North Carolina Department of Transportation

PROJECT NEPA ENVIRONMENTAL CONSULTATION FORM

STIP No. R-2721, R-2828, & R-2829

I. GENERAL INFORMATION

a. Consultation Phase: Construction

b. Project Description: Complete 540 – Triangle Expressway Southeast Extension
From NC 55 Bypass to US 64/264 (I-87)
Wake and Johnston Counties

c. STIP Project Nos.: R-2721 (A & B), R-2828, and R-2829
WBS Nos.: 37673.1.TA2, 35516.2.TA2, and 35517.1.TA1
State Project Nos.: 6.401078, 6.401079, and 6.401080
Federal Project Nos.: STP-0540(19), STP-0540(20), and STP-0540(21)

d. Class of Action:

FHWA Draft EIS	November 2015
FHWA Final EIS	December 2017
FHWA ROD	June 2018

II. CONCLUSIONS

With the Complete 540 project, the North Carolina Department of Transportation (NCDOT) proposes a new, limited-access highway from NC 55 Bypass in Apex, to US 64/264 (I-87) in Knightdale, completing the outer loop circumferential highway that partially encircles the greater Raleigh area today. The existing 540 outer loop route consists of a 27-mile freeway north and east of Raleigh (I-540) and a 16-mile toll expressway west of Raleigh (NC 540.) The Complete 540 project will continue the toll facility south and southeast of Raleigh. The project has been divided into three State Transportation Improvement Program (STIP) sections:

- R-2721 from NC 55 Bypass to US 401 - construction of this section is funded in the STIP
- R-2828 from US 401 to I-40 - construction of this section is funded in the STIP
- R-2829 from I-40 to US64/US264 (I-87) - construction of this section is not yet fully funded in the STIP

The above environmental documents have been reevaluated as required by 23 CFR 711. It was determined that the current proposed action is essentially the same as the original proposed action. Proposed changes, if any, are noted below in Section III. It has been determined that anticipated social, economic, and environmental impacts were accurately

described in the above referenced documents unless noted otherwise below. Therefore, the original Administrative Action remains valid.

III. CHANGES IN PROPOSED ACTION AND ENVIRONMENTAL CONSEQUENCES

Project Description

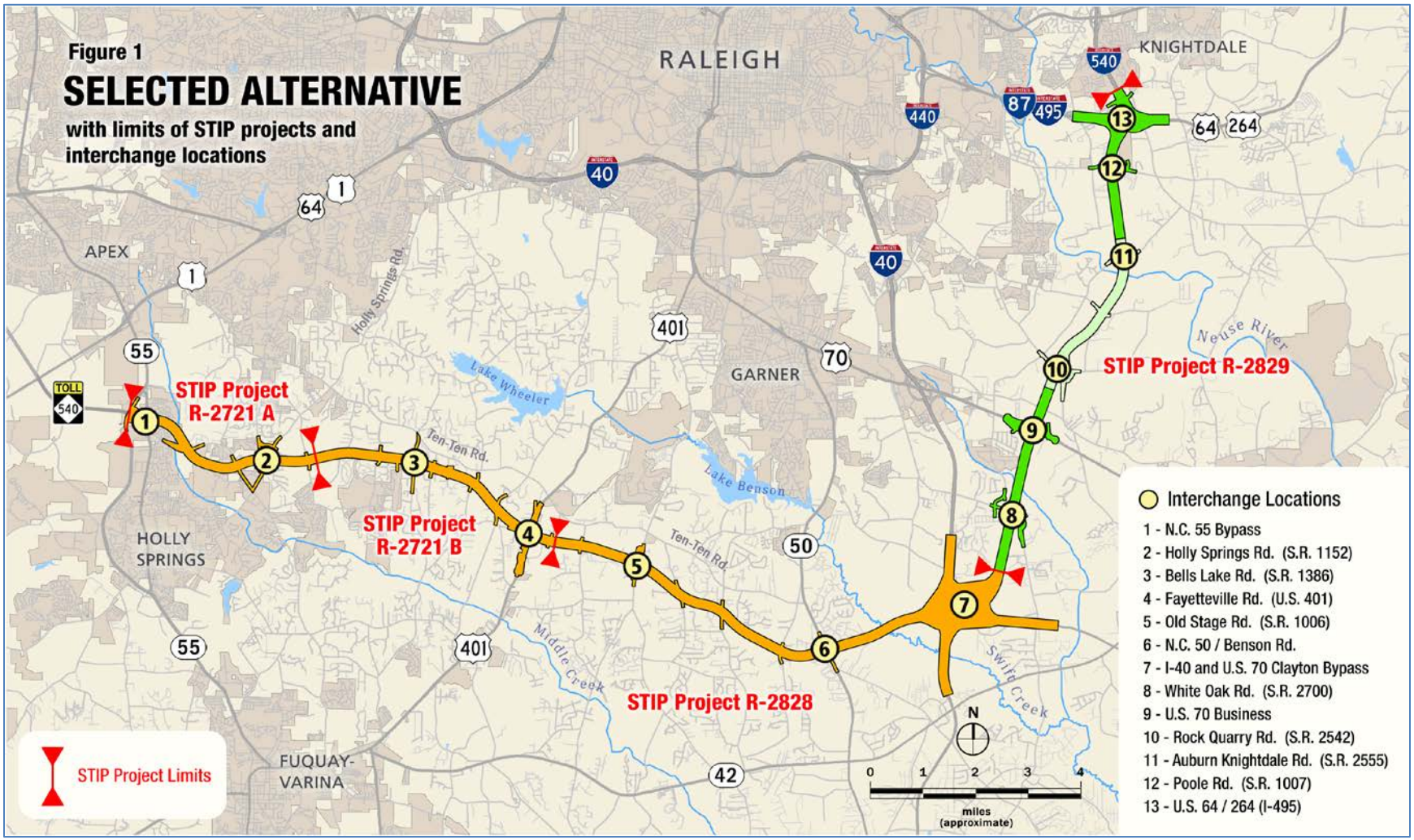
Complete 540, also known as the Triangle Expressway Southeast Extension, would expand and complete the 540 outer loop from NC 55 Bypass in Apex to US 64/US 264 (I-87) in Knightdale. It will have six travel lanes, a 70-foot wide median, and a posted speed limit of 70 mph. The primary purposes of the project are to improve mobility and reduce traffic congestion south and east of the Raleigh area during peak travel periods. The project would also achieve the secondary purpose of improving system linkage in the regional roadway network.

While the project has previously been divided into three STIP projects, the current NCDOT 2020-2029 STIP further divides the R-2721 section into two segments, so that the project is now divided into four segments for construction: R-2721A, R-2721B, R-2828, and R-2829. While the NEPA review and Environmental Impact Statement (EIS) for Complete 540 addressed all four STIP projects, only the R-2721A, R-2721B, and R-2828 projects, which together extend from NC 55 Bypass to I-40, have been programmed for right-of-way acquisition and construction. No further action has occurred on R-2829 since and therefore this consultation addresses notable changes only in the R-2721A, R-2721B, and R-2828 projects. **Figure 1** shows the locations of these three construction projects. Notable changes in design associated with the segments of Complete 540 between NC 55 Bypass and I-40 are discussed below.

Traffic analysis for the revised design concluded traffic would operate with no substantial changes to level of service or safety compared to the preliminary design. An Addendum to the November 2018 Interstate Access Report (IAR) update was submitted to the Federal Highway Administration (FHWA) in September 2019, is under review, and approval is imminent.

Changes in Proposed Action

The project design has been refined since the Record of Decision (ROD) was approved in June 2018 and the permit application was filed in September 2018 and revised in February 2019. Notable modifications that have been incorporated into the revised design are discussed below, grouped by STIP number. These modifications all occur within the study area previously addressed in the 2018 ROD. In addition to the modifications listed below, the 540 mainline profile has been adjusted in numerous places along the project to reduce the hauling of offsite borrow materials needed to construct the project. Also, several preliminary noise abatement walls were adjusted (for length, height, location, requirement, etc.) in the current proposed designs, and many of these adjustments resulted in impact changes to wetlands, streams, and/or stream buffers.



R-2721A

- NC 55 Bypass Interchange: Loop B in the southeast quadrant has been adjusted to utilize more of the existing pavement and curb and gutter. All existing ramps and loops are also now shown with an overlay to align future maintenance of the entire interchange on the same cycle.
- East Williams Street Bridge: Modifications to ramps in the northeast and southeast quadrants of the NC 55 Bypass interchange have been made to simplify the geometry of the bridge over East Williams Street and reduce the bridge width, and therefore reduce cost. The same bridge was also modified from a two-span bridge with a pier in what would be the future median on East Williams Street to a single span bridge.
- Mainline Bridge at Middle Creek: The mainline bridge over Middle Creek has been lengthened and raised to accommodate the future Apex Greenway under the bridge, and the pedestrian culvert just west of the bridge has been removed from the plans. The open-area passageway under the bridge will eliminate future maintenance costs of the pedestrian culvert and improve pedestrian experience on the greenway. Additionally, the mainline horizontal alignment was adjusted to simplify the Middle Creek bridge geometry and reduce bridge design complexity. The flattening of the mainline alignment in this area also eliminated the need for additional shoulder widening to accommodate the otherwise increased sight distance.
- Sunset Lake Road: A proposed temporary detour bridge was eliminated to reduce wetland impacts. Instead, the existing culvert will be lengthened and utilized temporarily while the bridge over the mainline is being constructed. The Sunset Lake Road bridge has also been widened to accommodate an 8.5-foot sidewalk on the westbound side as requested by the Town of Apex.
- Holly Springs Road Interchange: The proposed horizontal alignments of Ramp A in the northeast quadrant and Ramp C in the southwest quadrant of the Holly Springs Road interchange were revised to provide an additional lane to better facilitate traffic queuing and overhead signage. The temporary detour alignment and profile along Holly Springs Road were also revised to shorten the duration of exposure to the traveling public.
- Pierce Olive Road Bridge Over Mainline: The bridge on Pierce Olive Road was widened to accommodate a future 5-foot sidewalk and 4-foot bike lane on both sides as requested by the Town of Cary. Previously, this bridge was set up with standard 8-foot shoulders.

R-2721B

- Bells Lake Road Interchange: Ramp and loop alignments were revised to reduce wetland and stream impacts. By changing Ramp A in the northeast quadrant, the bridge along the ramp was able to be shortened. The bridge at Bells Lake Road

was widened to better accommodate a planned greenway connection that was previously crossing through a pedestrian culvert west of the bridge.

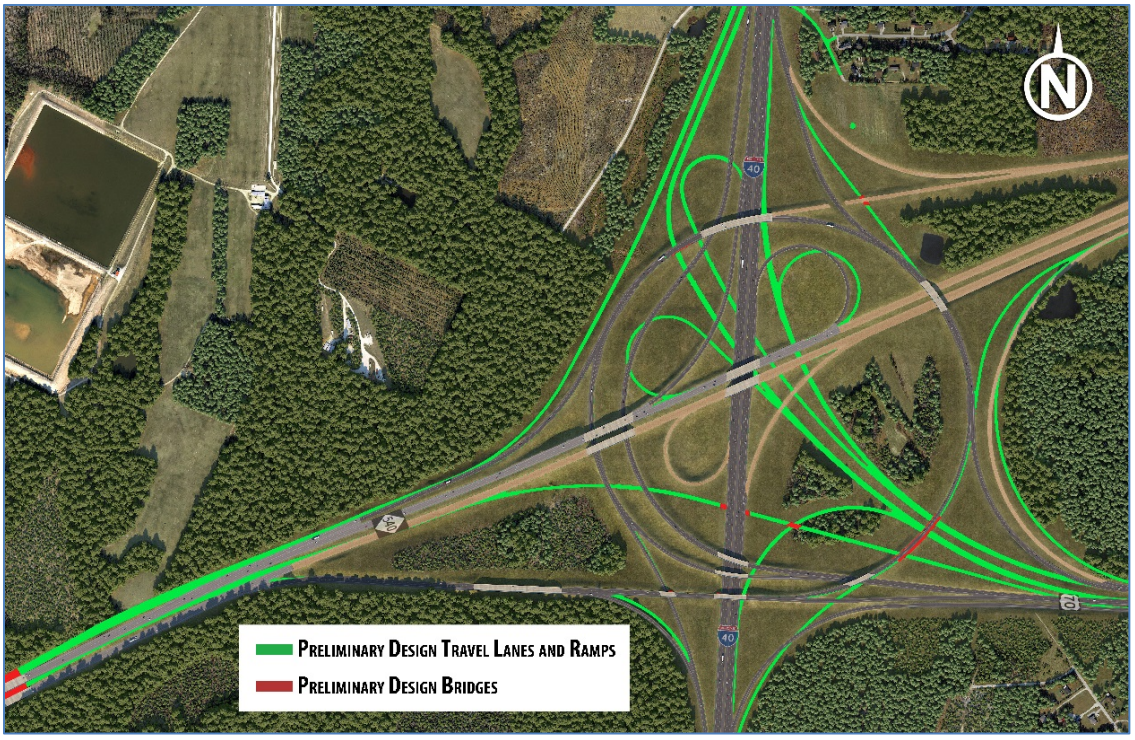
- Deer Meadow Drive: Access to the properties in the vicinity of the mainline crossing of Deer Meadow Drive was reevaluated. The initial design proposed extending Pineslope Road to connect to Deer Meadow Drive to maintain access to the residences, however this impacted a community well. Multiple options were evaluated to avoid impacting the community well. The revised design eliminates the extension of Pineslope Road to avoid impacting the well. The revised design realigns a portion of Buckwood Drive to connect with Deer Meadow Drive to maintain access to properties. This option does result in a residential relocation, but it does avoid impacts to the community well.
- Sugg Farm Road: The alignment connecting existing Sugg Farm Road and Lake Wheeler Road south of the proposed NC 540 was realigned to reduce impacts to residential properties in this area.
- A profile adjustment was made to allowed for a shorter culvert for a jurisdictional stream just west of US 401, therefore reducing stream impacts.
- US 401 Interchange: Ramp C in the southwest quadrant was revised to reduce impacts to a cemetery site on Donny Brook Road. Ramp D in the southeast quadrant of this interchange was revised to allow the use of a single bridge over McCullers Road that has a simpler design, making it easier to construct.

R-2828

- Mainline Alignment Near Swift Creek: Shifted the mainline alignment slightly to the south at the Swift Creek crossing to reduce wetland impacts, facilitate construction, and reduce proposed bridge lengths.
- NC 50 (Benson Road) Interchange: Removed Ramp D in the southeast quadrant and replaced it with a loop ramp in the southwest quadrant C. The loop in quadrant C allows the acceleration lane onto eastbound 540 to taper to the typical three-lane section before the bridge over Swift Creek. The interchange modification will also improve traffic operations, minimize stream and wetland impacts, and provide cost savings due to a reduced bridge width.
- I-40 and US 70 (Clayton Bypass) Interchange: Modified some of the movements of the turbine design interchange at NC 540, I-40, and US 70 (see **Figures 2 and 3**). The revised design turbine interchange is a two-level interchange that was revised from a three-level interchange developed for the preliminary design. The design modifications will reduce wetland, stream, and riparian buffer impacts. Construction cost and time to construct are expected to be reduced due to a decrease in the project's total number of bridges and square feet of bridge deck, and due to balancing of earthwork throughout the corridor. Savings and time reductions were also seen with mainline and ramp alignment optimizations.

Figure 2 – Current Proposed Design of Turbine Interchange at I-40

Figure 3 – Modification of I-40 Interchange



Note: The preliminary design is depicted in the foreground in green (travel lanes and ramps) and red (bridges) and is overlain by the current proposed design.

The revised turbine design removes the existing US 70 bridges over I-40 and adds ramps for the US 70 movements with ramps from US 70 northbound to I-40 northbound, I-40 southbound to US 70 southbound, and NC 540 westbound to US 70 southbound. From the preliminary design, the two exit ramps have been combined as one exit from NC 540 eastbound. Due to the extra traffic from US 70 northbound on the turbine, the current proposed design removes I-40 northbound to NC 540 eastbound traffic from the turbine and creates a direct exit ramp for this movement. The I-40 northbound to NC 540 eastbound ramp has been moved inside of the turbine. The loop in the northeastern quadrant was shifted off of existing US 70 northbound onto I-40 northbound. The I-40 northbound to US 70 westbound ramp was shifted outside of the turbine, and the NC 540 westbound to US 70 southbound ramp has been tied into the existing US 70 southbound before the existing bridge.

The revised design reduces the number of loops at the turbine interchange from four to two and reroutes the traffic onto the turbine while reducing the depth of the interchange from three levels to two. This allows for increased travel speeds for traffic associated with these movements without impacting the mobility and safety of the facility users.

Environmental Consequences

The design modifications described above will all occur within the study area identified in the 2018 ROD for the project.

Water Resources

The study area lies within the Piedmont physiographic region of North Carolina. Jurisdictional features within the project footprint are located in the Neuse River Basins (USGS Hydrologic Unit Codes 03020201), in Wake and Johnston Counties.

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the R-2721A, R-2721B, and R-2828 project area. There are no streams within the project area listed on the North Carolina 2018 Final 303(d) list of impaired waters for sedimentation and turbidity, although Middle Creek in the vicinity of R-2721A is listed for impaired benthic integrity.

Jurisdictional Resources

The design modifications that have been incorporated into the revised design would reduce the amount of combined stream, wetland, buffer, and 100-year floodplain impacts for the three project segments addressed in this document (R-2721A, R-2721B, and R-2828), compared to the preliminary design. **Table 1** shows the changes in jurisdictional impacts from the preliminary design as represented in the permit application for the project to the revised design for each segment individually and for the three segments combined.

Table 1 – Changes in Complete 540 Jurisdictional Impacts from Preliminary Design to Current Proposed Design[1]

	STIP No. R-2721A			STIP No. R-2721B			STIP No. R-2828			Combined Segments		
Category	**R/W Design[2]**	**Revised Design[3]**	**Change**	**R/W Design[2]**	**Revised Design[3]**	**Change**	**Prelim. Design[2]**	**Revised Design[3]**	**Change**	**Prior Design[2]**	**Revised Design[3]**	**Change**
Streams (Linear Feet)	11,891	12,030	139	9,928	10,574	646	20,086	16,296[6]	-3,790	41,905	38,900	-3,005
Stream Crossings (Number)	23	22	-1	22	22	0	40	42	2	85	86	1
Buffer Zone 1 (Acres)	16.41	16.58	0.17	18.83	17.85	-0.97	29.37	26.36	-3.01	64.61	60.79	-3.82
Buffer Zone 2 (Acres)	10.40	10.29	-0.11	11.21	10.71	-0.50	17.27	15.85	-1.42	38.88	36.85	-2.03
Wetlands (Acres)	15.26	14.56	-0.70	15.72	16.05	0.33	19.60	18.95[6]	-0.65	50.58	49.56	-1.02
Wetlands (Number)	28	28	0	23	23	0	43	39	-4	94	90	-4
Ponds (Acres)[4]	2.14	3.46	1.32	15.56	15.56	0	6.01	8.32	2.31	23.71	27.34	3.63
Ponds (Number)	2	2	0	4	4	0	11	11	0	17	17	0
Floodway (Acres)[5]	7.66	7.21	-0.46	1.24	1.26	0.02	0.16	0.07	-0.09	9.06	8.54	-0.52
100 Year Floodplain (Acres)[5]	6.19	6.36	0.17	1.22	1.26	0.04	16.37	16.14	-0.23	23.78	23.76	-0.02
500 Year Floodplain (Acres)[5]	1.85	1.68	-0.17	0.24	0.25	0.01	1.04	2.76	1.72	3.13	4.69	1.56

[1]Impacts for streams, buffer zones, wetlands, and ponds are from the September 2018 Section 404 permit application for the preliminary design, as amended in February 2019, and the anticipated 2019 Section 404 permit modification application for the current proposed design. Impact numbers for both designs include isolated wetlands and ponds.
[2]Preliminary and Right of Way (R/W) design impacts included impacts associated with some but not all utilities.
[3]Current proposed design includes impacts associated with all utilities.
[4]The increase in pond impact acreage is the result of a change in the method of impact quantification. Pond impacts included in the September 2018 Section 404 permit application, as amended in February 2019, were calculated based on slope stakes plus 25 feet buffer for the preliminary design and did not account for total pond takes. Pond impacts included in the anticipated 2019 permit modification application included total pond takes.
[5]Floodway and floodplain impacts were calculated using s
lope stake plus 25 feet buffer for the preliminary design and the current proposed design.
[6]Revised design impacts do not include temporary stream and wetland impacts (1,625 feet and 4.37 acres) to match preliminary design basis.

One important factor to note in regard to overall impacts is that while the preliminary design impact calculations accounted for preliminary utility impacts, impact calculations for the current proposed design include complete utility impacts. If utility impacts are excluded from the impact calculations for the revised design, the calculations show an even larger reduction in overall wetland, stream, and buffer impacts for the revised design as compared to the preliminary design.

Federally Protected Species

The design modifications that have been incorporated into the project have not changed the determination of effects for any of the federally protected species previously evaluated in the project's 2017 Biological Assessment (BA). After publication of the ROD, the US Fish and Wildlife Service (USFWS) proposed the addition of three aquatic species to the endangered species list within the Complete 540 project area. These three species are the Atlantic Pigtoe, the Neuse River Waterdog, and the Carolina Madtom. FHWA and NCDOT updated the project's 2017 BA to address these species, along with proposed Critical Habitat for these species. The revised BA was finalized in July 2019, and USFWS issued a revised Biological/ Conference Opinion in October 2019. The preliminary determination of effects for all of the protected species, included those proposed for listing, and relevant species critical habitat is included in **Table 2**.

FHWA and NCDOT determined that the project will likely adversely affect the Dwarf Wedgemussel, Yellow Lance, Atlantic Pigtoe, and the Atlantic Pigtoe Proposed Critical Habitat in Swift Creek. USFWS in their BO/CO indicated that the project is not likely to jeopardize the continued existence of these species and is not likely to destroy or adversely modify the proposed critical habitat for the Atlantic Pigtoe.

FHWA and NCDOT determined that the project may affect but is not likely to adversely affect the Atlantic Pigtoe proposed Critical Habitat in the Middle Creek Subunit, the Neuse River Waterdog, the Neuse River Waterdog Designated Critical Habitat in the Swift Creek and Middle Creek Units, Michaux's sumac and Cape Fear shiner based on insignificant and discountable effects. USFWS concurred with these determinations.

FHWA has consulted with the National Marine Fisheries Service (NMFS) regarding the Atlantic sturgeon and Atlantic sturgeon Critical Habitat for the Complete 540 - Triangle Expressway Southeast Extension project. The biological assessment for the Atlantic sturgeon and designated Critical Habitat was submitted to NMFS on January 30, 2018. NMFS requested additional information on March 1, 2018 and received requested information on March 14, 2018. On May 21, 2018, the NMFS issued a concurrence letter indicating the Complete 540 - Triangle Expressway Southeast Extension project would not likely adversely affect Atlantic sturgeon or designated Critical Habitat. This species and habitat are only along the Neuse River on R-2829.

The Green Floater (*Lasmigona subviridis*) is currently under review by USFWS for Wake and Johnston Counties.

The Current Proposed Design will continue to be in compliance with the protections established in the Bald Eagle and Golden Eagle Protection Act of 1962 and the Bald Eagle will not be affected.

Table 2 – Federally Protected Species – Complete 540 - Triangle Expressway Southeast Extension

Scientific Name	Common Name	Status	County	Present in Action Area	Determination of Effect
Alasmidonta heterodon	Dwarf Wedgemussel	E	W, J	Yes	LAA
Elliptio lanceolata	Yellow Lance	T	W, J	Yes	LAA
Fusconaia masoni	Atlantic Pigtoe	Proposed Threatened	W, J, H[+]	Yes	LAA
Fusconaia masoni	Atlantic Pigtoe Designated Critical Habitat – Swift Creek Subunit	Proposed	W, J	Yes	LAA
Fusconaia masoni	Atlantic Pigtoe Designated Critical Habitat – Middle Creek Subunit	Proposed	W, J	Yes	NLAA
Lysimachia asperulaefolia	Rough-leaved Loosestrife	E	H[+]	No	No Effect
Necturus lewisii	Neuse River Waterog	Proposed Threatened	W, J	Yes	NLAA
Necturus lewisii	Neuse River Waterdog Designated Critical Habitat – Swift Creek Unit	Proposed	W, J	Yes	NLAA
Necturus lewisii	Neuse River Waterdog Designated Critical Habitat – Middle Creek Unit	Proposed	W, J	Yes	NLAA
Notropis mekistocholas	Cape Fear Shiner	E	H[+]	Yes*	NLAA
Notropis mekistocholas	Cape Fear Shiner Designated Critical Habitat	E	H[+]	No*	No Effect
Noturus furiosus	Carolina Madtom	Proposed Endangered	W, J	No**	No Effect
Noturus furiosus	Carolina Madtom Designated Critical Habitat	Proposed	W, J	No	No Effect
Parvaspina steinstansana	Tar River Spinymussel	E	W, J	No	No Effect
Picoides borealis	Red-cockaded Woodpecker	E	W, J, H[+]	No	No Effect
Rhus michauxii	Michaux's Sumac	E	W, J	Yes	NLAA

Notes: T – Threatened, E – Endangered, W – Wake, J- Johnston, H – Harnett, LAA –Likely to Adversely Affect; NLAA –Not Likely to Adversely Affect;
** Potentially no longer present in Action Area (Neills Watershed),*
*** considered extirpated from Action Area (Swift Creek, Middle Creek, Neuse River)*
[+] While the project's environmental analysis required consideration of effects to species listed in Harnett County, the project is not actually in Harnett County.

Community Resources

Right of way impacts to Wake Technical Community College have been minimized through design refinements. The previously anticipated impact of 3.3 acres of permanent right of way as shown in the ROD has been reduced to about 1.9 acres. This acquisition will still not impact any campus buildings or functions.

There are five churches that have right of way impacts from R-2721A (3 locations) and R-2828 (two locations). For each of these locations, right of way impacts have been minimized to the maximum extent practicable. No church functions are affected at any of these locations.

On R-2721A, there will continue to be a right of way impact to a wooded area at Hope Community Church on East Williams Street (NC 55). The same is true for Word of Truth Church of God on Eddie Creek Drive just off East Williams Street. Similarly, a portion of wooded area will be required from the Triangle Community Church along Kildaire Farm Road at Ness Drive.

On R-2828, a narrow temporary construction easement is included in the current proposed design along the Triangle Baptist Church property, on the east side of Old Stage Road, to tie-in slopes and driveways. In addition, permanent utility easements encroach onto the Triangle Baptist Church property for Duke Distribution guy wires.

The current proposed design has been optimized to avoid all permanent impacts to the Juniper Level Missionary Baptist Church on Sauls Road. In addition, the current proposed design includes a pedestrian refuge area in the Sauls Road median for worshipers to cross from one side of Sauls Road to the other. A permanent utility easement encroaches onto the Juniper Level Missionary Baptist Church property for Duke Distribution guy wires.

Historic Resources

On December 10, 2014, the NC State Historic Preservation Office (HPO) concurred with NCDOT's finding that the Preferred Alternative for the Complete 540 - Triangle Expressway Southeast Extension would have no effect on 23 of the 25 properties in the Area of Potential Effect that are listed on or eligible for listing on the National Register of Historic Places (NRHP). The two properties that would be affected are the John Strain House (located on the west side of Lake Wheeler Road, north of the Preferred Alternative on R-2721B), and the Panther Branch School, (located on the east side of Sauls Road, south of the Preferred Alternative on R-2828).

The HPO concurred with NCDOT and FHWA that the Preferred Alternative would result in "no adverse effect" to either property, and for Panther Branch School, NCDOT committed to building a retaining wall along the property to minimize impacts and preclude the need for permanent right of way from the site. On February 7, 2019 and May 30, 2019, the design team met with representatives of Panther Branch School and HPO and have collectively decided to eliminate the small retaining wall proposed in the preliminary design. A temporary construction easement will be needed to tie-in the existing driveway. This temporary easement has been coordinated with the property owner and the SHPO. These changes will result in no permanent impacts to the property or require permanent right of way from the site.

Traffic Noise

A Traffic Noise Report was prepared in May 2015 and a Traffic Noise Report Addendum was prepared in December 2017 for the entire Complete 540 -Triangle Expressway Southeast Extension project. These documents were based on the preliminary designs at those times and the current NCDOT guidelines. These were the available technical reports at the time of the environmental documents for the project.
Following the ROD, further design development was performed for R-2721 in order to submit the permit application for the project. A Design Noise Report (DNR) based on right of way plan design for R-2721, and using the 2016 NCDOT Traffic Noise Policy and 2016 NCDOT Traffic Noise Manual, was completed in April 2019. The details for the noise barrier recommendations for some Noise Study Areas changed as a result of the DNR.

The R-2828 project is currently in the final design phase as part of the design-build project delivery. A DNR is in development based on final designs for R-2828. The Design-Build Team will construct all feasible and reasonable noise abatement measures identified in the DNR. Impacts associated with the likely noise abatement measures have been included in this document to the maximum extent possible.

Similarly, the R-2721A and R-2721B projects are in their final design phase. Modifications to the previously prepared right of way plans will require refinement of the previously prepared DNR for R-2721. The design modifications will be considered as the refinement and associated adjustments to likely noise abatement measures are described in this consultation.

Other Environmental Factors

The design changes for the R-2721A, R-2721B, and R-2828 portions of the project have no substantive changes on the previously documented effects of the Selected Alternative on the remaining environmental factors addressed. This includes environmental justice, relocations, neighborhoods, archaeological resources, Section 4(f) properties, air quality, land use, farmlands, hazardous materials, and indirect and cumulative effects.

Agency Coordination

Interagency coordination meetings to review the preliminary hydraulic plans (similar to a NEPA/404 Merger 4B Meeting) for each respective project were held for R-2721 on February 15, 2018, and for R-2828 on May 9, 2019. Summaries of these meetings are provided in **Appendix A**. Interagency coordination meetings to review draft permit drawings (similar to a NEPA/404 Merger 4C Meeting) were held for R-2721 on May 9, 2018, for R-2828 on August 1, 2019, and for R-2721B on August 22, 2019. Summaries of these meetings are provided in **Appendix B**. The permit drawing coordination meeting for R-2721A is anticipated to be held in December 2019, if needed.

IV. LIST OF ENVIRONMENTAL COMMITMENTS

NCDOT will implement all practical measures and procedures to avoid and minimize environmental impacts.

See attached “Green Sheet.”

V. COORDINATION

NCTA personnel have discussed current project parameters with qualified NCDOT representatives, as follows:

- Jared Gray, Environmental Analysis Unit
- Marissa Cox, Environmental Analysis Unit
- Deanna Riffey, Environmental Analysis Unit
- Heather Montague, Division 5 Environmental Officer
- Missy Pair, Environmental Analysis Unit
- Mary Pope Furr, Environmental Analysis Unit

VI. NCDOT CONCURRENCE

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Rodger Rochelle
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12/9/2019

Rodger Rochelle, P.E.
North Carolina Turnpike Authority

Date

VII. FHWA CONCURRENCE

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Donald W. Brew, for
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12/10/2019

Federal Highway Administration
Division Administrator

Date

PROJECT COMMITMENTS

Complete 540 – Triangle Expressway Southeast Extension
Wake and Johnston Counties, North Carolina

STIP Project Nos. R-2721, R-2828, and R-2829
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COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Item	Responsible Party	Resource	Project Commitment	Project Stage / Status	Applicable STIP Project
1	Environmental Analysis Unit, NCTA	Historic Architectural Resources	NCDOT will coordinate with the NC State Historic Preservation Office and the property owner(s) relative to potential retaining wall design to eliminate the need for permanent easement or right-of-way from the Panther Branch School.	Completed	R-2828
2	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will conduct an archaeological survey of the Preferred Alternative and will coordinate the results with the NC State Historic Preservation Office and the NC Office of State Archaeology.	Completed	R-2721, R-2828, and R-2829
3	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will establish a Memorandum of Agreement with the NC State Historic Preservation Office in order to take into account the project's effect on archaeological resources.	Completed	R-2828
4	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will coordinate with the NC Office of State Archaeology relative to data recovery of materials in the one site determined eligible for the National Register of Historic Places based on the information contained at the site.	Final Design and Construction	R-2828
5	NCTA	Community Resources & Section 4(f)	NCDOT will coordinate with the Town of Cary relative to a potential Section 4(f) de minimis use finding for the Middle Creek School Park.	Completed	R-2721
6	NCTA	Community Resources & Section 4(f)	NCDOT will coordinate with the City of Raleigh relative to a potential Section 4(f) de minimis use finding for the Neuse River Trail.	Completed	R-2829
7	Division 5, NCTA	Recreation Facility	During construction, NCDOT will accommodate trail users along the Neuse River Trail through the project construction zone.	Final Design and Construction	R-2829
8	Environmental Analysis Unit, NCTA	Noise	NCDOT will prepare Design Noise Reports for the Selected Alternative during final design. All feasible and reasonable noise abatement measures will be constructed.	Final Design and Construction	R-2721, R-2828, and R-2829

Item	Responsible Party	Resource	Project Commitment	Project Stage / Status	Applicable STIP Project
9	Hydraulics Unit, NCTA	Stormwater Management	NCDOT will utilize Design Standards in Sensitive Watersheds in the Swift Creek and ~~*in the Lower*~~ Middle Creek watersheds.	Final Design and Construction	R-2721, R-2828, and R-2829
10	Environmental Analysis Unit, NCTA	Migratory Birds	NCDOT will comply with requirements set forth in the Migratory Bird Treaty Act (MBTA) of 1918. *On December 22, 2017, after further analysis of the text, history, and purpose of the MBTA, the US Department of Interior issued Opinion M-37050. Opinion M-37050 permanently withdraws and replaces Opinion M-37041. Opinion 37050 concludes that the MBTA applies to only affirmative actions that have as their purpose to reduce migratory birds by taking or killing of migratory birds, their eggs, or their nest.*	Final Design and Construction	R-2721, R-2828, and R-2829
11	Hydraulics Unit, NCTA	Major Drainage Structures	NCDOT will perform a more detailed hydrologic and hydraulic analysis for each major drainage crossing for the Selected Alternative.	Final Design	R-2721, R-2828, and R-2829
12	Utilities Unit, NCTA	Utilities	NCDOT will coordinate with the appropriate utility owners during design of the Selected Alternative for all utility conflicts, including means to avoid or minimize impacts to utilities.	Final Design	R-2721, R-2828, and R-2829
13	Environmental Analysis Unit, NCTA	Indirect Effects & Cumulative Impacts	NCDOT will prepare a quantitative assessment for indirect and cumulative effects and impacts for the Selected Alternative.	Completed	R-2721, R-2828, and R-2829
14	Environmental Analysis Unit, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Biological Assessment of Potential Impacts to Federally Listed Species (December 2017) and the USFWS Biological Opinion (April 2018) and as amended.	Final Design and Construction	R-2721, R-2828, and R-2829
15	Environmental Analysis Unit, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Biological Assessment for Atlantic Sturgeon Critical Habitat (December 2017) and the NMFS concurrence letter (May 2018).	Final Design and Construction	R-2829
16	Environmental Analysis Unit, Division 5, NCTA	Protected Species	FHWA and NCDOT will update the 2017 Biological Assessment and coordinate with USFWS in accordance with ESA Section 7 for the Neuse River Waterdog, Carolina Madtom, Atlantic Pigtoe, and Atlantic Pigtoe Critical Habitats.	Completed	R-2721, R-2828, and R-2829
17	Environmental Analysis Unit, Division 5, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Revised Biological Assessment of Potential Impacts to Federally Listed Species (July 2019) and the USFWS Revised Biological/Conference Opinion (October 2019).	Final Design and Construction	R-2721, R-2828, and R-2829

COMMITMENTS FROM PERMITTING

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
18	Division 5, NCTA	Recreation Facility	During construction, NCDOT will accommodate trail users along the Woodcreek Trail through the project construction zone.	Final Design and Construction	R-2721A
19	Division 5, NCTA	404 Permit Condition 2	NCDOT will protect the Atlantic Sturgeon by not blocking greater than 50% of the Neuse River below the ordinary high-water mark with temporary causeways or work bridges. All causeways and work bridges will be removed at the end of the project.	Construction	R-2829
20	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3	NCDOT will comply with the attached USFWS Biological Opinion-Revised (USFWS BO), dated October 15, 2019.	Final Design and Construction	R-2721, R-2828, and R-2829
21	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS Biological Opinion (BO) Section 2.4)	NCDOT will invite representatives of the USFWS NCWRC, and other agency personnel to preconstruction meetings prior to incurring impacts in jurisdictional features, as well as to preconstruction meetings associated with installation of structures within 0.25 mile of the Swift Creek crossing.	Construction	R-2828
22	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 2.4)	NCDOT will not allow any part of the bridging structure for Swift Creek to be within 10 feet of the top of bank on either side of the channel. No permanent structures or temporary structures will be placed in Swift Creek. All permanent and temporary structures will be installed and designed to maintain stability of the stream banks of Swift Creek.	Final Design and Construction	R-2828
23	Roadside Environmental Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 2.4)	NCDOT will require construction of two permanent hazardous spill basins (HSBs) at the crossing of Swift Creek. Road runoff from approximately 1.3 miles of road facility will be directed to the HSBs prior to discharge into Swift Creek or Swift Creek tributaries. The HSBs will be designed to contain a spill from a typical tanker truck. NCDOT will implement their standard protocols for upkeep and use of these HSBs.	Final Design and Construction	R-2828

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
24	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Sections: 2.4, 8.2 & 8.3)	NCDOT will conduct a preconstruction survey (just prior to construction) at the Swift Creek crossing and remove mussels from a defined salvage area and relocate them to appropriate habitat within Swift Creek outside of the salvage area (relocation site) or if deemed appropriate, after coordination with the USFWS and NCWRC, Dwarf Wedgemussel and Yellow Lance individuals may be taken into captivity to use as brood stock for propagation efforts. The preconstruction survey will be incorporated into a Mussel Relocation Plan, which will identify the salvage area and relocation site, and be developed in coordination with USFWS/NCWRC.	Construction	R-2828
25	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Sections: 2.4, 8.2 & 8.3)	NCDOT will provide funding to Wake County and NCWRC, after receiving the Section 404 Permit, to be utilized for the retrofit and upgrade of the existing research facility in the A.E. Finley Center, at the Historic Yates Mill County Park for the purpose of research and propagation of aquatic species.	Final Design	R-2721, R-2828, and R-2829
26	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 8.4)	NCDOT will monitor the Action area for evidence of sediment loss. The USFWS will be contacted if project related sedimentation is occurring beyond 400 meters from the Action area.	Construction	R-2828
27	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 17	NCDOT will implement the Memorandum of Agreement (MOA) between the USACE and SHPO dated March 11, 2018 and adhere to the specific Stipulations provided in the MOA attachment.	Final Design and Construction	R-2721, R-2828, and R-2829
28	Roadside Environmental Unit, Division 5, NCTA	404 Permit Condition 23	NCDOT will segregate topsoil (6-12") in wetland areas where pipelines will be installed via trenching. The topsoil will be used to backfill the trench.	Construction	R-2828
29	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 27	NCDOT will only complete construction activities on TIP R-2721A and B under the Section 404 Permit dated October 24, 2019. No work will commence for TIPs R-2828 and R-2829 without further USACE coordination.	Final Design and Construction	R-2721, R-2828, and R-2829
30	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 3)	NCDOT will stop in-water construction activities if a sturgeon is spotted within 50 feet of operations. (See Attached NMFS Consultation)	Construction	R-2829
31	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 3)	NCDOT will observe an in-water work moratorium of February 15-October 31. This includes installation/removal of causeways and temporary bridges. This will cover the WRC moratorium of February 15-September 30.	Construction	R-2829

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
32	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 4)	NCDOT will not blast within 50 feet of the Neuse River.	Construction	R-2829
33	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 4)	NCDOT will adhere to shoreline stabilization Project Design Criteria (PDCs) when installing new bridges and piers.	Construction	R-2829
34	Division 5, NCTA	National Marine Fisheries Service Consultation (Attachment 1)	NCDOT will follow the PDCs outlined in Attachment 1 of the NMFS Consultation	Construction	R-2829

Appendix A
Summaries of Interagency Coordination Meetings – Preliminary Hydraulic Plan Review

Interagency Project Meeting

FINAL MEETING SUMMARY

Date: February 15, 2018
10:00 a.m. – 12:00 p.m.
NCDOT Century Center – Structure Design Conference Room

Project: STIP R-2721, R-2828, and R-2929 – Complete 540 - Triangle Expressway Southeast Extension

Attendees:

Donnie Brew, FHWA
Monte Matthews, USACE
Amanetta Somerville, USEPA*
Ntale Kajumba, USEPA*
Rob Ridings, NCDWR
Travis Wilson, NCWRC
Alex Rickard, CAMPO
Kenneth Withrow, CAMPO
Rodger Rochelle, NCTA*
Nora McCann, NCDOT Roadway
Jim Hauser, NCDOT EAU
Deanna Riffey, NCDOT EAU
Jared Gray, NCDOT EAU
Brad Chilton, NCDOT EAU
Jamille Robbins, NCDOT Public Involvement
Bill Elam, NCDOT Hydraulics
Brian Lipscombe, NCDOT Hydraulics
Todd Lapham – NCDOT Utilities
Donna Jackson, NCDOT Utilities
Mark Staley, NCDOT Roadside Environmental*
Kristy Alford – NCDOT Structures Management
Rupal Desai, NCDOT STIP
Doumit Ishak – NCDOT Congestion Management
Richard Hancock, NCDOT Division 5
Chris Murray, NCDOT Division 5
Kathy Smith. NCDOT Division 5 ROW
Brian Rogers, NCDOT Division 5 ROW
Jennifer Harris, HNTB/NCTA
Brandon Barham, Ecological Engineering
Reid Robol, Ecological Engineering
Heather Smith, Ecological Engineering
Josh Dalton, Sungate Design
Will Hines, Sungate Design
Jake Stanovich, Sungate Design
Michael Wood, Three Oaks Engineering
Nancy Scott, Three Oaks Engineering
Roy Bruce, Lochner
Brian Eason, Lochner

* Participated via telephone

Presentation Materials:

- Agenda
- Presentation

Purpose:
Project status update and review preliminary hydraulic design plans for R-2721

Project Discussion:
The following information was discussed at the meeting:

- **Project Status:** Roy Bruce gave a brief presentation, reviewing the project's Section 6002 coordination to date, summarizing the project status, and describing the technical work and coordination that have occurred since the previous Interagency Meeting in September 2017.
- **General Hydraulic Design Commitments**: NCDOT committed to the following general hydraulic design provisions for the R-2721 project:
  - For cross-pipes, riprap will be used at all pipe outlets and at pipe inlets with a headwall.
  - At pipe outlets a countersunk riprap pad will be used in the streambed using Class B riprap.
  - For riprap on banks, Class I or II rip-rap will be used:
    - For cross-pipes less than 48-inches, Class I riprap will be used.

        - For cross-pipes 48-inches or greater, Class II riprap will be used.
    - Riprap will extend a minimum of 10 feet or 4 times the pipe size whichever is greater.
    - Riprap will be used to fill in scour holes from the culvert invert to the end of the scour hole.
    - Toe Protection (Class B rip-rap) will be placed along the toe of the fill slope in wetland areas.
    - For 60 inch pipes or larger, box culverts to be used for L line crossings.
    - No precast culverts will be allowed.
- **Preliminary Hydraulic Design Review R-2721**: Will Hines, Reid Robol, and Brandon Barham presented a sheet-by-sheet review for the preliminary hydraulic design for R-2721. The following comments and questions relate to the project and the hydraulic design.
- **Comments/Questions**:
    - Sheet 5 and elsewhere on the project – USACE indicated to request a waiver for pipe burial for small pipes in wetlands to avoid draining the wetland.
    - Sheet 7 and elsewhere on plans – NCDWR indicated that pipe burial should be about 3 to 4 inches – essentially at the streambed.
    - Sheet 8 – Verify that the cross-pipe is aligned with the stream at 60+00. The channel change will require riprap due to Triassic soils. On the Permit Drawings, a channel change typical section was requested.
    - Sheet 9 – Riprap should extend beyond any diversion channel or lateral ditch tie in (General comment). The possibility of using steeper slopes for the fill will be investigated to avoid a channel change at the greenway crossing. Check greenway structure relative to potential utility conflicts.
    - Sheet 10 – Middle Creek bridges will be reviewed to move piers away streams to the maximum extent practicable. Generally storm water outlets are not desirable in a wetland. However, this may be acceptable in case where scour and velocity concerns are present.
    - Sheet 13 – Single barrel box culverts are to be buried one foot with a one-foot sill at the streambed elevation. Single barrel box culverts will not be filled. In order to avoid having a ditch in the wetland, the drainage system will tie to the box culvert.
    - Sheet 16 – For multiple barrel box culverts, the low flow barrel will be buried one foot with a one-foot sill at the streambed elevation. The high flow (overflow) barrel will contain a two-foot sill that uses riprap to create the floodplain bench. The high flow barrel will include +/-20 feet of a geotechnical recommended material at the inlet and outlet to "ramp" down to and back up from the culvert bottom to help prevent wildlife entrapment.
    - Sheets 17 – Effort should be made to help protect the wetland. If there is a ditch in the wetland, it should not drain the wetland. Minimize size and depth of ditches within wetlands (General comment).
    - Sheet 49 – Investigate the use of riprap on the relocated channel.
    - Sheet 21 – Relocate the pedestrian culvert crossing out of the wetland – perhaps parallel to the sewer line but not on top of the sewer line.
    - Sheet 25 – Check the stream buffers along stream SAP.
    - Sheet 27 – Relocate the pedestrian culvert out of the wetland.
    - Sheet 28 – Change the drainage from the monolithic island so it flows into the culvert.
    - Sheet 29 – Extend the jurisdictional stream (JS) through the service road.
    - Sheet 53 – There was agreement with removal of Y8B and purchase of the affected property to avoid the wetland impact of this service road. Lochner will send information on this parcel to NCDOT Division 5 Right of Way. If this service road remains as currently shown, this will require further discussion with the USACE.
    - Sheet 33 and all drained ponds – Pond muck will need to be removed from pond bottoms prior to placing rip-rap in proposed channels. A note will be needed in the plans to cover

this condition. Consider trapezoidal rock checks in the lateral base ditch from –L- Sta. 408+50 to 415+00 RT.

- Sheet 35 –Use one cross pipe (the 30" RCP) instead of two as shown in the preliminary plans.
- Sheet 37A – Beaver activity at this on-site stream mitigation site was discussed. NCDOT will need to remove the beavers from the site prior to construction and during the 5 to 7 years of monitoring. Once the monitoring period is over, if the beavers return, no action will be required of NCDOT. An agency site visit is desired at this location. No beaver removal or actions to remove beaver dams should be undertaken until after interested agencies can visit the site.
- Sheet 38 – Further investigations and considerations are needed for the existing 60" RCP under Old McCullers Road at Wake Technical Institute.
- NCDWR requested that a longer meeting period be scheduled for the next hydraulic design review for R-2721.
- Sufficient right of way should be provided along the project to adequately allow for needed drainage elements including erosion and control measures.
- USACE and NCDWR requested a meeting with NCDOT in advance of the next hydraulic design meeting to review the permit materials to be presented.

Previous Action Items (from July 12, 2017 IAM):

- NCDOT will provide agencies with a copy of this meeting's presentation and meeting summary. *(Completed)*
- NCDOT (B. Yamamoto) and USACE (E. Alsmeyer) will contact USEPA (C. Militscher) to convey information from this meeting and determine if USEPA has any issues of concern with the project. Subsequent to the July 12 meeting, a coordination meeting with USEPA was held on July 25, 2017 to discuss avoidance and minimization for the project. A summary of that meeting was included with the meeting summary. *(Completed)*

New Action Items:

- NCDOT will provide agencies with a copy of the meeting summary.
- Lochner will provide property information to NCDOT Division 5 Right of Way for the parcel at Y8B.

Meeting Minutes

STIP Project R-2828 (NC 540)

To: Quasi Concurrence Point 4B Merger Meeting Attendees

From: Karl Dauber, P.E.

Meeting Date: May 9, 2019

Location: NCDOT Structures Design Conference Room, Raleigh, NC

Subject: Meeting Minutes for Quasi Concurrence Point 4B Merger Meeting
NC 540 – East of US 401 to I-40/US-70 Interchange
STIP Number R-2828

Rob Ridings	N.C. Division of Water Resources (NCDWR)
Robert Patterson	N.C. Division of Water Resources (NCDWR)
Amy Chapman	N.C. Division of Water Resources (NCDWR)
Eric Alsmeyer	U.S. Army Corps of Engineers (USACE)
Travis Wilson*	N.C. Wildlife Resources Commission (NCWRC)
Dennis Jernigan	NCTA
Jennifer Harris	NCTA
Rodger Rochelle	NCTA
Amy Neidringhaus	NCTA
Roy Bruce	Lochner
Heather Montague	NCDOT Div 5 Environmental
Nikki Thompson	NCDOT Div 5 Environmental
Deanna Riffey	NCDOT/EAU
Mitchell Wimberly	NCDOT Division 5
Jenny Fleming	VHB
Tom Meador	Lane-Blythe JV
Kevin Oswandel	Lane-Blythe JV
Ryan Krakowski	Lane-Blythe JV
Michael Wood	Three Oaks
Nancy Scott	Three Oaks
Hayley Wood	Three Oaks
Karl Dauber	WSP
Rana Stansell	WSP
Nick Novello	WSP
Max Price	Wetherill

A Quasi Concurrence Point 4B meeting was held on May 9, 2019 in the NCDOT Structures Design Conference Room at 12:30 pm. The primary purpose of this meeting was to review the Design Build Team's development of the preliminary drainage design (submitted 30% hydraulic design plans) for STIP Project R-2828. The following summarizes what was discussed.

The meeting began with attendee introductions (see attached attendance sheet), followed by a brief presentation (see attached). Michael Wood provided a project overview and summarized the project's avoidance and minimization efforts to date. Karl Dauber then described the projects' general hydraulic design commitments. Michael then reviewed the anticipated Colonial gas line relocations and associated impacts, which were further explained by Dennis Jernigan. Karl then presented some of the

strategies that the Lane-Blythe JV had developed for temporary crossings of Swift Creek and the associated floodplain, in particular the proposed haul road that runs adjacent to the proposed bridge along and over Swift Creek. The agencies collectively expressed concern regarding the proposed haul road. The discussion concluded with the DB Team committing to re-evaluate access options and submit the findings to NCDOT and the agencies prior to the Quasi 4C meeting for consideration. Karl also noted that there are numerous existing stormwater management/water quality BMPs at the I-40/US 70 interchange area that were constructed for the R-2552 (Clayton Bypass) project as project commitments, and that both the R-2828 and the I-5111 project teams have committed to mitigating impacts to these BMPs so to provide the same level of treatment, or greater.

Karl then facilitated a sheet-by-sheet review of the preliminary hydraulic design plans, identifying likely resource impacts and proposed approaches to mitigate those impacts. A summary of the discussion is provided below:

Plan Set Review General Comments

- Multiple Barrel Culverts - Eric noted to install floodplain bench to maintain low flow conditions
- If single barrel culvert is wider than stream channel, baffles will be used to maintain low flow dimension.
- Backfill with native material to avoid wildlife getting trapped in barrel
- Extend bank stabilization to catch diversions - permanent impact but not stream loss
- Buffers adjacent to ponds to be drained will be quantified in permit but may not be shown on drawings
- Mike asked about an off-set due to stream coming back. NCDOT has typically just paid the mitigation
- On permit drawings make sure wetland and stream labels show up, especially near match lines

Work Areas 1 & 2

Plan Sheet 4

- Stream SBP – will extend bank stabilization to intercept lateral ditches
- Wetland WCD – total take
- Pond on west side of RR is non-JD

Plan Sheet 5

- WCE(1), WCE(2), WCH, and WCI – fill impacts
- SBQ, SBU, SBR, and SBS – fill impacts. Cross pipe provides continued hydrology for SBQ.
- SBQ, SBR – stabilization impacts.
- Pond PM will be drained. Buffer impacts will be included in Permit impact summary.

Plan Sheet 6

- WCJ – fill impacts. Energy Dissipator Basin provided to dissipate flow into wetland.

Plan Sheet 7

- WCL – total take from fill

Plan Sheet 8

- No impacts to WCM.
- WCR – total take from fill
- WCQ – fill impact.
- SBY and SBX – impacts from culverts and stabilization. Will extend bank stabilization for lateral ditches. Impacts due to stream loss beyond culvert should be accounted for.
- Rock plating provided to minimize impacts.

Plan Sheet 9

- No impacts

Plan Sheet 10 (Note: show labels on both sides of match lines)

- Pond PN to be drained. Buffer impacts will be included in Permit impact summary.
- WCN is a total take
- Pond PP to be filled. No buffers.
- WCZ(2) – fill impact downstream of Pond PP. No impact at SE corner of this sheet. Add label

Plan Sheet 11

- WCZ(1), WCZ(2) – fill impacts.
- SCD – no impact
- SCE – impacts from culvert and stabilization.
- SCK – total take from fill.
- SCC – impacts from culvert and stabilization. Rock plating to minimize impact.

Plan Sheet 12

- Pond PQ – to be drained
- Pond PR – to be filled
- WDA – Wetland will be considered a total loss unless supporting info provided to the contrary.
- WCZ(2) – stabilization impact from channel change outfall
- WCZ(1) – fill impact and stabilization impact from channel change outfall

Plan Sheet 13

- Pond PS – no impact
- Pond A – minor fill impact to buffer
- WWD, WDB – fill impacts. Evaluate feasibility of adjusting alignment of Y18B to avoid or minimize impacts.
- WDC, WDE – no impact
- SCF – stabilization impact at outfall

Plan Sheet 14

- WDB – fill impact from roadway approaches only. Add label north of L line.

- Bridge – no impacts to wetlands or buffers from the abutments. Bridge for wetland avoidance, not hydraulics. Not a FEMA crossing. Bents aligned to match flood flows.
- EDBs provided outside limits of wetlands.
- Toe protection will be provided at SE corner along wetlands.
- Riprap apron at southwest corner.

Plan Sheet 15

- WDB – fill impact. Toe protection to be provided. Total take next to fill slope.

Plan Sheet 16

- Pond PT – no impacts. No buffers.
- Pond PU – total take due to fill. No buffers.
- WDF – fill impact. Toe protection to be provided. Direct impacts only.
- WDG(1) – fill impact. Toe protection to be provided. Direct impacts only.

Plan Sheet 17

- Ponds PW and PV – to be drained and filled.
- WDG(1) – fill impacts.
- WDG(2) – fill impacts.
- SCL – fill impact.
- Outfall at 698 eliminated.
- Channel change on south side needed to maintain flow to SCL downstream. Riprap transition to be provided between wetlands and channel. Verify the ditch isn't steep. Add grade control if necessary.
- Lateral ditch on north side needed to convey overland flow to SCM downstream. Over 1800' long. Evaluate the need/feasibility of grade control to maintain wetland hydrology and prevent headcutting.

Plan Sheet 18

- WDH – fill impacts. Add label near SCN.
- SCM - impacts from culvert and stabilization.
- SCN – fill impacts.

Plan Sheet 19

- Pond PY – to be drained. Buffer impacts will be included in Permit impact summary.
- WDI – no impact.
- SCQ – fill impact from channel change. Suggest relocating AET to minimize impacts. Also, JS label appears missing between PSH 19 and 20. Check whether buffers on SCQ should continue through to Plan Sheet 20.

Plan Sheet 20

- WDL – no impact.
- WDJ – fill impact.

- SCP - impacts from culvert and stabilization.
- SCQ – impacts from fill. Will shift EDB out of wetlands, or extend ditch to stream and provide Riprap at Embankment. Check whether buffers on SCQ should continue through to Plan Sheet 19.

Plan Sheet 21

- Pond PZ - No impact.
- WDM – fill impact.
- SCR - impacts from culvert and stabilization. Outlets on north side to be combined.
- It was noted that for cross pipes that are conveying overflow from wetlands, it is not needed to bury invert of pipe, and riprap is not required at upstream end.

Plan Sheet 22

- No direct impacts, but possibly some impacts due to clearing

Plan Sheet 23

- WDO – fill impacts. Stabilization impact from outfall.
- SCT and SCV - impacts from culverts and stabilization. Will provide riprap at embankment for lateral ditches on north side. When temporary diversions are needed, make sure that bank stabilization is extended far enough to cover that work.
- Include impact to WDP from culvert stabilization. Make sure WDP is labeled
- Make sure culvert label (RCBC 8'x8') is legible.

Plan Sheet 24

- WDQ – no impact.
- WDP – fill impact. Direct impacts only.
- WDR – isolated wetland, total take.
- SCY – fill impact, stabilization impact, and channel change. Note loss of segment SDD.
- SCZ – fill impact.
- Keep wetland stream labels same size (don't scale down with drawing)

Plan Sheet 25

- Pond PAC – no impact. Make sure pond shows up on plans and is labeled
- WDT – no impact.
- SCY – Channel change. Will provide riprap at bottom, and sides up to 1' above design depth. Include channel impacts until confluence with SDD.
- Eric noted that the lower end of SCY below L is going to lose its hydrology to the confluence with SDD

Plan Sheet 26

- WDV – fill impact from roadway. No impacts from bridge.
- SDF – Buffer impact at west abutment. Will try to pull back EDB, or provide riprap at embankment. It was decided that extending to stream and using riprap at embankment was

preferred. Hand-clearing of areas under bridges should be noted (this applies to all bridges over wetlands).

Plan Sheet 27

- Two unnamed ponds south of road – to be drained.
- SCY – small buffer impact from EDB on north side.
- WDV – no impact on this sheet.
- Hazardous spill basin with media filter, west of Swift Creek. Move EDB to north side of basin.

Plan Sheet 28

- Mitigation area to be revised to match new R/W line. Hand clear upland areas and wetlands within the mitigation area.
- WDV – fill impact from roadway.
- No deck drains proposed for bridge over Swift Creek.
- SDG (Swift Creek) – interior bridge bents at least 10' from stream banks. Impacts to buffers only from two bents on west side of stream. Minor buffer impact from EDB from Hazardous Spill Basin on east side.
- Possibly add endwall to outlet pipe from HSB. Determine need for junction box along pipe to provide velocity dissipation.

Plan Sheet 38

- No impact.

Plan Sheet 39

- WCX and WCY – no impacts
- SCA – no impact.
- SCB(1) – stabilization impact at outfall (pipe to be upsized for capacity).

Plan Sheet 40 – no impacts.

Plan Sheet 41 – no impacts.

Plan Sheet 42 – no impacts.

Plan Sheet 43 – no impacts.

Plan Sheet 44 – no impacts.

Plan Sheet 45

- Ponds PAB and PBI –stabilization impacts for culvert replacements. Deanna Riffey confirmed that PAB does not have buffers, but PBI does.

Work Area 3

Plan Sheet 29

- WDZ – fill impact from roadway.
- SDJ - impacts from culvert and stabilization.
- Hazardous spill basin with media filter.

- Need to adjust outlet to outside of fill

Plan Sheet 30

- WEA – fill impact, total take.
- SDK SDL - impacts from culvert and stabilization.

Plan Sheet 32

- WEB – no impact
- WEC – fill impacts. Add label to wetland on north side
- WED – stabilization impact at outfall.
- SDL - impacts from culvert and stabilization
- SDM - impacts from culvert and stabilization. Will extend stabilization on north end to stream and provide riprap at embankment. On south side will turn channel and provide riprap transition.
- SDW - impacts from culvert and stabilization.
- SDV – fill impact.
- No embedment needed at upstream end of dual 60” culvert. Reduce size of riprap.
- General comment was made to angle outlets to provide a smooth transition from channel changes into natural streams.

Plan Sheet 33

- Existing pond on east end to be drained. Not JS.
- WEL, WEK, WFC, WFD – no impacts
- WFB – total take due to fill
- WFA – impact from culvert extension and stabilization.
- SDS – fill impact. Separate 15” outfall eliminated. 60” outfall pulled back from SDS.
- SDU - fill impact.
- SDT - impact from culvert extension and stabilization.

Plan Sheet 34 – no impacts

Plan Sheet 35 – no impacts

Plan Sheet 36 – no impacts

Plan Sheet 37

- WED (NW corner of sheet) – no impact
- WEJ – temporary impacts for removal of existing roadway and culverts.
- SDR and SDQ – removal of existing culverts will create new open channels.
- SDX – fill and stabilization impact at upper limit.
- SDT – fill and stabilization impacts. Will provide turn and riprap transition at end of channel change.

Plan Sheet 38 – no impacts

Plan Sheet 46

- Existing unnamed pond – to be drained. Not JS. This pond has not been assigned a label.
- WFG – no impact.
- SDR - impact from culvert extension and stabilization. Investigate missing stream line.

Plan Sheet 47

- WEC – impacts from interior bridge bents. Minor impact from stabilization at end of culvert for SDO. Riprap to be provided at end of lateral ditch at east end of bridge.
- SDV – impact from interior bridge bent. Riprap at embankment to be provided at end of lateral ditch on west end of bridge. Discharge on north side and ditch to flared riprap apron.
- SDO - impact from culvert and stabilization. Junction outlet of 24” pipe into 48” pipe for a single discharge into stream. Evaluate based on velocities if a countersunk pad will work instead of an EDB.

Plan Sheet 48

- WFH – do not drain.
- WEY – total take.
- WFI, WEX – no wetland impacts. Temporary buffer impacts for removal of existing roadway fills.
- Existing hazardous spill basin for roadway no longer needed and will be removed.
- Existing unnamed pond to be drained.
- SET – temporary impacts due to removal of existing culvert, which will result in a new open channel.

Plan Sheet 49

- WEW, WET – no impact.
- WEV – total take due to fill.
- WEU – fill impact. Total take.
- SET – impact from culvert and stabilization. Culvert end point has been adjusted to match revised fill slope. Address apparent conflict with bridge abutment.

Plan Sheet 50

- Existing hazardous spill basin to be modified as needed. Storm drainage system will be shifted back to road to accommodate roadway design revision. Jenny Fleming to provide design calculations from Andy McDaniel.
- WFN(2) – no impacts.
- SEG, SHE – no impacts.

Plan Sheet 51 - removed from project

Plan Sheet 52 - removed from project

Plan Sheet 53 - removed from project

Plan Sheet 54

- No wetland impacts on this sheet.
- SEM – JS line not provided in survey file. Fill slope should not impact stream, but temporary surface water impacts are likely.

Plan Sheet 55

- WEE, WEF, WEG – no impacts
- WFF – stabilization impact from outfall.
- SEK - impact from culvert and stabilization.

Plan Sheet 56

- WFE – no impact.
- SEL, SEV - impact from culvert extension and stabilization. Will combine the outfalls.

Plan Sheet 57

- WEZ – total take due to fill.
- SES - impact from culverts and stabilization. Will combine the outfalls. Ditch to stream and provide riprap at embankment.
- SDO – impact from channel change and roadway fill.

Plan Sheet 58

- WEM, WEQ – no impacts.
- SDG – minor buffer impact due to roadway fill.

Plan Sheet 58A – removed from project.

Action Items

1. DB Team to re-evaluate access options and submit the findings to NCDOT and the agencies prior to the Quasi 4C meeting for consideration.
2. R-2828 and the I-5111 project teams to mitigate impacts to existing BMPs at the I-40/US-70 interchange area.
3. DB Team to incorporate plan sheet comments into the project plans and permit drawings.

Anticipated Quasi Concurrence Point 4C Merger Meeting

The Quasi Concurrence Point 4C Merger Meeting date is anticipated to be August 1, 2019.

5/9/12

R-2828 HYDRO REVIEW

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Appendix B
Summaries of Interagency Coordination Meetings – Permit Drawing Coordination

Interagency Project Meeting

MEETING SUMMARY

Date: May 9, 2018
1:00 p.m. – 5:00 p.m.
NCDOT Century Center – Structure Design Conference Room

Project: STIP R-2721, R-2828, and R-2929 – Complete 540 - Triangle Expressway Southeast Extension

Attendees:

Donnie Brew, FHWA
Eric Alsmeyer, USACE
Amanetta Somerville, USEPA*
Rob Ridings, NCDWR
Travis Wilson, NCWRC*
Chris Lukasina, CAMPO
Rodger Rochelle, NCTA
Dennis Jernigan, NCTA
Nora McCann, NCDOT Project Management
Deanna Riffey, NCDOT EAU
Matt Lauffer, NCDOT Hydraulics
Bill Elam, NCDOT Hydraulics
Brian Lipscomb, NCDOT Hydraulics
Mark Staley, NCDOT Roadside Environmental*
Chris Murray, NCDOT Division 5 Environmental
Nikki Thomson, NCDOT Division 5 Environmental
Tracy Vann, NCDOT Division 5 ROW
Brian Rogers, NCDOT Division 5 ROW
Jennifer Harris, HNTB/NCTA
Jenny Fleming, Ecological Engineering
Reid Robol, Ecological Engineering
Heather Smith, Ecological Engineering
David Cooper, Ecological Engineering
Will Hines, Sungate Design
Jake Stanovich, Sungate Design
Michael Wood, Three Oaks Engineering
Kevin Thomas, Kleinfelder
Roy Bruce, Lochner
Brian Eason, Lochner

* Participated via telephone

Presentation Materials:

- Agenda
- Preliminary Permit Drawings

Purpose:
Project status update and review preliminary permit drawings primarily for R-2721 (detailed permit) but also for R-2828 and R-2829 (corridor level permit).

Project Discussion:
The following information was discussed at the meeting following self-introductions:

- **Project Status:** Roy Bruce gave a brief opening overview; reviewing the project's Section 6002 coordination to date, summarizing the project status, and describing the intent of the meeting.

- **General Comments**
  - Chris noted that clearing impacts are 10' from edge of toe protection
  - Chris explained that some areas show more than 10' of clearing to make field demarcation clearer and for constructability
  - Note that NCDWR mitigation requirement is based on impacts per stream
  - Utility impacts will be shown on a separate set of drawings but included in the permit applications for Complete 540.
  - Colonial will be included in the utility impact permit drawing set.

        - Directional bore is considered permanent impact to wetlands due to clearing and grubbing.
        - Show entire PDE as impact.
        - No stream impacts with directional bore
        - Dennis will let us know the response from Colonial on width of impact. *Colonial responded that they clear and grub easement.*
    - Chris asked for the opportunity to review the utility impacts/drawings

- **General Revisions**
    - Consistency between projects
        - Add call outs with stream and wetland identifier from waters report
        - Label sites independently if called different streams in waters report, this may affect mitigation requirements for NCDWR.
        - Trim buffer impacts to wetland/stream impacts in select areas to standardize construction limits.
        - Show buffer impacts all the way around any pond with buffers that is being drained. If the pond is gone then the buffer will be gone and must be shown as an impact. Only show impact on plans to easement. Summary sheet should include all impacts. Notes to be added to the effect that, although impacts not shown beyond easement, impact calculations include entire pond buffer.
    - Will countersunk Class B rip rap in the stream bed require mitigation? –
        - USACE – no mitigation required
        - NCDWR - yes if over 300' at a single site.
        - Show rip rap as stabilization in summary table
    - Where toe protection meets a stream add detail for rip rap at stream embankment on the roadway plans.
    - Details for channel changes needs to show countersunk rip rap, detail to be included in the roadway plans.
    - Add temporary impacts in wetland for temporary diversion channel
    - Make sure enough clearing impacts are shown for equipment
    - Label pipes to be buried and give depth of burial.
    - Make sure impacts are based on JS limits in .WET file.
    - Check to see if any streams do not require mitigation, check maps for "mit" label
    - Make sure buffer impacts extend far enough to capture any temporary diversion for construction.
    - Remove JS Mit labels
    - Isolated Wetlands –
        - USAE mitigation is not required.
        - NCDWR needs to check threshold for mitigation
        - Deanna to review waters report to see if isolated wetlands are identified and get with the USACE and NCDWR to make an isolated determination if needed
    - Buffer around all ponds that are drained are considered impacted.
        - Do not hatch beyond easement but add note to label as total take.
        - These impacts are considered road crossing impacts.
        - Greater than 1/3 acre per site is mitigable.

- **Preliminary Wetland and Surface Water Permit Drawing Review R-2721A**: Will Hines presented a sheet-by-sheet review for the preliminary permit drawings for R-2721A. The following comments and questions relate to the R-2721A project and the preliminary permit drawings:
  - Site 4 (PSH 6 & 6B) – Pond does not have buffers; remove from buffer impacts – why jurisdictional?
  - Site 6 (PSH 7) – add countersunk rip rap pad at inlet of pipe
  - Site 10 (PSH 8)- Insert streambank detail where toe protection hits the stream
  - Impact tables do not reflect site 12a, please make sure tables match drawings
  - Site 12a (PSH 9)-impacts should be combined with site 8 since same stream for NCDWR mitigation purposes
  - Site 15 (PSH 10) – Show permanent impact where rip rap ties to channel and TS 5 feet outside rip rap
  - Site 15 (PSH 10) – Rob asked if drainage system collecting all water from the bridge? Will responded with yes and described modified concrete flume that takes water from bridge to median ditch
  - Site 16 (PSH 11)– Will explained that the wetland is being undercut. Eric requests this be called a total take and show entire area as excavation. Part of wetland is outside ROW – do not show symbology but note total take on plan sheet and summary table.
  - Site 17 (PSH 12)– Roy noted that the noise wall will be shortened to reduce impacts. Sungate to revise drawing to show impact stopping 10' from rip rap. Also add more fill in wetland where ditch ties
  - Site 18 (PSH 13)- Need temporary impact (excavation) due to diversion ditch. Need to increase mechanized clearing.
  - Site 28 (PSH 17) – Eric asked if rip rap at pipe outlet will be in the wetland. Chris and Will explained that the rip rap will only be placed in the stream feature.
  - Site 32 (PSH 17C) – Add temporary stream impacts upstream of new channel relocation
  - Impacts from site 32, 33,34 and 46 need to be noted as same stream for mitigation determination purposes, specifically DWR
  - Site 33 (PSH 17C) – add TS impacts
  - Site 35a (PSH 18) – add small amount of fill in wetland where ditch ties
  - Site 36 (PSH 18)– square off mechanized clearing to match right side, add fill for ditch on right
  - Site 37 (PSH 19)– extend stream fill impact (SAG) to confluence since cutting off hydrology. Connect toe protection between sites 37 and 38.
  - Site 38 (PSH 20)– verify beginning of Jurisdictional stream
  - USACE has some issue with combining stormwater and streamflow at sites 37 and 38. Design can remain as is; however, it is not how they normally see it.
  - Site 39 (PSH 40)– Add TS label
  - Site 42 (PSH 42)– Middle Creek – Agencies asked for a cored slab bridge at this location. Due to traffic volume we cannot use cored slab. Any type of bridge will require a grade change. Roy explained that to minimized impacts to adjacent wetland and greenway (park) we opted to utilize a box culvert with extra barrels for wildlife. (*Roy Bruce coordinated with Travis Wilson (NCWRC) and his response was "…WRC can concur with the 4 barrel box culvert design."*
  - Site 42 (PSH 42)– make sure all impacts are accounted for between the permanent condition and temp. detour
  - Site 43 (PSH 46) – add countersunk rip rap at inlet of culvert
  - Site 46 (PSH 48)– include impacts with Sites 31, 32 & 34

- Site 48 (PSH 49)- add TS upstream of channel work
- Pond PB (PSH 16)– drain but no buffer impacts, will be surface water pond impacts
- Pond located on Sheet 17 at Station 175+00 -L- LT: We discussed this pond at the very end of the meeting. We did not show impacts and it was not included in the WET file. We are going to drain the pond so there will be surface water impacts, but no buffer impacts.

- **Preliminary Buffer Permit Drawing Review R-2721A:** Will Hines presented a sheet-by-sheet review for the preliminary buffer permit drawings for R-2721A. The following comments and questions relate to the R-2721A project and the preliminary buffer permit drawings:
  - Site 4 (PSH 6)– no buffers in the Waters Report – why is this a jurisdictional pond?
  - Buffer impacts should match wetland impacts in select areas – minimum is 10 feet from fill slope for buffers – do not just go to the right of way line
  - Buffer Site 23 (PSH 20)- Determine where stream starts and change buffer impacts based on correct stream start point
  - Buffer Site 25 (PSH 41) – trim impacts to 10' from pipe installation for EC
  - Pond PB (PSH 16) – drain but no buffer impacts, will be surface water pond impacts
  - Pond located on Sheet 17 at Station 175+00 -L- LT: We discussed this pond at the very end of the meeting. We did not show impacts and it was not included in the WET file. We are going to drain the pond so there will be surface water impacts, but no buffer impacts.

- **Preliminary Wetland and Surface Water Permit Drawing Review R-2721B**: Reid Robol presented a sheet-by-sheet review for the preliminary permit drawings for R-2721B. The following comments and questions relate to the R-2721B project and the preliminary permit drawings:
  - Clean up gaps in clearing symbology.
  - Separate sites with impacts to two or more streams for NCDWR mitigation purposes.
  - Site 1 (PSH 21)– adjust tributary alignment so it ties smoother and adjust impacts
  - Sheet 30 – make sure small wetland is either avoided or shown as impact.(further response below based on file review)
    - *An "Exist Hydro Stream of Body of Water" is shown in the FS file coming up through this plan sheet within the impact areas. No matching feature is shown in the WET file, and the feature is not given JS symbology in the FS file. The feature is not labeled in the WET file, and is not shown in the Waters Report or NRTR. We have considered this feature and other similar features to be non-jurisdictional and have not included impacts to them in the permit drawings.*
    - *Recent (but not current) designs showed no impact to Wetland BH on this plan sheet; however, the current version of the RDY_SS file comes within 10' of approximately 1.1 square feet of the wetland. If this stays consistent in future design files, sheet 30 will be added and this impact will be shown as mechanized clearing.*
  - Site 9 (PSH 31) – move Wetland BI label off of noise wall
  - Site 10 (PSH 33) - Wetland BK should be its own site
  - Site 10 (PSH 33)– easement needs to be revised to encompass pond
  - Site 11 (PSH 34)– tie two pipes together with shallow rip rap ditch and show excavation in wetlands in the area.
  - Sheet 36, make sure stream is either non-jurisdictional or included in permit drawings. (further response below based on file review)
    - *An "Exist Hydro Stream of Body of Water" is shown in the FS file coming up through the middle of this plan sheet within the impact areas. No matching feature is shown in the WET file, and the feature is not given JS symbology in the FS file. The feature is not labeled in the WET file, and is not shown in the Waters Report or NRTR. We have*

considered this feature and other similar features to be non-jurisdictional and have not included impacts to them in the permit drawings.
    - *A large stream/wetland complex is shown at the bottom of the plan sheet, outside any impact areas. No stream or wetland impacts were seen upon checking the plan sheet.*
    - *The upper right corner of the plan sheet has a small portion of Pond K, which has been captured on sheets 37 and 37A.*
  - Site 13 (PSH 37)– Stream SBM is a relic channel and not jurisdictional
  - Site 13 (PSH 37 & 65)emergency stream repair in the Woods of Ashbury along Mills Branch
    - Dennis wants to do an emergency repair before the project goes to construction – would like Agency feedback from agencies today.
    - Class II on banks and some small stone in channel to keep from further erosion
    - This can be done under Nationwide 13, NCDWR would require notification for buffer impacts but can use reason of protection of existing structure
    - USACE would prefer not to permit under NW 3
    - Documentation for agencies required before work can commence
  - Site 13 (PSH 65) Stream Relocation
    - Eric would prefer to make it a separate project.
    - He will get back to us on how to approach this. (Deanna)

- **Preliminary Buffer Permit Drawing Review R-2721B:** Reid Robol presented a sheet-by-sheet review for the preliminary buffer permit drawings for R-2721B. The following comments and questions relate to the R-2721B project and the preliminary buffer permit drawings:
  - David Cooper noted that impacts in section B still need to be separated between mitigable and non-mitigable.
  - Break out buffer impacts per stream
  - Buffers around all ponds that are drained are considered impacted. Do not hatch beyond easement but add label to plan view stating it is a total take. These impacts are considered road crossing impacts. Greater than 1/3 acre per site is mitigable. Summary sheet should include all impacts, with asterisks and a note to indicate sites where pond buffer was a total take.
  - Buffer Site 3 (PSH 25) – JS starts outside of fill but in ROW, buffer impacts shown to ROW but no stream impacts occur. *David Cooper has verified the impacts as shown are correct per the start point in the WET file.*McCullers pond (Pond K) – show buffer impacts around the pond. Add plan sheet 37A to show upper end of pond buffer impacts.
  - Buffer Site 4 (PSH 26) – consider it a parallel impact
  - Buffer Site 8 (PSH 31)– Road crossing
  - Buffer Site 11 (PSH 35)– parallel impact
  - Site 12 (PSH 37)- Inlcude buffer impacts on entire pond.
  - Site 12 (PSH 37 & 65) – buffers need to be adjusted to reflect what will actually be done. Buffers may not need to be mitigated if this is a separate permit
  - Buffer Sites 14 and 15 probably allowable due to small impact
  - Stream relocation – trim impacts to just what is needed for relocation and it will fall under protection of existing structure with no mitigation.

- **Preliminary Permit Drawing Review R-2828**: A sheet by sheet review of the drawings for this portion of the project was not done since the drawings are based on preliminary plans and surveys. These drawings will be modified by the Design-Build team and presented at a future Interagency Meeting. The following comments and questions relate to the R-2828 project and the preliminary permit drawings:

- Agencies had no questions or comments on these drawings.

- **Preliminary Permit Drawing Review R-2829**: A sheet by sheet review of the drawings for this portion of the project was not done since the drawings are based on preliminary plans and surveys. These drawings will be modified by the Design-Build team and presented at a future Interagency Meeting. The following comments and questions relate to the R-2829 project and the preliminary permit drawings:
  - Agencies had no questions or comments on these drawings.

Previous Action Items (from February 15, 2018 IAM):

- NCDOT will provide agencies with a copy of the meeting summary. *(Completed)*
- Lochner will provide property information to NCDOT Division 5 Right of Way for the parcel at Y8B. *(Completed)*

New Action Items:

- NCDOT will provide agencies with a copy of the meeting summary.
- Eric to get back to Deanna about Stream Relocation/Stabilization
- Roy to coordinate with Travis about Middle Creek culvert *(complete, Travis' comments included in meeting summary)*

R-2828 4C Meeting Minutes

STIP Project R-2828 (NC 540)

To: Quasi Concurrence Point 4C Merger Meeting Attendees

From: Karl Dauber, P.E., Michael Wood

Meeting Date: August 1, 2019

Location: NCDOT Structures Design Conference Room, Raleigh, NC

Subject: Meeting Minutes for Quasi Concurrence Point 4C Merger Meeting
NC 540 – East of US 401 to I-40/US-70 Interchange
STIP Number R-2828

Rob Ridings	N.C. Division of Water Resources
Robert Patterson	N.C. Division of Water Resources
Eric Alsmeyer	U.S. Army Corps of Engineers
Dennis Jernigan	NCTA
Jennifer Harris	NCTA
Rodger Rochelle	NCTA
Tyler Blang	NCTA
Roy Bruce	NCTA/Lochner
Jenny Fleming	NCTA/VHB
Deanna Riffey	NCDOT/EAU
Heather Montague	NCDOT Div 5 Environmental
Nikki Thomson	NCDOT Div 5 Environmental/Kleinfelder
Mitchell Wimberley	NCDOT Div 5 Environmental/Kleinfelder
Tom Meador	Lane-Blythe JV
Kevin Oswandel	Lane-Blythe JV
Marcus Curran	Lane-Blythe JV
Michael Wood	Three Oaks
Nancy Scott	Three Oaks
Hayley Wood	Three Oaks
Karl Dauber	WSP
Daniel Bridges	WSP
Rana Stansell	WSP
Vidya Mohandas	WSP
Nick Novello	WSP
Ronyell Thigpen	WSP
Bill Elam	Wetherill
Liz Bissonnette	Kleinfelder (by phone)

A Quasi Concurrence Point 4C meeting was held on August 1, 2019 in the NCDOT Structures Design Conference Room at 8:30 am. The primary purpose of this meeting was to review the Design Build Team's development of the Permit Drawings for STIP Project R-2828. The following summarizes what was discussed.

The meeting began with attendee introductions (see attached attendance sheet), followed by a brief presentation (see attached). Michael Wood provided a project overview and summarized the project's avoidance and minimization efforts to date. Karl Dauber then described the projects' general hydraulic

design commitments. Karl then presented the work trestles that would be used to construct the bridges over the four sites (19, 41, 48, 75) that are being bridged due to high quality systems. In particular, there were changes to the trestle and haul road since the Quasi 4B meeting to allow access and construction of the bridge over Swift Creek.

Karl then facilitated a sheet-by-sheet review of the permit drawings, identifying likely resource impacts and proposed approaches to mitigate those impacts. A summary of the discussion is provided below:

Plan Set Review

General Comments:

- All toe protection shall be considered fill. Toe protection is offset 2 feet from the toe of the fill embankment. Mechanized clearing should be shown 10 feet offset from the toe protection.
- Review call-outs for stabilization to verify that "inlet" vs. "outlet" is labeled correctly.
- Ensure impacts are accounted for where fill slope goes to excavation for ditch. Do not leave a gap.
- Do not fill the low flow barrel (Sites 32 & 55) or single barrel (Sites 2, 10, 11, 14, 26A, 35, & 50) with native material. Take off note about fill with native material. High flow barrel (Sites 32 & 55) will just have riprap on inlet and outlet that ramps up to high flow barrel.
- Culvert/Pipe Crossing – ensure the temporary impact goes from end of rip rap to where potential impacts actually end
- Overlay wetland impacts and buffer impacts to ensure that all areas where there are buffer impacts are accounted for consistently.
- Send updated plan sheets for revised HSBs (located at/near Sites: 47, 49, & 82) before submittal of Permit Drawings to DWQ.
- Make sure all details including basins are included in permit set. Some of the basin details are missing information.
- Make sure all details are correct including correct number reference on the plan sheet, correct station numbers, correct call out label, etc.
- For all bridges (excluding permanent bents) and work trestles (Sites 19, 42, 44, 48, 49, 75), only show wetland hand clearing impacts. Do not show any temporary wetland impacts.
- Make sure flow arrows are shown on all streams
- Identify the need for the various easements depicted on the plan sheets
    - At subsequent meeting on 8/12/19, agreed to change all temporary wetland impact/fill to mechanized clearing (other than where specified as hand clearing under/adjacent to the bridges). This is noted at each site where appropriate.

Plan Sheet 4

- Site 1: Roadway fill in wetland WCD – total take
- Site 2: Permanent and temporary SW and channel impacts to SBP from culvert installation and riprap stabilization.
- Pond on west side of RR is non-JD

Plan Sheet 5

- Site 3: Wetlands fill and mech clearing to WCE(2), plus permanent and temporary SW and channel impacts to SBR from 42" outfall and riprap stabilization.
- Inset A: small remnant of wetland WCE(1) updated to be a total take instead of mechanized clearing. Remove stray JS line.
- Site 4: Pond PM drained, resulting in SW impact. Buffer impacts included in buffer impact summary.
- Site 5: Wetlands WCF fill and SW and channel impacts to SBR from roadway fill and pipe outfall with riprap stabilization.
- Site 6: Wetlands fill and excavation, mech clearing of SCH, and SW and channel impacts to SBU due to roadway fill. Removed overlapping wetland fill which was shown in stream. SBU entering ditch at 90 degrees, adjust for smoother transition. Consider more stabilization.
- Site 7: Wetlands fill and excavation, mech clearing of WCI, and SW and channel impacts to SBR due to roadway fill. Ditch is at 0.4% slope. Ditch may have an impact on wetlands. No concern with WCI being a total take. Good with how impacts are currently shown.

Plan Sheet 6

- Site 8: Wetlands fill and mech clearing of WCJ from roadway fill and stormwater outfall. Double check SMP that Energy Dissipator Basins are included.

Plan Sheet 7

- Site 9: Wetlands fill of WCL from roadway fill. Total take.

Plan Sheet 8

- Site 10: Permanent and temporary SW and channel impacts to SBY from roadway fill and box culvert with riprap stabilization
- Site 11: Permanent and temporary wetland fill, mech clearing of WCQ, permanent and temporary SW and channel impacts to SBX from roadway fill and box culvert with riprap stabilization. Removed overlapping wetland fill which was shown in stream. Will square off temporary impact line.
- Site 12: Wetland fill of WCR. Total take from roadway fill.
- Rock plating provided to minimize impacts at Sites 10, 11, and 12.

Plan Sheet 9

- Site 13: SW impact from draining of Pond PN.

Plan Sheet 10

- Site 13: SW impact from draining of Pond PN, and wetland WCW fill from roadway.
- Wetland WCW to be total take due to draining.
- Site 13A: SW impact from draining of Pond PP, and wetland WCZ(2) fill from roadway.

Plan Sheet 11

- Site 13A: Wetland WCZ(2) fill from roadway.
- Site 14: Permanent and temporary wetland fill, mech clearing of WCZ(1), permanent and temporary SW and channel impacts to SCC from roadway fill and box culvert with riprap

stabilization. Easement will be revised to accommodate full width of the temporary impact. Outlet of 36" pipe: provide riprap stabilization or ditch to dissipate energy before stream.

Plan Sheet 12

- Site 15 and 15A: Temp wetland fill to WCZ(2) and permanent SW impact from draining of Pond PQ, roadway fill, and stormwater outfall and stabilization; Site 15A is off project.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 16: SW impact from draining of Pond PR. Discussion on the pipe being buried and a stream forming upstream of the pipe. Add note to drawings that new stream shall be formed to convey flow through old pond area and directed into pipe during construction within right of way. No impact to WDA.
- Site 17: Wetland fill and mech clearing of WCZ(1) for roadway fill.

Plan Sheet 13

- Site 18: Wetland fill and mech clearing from roadway fill (WDB).
- Site 18A: Wetland fill and mech clearing from roadway fill (WWD (HDR)).
- Site 18B: Permanent and temporary SW and channel impacts from roadway and pipe culvert and stabilization (SCF).
- Evaluated feasibility of adjusting alignment of Y18B to avoid or minimize impacts. Do not place driveways in wetlands. Add driveways to drawings for the permit application submittal.

Plan Sheet 14

- Site 18: same as previous sheet.
- Site 19: temporary wetland fill to WDB, permanent and temporary SW and channel impacts to SCG from bank stabilization at end of ditch.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 19A: permanent wetland WDB fill from bridge piers and temporary wetland WDB fill from work trestle piers, and hand-clearing under bridge. Make sure limits of hand clearing include trestle. Extend hand-clearing another 10' beyond limits of bridges/trestles.
- Site 20: wetland fill and mech clearing for roadway fill (WDB).
- Bridge – no impacts to wetlands or buffers from the abutments. Bridge for wetland avoidance, not hydraulics. Not a FEMA crossing. Bents aligned to match flood flows.
- Comment during right of way review with ditch behind noise wall. Noise wall and ditch will likely be pulled into right of way. Will investigate moving noise wall toward roadway such that it eliminates the need for additional PDE for ditch behind noise wall and eliminates issue with wall going through riprap ditch.

Plan Sheet 15

- Site 20: same as previous sheet. Wetland WDB will be a total take on this PSH only.

Plan Sheet 16

- Site 21: wetland fill and mech clearing for roadway fill (WDF).

- Site 22: SW impact from draining of Pond PU. Drainage impacts to WDF expected to be relatively minor due to input from pond upstream (PT). Add 10' temp wetland along edge of base ditch
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 23: permanent wetland fill, excavation in wetlands, mech clearing of WDG(1), Updated fill and mechanized clearing for correct fill slope at beginning of wetland.

Plan Sheet 17

- Site 23: permanent and temporary wetland fill, excavation in wetlands, mech clearing of WDG(1). Continue mech clearing along toe of fill to channel change base ditch (replace small strip shown as temp wetland)
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 24: SW impact from draining of Pond PW. Impacts to SCL have been incorporated with Site 26 since this entire stream is SCL both before and after pond PV. Site 24 is just pond PW and Site 26 is just SCL.
- Site 25: SW impact from draining of Pond PV.
- Site 26: Permanent and temporary SW and channel impacts from roadway fill of Stream SCL.
- Site 27: Permanent and temporary wetland fill impacts, wetland excavation, and mech clearing from roadway fill of WDH.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Channel change on south side. Grade control to maintain wetland hydrology and prevent headcutting not needed. Slope not as steep as it appears. S = 1% (V = 4 fps).
- Lateral ditch on north side needed to convey overland flow to SCM downstream. Over 1800' long. Too much for toe protection: flow varies from 29 cfs to 42 cfs. Velocity = 3 fps. Slope varies between 1% to 2%.

Plan Sheet 18

- Site 26: same as previous sheet.
- Site 26A: Permanent and temporary SW and channel impacts from roadway fill and box culvert and stabilization of SCM. Fix outlet channel stabilization to say "inlet".
- Site 27: same as previous sheet. Mechanized clearing revised to culvert. Eliminate gap between ditch excavation and fill slope. Extend impact shape to fill slope line. Will square off temporary wetland impact lines.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 28: Permanent and temporary SW and channel impacts from roadway fill of SCN.

Plan Sheet 19

- Site 29: SW impact from draining of Pond PY.
- Site 30: SW and channel impacts from channel change of SCQ. It was confirmed that a portion of SCQ is non-jurisdictional based on the NRTR and the stream will remain as shown.

Plan Sheet 20

- Site 30: same as previous sheet.
- Site 31: Permanent and temporary wetland fill, mech clearing to WDJ, and permanent and temporary SW and channel impacts from roadway fill of SCQ. Inset B – change Site 30 label to Site 31. Remove TS from DS end and just have mechanized clearing. Show permanent stream impact where rip rap is in channel. Easement is not needed.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 32: Permanent and temporary SW and channel impacts from roadway fill, box culvert and riprap stabilization of Stream SCP.
- Discussed 42" outlet and flow discharging to wetland. Based on outlet velocity and existing topographic swale below outlet, which provides further dissipation/treatment prior to discharge to wetland, current design is acceptable.
- Sheet 20-1 fix detail for callouts for bench and fill in high barrel with riprap.

Plan Sheet 21

- Site 33: Wetland fill and mech clearing of WDM from roadway fill and pipe culvert with stabilization.

Plan Sheet 22

- Site 34: Mech clearing of WDN from roadway fill.

Plan Sheet 23

- Site 35: Permanent and temporary SW and channel impacts to SCT from roadway fill, box culvert and riprap stabilization.
- Site 36: Permanent and temporary wetland fill impacts, wetland excavation, and mech clearing from roadway fill of WDO. Will square off temporary wetland impact lines Note: buffer and wetland impacts don't match at downstream end.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 37: Permanent and temporary SW and channel impacts from pipe culvert and riprap stabilization of SCV. Extend toe protection on US side from pipe outlet to culvert.
- Site 38: Wetland fill impact and mech clearing from roadway fill of WDP.

Plan Sheet 24

- Site 38: same as previous sheet.
- Site 39: Wetland fill impact and mech clearing of WDS from roadway fill. Show WDS as a total take; no mechanized clearing.
- Site 40: SW and channel impacts to SDC from channel change. Added impact for SDB. Fixed label for SCY. Added Spring Box for SDB.
- Site 40A: Wetland WDR fill impact from roadway fill.
- Site 40B: Change 40B to represent permanent and temporary SW to SCZ and channel impacts from roadway fill, stormwater outfall, and riprap stabilization. Added roadway fill impact for SCZ.
- Site 41: Permanent and temporary SW and channel impacts from channel change. Make sure stream is labeled as SCY where there is text overlap for SDB. Remove SDB callout.

- Plan Sheet 24A – Change stream label SDB to SCY.

Plan Sheet 25

- Site 41: same as previous sheet. Impacts to SCY. No impact to WDT. Label for stream needs to be fixed (remove SDB).
- Site 42: Change to represent impacts to Wetland WDU.
- Site 43: This site will be deleted.
- Add a note to restore channel for temporary stream impacts for trestle bridge. There was discussion about potential bank scour where piles for the temporary trestles are located in a stream channel or bank. It was decided that riprap would be provided on the stream bank potentially affected by the pile and left there permanently. Show bank stabilization and list the impact for the areas where the piles are in the bank or stream channel.

Plan Sheet 26

- Site 43: This site will be deleted.
- Site 43A: This site will be deleted. Per directions from USACOE, no temporary wetland impacts from work trestle.
- Site 44: Permanent and temporary wetland impacts to WDV, and temporary SW and channel impacts from bridge piers to SCY. Hand clearing under bridge.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Site 45: Wetland fill and mech clearing from roadway fill to WDV
- Look at moving trestles such that they minimize stream impacts. May have to be done in field during construction pending site conditions.

Plan Sheet 27

- Site 45: same as previous sheet.
- Site 46: site removed.
- Site 47: Wetland fill and mech clearing from roadway fill to WDV.
- Hazardous spill basin with media filter, west of Swift Creek. Move EDB to north side of basin.
- Look at issue with SCY and where it is labeled. Should SCY label be moved to bottom stream and label stream where SCY is currently shown? Is SCY braided?
- Show ponds in blue but add notes regarding non-JS.

Plan Sheet 28

- Site 47: Wetland fill and mech clearing from roadway fill to WDV
- Site 48: Permanent fill of WDV from bridge piers. Hand clearing of WDV under bridge. Add 10' of HC from bridge. Add note that permanent bents are fill. Add note that all clearing, including uplands, under bridge shall be hand clearing. "Temporary wetland fill" from piers to be removed.
- Site 49: Permanent and temporary wetland fill from temporary trestle bridges to WDY.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Mitigation area to be revised to match new R/W line.

- No deck drains proposed for bridge over Swift Creek.
- SDG (Swift Creek) – interior bridge bents at least 10' from stream banks.

Plan Sheet 29

- Site 50: Permanent and temporary SW and channel impacts to SDJ from roadway fill, box culvert and riprap stabilization. Verify that detail 3-32 shows riprap consistent with what is shown on the plan.
- Site 50A: Permanent and temporary wetland fill and mech clearing to WDZ for roadway fill.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Buffer impacts extend beyond the wetland impacts. Make sure they line up. General comment.

Plan Sheet 30

- Site 51: Permanent and temporary SW and channel impacts to SDK from pipe culvert and riprap stabilization.
- Site 51A: Wetland fill of WEA from roadway fill.
- Site 52: Permanent and temporary SW and channel impacts to SDL from pipe culvert and riprap stabilization.

Plan Sheet 32

- Site 52: same as previous sheet.
- Site 53: Permanent and temporary SW and channel impacts to SDM from pipe culvert and riprap stabilization.
- Site 54: Permanent and temporary wetland fill and mech clearing of WEC from roadway fill and riprap stabilization. Pipe burial is acceptable at this location.
- Site 55: Permanent and temporary SW and channel impacts to SDW from box culvert and riprap stabilization. Corrected stream impact to reflect correct JS. JS actually turns south.
- Site 56: Permanent and temporary SW and channel impacts to SDV from roadway fill. On US end, put a curve to tie in stream to channel change and add grading notes so there isn't a low point at toe of fill.

Plan Sheet 33

- Site 57: Permanent and temporary SW and channel impacts to SDT and SDS from pipe culvert and riprap stabilization. Extend riprap to cover JS. Split into 2 sites (57 and 57A).

Plan Sheet 37

- Site 58: Permanent and temporary SW and channel impacts to SDT from pipe culvert and riprap stabilization.
- Site 59: Permanent and temporary SW and channel impacts to SDX from roadway fill, and stormwater outfall riprap stabilization. Extend riprap to cover pipe outlet and bank completely.

Plan Sheet 39

- Site 70: Permanent and temporary SW and channel impacts to SCB(1) from pipe extension and riprap stabilization.

Plan Sheet 45

- Site 72: Permanent and temporary SW impacts to PAB from pipe replacement and riprap stabilization. Update callout and table to reflect temporary and permanent surface water impact. There is no stream impact, only surface water impacts.

Plan Sheet 46

- Site 73: Permanent and temporary SW and channel impacts to SDR from pipe extension and riprap stabilization. Extend riprap to cover JS.

Plan Sheet 47

- Site 74: This site was shown for temporary wetland fill, and temporary SW and channel impacts, for the temporary trestle bridges. It was decided to remove this site for the wetland impact drawings. However, this site will remain for the buffer impact drawings.
- Site 75: Permanent wetland fill of WEC for the bridge piers. Hand clearing under the bridge. Add mechanized clearing to bridge approaches (will replace temp wetland impacts); add 10' HC offset from bridges; add permanent wetland fill for bents. Include the small sliver of fill impacts from the east end bent under this site. This site will include all impacts from the permanent bridge.
- Site 76: Permanent and temporary wetland fill of WEC, and permanent and temporary SW and channel impacts to SDO for roadway fill, stormwater outfall riprap stabilization (energy dissipator). Remove callout that says Sheet 57 with arrow to EDB and pipe. Per the 4B, the ditch on the south side of the bridge was to be carried to the wetland with a flared end section.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
    - agreed to leave ditch on the south side of the bridge as shown because the discharge is small, the slope is not steep, and the velocity is < 2 fps at subsequent meeting on 8/12/19

Plan Sheet 48

- Site 77: Wetland fill of WEY from roadway fill.
- Site 78: Temporary SW and channel impacts to SET from pipe removal.
- Update callouts for pipes to be "remove" instead of "retain". We will need to show a channel to connect stream where road is being removed.

Plan Sheet 49

- Site 79: Permanent and temporary SW and channel impacts to SET from pipe culvert and riprap stabilization. Added temporary stream impacts to downstream end, at Inset B. Missing JS line has been added.
- Site 80: Wetland fill of WEV from roadway fill.
- Site 81: Wetland fill of WEU from roadway fill.

Plan Sheet 50

- Site 82: Temporary wetland fill of WFN(2), and permanent and temporary SW and channel impacts to SEH from pipe outlet and riprap stabilization
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19

Plan Sheet 54

- Site 82A: Permanent and temporary SW and channel impacts to SEM from channel change.

Plan Sheet 55

- Site 83: Temporary wetland fill to WFF, and permanent and temporary SW and channel impacts to SEK from channel change.
    - agreed to change this temporary wetland fill to mechanized clearing at subsequent meeting on 8/12/19
- Turn off sag and crest

Plan Sheet 56

- Site 84: Permanent and temporary SW and channel impacts to SEL from pipe extension and riprap stabilization. Will round off temporary impact lines. Extend riprap on left side so that bank is included.
- Site 85: Permanent and temporary SW and channel impacts to SEV from pipe extension and riprap stabilization. There is a remnant square of riprap that should be removed from the plans.

Plan Sheet 57

- Site 76: Continued from Sheet 47. Permanent and temporary SW and channel impacts to SDO for roadway fill.
- Site 87: Temporary SW and channel impacts to SES from outlet stabilization. This has been updated to show both permanent and temporary SW impacts.
- Site 88: Permanent and temporary SW and channel impacts to SES from pipe culvert and riprap stabilization.

Utility Set Review

Review of Colonial Permit Drawings

General comments:

- Need index sheet showing location of permit drawings with regard to highway project
- Send colonial drawings.
- For wetlands show as permanent fill impact not excavation.
- Add notes for all stream crossings to be restored to original conditions. Show bank stabilization where pipe is going if it is warranted based upon bank height. This will be noted as streambank stabilization and considered a permanent impact.
- Need details on installation methodology
- Question was raised as to who is responsible for Erosion Control Compliance during utility installation.
- Where utility lines are removed, this is considered temporary impacts provided the area is returned to the original contours/grade and seeded with wetland seed mix (if in a wetland area)

Site U-1

- Permanent fill impact.
- Provide amount of wetland impact that is within the buffer impact by Zone

Site U-2

- Permanent fill impact
- Temporary SW impact w/ stream bank stabilization where appropriate
- Provide amount of wetland impact that is within the buffer impact by Zone

Site U-3
- Temporary SW impact w/ stream bank stabilization where appropriate

Site U-4
- Permanent fill impact
- Temporary SW impact w/ stream bank stabilization where appropriate
- Provide amount of wetland impact that is within the buffer impact by Zone

Site U-5
- Temporary SW impact w/ stream bank stabilization where appropriate

Site U-6
- Permanent fill impact
- Temporary SW impact w/ stream bank stabilization where appropriate

Site U-7
- Temporary wetland fill impact
- Temporary SW impact
- Investigate alternative lay-down areas. Look at having staging area outside of wetland area. Look at other options for not impacting as much wetland area. A descriptive narrative on these efforts is required. For area of removal of lines show as a temporary impact.

Site U-8
- Buffers need to be updated to exclude existing transportation facility. Provide existing transportation facility limit to Kleinfelder.

Site U-9
- Temporary SW impact w/ stream bank stabilization where appropriate

Review of Duke/Williams Permit Drawings

General comments:
- If hand-clearing for overhead lines then just show as that. Mitigation not required and no permit required.
- For Williams, same requirements apply as for Colonial.
- For wetlands show as permanent fill impact not excavation.

Buffer Drawings Review

General comments:

- Buffer impacts outside of right of way. Jenny to investigate to determine how to show those impacts. (It was later determined based on direction from NCDOT Division 5 staff that buffer impacts outside R/W should not be shown on the plans, but should be included in the summary impact tables).
- Provide 10 feet offset from bridges and work trestles.
- Make sure buffer impact drawings say Buffer x of x. Several have Permit x of x.
- 83A is listed in summary sheet, but this should be 82A.
- Many of the impacts will need to be squared off for construction purposes. These were subsequently reviewed in meeting on 8/5/19 with Division and Contractor.
- Easements for erosion control devices should be moved out of buffers if at all possible. If not, will need justification.
- Make sure to label all streams and wetlands

- Cover sheet: Site 4 has no arrow call out; gray in sheet 9 (as it is included in buffer set), fix 2040 ADT information, sheet 54 shows site# as the call out

Plan Sheet 5

- Site 2: RCBC and stabilization (SBP).

Plan Sheet 6

- Site 3: Pipe culvert and stabilization (SBR).
- Site 4: Draining of pond. Removed impact for dirt road and building (PM).
- Site 6: Roadway fill and ditch. Removed impact for 8’ dirt road (SBU).
- Site 7: Roadway fill (SBR). Added an allowable impact to buffer for SBS.

Plan Sheet 7

- Site 10: Box culvert and stabilization (SBY).

Plan Sheet 8

- Site 10: Box culvert and stabilization (SBY).
- Site 11: Box culvert and stabilization (SBX).

Plan Sheet 9

- Site 13: Draining of pond (PN). Impacts for buffers and wetlands in buffers needs to be added to the impact summary.

Plan Sheet 10

- Site 13: Draining of pond (PN). Show buffer impacts within ROW/E, but not outside; however calculate for entire buffer in summary table

Plan Sheet 11

- Site 14: Box culvert and stabilization (SCC).

Plan Sheet 13

- Site 18A: Roadway fill (PA (HDR)).

Plan Sheet 14

- Site 19: Bridge and drainage ditch (SCG). Will extend for construction purposes.

Plan Sheet 17

- Site 24: Roadway fill. Updated callout to Site 26 since it is all part of SCL.
- Site 25: Draining of pond PV. Removed buffer impacts for 24’ dirt road and structure. Add small wedge as impact that is outside of right of way (top of sheet).
- Site 26: Ditch. (SCL)
- Site 26A: Box culvert and stabilization (SCM).

Plan Sheet 18

- Site 26: Ditch (SCL).
- Site 26A: Box culvert and stabilization (SCM). Make sure buffer and wetland impacts align and are calculated appropriately

Plan Sheet 19

- Site 29: Draining of pond (PY).
- Site 30: Roadway fill and ditch (SCQ). The limits of the JS were confirmed based on the NRTR.

Plan Sheet 20

- Site 31: Roadway fill (SCQ).
- Site 32: Box culvert and stabilization (SCP).

Plan Sheet 23

- Site 35: Box culvert and stabilization (SCT). Add 10' of impact along edge of ditch at inlet.
- Site 37: Pipe culvert and stabilization (SCV).

Plan Sheet 24

- Site 40B: Roadway fill and ditch (SCZ).
- Site 41: Roadway fill and ditch (SCY). Discuss buffer impacts to access opposite side of stream to build channel change.

Plan Sheet 25

- Site 41: Roadway fill and ditch (SCY).
- Site 42: Channel change (SCY).
- Is buffer under bridge approach fill allowable impact? No, it is mitigable

Plan Sheet 26

- Site 42: Bridge (SCY). Provide 10 feet offset from bridge.

Plan Sheet 27

- Site 46: Pipe outlet stabilization (SCY).

Plan Sheet 28

- Site 48: Bridge (SDG – Swift Creek). Provide 10 feet offset from bridge.

Plan Sheet 29

- Site 50: Box culvert and stabilization (SDJ).

Plan Sheet 30

- Site 51: Roadway fill and pipe outlet stabilization (SDK).
- Site 52: Pipe culvert and stabilization (SDL).

Plan Sheet 32

- Site 52: Will adjust for impacts from 18" RCP (SDL).
- Site 52: adjust impacts to allow for construction access
- Site 53: Pipe culvert and stabilization (SDM).
- Site 55: Box culvert and stabilization (SDW).
- Site 56: Roadway fill (SDV).

Plan Sheet 33

- Site 57: Pipe extension and stabilization. Separate into 2 sites: SDT will likely be allowable and SDS will be mitigable. Separate into 57 and 57A.
- Site 76: Roadway fill (SDO). Show wetlands in buffer on summary table.
- Site 89: Ditch (SDU). Needs additional coordination with I-5111
- Site 90: Roadway fill (SDT). Need to adjust buffer impacts to include 10' mech clearing. Needs additional coordination with I-5111

Plan Sheet 37

- Site 58: Pipe culvert and stabilization (SDT).
- Site 58A: Pipe culvert and stabilization (SDT).

Plan Sheet 39

- Site 70: Pipe outfall and stabilization (SCB(1)). Will add impact for 18" pipe installation. Buffer impacts are mitigable since it is stormwater driven and not stream driven. Verify we have correct impacts shown based upon existing transportation facility.

Plan Sheet 45

- Site 72: Added to account for roadway fill.

Plan Sheet 46

- Site 73: Roadway fill and outlet stabilization (SDR). Can this be changed to allowable? Yes

Plan Sheet 47

- Site 74: Roadway fill and bridge (SDM). Show allowable impact to buffer SDM for trestle
- Site 76: Roadway fill (SDO). Wetland in buffer. Update summary sheet to reflect the wetland quantities.
- Is buffer under bridge approach fill allowable impact? No.

Plan Sheet 49

- Site 79: Pipe culvert and stabilization (SET). Label streams and wetlands

Plan Sheet 50

- Site 82: Fill from hazardous spill basin, and pipe outlet stabilization (SHE). Add quantity for wetland in buffer impact to summary sheet. This impact is considered allowable since we are protecting an existing use within the basin

Plan Sheet 54

- Site 82A: Channel change (SEM). Will adjust limits of buffer impact. Adjust buffer impact. Add to summary sheet.

Plan Sheet 55

- Site 83: Pipe extensions and stabilization (SEK). Will revise to be 10' off pipe outlet.

Plan Sheet 56

- Site 84: Pipe extensions, ditch, and stabilization (SEL).

Plan Sheet 57

- Site 76: Roadway fill (SDO).

- Site 87: Pipe culvert and stabilization (SES). Does this need to be cumulative buffer impact with Site 88? No
- Site 88: Pipe culvert and stabilization (SES).

TO: **Tyler Blang**
NCDOT Turnpike Authority

FROM: **James Rice, PE (HDR)**

DATE: **August 22, 2019**

SUBJECT: **R-2721B Interagency Permit Meeting**

Project: STIP R-2721B – Complete 540 – Triangle Expressway Southeast Extension

Attendees:

Rodger Rochelle, NCTA
Jonathan Henderson, HDR
Scott Cameron, Flatiron-Branch
Jason, Mroz, Flatiron-Branch
Brian Watson, HDR
Kenny Bussey, HDR
Donna Jackson, NCDOT Utilities
Roy Bruce, Lochner
Jason Peterson, NCDOT Div. 5/S&ME
Tyler Blang, NCTA
Mike Kneis, NCTA
Jennifer Harris, NCTA/HNTB
Chris Myers, HDR
Rob Ridings, NCDWR
Robert Patterson, NCDWR
Jenny Fleming, VHB
Deanna Riffey, NCDOT EAU
Eric Alsmeyer, USACE
James Rice, HDR
Sara Easterly, HDR
Vickie Miller, HDR
Heather Montague, NCDOT Div 5 Environmental
Mitchell Wimberley, NCDOT Div 5 Environmental
Nikki Thomson, NCDOT Div 5 Environmental

Presentation Materials:

- Revised 404/401 Wetland and Surface Water Impacts Permit Modification Plans and Buffer Impacts Permit Modification Plans

Purpose:

The purpose of the meeting was to review the permit impact sheets and changes that have occurred during final design by the Design-Build Team.

Project Discussion:

The meeting was opened with introductions and James Rice led the discussion. The PDF drawings were projected on the screen and the following agenda items were presented to all in attendance.

The *italicized* text indicates notes from the meeting discussion.

General Project Details

- The preliminary hydraulic design plan review (4B) meeting occurred on 2/15/2018
- The preliminary permit drawing review (4C) meeting occurred on 5/9/2018
- The 404/401 permit application was submitted to the agencies on September 12, 2018.

- The section R-2721B we are reviewing today is from east of Pierce Olive Road to east of US 401 in southern Wake County. Approximately 5 miles
- 2 interchanges: Bells Lake Road and US 401.
- Located within the Neuse River Basin, buffer rules will apply to jurisdictional streams and ponds.
- Ditches have been designed to meet grass swale criteria to the maximum extent practical.
- To maintain consistency, the plan sheet numbers have remained the same as the original permit along with the permit site numbers. R-2721B plan sheet references have been added to show the R-2721B roadway plansheets for each site.

General Comments

- *In the table for the permit modification indicate what has changed and describe what/why it has changed.*
- *Ensure erosion control is not located in buffers as well as temporary easements for EC.*
- *All details need to be in the permit set. These can be added on additional pages at the beginning. Renumbering of the sheets will not be required.*
- *Details for culverts need to illustrate the floodplain benches, etc.*
- *Add the flow lines for all streams. Make them visible on the plans.*
- *There needs to be enough room for the contractor to work in the jurisdictional areas. There may need to be more impacts to accommodate this.*
- *Permit impacts and buffer impacts need to match – a few locations noted during review of the plansheets.*
- *Agencies requested plans that illustrate the location of the changes as shown during the meeting to speed up review. NCDOT staff stated they did not want to set a precedent for this so they will be described in detail in the modification.*
- *Discussions related to easements occurred a couple of times in the meeting. A request was made to review all of them and see if there are any that will not be needed. Following that circle back with Dennis (NCTA) on removing them so they are not purchased.*
- *Discussion on keeping erosion control TDE/E areas out of buffers if possible.*

WETLAND/STREAM PERMIT SET

PSH 21 – SITE 1

- **Site 1 (SAJ, SAK, WAR, and WAS)**
  - Installation of a 3 barrel 8x10 RCBC that impacts SAJ
  - Temporary impacts occur to SAK and a small area of bank stabilization
  - Fill, excavation and mechanized clearing impacts to WAR and WAS
  - Permanent reduction of stream impacts: 2 lf of due to the culvert, 50 lf due to fill, and 27 lf of stabilization
  - Reduction of 9 lf of temporary impacts
  - Wetland impacts: Increase in fill impacts of 0.03 ac, decrease of < 0.01 ac of excavation, and 0.02 ac reduction in mechanized clearing.
  - No net change in permanent impacts to wetlands, just shifting around.

Comments:

- *Make sure there is enough room for the contractor to install the energy dissipater basin.*

- *Pedestrian culvert at Site 1 may change to a bridge. Discussions with the Town of Cary are underway to replace the pedestrian culvert with a bridge. Jenny Fleming noted that the request for a bridge could cause the D-B team to have to go back through the CLOMR process. That could result in a delay of nine to twelve months.*
- *Eric shared that he considered an increase in fill, even if no net change, an increase and that he did not think wasting material was a good reason for an increase in fill impacts. The D-B Team shared that the intent was not to waste material but rather to better balance the job by minimizing the amount of cut and fill across the entire job.*

PSH 23 and 24 – SITES 2 and 3

- **Site 2 (SAL, PD, and WAW)**
  - Pond D will be drained and fill impacts to SAL – no impact changes from original permit impact amounts, ditch added along property line of plans for property owner request.
  - WAW permanent impacts remain the same but categories changed. Our plan reduced fill by 0.01 ac and increased 0.01 ac mechanized clearing.

Comments:

- *The Division was concerned about the hydrology of SAL due to it being redirected into the ditch and pipe and thus removing hydrology from the downstream section. The question was should the downstream portion be considered as permanent impacts. The D-B Team suggested installing an 18" pipe to maintain the daily flow to SAL and larger storm events would still be routed through the culvert.*
- *Pond hatching label needs to be added back in.*

- **Site 3 (SAM)**
  - We have a reduction in permanent impacts to SAM due to the culvert of 31 lf.
  - Temporary impacts remain the same.
  - The previous plans illustrated fill (11 lf) and bank stabilization (84 lf) impacts; however, there is rock in the channel and we have shown it as 96 lf of fill.
  - Overall a decrease of 30 lf of impact for the site.

Comments:

- *No Comments*

PSH 26 and 27– SITES 4 and 5

- **Site 4 (SAR, WAX and WAY)**
  - Changes in impacts are due to ditch and fill slope alterations
  - Permanent stream impacts decreased by 21 lf and temporary impacts increased by 4 lf
  - Wetland fill remained the same, excavation increased slightly (by less than 0.01 ac) and mechanized clearing decreased by 0.02 ac. Original mechanized clearing was taken to the ROW line.
  - Net decrease in permanent wetland impact of 0.02 ac

Comments:

- *Need to add rip rap pad back for WAX.*

- **Site 5 (SAQ and WBC)**
  - Changes in impacts due to fill slope alterations

- Permanent stream impacts decreased by 22 lf and increase by 30 for temporary impacts
- Wetland fill impacts decreased by 0.08 acres and mechanized clearing increased by 0.07.
- Net decrease of permanent wetland impact is 0.01.

Comments

- *Need to ensure the impacts at this site are consistent with the buffer impact plans.*
- *Add size to culvert at STA 327+66.89.*

PSH 28 – SITES 6 and 7

- **Site 6 (SAS and WBE)**
  - Changes in impacts are due to a ditch change and leaving existing pipe in place.
  - On the updated impact sheets the impacts due to the 6x8 culvert fill were revised to more accurately illustrate where the impacts were taken.
  - Permanent stream impacts for the 6x8s and fill changed by type; however, the net reduction was only 1 ft.
  - Temporary stream impacts were reduced by 20' due to leaving pipe in place.
  - Wetland fill decreased by 0.05 ac, excavation impacts increased by 0.06 ac, and mechanized clearing remained the same.
  - Net increase of permanent wetland impact is 0.01ac

Comments:

- *No Comments*

- **Site 7 (WBF)**
  - The bridge was shifted south, ditches were relocated, and the Energy Disaptor Basin (EBD) was moved outside the wetland.
  - Temporary causeways will be used for construction
  - Wetland fill decreased by 0.03 ac, excavation increased by 0.06 ac, and mechanized clearing remained the same.
  - Net increase in wetland impacts of 0.03 ac.

Comments:

- *Add additional 10 feet of hand clearing around the bridge to allow room for construction.*
- *Any area under bridge not impacted by temporary causeway should be considered hand clearing.*

PSH 29 – SITES 8 and 9

- **Site 8 (SAT and WBG)**
  - No change in stream impacts
  - Net decrease in wetland impacts by 0.02 ac. Mechanized clearing and temporary fill remained the same. Wetland fill went down by 0.02 ac and excavation increased by <0.01 ac at the 7x8 RCBC inlet.

Comments:

- *No Comments*

- **Site 9 (SAU and WBH)**
  - Stream impacts related to the 6x8 RCBC and the 66" RCP remain the same.

- The previous plans illustrated fill as 283 lf and bank stabilization as 38 lf of impact; however, there is rock in the channel and we have shown it as total of 319 lf of fill. A net decrease in 2 lf of stream impact.
- Wetland fill remained the same, excavation remained the same, and mechanized clearing increased by 0.01 ac.

Comments:

- *Add outlet pad back to the plans.*

PSH 31 – SITE 10-12

- **Site 10 (PG) – Isolated Pond**
  - No changes to the pond impacts

Comments:

- *A request regarding the easement around the pond was made in order to capture the streams at the north side of the pond. An offer has been made on the property so no changes to the easement will be made. The D-B Team will remove the hatching on the portion of stream outside of the easement on the north side of PG.*

- **Site 11 (SAW and PF)**
  - No changes in impacts

Comments:

- *Add wetland symbology to the inset for the top of WBJ near the matchline.*

- **Site 12 (SAX and WBI)**
  - No change in stream impacts
  - A small ditch change resulted in an increase of 0.02 ac of mechanized clearing. Excavation and fill remained the same.

Comments

- *No Comments*

PSH 33 – SITES 13-15

- **Site 13 (WBK)- Isolated wetland**
  - Wetland fill impacts were reduced by 0.03 ac and excavation increased by 0.03 ac due to a ditch change at this location.
  - No net changed to permanent wetland impacts.

Comments:

- *No comments*

- **Site 14 (SAZ and WBN)**
  - Stream impacts increased by 11 lf due to a section of SAZ being missed north of Pond I.
  - Wetland impacts changed due to a fill slope and ditch change
  - Wetland fill decreased by 0.08 ac, wetland excavation increased by 0.03 ac, and mechanized clearing increased by 0.06 ac.
  - A net increase in permanent wetland impacts of 0.01 ac
  - Note that the new plans do not illustrate mechanized clearing in the TDE whereas the previous plans did.
  - The original plans illustrated a temporary impact at this location which did not account for the permanent impact that mechanized clearing does and therefore is the reason we are showing a net increase in permanent impacts. Technically the new footprint should be a reduction from the previous plans.

- There will not be any temporary fill in wetlands as was noted in the previous permit application.

Comments:

- *Buffer Zone 1 line is missing along a portion of SAZ. The D-B Team will correct.*
- *Comment was made about the TDE line not being needed due to this no longer being a diversion ditch.*

- **Site 15 (SBA and PI)**
  - No changes in impacts

Comments:

- *The D-B Team mentioned the rip rap in the ditch through the pond outside of the CA and PDE but within the easement. The D-B Team will look at the option to use matting within the pond for stability rather than rip rap. There was concern that rip rap in the easement may not be allowed; however, NCDOT stated that if it is needed then illustrate it as they didn't think it would be an issue and would not require additional easement or need for future maintenance.*

PSH 34 – SITE 16

- **Site 16 (SBB and WBN)**
  - Stream impacts related to the 42" RCP remain the same.
  - The previous plans illustrated fill as 18 lf and bank stabilization as 46 lf of impact; however, there is rock in the channel and we have shown it as total of 64 lf of fill.
  - Wetland fill increased by 0.04 ac, excavation increased by 0.01 ac, and mechanized clearing decreased by 0.04 ac.
  - Net increase of 0.01 ac of permanent wetland impact according to the numbers but the overall footprint is exactly the same as the previous impact plans. Rounding issue when the impacts were tweaked due to the ditch change.

Comments:

- *Need bank stabilization on the opposite side of where the ditch meets SBB.*
- *Need to correct the details on the sheet as they reference a 7'x8' culvert and the plans show a 42" RCP.*
- *Callout for inlet channel stabilization needs to be added back to plans.*

PSH 35 – SITE 17

- **Site 17 (SBF and WBP)**
  - Stream impacts remain the same.
  - Wetland impacts were reduced due to the fill slope change.
  - Wetland fill was reduced by 0.07 ac and the need for temporary fill was removed. Mechanized clearing increased by 0.01 ac.
  - Net decrease in wetland impacts by 0.06 ac.

Comments:

- *No comments*

PSH 37 – SITES 17-21

- **Site 17 continued from PSH35 (SBF and WBQ)**
  - Impacts for Site 17 on this page remain the same from the previous permit plans.

Comments:

- *No comments*

- **Site 18 (SBH, PK, and WBR)**

- No changes in impacts from previous permit plans.

Comments:

- *The D-B Team discussed SBM at this location as it was not previously illustrated as an impact but was noted in the WET file and Waters Report as jurisdictional and buffered. Later during the meeting there was some discussion on this stream and potential changes that may have occurred. Documentation will be provided to the D-B Team.*
  - *At the 4C meeting held 5/23/2018, stream SBM was considered a relic channel and not jurisdictional. Buffers should be shown as on original permit application. (see page 5 of attached minutes)*

- **Site 19 (WBV) – Isolated wetland**
  - No changes in impacts from previous permit plans.

Comments:

- *No comments*

- **Site 20 (SBI and WBY)**
  - No changes in stream impacts.
  - Permanent wetland fill was reduced by 0.01 ac, excavation was reduced by 0.09 ac, and mechanized clearing was increased by 0.05 ac due to a fill slope and ditch change.
  - Net decrease in wetland impacts by 0.05 ac.

Comments:

- *No comments*

- **Site 21 (SBJ and WBZ)**
  - Stream impacts related to the two-6x8 RCBCs are similar – 1 lf decrease.
  - The previous plans illustrated fill as 181 lf and bank stabilization as 204 lf of impact; however, there is rock in the channel and we have shown it as total of 384 lf of fill. A 1ft decrease in stream impact.
  - Wetland fill decreased by 0.01 ac.
  - Net decrease of 0.01 ac of permanent wetland impact according to the numbers but the overall footprint is exactly the same as the previous impact plans. Rounding issue between fill and mechanized clearing.

Comments:

- *Label WBZ.*

PSH 38 – SITES 20-22

- **Site 20 – continued from PSH37 (SBI and WBY)**

Comments:

- *No comments*

- **Site 21 – continued from PSH37 (SBJ and WBZ)**

Comments:

- *No comments*

- **Site 22 (SBK and WCB)**
  - No changes in wetland impacts.

- The previous permit plans had a 54" RCP here; however, we are proposing a 6x8 RCBC at this location. Stream impacts associated with the RCBC remain the same.
- The previous plans illustrated fill as 202 lf and bank stabilization as 55 lf of impact; however, there is rock in the channel and we have shown it as total of 242 lf of fill. A 1ft decrease in stream impact.

Comments:

- *No comments*

PSH 63 – SITE 25

- **Site 25 (SBO and WBW)**
  - No changes in impacts – the ditches changed slightly but impacts remain unchanged

Comments:

- *No comments*

PSH 64 – SITES 23 and 24

- **Site 23 (SBN)**
  - No changes in impacts

Comments:

- *No comments*

- **Site 24 (SSI)**
  - No changes in impacts

Comments:

- *No comments*

PSH 65 – SITE 26

- **Site 26 (WWE) – Isolated Wetland**
  - No changes in impacts
  - The wetland shape has been updated to match the WET file. This change resulted in a reduction of mechanized clearing impacts.

Comments:

- *This site may be eliminated depending on if there is a need for an erosion control basin in this area.*
- *DWR and USACE wanted to make certain there is a separate discussion in the permit modification regarding the isolated wetland and isolated pond impacts.*

UTILITY DRAWING REVIEW

The USACE requested a quick review of the utility impact drawings. Questions regarding the temporary impacts and existing utility easement came up. The portion of the temporary impacts that are outside of the existing utility easement are related to access.

BUFFER PERMIT SET

Only a select number of buffer sheets were reviewed. The following items were noted:

- *Request was made by the Division staff to review all areas and ensure adequate access is available for construction. DWR concurred that additional buffer impacts needed for construction access was a suitable reason for the increase in impacts.*
- *Request to change the red and blue buffer hatching to a color that is easier to see due to the red drainage and blue streams/wetlands on the plans. The D-B Team will discuss this with NCDOT and change them accordingly.*
- *The D-B Team had illustrated buffers on SBM at Site 17 due to the WET file and the Waters Report. It was noted that this area may have changed conditions and thus the reason the area was without buffers and impacts. Turnpike will provide documentation for the change to the D-B Team and then D-B Team will update the plans according to any provided materials.*
- *Comment was made for Site 8 regarding placing buffer hatching to easement near Y10A-Sta 14+00.*
- *Site 12 – Buffers should be changed from allowable to mitigable for parallel impacts. Summary sheet should be changed to reflect the change from allowable.*
- *Site 13 – Buffers are needed on SAZ, SBS, and SBD.*
- *Site 15 – Comment was made regarding buffers outside of ROW.*
- *Sheet 64 –Comment to include label for Buffer Drawing 17 of 19 which was missing.*

OVERALL DISCUSSION AT CLOSING REGARDING THE MODIFICATION

- *DWR requested that the mitigation request be updated as needed for the project prior to submission of the modification.*
- *DWR stated that the modification should have a detailed description of any increases in impacts. Decreases should be noted but will not require the same detail as increases.*
- *DWR stated that if a site had no changes then to state that clearly.*

NOTE: Numbers in the site descriptions above will be changed for permitting based on comments and edits discussed during the meeting.