily alter traffic patterns and increase vehicular travel time to some residences and business by up to five minutes.

**Emergency Response:**

NCDOT will coordinate with law enforcement and emergency services in Macon County before and during construction.

**Jurisdictional Resources:**

One jurisdictional stream was identified in the study area (Table 1). The location of the stream is shown on Figure 1.

**Table 1. Characteristics of jurisdictional streams in the study area**

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
Nantahala River	999	Perennial	Yes	Not Subject
<b>Total</b>	<b>999</b>			

The NCWRC identified the Nantahala River as trout waters, in a letter dated September 17, 2018, therefore, mandatory trout moratorium from October 15 to April 15 will be applied.

**Protected Species:**

The United States Fish and Wildlife Service (USFWS) lists the following federally protected species within the project study area under the Endangered Species Act (ESA) (Table 2). Listed for each species is habitat presence along with the Biological Conclusion rendered based on survey results in the study area.

**Table 2. ESA federally protected species listed for the study area**

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Haliaeetus leucocephalus</i>	Bald Eagle	BGPA	No	No Effect
<i>Glyptemys mühlenbergii</i>	Bog Turtle	T (S/A)	No	No Effect
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	T	Yes	Unresolved

<i>Myotis grisescens</i>	Gray Bat*	E	No	Unresolved
<i>Myotis sodalis</i>	Indiana Bat*	E	Yes	Unresolved
<i>Mesodon clarki nantahala</i>	Noonday Snail	T	Yes	No Effect
<i>Sarracenia rubra ssp. jonesii</i>	Mountain Sweet Pitcher-plant	E	No	No Effect
<i>Isotria medeoloides</i>	Small Whorled Pogonia	T	Yes	No Effect
<i>Helionas bullata</i>	Swamp Pink	T	No	No Effect
<i>Spiraea virginiana</i>	Virginia Spiraea	T	Yes	No Effect
<i>Gymnoderma lineare</i>	Rock Gnome Lichen	E	No	No Effect

E - Endangered

T – Threatened

T (S/A) – Threatened due to similarity of appearance

MA-NLAA – May Affect-Not Likely to Adversely Affect

\* - Probable/potential record (the species is likely to occur in county based on proximity of known records and/or the presence of potentially suitable habitat)

Surveys for the Gray Bat, Indiana Bat, and Northern Long-Eared Bat are scheduled for Summer 2022 and biological conclusions will be updated prior to permitting.

### **Cultural Resources:**

NCDOT’s cultural resources staff reviewed the project under the Section 106 Programmatic Agreement for Minor Transportation Projects (NCDOT, North Carolina State Historic Preservation Office-NCHPO, Federal Highway Administration-FHWA, United States Army Corps of Engineers-USACE, Advisory Council on Historic Preservation-ACHP, and United States Forest Service-USFS, 2020). They determined that no significant archaeological resources are likely to be impacted within the Area of Potential Effects (APE), and therefore no additional survey is required.

Cultural resources staff initiated a review of HPO quad maps, HPO GIS information, historic designations roster, and indexes on January 8, 2018. Based on this review, the project falls within the Determined Eligible Nantahala Power and Light Complex. An assessment of effects was required. The NCHPO and FHWA completed an assessment of effects on April 28, 2022. A ruling of No Adverse Effect was issued with the inclusion of several environmental commitments, which include maintenance of proposed right-of-way, utilization of Oregon rail on the bridge, and utilization of natural stone design on retaining walls. FHWA intends to use the State Historic Preservation Office’s concurrence as a basis for a “de minimis” finding for the Nantahala Hydroelectric Power Project, pursuant to Section 4(f). This correspondence, as well as review forms for both Archaeology and Historic Architecture, can be found on the SharePoint project site:

<https://connect.ncdot.gov/site/Preconstruction/division/div14/BR-0031%20Macon%20226-230/Human%20Environment/Forms/AllItems.aspx>

If modifications to the current designs are made, additional review and coordination with HPO will be conducted.

### **Residential and Commercial Impacts:**

The proposed project would occur primarily within the existing NCDOT right-of-way. Additional right of way would be required along the length of the new bridge; this addition would occur primarily on the eastern side to minimize impacts to the Nantahala Power & Light Hydroelectric Plant Complex. New right of way segments would affect three (3) parcels; however, the proposed improvements are not anticipated to cause any residential or commercial relocations. Small segments of permanent utility easement, permanent drainage easement, and temporary construction easement would also be required. The commercial driveway to the Nantahala Power & Light Hydroelectric Plant Complex may be impacted during construction; however, temporary access would be provided.

**Pedestrian and Bicycle Accommodations:**

The proposed improvements include 4'-9" paved shoulders for bicycles on each side of the bridge. Bicycle-safe railing (Oregon Rail) will be included on the bridge.

**Recreational Areas:**

Wishon's Fishing Hole is located just south of the existing bridge. Right of way and easements will be required from the property to accommodate the shift in roadway alignment, and driveways to the property will be adjusted to tie-in to the new alignment. A new ditch will run along the front of the property parallel to the alignment; therefore, the existing sign will need to be relocated. No impacts are anticipated to the existing parking area.

**Public Involvement:**

On June 1, 2022, a total of 13 newsletters were mailed to all residents (owners and tenants) along Wayah Road from US 74 to Old River Road. The newsletter provided an update on the project as well as information on the proposed project schedule, cost estimates, maintenance of traffic, typical sections, and an overview map of all three bridges.

One citizen comment was received in response to the newsletter. The comment was in favor of the proposed improvements and requested to be notified of further project details (traffic maintenance, noise, construction schedule, etc.). The NCDOT Project Manager contacted the citizen after receiving the comment.

**Other Projects in the Area** – BR-0052 and BR-0053 are adjacent to BR-0031 along Wayah Road. Construction schedules and maintenance of traffic for the three bridge replacements will be coordinated.

**FERC Coordination** - The proposed project crosses both the Nantahala FERC project boundary (P-2692) and the Queens Creek FERC project boundary (P-2694). Coordination is ongoing with Duke Energy; a conveyance application will be submitted for approval.

**Other Agency Comments:**

The start of study letter was sent to federal, state, and local agencies on September 27, 2018.

Comments were received from Macon County Schools, Macon County Emergency Management Services (EMS), NCDOT-Division of Bicycle/Pedestrian Transportation (DBPT), North Carolina Wildlife Resources Commission (NCWRC), Southwestern Commission (RPO), and USFWS. No other agencies provided a response.

Macon County Schools and Macon County EMS noted that closure of the bridge due to construction would have a high impact on school and emergency transportation services. NCDOT-DBPT stated that there were no known bike/ped facilities along the corridor, but that Wayah Road was part of a Macon County Bike Route and bicycle accommodations should be considered in design. NCWRC mentioned the October to April trout moratorium as well as using sediment/erosion control measures. The RPO noted that heavy use of de-icing salts corrodes the bridges and may leak into the river, and also suggested wider bridge shoulders for cyclists. USFWS addressed threatened/endangered species, migratory birds, stream crossing design measures, and sediment/erosion control.

A tribal coordination letter was sent out to the Catawba Indian Nation, Cherokee Nation, EBCI, Muscogee (Creek) Nation, and the United Keetoowah Band of Cherokee Indians on April 30, 2021. A response was received from the Catawba on June 4, 2021, in which they indicated that they have no immediate concerns with the project but requested to be notified if Native American artifacts and/or human remains are located during the ground disturbance phase of the project.

F. Project Impact Criteria Checklists:

<b>F2. Ground Disturbing Actions – Type I (Appendix A) &amp; Type II (Appendix B)</b>				
Proposed improvement(s) that fit Type I Actions (NCDOT-FHWA CE Programmatic Agreement, Appendix A) including 2, 3, 6, 7, 9, 12, 18, 21, 22 (ground disturbing), 23, 24, 25, 26, 27, 28, &/or 30; &/or Type II Actions (NCDOT-FHWA CE Programmatic Agreement, Appendix B) answer the project impact threshold questions (below) and questions 8 – 31.				
<ul style="list-style-type: none"> <li>If any question 1-7 is checked "Yes" then NCDOT certification for <b>FHWA approval is required.</b></li> <li>If any question 8-31 is checked "Yes" then additional information will be required for those questions in Section G.</li> </ul>				
<u>PROJECT IMPACT THRESHOLDS</u> (FHWA signature required if any of the questions 1-7 are marked "Yes".)			Yes	No
1	Does the project require formal consultation with U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2	Does the project result in impacts subject to the conditions of the Bald and Golden Eagle Protection Act (BGEPA)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3	Does the project generate substantial controversy or public opposition, for any reason, following appropriate public involvement?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
4	Does the project cause disproportionately high and adverse impacts relative to low-income and/or minority populations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5	Does the project involve a residential or commercial displacement, or a substantial amount of right of way acquisition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
6	Does the project require an Individual Section 4(f) approval?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
7	Does the project include adverse effects that cannot be resolved with a Memorandum of Agreement (MOA) under Section 106 of the National Historic Preservation Act (NHPA) or have an adverse effect on a National Historic Landmark (NHL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If any question 8-31 is checked "Yes" then additional information will be required for those questions in Section G.				
<u>Other Considerations</u>			Yes	No
8	Is an Endangered Species Act (ESA) determination unresolved or is the project covered by a Programmatic Agreement under Section 7?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9	Is the project located in anadromous fish spawning waters?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
10	Does the project impact waters classified as Outstanding Resource Water (ORW), High Quality Water (HQW), Water Supply Watershed Critical Areas, 303(d) listed impaired water bodies, buffer rules, or Submerged Aquatic Vegetation (SAV)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
11	Does the project impact Waters of the United States in any of the designated mountain trout streams?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12	Does the project require a U.S. Army Corps of Engineers (USACE) Individual Section 404 Permit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13	Will the project require an easement from a Federal Energy Regulatory Commission (FERC) licensed facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

<u>Other Considerations for Type I and II Ground Disturbing Actions (continued)</u>		Yes	No
14	Does the project include a Section 106 of the National Historic Preservation Act (NHPA) effects determination other than a No Effect, including archaeological remains?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15	Does the project involve GeoEnvironmental Sites of Concerns such as gas stations, dry cleaners, landfills, etc.?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
16	Does the project require work encroaching and adversely affecting a regulatory floodway or work affecting the base floodplain (100-year flood) elevations of a water course or lake, pursuant to Executive Order 11988 and 23 CFR 650 subpart A?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17	Is the project in a Coastal Area Management Act (CAMA) county and substantially affects the coastal zone and/or any Area of Environmental Concern (AEC)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
18	Does the project require a U.S. Coast Guard (USCG) permit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
19	Does the project involve construction activities in, across, or adjacent to a designated Wild and Scenic River present within the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
20	Does the project involve Coastal Barrier Resources Act (CBRA) resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
21	Does the project impact federal lands (e.g. U.S. Forest Service (USFS), USFWS, etc.) or Tribal Lands?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
22	Does the project involve any changes in access control or the modification or construction of an interchange on an interstate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
23	Does the project have a permanent adverse effect on local traffic patterns or community cohesiveness?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
24	Will maintenance of traffic cause substantial disruption?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
25	Is the project inconsistent with the STIP, and where applicable, the Metropolitan Planning Organization's (MPO's) Transportation Improvement Program (TIP)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
26	Does the project require the acquisition of lands under the protection of Section 6(f) of the Land and Water Conservation Act, the Federal Aid in Fish Restoration Act, the Federal Aid in Wildlife Restoration Act, Tennessee Valley Authority (TVA), Tribal Lands, or other unique areas or special lands that were acquired in fee or easement with public-use money and have deed restrictions or covenants on the property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
27	Does the project involve Federal Emergency Management Agency (FEMA) buyout properties under the Hazard Mitigation Grant Program (HMGP)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
28	Does the project include a <i>de minimis</i> or programmatic Section 4(f)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
29	Is the project considered a Type I under the NCDOT Noise Policy?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30	Is there prime or important farmland soil impacted by this project as defined by the Farmland Protection Policy Act (FPPA)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
31	Are there other issues that arose during the project development process that affected the project decision?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

G. Additional Documentation as Required from Section F (ONLY for questions marked 'Yes'):

8. Surveys for the Gray Bat, Indiana Bat, and Northern Long-Eared Bat are scheduled for Summer 2022 and biological conclusions will be updated prior to permitting.
11. The NCWRC identified the Nantahala River as trout waters, in a letter dated September 17, 2018, therefore, mandatory trout moratorium from October 15 to April 15 will be applied.
13. The proposed project crosses both the Nantahala FERC project boundary (P-2692) and the Queens Creek FERC project boundary (P-2694). Coordination is ongoing with Duke Energy.
14. Cultural resources staff initiated a review of HPO quad maps, HPO GIS information, historic designations roster, and indexes on January 8, 2018. Based on this review, the project falls within the Determined Eligible Nantahala Power and Light Complex. An assessment of effects was required. The North Carolina State Historic Preservation Office (NCHPO) and FHWA completed an assessment of effects on April 28, 2022. A ruling of No Adverse Effect was issued with the inclusion of several environmental commitments, which include maintenance of proposed right-of-way, utilization of Oregon rail on the bridge, and utilization of natural stone design on retaining walls.
16. The proposed bridge replacement is located within and adjacent to a Flood Zone AE which surrounds the Nantahala River.
21. The project is located within the Nantahala National Forest. Coordination with the USFS has been ongoing throughout the planning and design process.
28. FHWA intends to use the State Historic Preservation Office's concurrence as a basis for a "de minimis" finding for the Nantahala Hydroelectric Power Project, pursuant to Section 4(f), as noted in the Assessment of Effects form.
30. The project passes through a section of farmland classified as "Prime farmland if protected from flooding or not frequently flooded during the growing season." A Preliminary Screening of Farmland Impacts was completed by Stantec and reviewed and approved by NCDOT-Community Studies on July 15, 2021. Forty-five (45) total impact points were calculated which fall well below the threshold for alternative actions to reduce farmland impacts.

H. Project Commitments:

## NCDOT PROJECT COMMITMENTS

STIP Project No. **BR-0031**

Replacement of Bridge #226 on S.R. 1310 (Wayah Road) over the Nantahala River  
Macon County

WBS Element 67031.1.1

### **NCDOT – SMU, ECAP, Division 14**

Project coordination will continue as follows:

- Macon County Schools-Transportation will be contacted at least one month prior to start of construction by NCDOT in order to have time to adequately adjust school bus schedules.  
*Phone: (828) 524-3314*
- Macon County Emergency Services will be contacted by NCDOT at least one month prior to start of construction to make the necessary temporary reassignments to primary response units.  
*Phone: (828) 349-2548*
- The project is located within the Nantahala National Forest. Coordination with the USFS will be maintained throughout the duration of the project.
- The proposed project crosses both the Nantahala FERC project boundary (P-2692) and the Queens Creek FERC project boundary (P-2694). Coordination with Duke Energy will be maintained throughout the FERC permitting process. Access will be maintained to the Nantahala Power and Light Hydroelectric Plant Complex during construction.

### **NCDOT – ECAP**

Surveys for the Gray Bat, Indiana Bat, and Northern Long-Eared Bat are scheduled for Summer 2022 and biological conclusions will be updated prior to permitting.

### **NCDOT – SMU, Historic Architecture, GeoEnvironmental, Division 14**

Compliance with the No Adverse Effect determination on the Nantahala Hydroelectric Power Project by NCHPO includes adherence as follows:

- If the proposed right of way is expanded from the boundary shown at the historic effects meeting on April 28, 2022, further coordination with NCHPO will be required.
- 42" Oregon rail will be utilized on the bridge.
- Retaining walls will utilize design which resembles a natural stone façade.

### **NCDOT – Roadside Environmental Unit, Division 14**

The Nantahala River has been identified as a NCWRC and NCDEQ trout water. Sedimentation and erosion control measures shall adhere to the Design Standards in Sensitive Watersheds. Mandatory trout moratorium from October 15 to April 15 will be applied.

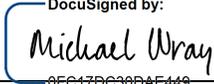
### **NCDOT – Work Zone Traffic Control, Division 14**

Access will be maintained to the Wishon's Fishing Hole property during construction.

I. Categorical Exclusion Approval:

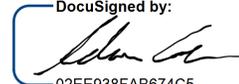
STIP Project No.	<u>BR-0031</u>
WBS Element	<u>67031.1.1</u>
Federal Project No.	<u>N/A</u>

**Prepared By:**

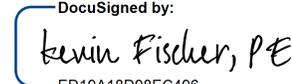
9/16/2022	
<u>Date</u>	<u>Michael Wray, P.E.</u> Transportation Engineer, Stantec

**Prepared For:** Adam Cole, NCDOT Structures Management Unit

**Reviewed By:**

9/16/2022	
<u>Date</u>	<u>Adam Cole, P.E., Project Engineer, Field Operations</u> NCDOT Structures Management Unit

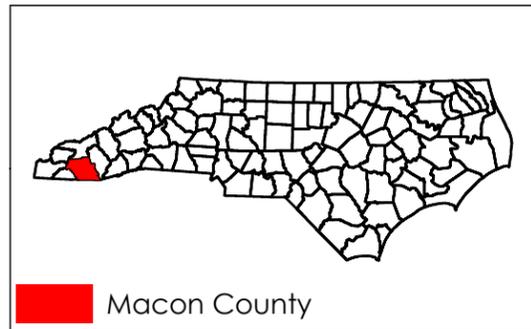
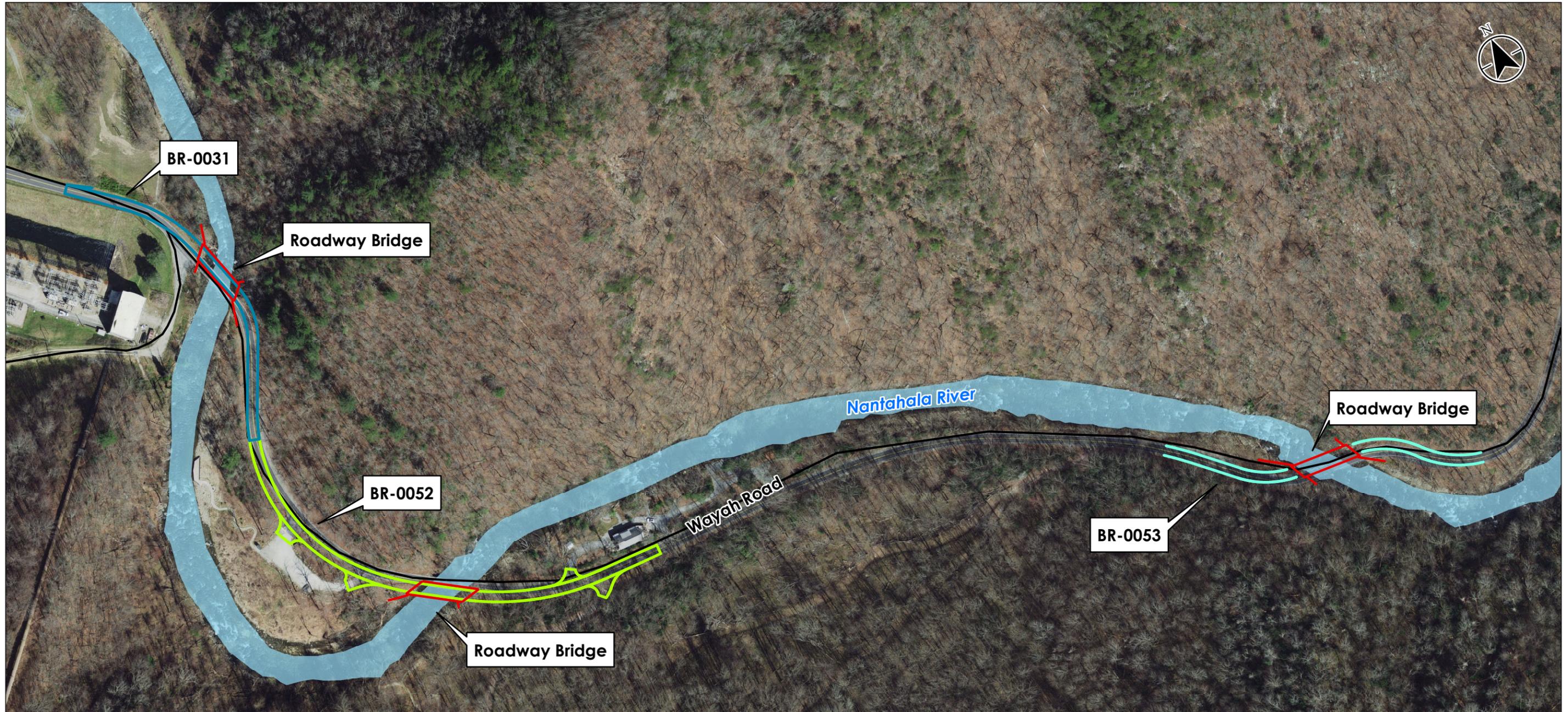
- Approved**
  - If NO grey boxes are checked in Section F (pages 2 and 3), NCDOT approves the Type I or Type II Categorical Exclusion.
- Certified**
  - If ANY grey boxes are checked in Section F (pages 2 and 3), NCDOT certifies the Type I or Type II Categorical Exclusion for FHWA approval.
  - If classified as Type III Categorical Exclusion.

9/16/2022	
<u>Date</u>	<u>Kevin Fischer, P.E.</u> Assistant State Structures Engineer—Program Management and Field Operations, NCDOT Structures Management Unit

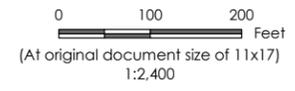
FHWA Approved: For Projects Certified by NCDOT (above), FHWA signature required.

<u>Date</u>	<u>N/A</u> for John F. Sullivan, III, PE, Division Administrator Federal Highway Administration
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*Note: Prior to ROW or Construction authorization, a consultation may be required (please see Section VII of the NCDOT-FHWA CE Programmatic Agreement for more details).*



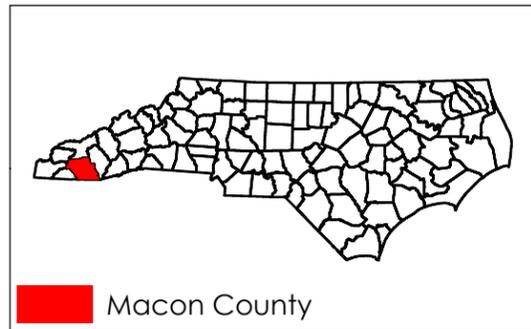
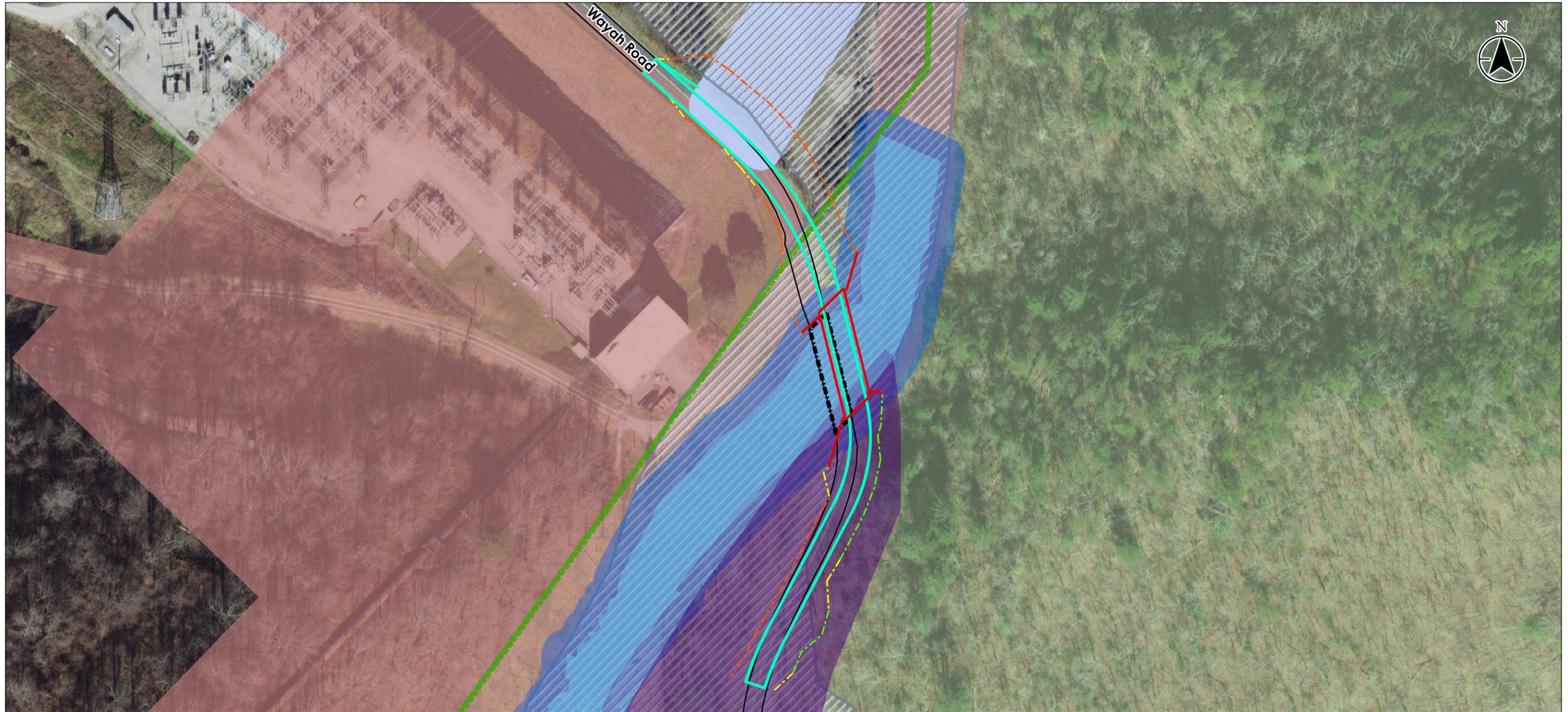
- Legend**
- BR0031 Proposed Edge of Travel
  - BR0052 Proposed Edge of Travel
  - BR0053 Proposed Edge of Travel
  - - - Proposed Roadway Bridge
  - Roads
  - Streams



Project Location: Macon County, NC  
 Client/Project: NCDOT - Environmental Analysis Unit  
 Replacement of Bridge # 226, 227, & 228 along SR 1310 (Wayah Rd.) over the Nantahala River  
 STIP Nos. BR-0031, BR-0052, BR-0053

Figure No. **1**  
 Title **Vicinity Map**

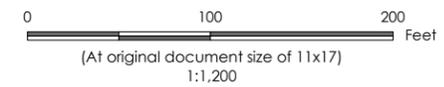
**Notes**  
 1. Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet



**Notes**  
 1. Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet  
 2. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**Legend**

- Proposed Edge of Travel
- Proposed Roadway Bridge
- Proposed Slope Cut
- Proposed Slope Fill
- Proposed Slope Transition
- Existing Road
- Existing Bridge
- Duke Energy Nantahala
- Duke Energy Queens Creek
- Streams
- Trout Streams 25' Buffer
- 100-Year Floodplain
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Natural Area



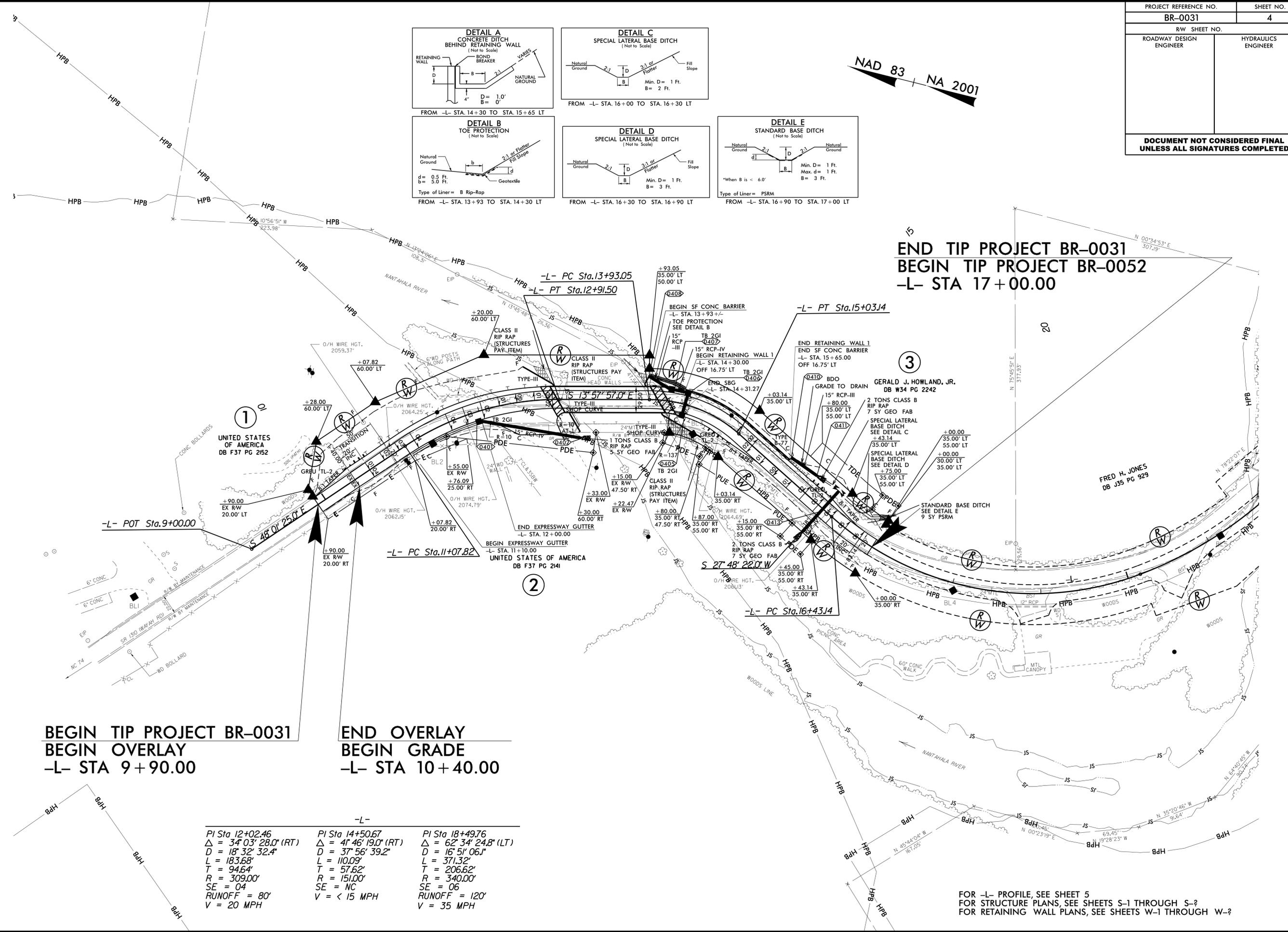
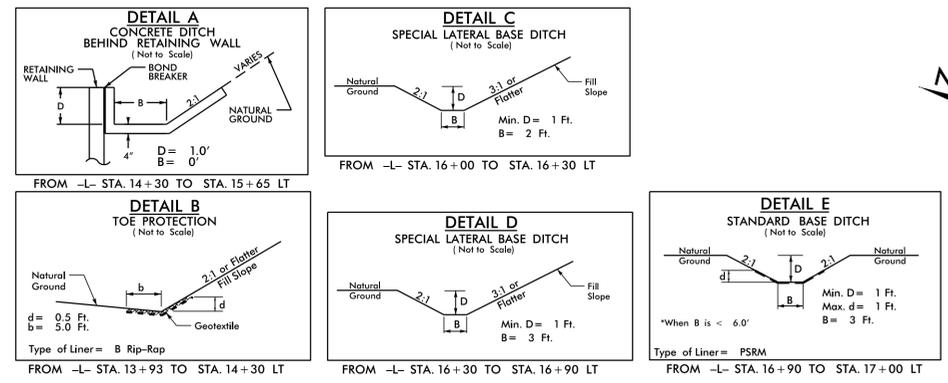
*Project Location*  
 Macon County, NC  
*Client/Project*  
 NCDOT - Environmental Analysis Unit  
 Replacement of Bridge # 226, 227, & 228  
 along SR 1310 (Wayah Rd.) over the Nantahala River  
 STIP Nos. BR-0031, BR-0052, BR-0053

*Figure No.*  
**2**  
*Title*  
**BR-0031 Environmental Features**

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PROJECT REFERENCE NO.	SHEET NO.
BR-0031	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

NAD 83  
NA 2001



**BEGIN TIP PROJECT BR-0031**  
**BEGIN OVERLAY**  
-L- STA 9+90.00

**END OVERLAY**  
**BEGIN GRADE**  
-L- STA 10+40.00

-L-		
PI Sta 12+02.46	PI Sta 14+50.67	PI Sta 18+49.76
$\Delta = 34^{\circ} 03' 28.0''$ (RT)	$\Delta = 41^{\circ} 46' 19.0''$ (RT)	$\Delta = 62^{\circ} 34' 24.8''$ (LT)
D = 18' 32' 32.4"	D = 37' 56' 39.2"	D = 16' 51' 06.1"
L = 183.68'	L = 110.09'	L = 371.32'
T = 94.64'	T = 57.62'	T = 206.62'
R = 309.00'	R = 151.00'	R = 340.00'
SE = 04	SE = NC	SE = 06
RUNOFF = 80'	V = < 15 MPH	RUNOFF = 120'
V = 20 MPH		V = 35 MPH

FOR -L- PROFILE, SEE SHEET 5  
FOR STRUCTURE PLANS, SEE SHEETS S-1 THROUGH S-2  
FOR RETAINING WALL PLANS, SEE SHEETS W-1 THROUGH W-2

18-MAY-2022 13:42 BR0031-RdL.pst-04.dgn