# R-2829A SAFETEA-LE Section 6002 Interagency Meeting (Concurrence Point 4B)

Branch-S.T. Wooten Joint Venture

**Date:** April 17, 2024
**Location:** CCA Technical Services Conference Room
**Time:** 1:00PM
**Attendees:**

Jenny Fleming– NCTA (VHB)
Rob Ridings – NCDWR
Jennifer Harris – NCTA
Cameron Richards – NCDOT
Chris Martin – Branch Civil
Roy Bruce – NCTA
Alexis Burke – RK&K
Chris Rivenbark – RK&K
Paul Nishimoto – Branch Civil
Nikki Duprey – NCTA (Sage)
*Monte Matthews – USACE
Aaron Harper – NCDOT REU
*Jared Gray – NCDOT EAU
*Marissa Cox – NCDOT EPU
*Tim Ritacco- NCDOT ADU
Deanna Riffey – NCDOT EAU
Ron McCollum – NCTA
Dennis Jernigan – NCTA
Jonathan Bivens – ST Wooten
Alan Shapiro – NCTA
Matthew Cook – RK&K
Byron Holden – RK&K
Jason Kiser– Branch Civil
*Christina Yokeley – Lochner
Abi Sheffey – NCTA (Sage)
Susan Locklear – NCDEQ
*Wesley Chandler – NCDOT REU
*Wesley Cartner – NCDOT PMU
*Donnie Brew – FHWA

(* virtual via Microsoft Teams)

The 30% Hydraulic Review was held in order to reach compliance on SAFETEA-LE Section 6002 (equivalent to concurrence point 4B and further know in the minutes as 4B) for R-2829A Complete 540 in Wake County. The following items were discussed and conclusions reached:

Jennifer Harris kicked off the 4B Meeting with introductions in Mike Sanderson's absence. In person and virtual attendees were noted and introduced. Ms. Harris turned the meeting over to Monte Matthews who was standing in for Eric Alsmeyer (USACE) and noted that he and Mr. Alsmeyer had previously gone through the plans together and had noted comments to discuss at those locations. Ms. Harris then turned the meeting over to the design build team.

Matthew Cook introduced the DB Team for the project which is a joint venture team of Branch Civil/ST Wooten (contractors) and RK&K (prime engineer). The project begins just southwest of I-40; the beginning of the R-2829A job consists of primarily pavement overlay inside the R-2828 turbine area and full construction of the mainline begins around -L- 965+50 (location was noted on the title sheet). The R-2829A portion of the project joins in to the R-2829B project just south of Rock Quarry Rd or north of East Garner Rd.

This project does currently have a preliminary permit in hand. The DB Team will be submitting a permit modification once the equivalent 4C meeting is held and the plans / impacts are completed. Construction will not occur inside any jurisdictional features until a new signed permit 401/404 has been issued. There is an early start package under review at this time at the beginning of the job bordering on the R-2828 turbine area. This early start package does not impact any jurisdictional features; however Chris Rivenbark will send an email to Deanna Riffey to send to the agencies stating the date construction in this area is set to begin.

**General Notes:**

- Permit is already in hand; however, it has differing permit and buffer site numbers. Per coordination with NCTA and agencies, the DB Team will renumber the buffer sites to match the wetland/stream site numbers. If an additional site is added to the job that was not part of the original permit, that site will be given a new number consecutively to the

last wetland/stream site number on the R-2829A job. R-2829B job will have its own permit numbers and not dictate R-2829A permit site numbering.

- There are two hydraulic bridges on the job (Bushy Branch & White Oak Creek) and 10 box culverts. Bushy Branch bridge is however not hydraulically controlled by flow, but the crossing is dictated by wetland impact commitments.
- Drainage design shown on the 4B plan set is what was submitted for the initial/first review of 100% drainage (on 4/3/24) to NCTA/VHB. 100% drainage comments will be received next week (anticipated 4/24/24). Both hydraulic bridges and all but 4 CSRs (C300, C400, C700, & C1000) have been reviewed once by NCTA/VHB prior to issuance of the 4B set.
- At this time, the 4C Meeting is anticipated to stay on the requested June 20th, 2024, date.
- Locations where streams start or stop their jurisdictional functionality will be revised to have a label of "JS Begins" or "JS Ends" added into the 4C plan set to avoid confusion of where the features/impacts change.
- There are locations where a wetland (or stream) will be a total take even though a portion of the feature is outside the right of way/easement. These will be noted in the permit impact summary table "notes" at the bottom and values in the table will show the maximum take. This area of the jurisdictional feature outside the ROW will not be hatched in plan view on the permit drawings to avoid any access/construction limits confusion. "Total Take" will not be used as an identifier on the plan sheets.
- Locations of wetlands where ¼ acre or more remains untouched will be looked at case by case to determine if the remaining wetland will be viable and not show as a 'total take.' As noted by Mr. Matthews, Rob Ridings, and Mr. Rivenbark, these locations will likely need to be monitored for functionality post construction to determine if impact values would need to be modified if the feature does not replenish.
- The DB Team held an internal preliminary constructability meeting on Monday (4/15/24) before the 4B meeting to aid with discussion of how these jurisdictional feature crossings will be constructed. Anticipated construction sequencing and permit impacts will be discussed per plan sheet at these sites.
- Mr. Cook discussed that the DB Team tried very hard to include buffer swale filtration throughout the project (Neuse River Basin utilizing 100' swale filtration per acre draining to a buffered hydraulic crossing). While the DB Team is able to achieve this at some of the buffered crossings, it was unachievable at other locations primarily due to the steep contours in the area and the need to meet stable hydraulic ditch requirements. The DB Team has provided swales at other locations that do not drain to buffered crossings in a good faith effort to achieve as much as possible.
- During discussions of RCBCs, it was noted by Nikki Duprey that native material backfill was longer being required at RCBCs.
- Green sheet commitments were discussed and reviewed.

**Section 1 Equivalent 4B Planset:**

Mr. Cook kicked off the review of the 4B plan sheets, starting with the ditch detail sheets. (Note: permit site numbers below correspond to the original permit site number in the preliminary permit.)

**Plan Sheet 4-5**

- These sheets are inside the R-2828 turbine area, and we do not anticipate any impacts to any R-2828 or I-5111 permit sites since the R-2829A DB team is primarily paving and staying at the top of the roadway surface away from jurisdictional features.

**Plan Sheet 6**

- Wetland WFK: no permit number (will be assigned next consecutive number on the job) at the bottom right of the plan sheet along -Y22RPE_REV-.
    - Temporary impact anticipated to the wetland edge due to the need to drain all ponds on the R-2829A job and to breach the existing dam down to the wetland.
    - The pond under -Y22RPE_REV- feeding wetland WFK is not jurisdictional and will be provided a "pond drainage plan".
- Mr. Matthews and USACE questioned if the stream shown under -Y22RPAFLY_REV- (60" RCP crossing conveyance) was jurisdictional. Mr. Cook responded that it was not a JS.

**Plan Sheet 7**

- Wetland WFJ: Permit site #2, total take under the -L- LT fill slope.

- Bushy Branch, Wetland WFN(1): permit site #3, bridge structure B5 is designed with 54" FIBs, 4 spans, a Q100 of roughly 2100 cfs, and is not a FEMA crossing (or hydraulically controlled).
    - Bushy Branch Bridge is anticipated to be constructed with a causeway and not mats. It should be noted that during the proposal stage DB Team noted there would not be hauling across Bushy Branch. Mr. Cook discussed the anticipated location of the temporary causeway via sketch on the screen. The intent is to leave an opening to provide flow through this crossing (opening near -L- 974+00). The intent is to only need a causeway on the right side of Bushy Branch with the utilization of cranes by only needing to come in on one side. Since this is a wetland system, high normal water surface levels nor a tall temporary causeway are anticipated. Contractor was requesting the use of class A rock to aid with drivability for regular delivery trucks along this causeway and lower 100year water surface level.
        - Discussion was had about class A being acceptable if a construction entrance was formed at the top of the temporary causeway. Contractor agreed to this installation method.
    - Mr. Matthews asked what kind of impact is anticipated with the bridge?
        - Mr. Cook explained that he didn't have final impact numbers however he was anticipating hand clearing impacts for the entire limits of the wetland WFN(1) under the bridge footprint + 15' additional along the bridges. The temporary causeway limits will be a temporary wetland impact. Permanent impacts due to the bridge bents will be noted on the impact summary table at the bottom. Mechanized clearing impacts will be included along the end bents.
    - Mr. Matthews expressed concerns with the larger riprap of the temporary causeway and issues with removal. Would there be a restoration plan for this area?
        - Jonathan Bivens explained that the DB team would be taking all the rock out since it would be reused in later work areas. He also explained that they have not had issues with this rock removal, but it is noted that other jobs in the area have. Mr. Bivens also explained that they usually include strong geotextile underneath to aid in the removal process.
        - Mr. Rivenbark explained that in conclusion to this temporary causeway rock discussion that the DB Team will show this as a temporary wetland impact and include a small write up in the permit modification noting this construction technique. Mr. Matthews agreed that this would be acceptable as long as the DB Team will just monitor the wetland after removal for appropriate restoration to function.
    - Discussion was held concerning wetland seed mix for this area once the temporary causeway is removed to aid with replanting. Wetland tree planting was also discussed but with this wetland being located under the bridge not considered a viable option and usage of a wetland seed mix was determined appropriate. Mr. Ridings noted that he and Mr. Alsmeyer had been conducting field visits in very similar areas and know what to look for from a revegetation standpoint to aid with mitigation/compensation values at a later date.
- Stream SEW & wetland WFN(1): Permit site #3, impacts due to channel change along -L- LT
    - Upland wetland WFN(1) finger will be considered a total take. See the general note above. This location was discussed to possibly be a 1/4ac viable wetland to remain however discussion felt taking the total wetland piece would be the best action. This finger of the WFN(1) wetland was shown fully impacted in the original permit takes as well. This wetland feeding stream SEW is outside the ROW and will not show impacts hatched in plan view outside easements. Stream SEW will be a total take.
- Stream SEY: Permit site #3: temporary and permanent stream impacts anticipated due to channel change along -L- RT and bridge approach construction.
    - Stream SEY will be given a "JS Ends" label close to the right bridge approach per general comments.

**Plan Sheet 8**

- Wetland WFY: Permit Site #4, impacts due to 48" RCP (Not Buried)
    - Mr. Matthews and USACE had questions about the riprap inlet/outlet protection detail for the 48" crossing. He noted that detail AL for this countersunk riprap pad appears to show an existing channel bed to be rock lined. He requested that since this is a wetland system and does not have defined base/channel flow, that a different detail be shown for this type of location.
    - DB Team agreed per Jenny Fleming guidance to add an additional detail (similar to detail AL) for wetland system inlet/outlet countersunk riprap pads without a base channel.
- Additional general discussion was held concerning the class of rock utilized for these wetland system countersunk riprap pads. Class II rock is shown per RFP guidelines that >48" pipes utilize this size. However, agreement was made

that Class I should be utilized at this 48" WFY wetland system crossing (inlet and outlet), as the larger rock is not anticipated to be needed with no defined channel flow.

- Mr. Cook asked if the inlet RT wetland finger of WFY be a 'total take' due to viability after ditch ties to the edge of this wetland piece to bring it into the 48" crossing. Mr. Ridings stated this finger should not be a 'total take'.
- Mr. Cook then discussed the general comment noted above that buffer swale filtration was designed with a good faith effort to be before buffered streams, however was difficult to reach required lengths due to topography. At locations such as this 48" wetland system crossing, it was noted that DB team showed proposed buffer swales down to the wetland even though it is not a buffered stream.
    - Mr. Ridings agreed to keep these additional filtration locations to show effort to provide filtration along the job since these locations do likely feed a buffered area off site.
    - Ms. Duprey asked if these non-buffered stream swales will be placed inside the SMP document to count toward treatment. Mr. Cook responded no, only the required filtration locations would be shown in this table however we would keep these other locations per NCDWR guidance on a case-by-case basis to continue showing effort.

**Plan Sheet 9**

- Stream SFH: Permit site #5, perennial stream with a 2' base channel at the entrance and a 2' base channel at the exit. Conveying this channel is culvert C100 which is currently sized as a 9'x8', Buried 1.0'. Drainage area is 40 acres with a Q100 of 130 cfs.
    - Mr. Cook asked if baffles would be necessary to convey this 2' stream through the 9' wide culvert barrel to avoid over-widening the channel which is a permit commitment. Ms. Fleming asked the slope of the proposed culvert which was found to 2.13%.
        - Discussion was had for the merits of placing baffles throughout the culvert vs a modified sill at the entrance and exit to include a baffle on top of the 1' sill.
            - ✓ Modified 1' sill with a 4' baffle only at the entrance and exit of C100 was decided.
        - Countersunk riprap dissipator pads at inlets and outlets were clarified for Mr. Matthews.
    - Construction sequence of C100 preliminarily discussed as a temporary channel change along the left side of SFH stream, and only using temporary pump arounds for the final culvert ties to the main channel.
- Stream SFF: Permit Site #6, conveys C200 which is currently sized as a 12'x8' RCBC, Buried 1.0 with a Q100 of 190cfs. There is additionally a channel change that conveys stream SFE on the bottom right into Stream SFF.
    - Baffles: a modified sill with a 6' baffle only at the entrance and exit will be added to C200 (2.2% slope of culvert)
    - Construction sequence of C200 discussed as a temporary channel change along the right at the downstream end of stream SFF only.
- Stream SFG will not be impacted.
- Stream SFE: Permit site #7, downstream end of C200 and impacts due to lateral base swale along -L- LT & channel change along -L- RT.
- Mr. Cook noted that Cardinal Pipeline was relocating a gas line from -L- 1010+50 to -L- 1012+50 crossing the entire project. Cardinal has noted existing rock in the ground which will require blasting.
    - Everyone agreed to address on a case-by-case basis if additional riprap in the channel beds of these culverts is necessary if existing bedrock is encountered during construction.
    - Additionally discussed removing need for "backfill with native material" from the culvert survey reports and plan to allow for the RCBC bottoms to naturally fill in. The only exception is for placement of rock "turtle ramps" within the high flow barrel of 2-cell RCBCs to allow for passage of wildlife, as shown on plansheet 16.
- Wetland WFZ: permit site #7 will be a total take due to mainline fill and channel change conveying to entrance of C200.

**Plan Sheet 10**

- Wetland WFZ and stream SFE: see notes on plan sheet 9. No impacts to wetland WGA.
- Stream SFB, wetland WGB (total take), Wetland WGC (total take), & Wetland WGD: Permit Site #8, conveyed by a 42" RCP (not buried) due to no jurisdictional flow entering the inlet of the pipe.
    - "JS Begins" label will be added near the centerline of road for stream SFB
    - Wetland WGD will have an impact due to the roadway fill, ditch and crossing however it will maintain its functionality and not be a total take like the others at this site.

- Wetland WGE: No impacts, PDE will be pulled back and ditch ties down to the existing topography before the edge of the wetland.
- Existing Pond at -L- 1031+00 LT is not jurisdictional, however it will be drained according to a 'pond drainage plan'.

**Plan Sheet 11**

- Pond PAD: Permit site #9, will be completely drained according to the 'pond drainage plan'.
- Wetlands WAAF & WAAE: were added via a supplemental survey conducted by Kimley Horn after the initial permit and were included as part of a supplemental NRTR. These will need to be provided with a new permit # for their impacts.
    - WAAE will be a total take per discussions due to this wetland being the overflow of the pond that is being drained and the wetland no longer viable. The permit # for the impacts will be part of site #9.
    - WAAF discussed to be a temporary impact to remove the dam on the existing pond, however it will not be a total take since water will still be received.
- Stream SFA: Permit site #9, 48" RCP (Not buried) due to no jurisdictional call at upstream end. Stream SFA is a total take.
- Wetland WGF: Permit site #9, total take; borders on edge of drained pond PAD (was not part of the original permit package impacts).
- Wetland WGG: Permit site #9, total take under roadway fill.
- Mr. Cook noted that in the original permit, there is an open area with no jurisdictional functionality between pond PAD and wetland WGG. Also, originally stream SFA tied into the pond. A new file provided by NCTA stops the stream short of the pond. Mr. Cook asked if the pond should continue up to wetland WGG. It was agreed that it should.
- Mr. Cook noted that the DB team has preliminarily shown a stormwater detention pond inside the limits of the drainage pond PAD due to a velocity concern of the post Q leaving the construction site. The proposed pond would likely be built with a berm across the middle of the existing pond PAD to limit excavation needs and maintain the existing footprint.
    - Ms. Duprey had concerns about constructing a new pond within the limits of an existing drained pond due to EPA requirements.
    - Mr. Ridings & Mr. Matthews noted that the EPA standard in question is at locations where a jurisdictional resource is used as an inline system because it potentially takes everything downstream out of jurisdiction. This site is completely removing pond PAD's jurisdictionally with no jurisdictional features upstream; however, wetland WAFF and other off-site jurisdictional features may remain downstream. Mr. Matthews stated that he would check into this and report back during the 4C meeting.
    - Additional concerns about the area between the outlet of the 48" and the new limits of the constructed stormwater pond with how the right of way stands. Mr. Cook noted that we would coordinate with NCTA and Ms. Fleming on how this area shall be shown if rock/earthen dam/berm be required per RFP requirements of ponds in the ROW.
- Wetland WGJ: Permit site #10, impact due to ditch tie.
- Stream SFK: buffer impact anticipated due to energy dissipator basin & driveway. New consecutive site # will be added.
- Susan Locklear asked if the 24" storm drainage along loop B could be outletted sooner into the loop ditch and cut down on pipe to provide more open flow?
    - Alexis Burke noted this was attempted during 100% drainage design but due to the elevations of the systems and the sag location on loop B, was not possible.
- Wetland WGI: no impact
- Wetland WGM: Permit site #12, total take. Located on the matchline between PSH 11 and 12 under roadway fill.

**Plan Sheet 12:**

- Wetland WGM: see notes on plan sheet 11.
- Stream SFC: permit site #13, 48" RCP (Not Buried), as the jurisdictional stream begins just below the headwall of the pipe – "JS Begins" label will be added at this location.
    - Due to wetland on inlet and stream on outlet end; inlet end of pipe will have class I riprap countersunk riprap pad and outlet end will keep class II as shown.
- Wetland WGN: permit site #13, 48" RCP (Not Buried). Impact due to the countersunk riprap pad. This wetland will not be a total take.

- Stream SFD: permit site #12, total take
- Wetland WGO: Permit site #14, impact due to roadway fill and toe protection.
    - Ms. Fleming noted that a spring box may be necessary around -Y23DR- 49+00 to continue feeding the wetland WGO. Mr. Bivens noted that if they were to encounter a spring during construction, they would have to install a spring box regardless to avoid a failure of the roadbed. Mr. Cook stated that a potential spring box note will be added to the plans in this area.
    - Discussion was held concerning the viability of the wetland given the overland flow changing in the area due to the roadway facility. Mr. Cook pointed out the majority of the -L- and -Y23DR- drainage was designed to continue to feed the wetland.

**Plan Sheet 13:**

- White Oak Creek, stream SFV: buffer site #11, will need to reassign a new permit # (next consecutive number) and revise buffer site # to match.
    - White Oak Creek has a drainage area of 6.2 sq. miles, Q100 is 3160 cfs, bridge uses 3 spans with 54" FIBs with no anticipated causeways (will be constructed with cranes from either side). Only impacts to Stream SFV are from the swales entering the creek from the drainage design.
- Ms. Locklear asked if the DB team was comfortable with the 4' base ditch entering the 36" pipe under the greenway. Mr. Cook explained that the standard minimum base width for ditches was 4' wide and not typically dictated by the size of pipe it enters.
- Ms. Fleming confirmed that the designed swales are tying into White Oak Creek at the base of flow elevation. Mr. Cook responded that they were tying down and not utilizing a 'riprap at embankment' detail for these locations.
    - Ms. Fleming & Ms. Duprey expressed concerns with the back flow of White Oak Creek continuing up these swales and asked to add some rock at these tie points to aid with this water level/stabilization. Mr. Cook confirmed that Class I riprap a distance of 20'up the swales will be added with a detail in the drainage plans.
- Paul Nishimoto noted that we will likely be hauling across White Oak Creek. DB Team stated that a temporary bridge may be necessary at this location, however additional impacts are not anticipated to stream SFV.

**<u>Section 2 4B Planset:</u>**

Ms. Burke took over going through the 4B plan sheets after a brief break.

**Plan Sheet 14:**

- Stream SFR & wetland WGR: Permit site #15, C300 has not been submitted for review at this time and size/data is still from proposal design. Initially sized as an 8'x8' RCBC, Buried 1.0'.
- Ms. Burke asked if baffles/sills would be needed for this site as stream SFR has a 6' wide base and feeds a wetland system.
    - Mr. Ridings & Mr. Matthews confirmed that they only bury if it is a jurisdictional stream in/jurisdictional stream out.
    - In conclusion, C300 will not be buried, remove the sill and baffles, and become an 8'x7' RCBC.
- Construction sequence anticipated to be a temporary channel change along the right side of the culvert along the edge of the wetland.
    - Ms. Burke asked how the outlet of this temporary channel change should come into the wetland; tie to the culvert exit area or straight down to the wetland/fill slope edge. Ms. Duprey & Ms. Fleming agreed that dissipation of this channel away from the culvert would cut down on temporary wetland impacts and be the preferred construction method along with Class I riprap. Class II riprap will still be used at the inlet.
    - Ms. Burke asked how the wetland WGR at the entrance of C300 be handled for impacts with drainage swale tie and temporary channel change. Ms. Riffey & Ms. Duprey confirmed that viability would likely be loss during construction phasing and would like to show it as a total take of this inlet finger of Wetland WGR. However, hatching of the wetland outside the ROW will not be shown in plan view but noted per general comment above. Hatching inside the construction zone will be broken out per excavation in wetlands due to temporary ditch and mechanized clearing (with separate shapes per type of impact).
        - Lateral ditch will be extended through wetland WGR at -L- RT to the entrance of C300 to aid with stabilization (riprap lined).

**Plan Sheet 15**

- Wetland WGR: permit site #15 impacted by roadway fill and toe protection.
- Stream SFN & wetland WGR: permit site #16, outlet of C400 (to be discussed on next plan sheet).
    - Original permit showed impacts of fill slope to buffers of stream SFN and called this location only buffer site #13. Confirmed to remove differing buffer number and label all of C400 impacts as permit site #16.
- Wetland WGS: permit site #17, temporary impact anticipated for swale tie and toe protection along fill slope.
    - Discussed viability of this WGS finger due to upstream site still feeding wetland. Confirmed to not have this finger be a total take.

**Plan Sheet 16**

- Stream SFN, stream SFQ: permit site #16, C400 CSR has not been submitted at this time. Initially sized as (2)11'x9', buried 1.0', Q100 is 474cfs.
    - Channel change designed to pick up stream SFQ (coming out of Pond PAF) and combining with SFN to cross inside the RCBC.
    - Due to primarily relocated channel and wetland on the exit end, confirmed to remove sill (not bury) on the low flow cell with no baffles, culvert will likely be resized to (2)11'x8' RCBC, not buried. The high flow cell will have a 1' sill. Keep class II riprap on entrance and exit due to high volume of water. Add small rock pile ("turtle ramp") behind high flow barrel sill to aid with critter escape.
    - The remainder of stream SFQ that is not impacted that adjoins pond PAF will not be a total take.
- Construction sequence of C400 was discussed as two shorter pieces of a temporary channel change to the left of the culvert near the entrance and another channel close to the outlet (PSH 15) that does not tie back down to the culvert outlet but dissipates at the fill slope location to avoid additional wetland impacts to WGR.
- Pond PAF: no impact, not draining.
- Wetland WGT: permit site #18, fed by water existing pond PAF. Ms. Burke noted that stream SFN will be given a "JS Begins" label near the entrance of C400 and that the 4B drawings incorrectly showed the JS line style through wetland WGT (will be revised).
- Wetland WGS: permit site #17 wetland finger to left of C400 entrance will only be shown as temporary impacts.
    - Ms. Fleming noted to shift the outlet of the 15" pipe and ditch start 10-15' further to the right to avoid drawing down the existing wetland quickly into the channel that enters C400. By shifting this, the hope is this wetland finger will retain its viability and not be a total take. It will need to be monitored for potential loss of function.
- Stream SFS, wetland WGR: permit site #19, 60" RCP (Not Buried), due to jurisdictional stream beginning under fill slope.
    - Mr. Matthews noted that a detail for the countersunk riprap pad at this 60" crossing was not called out and should be added. Ms. Burke noted that the detail would become AL.

**Plan Sheet 17**

- WGU(1): no impact.
- Stream SFT: permit site #20, 54" RCP/WSP under -Y24RPDR-, -Y24R- (US 70), -L-, and -Y24RPBR-.
    - Ms. Burke explained that multiple designs were considered for this SFT crossing during the proposal stage. Preliminary design had shown a box culvert diagonal under the US 70 bridges which the DB team found difficult to safely stage and difficult for NCTA to maintain.
    - Construction sequencing of the 54" pipe design consists of channel changes and utilization of the existing 36" pipe under US70. Discussion was had to shift the last 2GI near ramp B further to the left away from the existing stream bed to shorten that temporary channel change.
    - A 'JS Begins' label will be added to Stream SFT at the inlet entrance near the outlet of wetland WHA (no impact).
- Wetland WGU(2): No permit site number in preliminary permit, per discussion will become permit site #20 due to a ditch impact.
- Ms. Locklear asked if there was any way to outlet some of the systems along US70 into the proposed roadside ditches as opposed to closed storm drainage systems, specifically noting changes in 2 locations.
    - Outlet 24" crossing at -Y24R- 47+50 into roadside ditch/send to 42" crossing. Ms. Burke noted that this might increase the size of the 42" RCP, but it can be considered.
    - Shorten ditch to be outside buffer zone, -Y24R- 40+00 RT.

- Wetland WGY: Permit site #22, total take under roadway fill.
- Wetland WGZ: permit site #23, viability still considered with design shown – not a total take. Impacts are due to ditch tie-ins.
- Stream SGC and wetland WHB: Permit site #24, C500 currently sized as 6'x8', buried 1.0', Q100 is 170cfs.
    - Narrow (1.5' width) stream entering inlet of RCBC. Use a modified sill at entrance/exit with a 3' wide baffle.
    - Construction sequence of C500 anticipates temporary pipe at entrance end to avoid additional construction impacts to Wetland WHB and a channel change along the left side of C500.
    - Stream SGC will remain; therefore it is not anticipated that the remaining portions of wetland WHB will lose function and will not be considered a total take.

**Plan Sheet 18**

- Wetland WHB: see notes on plan sheet 17; the portion of the wetland on this plansheet will be under fill.
- Stream SGD: permit site #25, 60" CAAP crossing is currently buried 1.0'.
    - Discussion to remove burial of this pipe due to overall length (450') for fish passage. Pipe will be unburied and decrease in size to a 54" CAAP.
    - Ms. Duprey brought up the discussion of lining the portion of the SGD stream downstream of the existing 4'x4' RCBC to aid with stabilization downstream of all the construction/realigned channels which have riprap lining. Group decided to line 'on banks only' this portion of the untouched downstream SGD stream and to show as a 'bank stabilization' impact in the summary table.
        - Mr. McCollum requested the DB team revise PDE/ROW around this newly lined SGD stream.
- Wetland WHC: no impacts for drainage (upstream of stream SGD), PUE shown inside this wetland limits however and utility permit drawings/impacts will be coordinated for 4C.
- The non-jurisdictional pond off of Aggravation Lane will be drained for the project and will have a pond drainage plan.

**Plan Sheet 19**

- Stream SGE: permit site #26, C600 currently sized as 11'x8' RCBC, buried 1.0', Q100 is 230cfs.
    - Discussed placing a 6' baffle on entrance and exit to provide modified sill to the narrow stream traveling through this RCBC.
    - Mr. Cook asked if the agencies preferred a particular side for the baffles to be placed – if it should differ from inlet/outlet? Ms. Fleming requested that alternating the side the baffle was on was more of a case-by-case basis as to which direction the flow would likely be coming in to mimic closer to the existing condition the stream wants to take.
- Wetland WHD(1): permit site #26, at entrance of C600 also.
    - Labeled as "WHD" in original permit and 4B drawings, however NRTR indicates WHD(1), which label is correct? Ms. Riffey indicated WHD(1) was correct.
    - Discussed if the portion of the wetland WHD(1) outside the limits of the channel change would be a "total take." Mr. Ridings & Ms. Duprey agreed that the stream SGE would continue providing Wetland WHD(1) viability and shall remain.
- Wetland WHD(2): Permit site #26, impacts at outlet end of C600 and roadway fill.
- Wetland WHF: no impacts from drainage, will determine any utility impacts for 4C.
- Stream SGF & Wetland WHD(2): Permit site #27, impacts due to channel change and roadway fill.
    - Ms. Duprey asked that channel blocks be provided along the stretches of stream SGF near the fill slope. The DB Team agreed to add these blocks into the plan and add to detail BK.
    - Mr. Cook asked if stream impacts were required to be shown inside the entire limits of the PDE along the channel change (-L1- 1179+00 LT) even if the DB Team does not anticipate impacting/constructing inside a portion of the stream. Ms. Duprey noted that permanent impacts were not necessary due to the Nationwide 3 permit that NCDOT utilizes will allow for maintenance of this area without impacts.
- Stream SGG: permit site #28, conveyed in a channel change to culvert C600 with stream SGE.
    - Discussed removing the 2GI and 15" system near the toll gantry which outlets into buffer zones of SGG to avoid additional impacts. The DB Team agreed to research the amount of water traveling out of this cut ditch and possibly place a flared riprap pad to outlet at the cut/fill transition to avoid construction inside the buffer zones.

**Plan Sheet 20**

- No impacts.
- There is a proposed stormwater detention pond shown on this sheet that will be designed by the R-2829A team, however it is on the R-2829B project. This requires coordination between the two DB Teams. Project breakpoint from R-2829A to R-2829B is -L1- 1185+19.
    - Ms. Burke explained that this is not a water quality basin but is designed to detain the increase in Post 100 year peak flowrate to the railroad right of way per the RFP requirement. (The railroad crossing is at -Y26R- 19+00 RT, E. Garner Rd.)

**Plan Sheet 21**

- Wetland WFG: permit site #1, total take under roadway fill.
    - Ms. Burke noted that the existing ponds shown will be provided with 'pond drainage plans' and much of the roadway work of -Y22RPAFLY_REV- will be constructed in the previously mentioned early start package but will not impact wetland WFG before the permit is in hand.

**Plan Sheet 22**

- No impacts.

**Plan Sheet 23**

- Stream SKR: was not a permit site in the original permit (outside study area). The site will be numbered as the next consecutive new number on the R-2829A project. C700 has not been submitted for review at this time, however proposal design showed a (2)12'x9' RCBC, buried 1.0' to convey the Q100=832 cfs.
    - Ms. Burke noted that multiple crossing types were discussed during the proposal stage (including a possible bridge) and the size is subject to change due to the hydro pre-design meeting which requires the sizing of dual barrel culverts within HECRAS (original size completed in HY-8).
    - Average width of stream is around 10' base, decided to bury box culvert (1' sill) but not place any baffles in the low flow barrel and utilize a 2' sill in the other barrel to restrict flow to the low flow barrel in low flow conditions.
    - A rock "turtle ramp" will placed at the 2' sill within the high flow barrel at the inlet and outlet of the 2-cell RCBC to allow for passage of wildlife.
    - Ms. Burke stated she would look into adjusting the RCBC to avoid hitting any hard angles with the inlet or outlet.

**Plan Sheet 24**

- No impacts.

**Plan Sheet 25**

- Pond PAO & wetland WGH: permit site #61, fed by 36" RCP (not buried). Pond to be drained and provided with a 'pond drainage plan.' Additional impacts to pond seen on plan sheet 28.

**Plan Sheet 26**

- Stream SFJ: permit site #62, 36" RCP (not buried) impacts and roadway fill.

**Plan Sheet 27**

- No impacts.

**Plan Sheet 28**

- Pond PAO, stream SHT, & wetland WGH: permit site #61, pond to be drained (via 'pond drainage plan') and water conveyed downstream via 48" RCP (buried 1.0').
    - Discussed since upstream pond will be removed that stream SHT will no longer be jurisdictional and pipe crossing can be unburied. Pipe will be revised to 42" RCP (not buried).
    - Concerns with angle of the crosspipe entering the existing 24" HDPE and surrounding property buildings. Discussed revising the angle of the proposed crossing to better align closer to the existing downstream pipe. Stream SHT will become a total take due to construction limits.

- Wetland WGH discussed as not being a total take since once pond PAO is drained, will likely regenerate as a larger wetland. Mr. Ridings & Ms. Riffey agreed to leave the wetland unhatched and unimpacted in the permit drawings inside the limits of pond PAO. Mr. Ridings confirmed that buffer impacts should be included. Ms. Duprey requested that orange fence be placed along the fill slope line of -Y23DR- to limit construction activity inside the drained pond and protect the wetland to remain.

**Plan Sheet 29**

- Stream SFX: permit site #11, buffer impacts anticipated due to 42" RCP (Not buried) but not anticipating any stream impacts.
  - "JS Begins" label to be added near current DUE line outside limits of the riprap pad of the 42" RCP.
  - Mr. Matthews noted that the limits of stream SFX differed from the original permit. Ms. Burke & Ms. Riffey confirmed this as correct per the updated wetland file provided by NCTA.

**Plan Sheet 30**

- No impacts.

**Plan Sheet 31**

- Stream SFJ & wetland WNM: no permit number in original permit. Since this impact is downstream of permit site #62 along White Oak Road (PSH 26), it will become permit site #62A. Impacts by 54" RCP (buried 1.0') and roadway fill.
  - Ms. Locklear asked if the stability of the outlet channels of the 42" RCP (under Y23AR) and 54" RCP (under Y23FR) had been evaluated. Mr. Cook responded that the outlet ditch was stable with riprap per hydraulic calcs but non-erosive velocities had not been checked for entering the JS and would be provided later.
  - The DB Team will consider use of a temporary pipe instead of a temporary diversion channel during construction in order to not draw down the wetland.
  - The swales adjacent to wetland WNM will end at the wetland instead of the pipe headwall.

**Plan Sheet 32**

- No impacts. The DB team noted that a new alignment of Raynor Road on this plan sheet is being studied to stay away from the septic field and septic repair field at the Mount Herman Christian Church property. RK&K natural resources group is anticipating surveying this area (which is outside the R-2829 study area) to determine if any jurisdictional features are present.
- Future Raynor Road site development is currently under construction and shown shaded back on this plan sheet. Site development includes stormwater detention ponds which eventually do drain down to White Oak Creek.

**Plan Sheet 33**

- No impacts. Raynor Road site development (currently under construction) is also on this plan sheet.

**Plan Sheet 34**

- Wetland WGW, stream SFY, wetland WGV(1), and stream SFZ(1): permit site #63, crossing is C800 which is an extension of the existing 5'x6' RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the Q100 FEMA posted value controlled at 660cfs.
  - Note that the stream is not jurisdictional at the entrance of the RCBC, only wetland WGW. Ms. Fleming requested the top of banks removed from this entrance channel to avoid confusion on jurisdiction.
  - "JS Begins" label will be added to Stream SFY near the exit of the culvert extension.
  - Ms. Burke noted that the NRTR indicated stream SFZ(1) is not subject to buffers, however stream SFY is subject to buffers. The buffered streams shown on current drawing match the buffering call outs on the original permit (which shows buffers on the opposite streams). Ms. Riffey confirmed that the buffers were drawn on the incorrect stream and plan view would need to be revised to match the NRTR; SFZ(1) not buffered, SFY is buffered. (Ms. Riffey also confirmed that we can include NRTR jurisdictional feature names in the summary sheet to help distinguish impacts in close proximity to each other.)
  - Construction sequence of C800 is anticipated to utilize impervious dikes around the culvert extension sections, trenchless installation bore/receiving pit of the supplemental 72" pipe. Ms. Burke noted that the supplemental pipe invert would be installed 2' above the RCBC invert, however the necessary pooling of

water in the area to rise up to this higher elevation was not anticipated to be an issue (no nearby structures at risk of flooding).

**Plan Sheet 35**

- Stream SGA: Permit site #64, crossing is C900 which is an extension of a 6'x8' (entrance) and 6'x9' (outlet) RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the calculated Q100 is higher than the posted FEMA Q at 850 cfs.
    - Construction sequence of C900 matches C800 with the utilization of impervious dikes to send temporary flow through the higher supplemental trenchless installation pipe.
    - Additional stabilization can possibly be used at the outlet of the RCBC as a potential solution to design concerns of stability. This will be addressed during the 100% Hydraulic Design review.
    - There are no impacts to stream SGI.

**Plan Sheet 36**

- No impacts.

**Plan Sheet 36A**

- Stream SGA, stream SAAK, stream SAAL, wetland WHD, wetland WAAK: permit site #65, crossing is C1000 and has not been submitted at this time; preliminarily sized as a 10'x9' RCBC (Buried 1.0') with RFP requirement a minimum conveyance opening of 77sqft. Q100 is 599cfs and baffles are anticipated (5' wide).
    - RK&K (Hal Bain, Josh Tutt, & Gordon Marsh) delineated the additional streams and wetlands shown on the sheet (SAAL, SAAK, WAAJ, WAAK) that were outside the study area along E. Garner Rd. and coordinated via email with Ms. Riffey & Ms. Duprey (dated 3/22/24) on the naming conventions and buffering status. The draft PJD package for these additional features was submitted on 3/29/24 and was under review during the 4B meeting.
    - With the additional streams coming into C1000, it is anticipated to be angled more to what is considered the main entrance stream of SGA. Ms. Fleming requested that the entrance channel change be revised to clearly show how stream SAAL and stream SAAK will be brought into the RCBC.
    - Construction sequence is anticipated to utilize the existing 4'x4' RCBC under E. Garner Rd. and construct a temporary channel around the outlet end to stay out of the C1000 construction zone.
    - Wetland WHD upon further NRTR review and 4B discussion shall be renamed to WHD(2).
- Wetland WAAJ: no impacts anticipated.
- Stream SGD: permit site #25, crossing is a 60" RCP (buried 1.0') and is fed by additional SGD crossings shown on plan sheet 18.
    - Construction sequencing of the 60" is anticipated to be a temporary channel change around the left side of the work zone.
- Ms. Burke noted that the downstream structures of these two crossings (C1000 RCBC & 60" RCP) are the existing dual 60" RCPs under the railroad. This railroad right of way is the location where the RFP dictated no increase to the peak Q100 flowrate, requiring a designed stormwater pond for attenuation (shown on plan sheet 20).

**Plan Sheet 36B**

- No Impacts.

The meeting adjourned.