

**LEAST ENVIRONMENTALLY DAMAGING
PRACTICABLE ALTERNATIVE (LEDPA)
AND
AVOIDANCE AND MINIMIZATION MEASURES**

Proposed Improvements to Wilson Road (SR 1540) from US 276 to
SR 1504 (Old US 64/Old Hendersonville Highway)

Transylvania County

STIP Project R-5763

North Carolina Department of Transportation
Division 14



MERGER CONCURRENCE POINT NUMBERS 3 AND 4A

July 15, 2020

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Figure 1. Study Area

Figure 2. Potential Impacts

1. INTRODUCTION

The North Carolina Department of Transportation (NCDOT) proposes to improve SR 1540 (Wilson Road) from US 276 to SR 1504 (Old US 64/Old Hendersonville Highway), approximately 3.7 miles, as shown on **Figure 1**. This state-funded project is included in the 2020-2029 State Transportation Improvement Program (STIP) as project number R-5763. The project proposes to upgrade Wilson Road moving it out of the 50-year floodplain associated with the French Broad River and improving the safety of Wilson Road. The anticipated environmental document for this project is a combined State Environmental Analysis/ Finding of No Significant Impacts (SEA/FONSI).

Because of the potential impacts to human and natural resources, STIP Project R-5763 will follow the Section 404/NEPA Merger Process. An Individual Permit is expected, although final discretion lies with the US Army Corps of Engineers (USACE).

1.1 Concurrence Point 1: Purpose and Need and Study Area Defined

On February 13, 2019, the Merger Team concurred with the project's purpose and need and study area.

Project Need:

Currently, Wilson Road is flooded during 10-year and 50-year flood events making the road impassable to residents, those traveling to or from businesses, and to the City of Brevard's wastewater treatment plant (WWTP). In addition, Wilson Road exceeds the statewide and critical crash rates for similar roadways in non-fatal injury and wet crashes.

Project Purpose:

The purpose of this project is to bring the roadway out of the 2 percent annual chance (50-year) flood zone of the French Broad River and address facility deficiencies throughout the corridor, bringing the road up to minimum design standards.

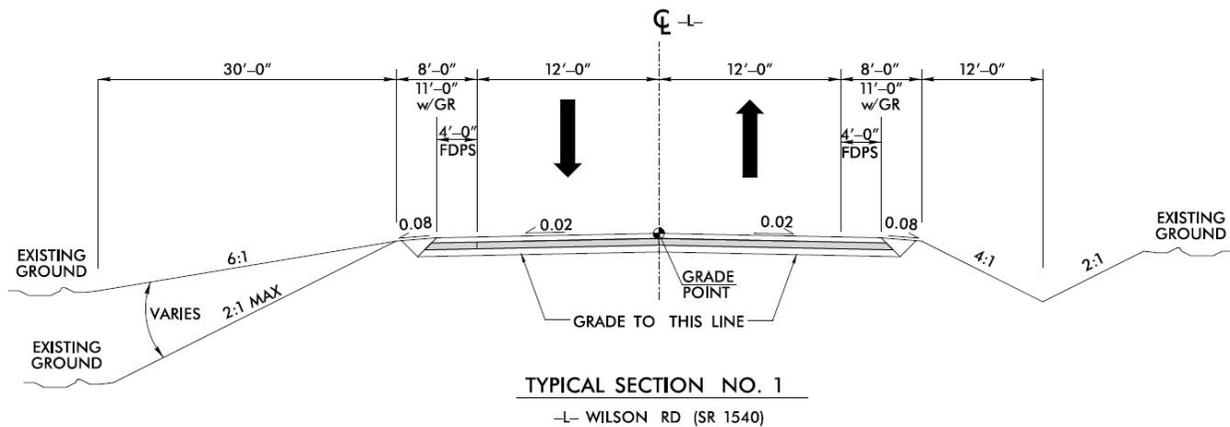
Project Study Area

The project study area boundaries are shown on **Figure 1**. The study area for this project encompasses approximately 200 feet on either side of the existing Wilson Road centerline. It extends approximately 250 additional feet to the east of the centerline as it approaches Old US 64/Old Hendersonville Highway to include the Ecusta Road intersection. Where the French Broad River is closer to the road than the 200-foot boundary, the study area stops at the French Broad River. The resultant study area encompasses approximately 173 acres, including sufficient area to pursue alignment shifts and apply avoidance and minimization measures during design development.

1.2 Concurrence Point 2: Detailed Study Alternatives Carried Forward

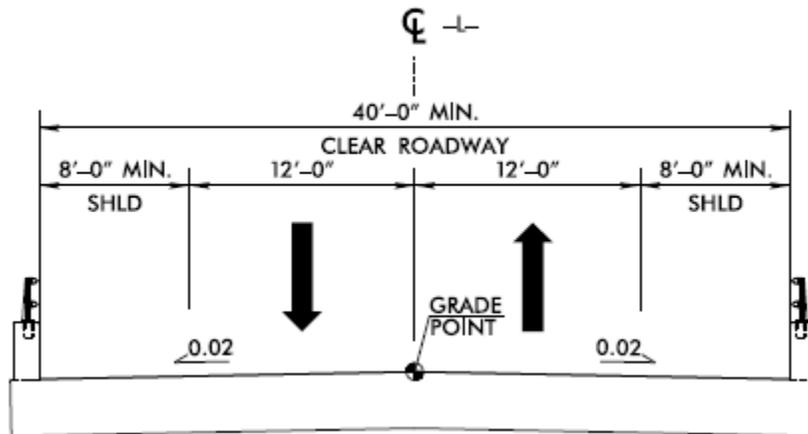
On March 20, 2019 the Merger Team concurred with moving the No Build Alternative and Build Alternative 1 forward for further study. The No Build Alternative does not meet purpose and need and was carried forward for the purpose of serving as a baseline. Build Alternative 1, also known as the Build Alternative, proposes to realign Wilson Road to intersect with Ecusta Road, creating a four-way intersection. The proposed typical section for the road is two, 12-foot lanes, with 4-foot paved and 4-foot unpaved shoulder (Exhibit 1).

Exhibit 1. Proposed Roadway Typical Section



Beginning approximately 0.4 mile south of the northern terminus, the realignment of Wilson Road to intersect Ecusta Road would shift the facility, and the bridge, approximately 260 feet east of the existing road and bridge. The existing bridge and remaining pavement would be removed and the remnant portion of Wilson Road north of the river would be terminated before the French Broad River, allowing for continued access to businesses, homes, and the river access area.

Exhibit 2. Proposed Bridge Typical Section



1.3 Concurrence Point 2A: Major Hydraulic Structures and Alignment Defined

On March 20, 2019, the Merger Team also concurred with the replacement of the two major structures on the project, the bridge over Williamson Creek, and the bridge over the French Broad River with bridge structures. Following the CP2A meeting, both structures were modeled using 2D hydraulic modeling. Using this information, the bridge over Williamson Creek is expected to be approximately 265 feet long and the bridge over the French Broad River is expected to be approximately 1,150 feet long. Both bridges are sized to accommodate a 50-year flood event without creating a rise.

Following CP2A, the NCDOT Project Team reviewed the 1D hydraulic model and determined that the road centerline, and not the low shoulder had been used to design for the 50-year level of service. Consequently, sections of the road, totaling approximately 1 mile, still did not meet purpose and need. NCDOT Hydraulics Unit recommended a 2D model to better account for velocities through the bends in the river and to update land use and DTM data. By using the 2D model, it was believed that a more

accurate water surface elevation (WSE) could be determined and that it may be lower than previously assumed. Having a lower WSE would give the roadway design some flexibility when updating the vertical profile.

In addition to the 2D hydraulic modeling, NCDOT conducted a Value Engineering Study on the project and determined that in the vicinity of Elm Bend Road, Wilson Road would not be feasible to construct unless it was realigned away from the existing road due to the number of private connections, grade changes, and road intersections.

2. PUBLIC INVOLVEMENT

USACE issued a Public Notice regarding NCDOT's intent to seek an authorization to discharge dredged or fill material into waters of the United States associated with the proposed project on April 23, 2020, with the comment period ending May 26, 2020. USACE received five comments. Of the five comments, National Marine Fisheries Service, State Historic Preservation Office (NC HPO), and Catawba Nation noted that they did not have any concerns regarding the project at the time of the notice. NC Wildlife Resources Commission (NCWRC) expressed concern for the federal and state-listed threatened and endangered species as well as any indirect and cumulative effects of the project. A private landowner, Turf Mountain Sod, Inc. responded in favor of the project, but requested information on the amount of right of way that would be acquired from their property and requested to be consulted regarding new access to their property. NCDOT provided responses to these comments on June 10, 2020 and June 11, 2020, respectively. In further correspondence, NC HPO rescinded the clearing of all structures on the project and confirmed that a determination of effects meeting is required.

In conjunction with the Public Notice, NCDOT sent out a newsletter providing updates on the project. The mailing list included property owners and potential tenants whose property is either on Wilson Road or only has access from Wilson Road (i.e. subdivisions on Glen Cannon Drive, Three Mile Knob Road, Williamson Creek Road, et al). NCDOT received questions from four people regarding the subject project. All questions concerned impacts to property either through right of way acquisition, temporary easement, or change in access.

3. CONCURRENCE POINT 3: LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE (LEDPA)

The two alternatives moved forward for detailed study were the No Build Alternative and Build Alternative 1. The No Build Alternative does not meet purpose and need and only serves as a baseline. Build Alternative 1 meets the purpose and need by improving the horizontal and vertical alignment of the road to meet current design standards and shifts the road out of the 50-year floodplain. Consequently, the Build Alternative is NCDOT's Preferred Alternative and is proposed to be the Least Damaging Practicable Alternative (LEDPA).

4. SUMMARY OF IMPACTS

Table 1 presents a summary of the potential impacts of the project on the natural and human environment. The impacts shown at CP 2A (based on 15 percent designs) were brought forward for comparison purposes. However, due to the aforementioned alignment changes (Section 1.3) and other design updates, it is not an equivalent comparison. Figure 2 depicts the locations of the impacts.

Table 1. Summary of Potential Impacts

Resource	Build Alternative 1 (15 percent design presented at CP2A) (SS + 40) ¹	Build Alternative 1 (25 percent design) (SS + 25) ²
	Potential Impacts	
Jurisdictional Streams	3,322 ft	3,038 ft
Jurisdictional Wetlands	0.5 ac	0.4 ac
Jurisdictional Surface Waters (Ponds)	0.15 ac	0.06 ac
Jurisdictional Surface Waters (Tributary)	973 ft	544 ft
100-year Floodplain	39.7 ac	34.1 ac
500-year Floodplain	7.4 ac	7.8 ac
Historic Properties (3)	Pisgah Forest US Post Office	Pisgah Forest US Post Office – No Effect ³
	Glen Cannon Country Club	Glen Cannon Country Club – No Effect ³
	Mary & Albert Jenkins House	Mary & Albert Jenkins House – No Adverse Effect ³
Threatened and Endangered Species	Appalachian elktoe – Endangered Biological Conclusion – Unresolved ⁴	Appalachian elktoe – Endangered Biological Conclusion – Unresolved ⁴
	Northern long-eared bat – Endangered Biological Conclusion – Unresolved ⁵	Northern long-eared bat – Endangered Biological Conclusion – Unresolved ⁵
Residential Relocations	8 (7 mobile homes ⁶)	7 parcels (one with 9 tenants in the Blythe Mobile Home Park)
Business Relocations	0	0

¹ Impacts calculated based on 15 percent design slope stake limits plus 40 feet prior to 2D Hydraulic modeling.

² Impacts calculated based on 25 percent design slope stake limits plus 25 feet.

³ Preliminary effects determination pending further design refinements.

⁴ NCDOT, USACE, and USFWS will be coordinating under Section 7 of the Endangered Species Act for the Biological Opinion for this species.

⁵ The USACE has developed a Standard Local Operating Procedure for Endangered Species (SLOPES) to address NLEB and will be completed prior to Let and will be submitted to the USACE.

⁶ Number based on aerial photography. Speaking with the property owner for Blythe Mobile Home Park there are ten homes and nine are currently occupied.

Due to the location of the project NCDOT does not foresee any opportunities for on-site mitigation. In addition, no streams are anticipated to be relocated as part of this project.

5. CONCURRENCE POINT 4A: AVOIDANCE AND MINIMIZATION MEASURES

Avoidance and minimization measures (AMMs) to reduce impacts to the natural and human environment regularly occur throughout the planning and design stages of a project. Using guidance provided by NCDOT Environmental Analysis Unit (EAU) – Environmental Coordination and Permitting (ECAP) the NCDOT Project Team considered and recorded AMMs throughout the life of the project and summarized them in the Merger Packets of each concurrence point. Those measures and measures considered and implemented between CP2A and this Merger Packet are documented in the following sections.

5.1 Avoidance and Minimization Measures Applied to Jurisdictional Features

The following is a summary of AMMs as applied to jurisdictional resources to meet the requirements of Sections 404 and 401 of the Clean Water Act.

1. The study area does not extend into the French Broad River as NCDOT has determined that the roadway alignment will be shifted away from the river where necessary to improve horizontal and vertical alignment.
2. The French Broad River provides habitat for the Appalachian elktoe, a federally protected species (endangered), which has been found in the stretch of the river adjacent to Wilson Road. NCDOT is conducting a Biological Assessment (BA) to evaluate the potential effects of this project on the Appalachian elktoe. Based on the BA, the US Fish and Wildlife Service will develop a Biological Opinion (BO), which will be completed prior to the completion of the environmental document.
3. The study area has been minimized to avoid impacts to the French Broad River where it is adjacent to the roadway. The study area is sized to accommodate an improvement of Wilson Road on existing alignment where possible and realignment where necessary to bring the horizontal and vertical alignment up to current design standards.
4. The 2016 Feasibility Study evaluated a new location concept and found it to have substantial additional impacts to the human and natural environment when compared to the proposed upgrade of the existing alignment.
5. Build Alternative 1 and Build Alternative 2 shifted the alignment of the majority of the road away from the French Broad River. Build Alternative 1 replaces the bridge over the French Broad River on new alignment, avoiding the need for an additional temporary bridge, which would have additional impacts.
6. The existing bridges will be replaced with bridges on new location. The bents of the new bridges will be placed outside of the stream channel. The bents of the existing bridges that are in the stream channel will either be removed or cut at the stream bed.
7. Deck drains will not be used on either the bridge over Williamson Creek or the French Broad River, thereby eliminating direct discharge into the creek and river.
8. Based on current designs, the bridge over Williamson Creek will be approximately 265 feet long and the bridge over the French Broad River will be approximately 1,150 feet long to provide the appropriate amount of hydraulic conveyance.
9. NCDOT will use Design Standards in Sensitive Watersheds throughout the project due to the proximity of the project to the French Broad River and crossing of Williamson Creek.
10. The existing culverts in the study area are corrugated metal pipe (CMP) and less than 72 inches and not considered major structures. They will be removed or filled and replaced with

- appropriately sized pipes that will be realigned with the stream to provide hydraulic conveyance.
11. NCDOT shall require the contractor to use clean stone for the construction of the causeways. This will minimize unnecessary sediment input into the river.
 12. All of the stone used in constructing the causeway will be removed and disposed of off-site, or the stone can be used in areas that require permanent stone protection after project completion. NCDOT shall also require that concrete barriers (barrier rail) be placed along the downstream edge of each causeway to limit the downstream movement of causeway material during high flow events.
 13. To minimize disturbance to the streambed, care will be taken to remove all readily detectable causeway material to the extent practicable, while removing as little of the original streambed as possible.
 14. Construction fabric will not be used under the causeway material, as it tends to shred and litter areas downstream during removal.
 15. Equipment that is placed on the causeways will be removed any time throughout a workday when the water level rises, or is expected to rise overnight, to a point where the equipment could be flooded, or during periods of inactivity (two or more consecutive days). The only exception to this measure is that the crane may be left in place for periods of inactivity; however, it must also be removed if the water rises, or is expected to rise, to a point where the crane could be flooded.
 16. NCDOT shall commit to requiring its contractor to have clean, non-leaking equipment on the causeway or within the waterway limits; diapers on-site for each causeway; and spill kits located at each causeway.
 17. With the exceptions noted below for the crane, all construction equipment will be refueled at least 200 feet from all water bodies and be protected with secondary containment. The crane will be refueled provided spill response materials (such as spill blankets and fueling diapers) are used during the refueling. Hazardous materials, fuel, lubricating oils, or other chemicals will be stored outside the 100-year floodplain or at least 200 feet from all water bodies (whichever distance is greater), not in a Water of the U.S., and preferably at an upland site. Areas used for borrow or construction by-products will not be located within wetlands or the 100-year floodplain.
 18. When constructing drilled shafts, if required, a containment system will be developed so that substrate material does not enter the river. Any material by-product will be pumped out of the shaft to an upland disposal area and treated through a proper stilling basin or silt bag.
 19. The Sediment and Erosion Control Plan will be in place prior to any ground disturbance. When needed, combinations of erosion control measures (such as silt bags in conjunction with a stilling basin) will be used to ensure that the most protective measures are being implemented.
 20. Construction of new bridges will be accomplished in a manner that prevents uncured concrete from coming into contact with water entering or flowing in the river.
 21. The Contractor will be required to prosecute the work in a continuous and uninterrupted manner from the time he begins the work until completion of each phase of structure construction, demolition and completion. The Contractor will not be permitted to suspend his operations except for reasons beyond his control or except where the Engineer has authorized a suspension of the Contractor's operations in writing.
 22. In the event that the Contractor's operations are suspended in violation of the above provisions or it is determined the Contractor is not deemed to be pursuing the work in a continuous manner in accordance with his submitted and approved schedule, the sum of

\$1,000 per day will be charged the Contractor for each and every calendar day that such suspension takes place. The said amount is hereby agreed upon as liquidated damages due to extra engineering and maintenance costs and due to increased public hazard resulting from a suspension of the work. Liquidated damages chargeable due to suspension of the work will be additional to any liquidated damages that may become chargeable due to failure to complete the work on time.

23. NCDOT will use energy dissipators to reduce the velocity of stormwater prior to entering the French Broad River and other streams.

5.2 Avoidance and Minimization Measures Applied to Human Environment

The following is a summary of AMMs as applied to the human environment to meet the requirements Sections 404 and 401 of the Clean Water Act.

1. The Feasibility Study analyzed three concepts and determined that:
 - a. Concept 1 – Minor upgrades and improvements using 3R guidelines; did not meet proposed purpose and need of project.
 - b. Concept 2 – Upgrade the road to Major Collector design standards; meets purpose and need and has fewer impacts and is less costly than Option 3
 - c. Concept 3 – Upgrade the road to Principal Arterial design standards; required the road to be realigned on new location, resulting in higher residential relocations, non-disturbed terrestrial community impacts, and a higher cost.

Therefore, NCDOT recommended Concept 2 be carried forward, which includes adjustments to the horizontal and vertical alignment while retaining current alignment to the extent feasible. This concept became Build Alternative 1.

2. No known FEMA buy-out parcels are located within the study area.
3. Majority of the project is within the 100-year floodplain currently and will remain in the 100-year floodplain in the future.
4. Build Alternative 1 aligns Wilson Road with Ecusta Road, which will improve safety at these two intersections.
5. The Build Alternatives improve Wilson Road in its existing location instead of rerouting the road on new alignment creating substantial impacts to homes and the natural environment.
6. Hydraulic 2D modeling was used to study the potential of the proposed design to impact structures in or near the floodplain. Based on the results of the 2D modeling, the vertical alignment in some locations was raised to prevent overtopping in a 50-year storm event and the French Broad River bridge was extended to cover the entire floodplain.
7. The alignment of the Preferred Alternative will not impact the Knob Creek Properties fly ash disposal site or the Aqua North Carolina well.
8. Build Alternative 1 impacts the fewest residences and businesses when compared to Build Alternative 2, which would have impacted the residences and businesses on existing Wilson Road north of the French Broad River due to replacing the bridge in place.
9. On-site detours will be used under Build Alternative 1.
10. A local ditch section was used on Wilson Road to reduce impacts, instead of the standard, hinged arterial ditch for a roadway of this volume and classification. Using a 6:1 ditch frontslope results in a narrower clear zone which allows for use of a 2:1 backslope. This reduced impacts to properties by requiring fewer acquisitions as well as reducing the amount of cut/fill on the slope.
11. To minimize impacts to the Jenkins House historic property, a retaining wall was used reducing the area requiring tree clearing from 1 acre to 0.7 acre.

6. PROJECT SCHEDULE

Table 2 provides the tentative milestone schedule for this project (subject to change). The funding schedule is consistent with the draft 2020-2029 STIP.

Milestone	Schedule*
Concurrence Point 2/2A	March 2019
Draft Biological Assessment	July 2020
Concurrence Point 3/4A	July 2020
Biological Opinion	Fall 2020
State EA/FONSI	Fall 2020
Begin ROW Acquisition	FY 2021
Begin Construction	FY 2023
*tentative, subject to change	

Section 404/NEPA Merger Project Team Meeting Agreement
Concurrence Point No. 3
Least Environmentally Damaging Practicable Alternative

Project Name/Description: SR 1540 (Wilson Road) between US 276 and SR 1504 (Old US 64/Old Hendersonville Highway). **STIP Project: R-5763**

Build Alternative 1 – Realign Wilson Road to intersect with Ecusta Road, creating a four-way intersection. Beginning approximately 0.4 mile south of the northern terminus, this realignment will shift the road, and the bridge, approximately 260 feet east of the existing road and bridge. The existing bridge and remaining pavement would be removed and the remnant portion of Wilson Road north of the river would be terminated at the French Broad River, allowing for access to businesses, homes, and the river access area.

The Merger Team has concurred on this date of July 15, 2020, on the above Least Environmentally Damaging Practicable Alternative for STIP Project R-5763.

USACE	NCDOT
USEPA	Land of Sky RPO
USFWS	Eastern Band of Cherokee Indians
NCDWR	Cherokee Nation
NCWRC	United Keetowah Band
NCHPO	

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 4A

Avoidance and Minimization Measures

Project Name/Description: SR 1540 (Wilson Road) between US 276 and SR 1504 (Old US 64/Old Hendersonville Highway). **STIP Project: R-5763**

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23. NCDOT will use energy dissipators to reduce the velocity of stormwater prior to entering the French Broad River and other streams.

The following is a summary of AMMs as applied to the human environment to meet the requirements Sections 404 and 401 of the Clean Water Act.

1. The Feasibility Study analyzed three concepts and determined that:
 - a. Concept 1 – Minor upgrades and improvements using 3R guidelines; did not meet proposed purpose and need of project.
 - b. Concept 2 – Upgrade the road to Major Collector design standards; meets purpose and need and has fewer impacts and is less costly than Option 3
 - c. Concept 3 – Upgrade the road to Principal Arterial design standards; required the road to be realigned on new location, resulting in higher residential relocations and a higher cost.

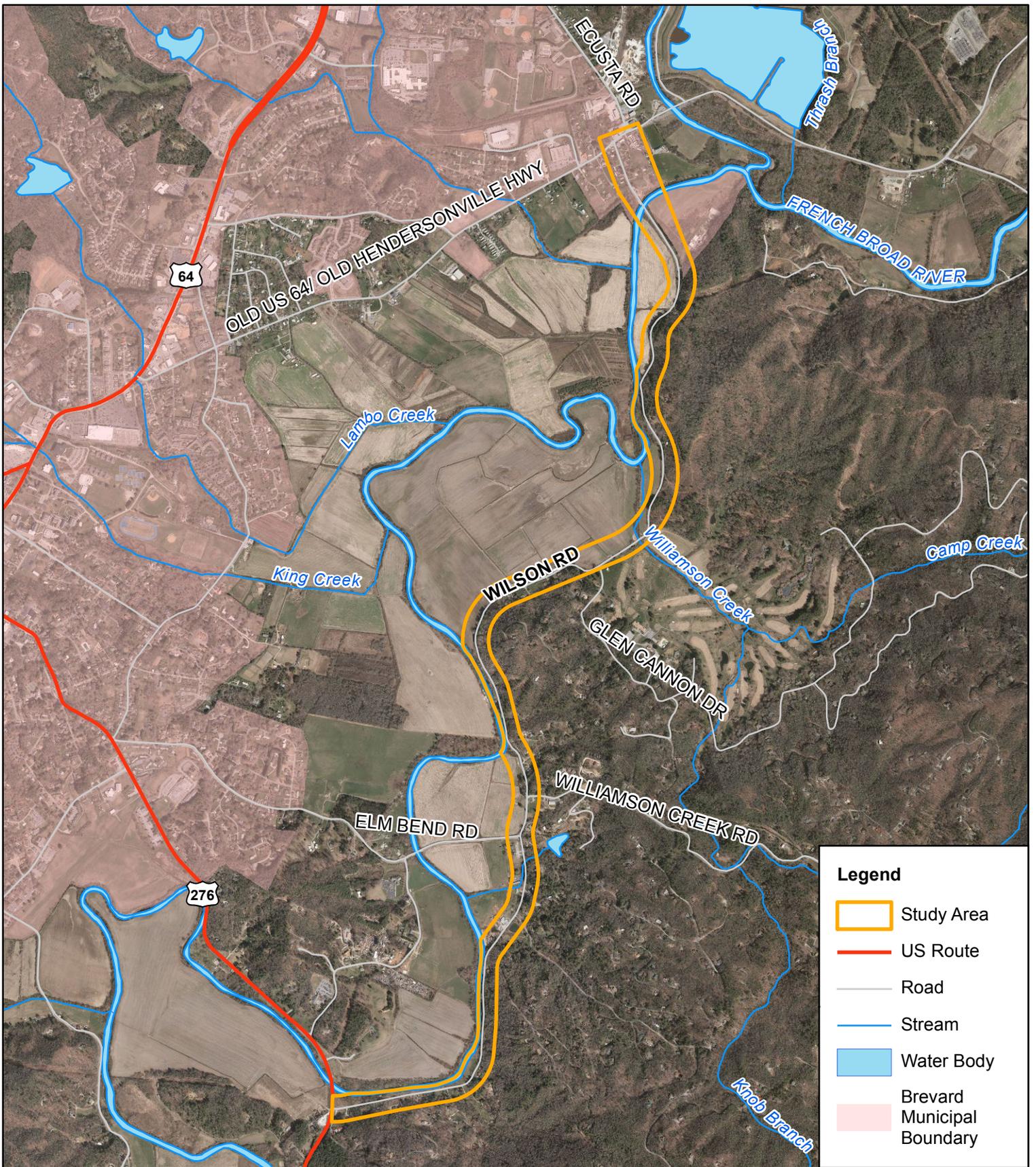
Therefore, NCDOT recommended Concept 2 be carried forward, which includes adjustments to the horizontal and vertical alignment while retaining current alignment to the extent feasible. This concept became Build Alternative 1.

2. No known FEMA buy-out parcels are located within the study area.
3. Majority of the project is within the 100-year floodplain currently and will remain in the 100-year floodplain in the future.
4. Build Alternative 1 aligns Wilson Road with Ecusta Road, which will improve safety at these two intersections.
5. The Build Alternatives improve Wilson Road in its existing location instead of rerouting the road on new alignment creating substantial impacts to homes and the natural environment.
6. Hydraulic 2D modeling was used to study the potential of the proposed design to impact structures in or near the floodplain. Based on the results of the 2D modeling, the vertical alignment in some locations was raised to prevent overtopping in a 50-year storm event and the French Broad River bridge was extended to cover the entire floodplain.
7. The alignment of the Preferred Alternative will not impact the Knob Creek Properties fly ash disposal site or the Aqua North Carolina well.
8. Build Alternative 1 impacts the fewest residences and businesses when compared to Build Alternative 2, which would have impacted the residences and businesses on existing Wilson Road north of the French Broad River due to replacing the bridge in place.
9. On-site detours will be used under Build Alternative 1.
10. A local ditch section was used on Wilson Road to reduce impacts, instead of the standard, hinged arterial ditch for a roadway of this volume and classification. Using a 6:1 ditch frontslope results in a narrower clear zone which allows for use of a 2:1 backslope. This reduced impacts to properties by requiring fewer acquisitions as well as reducing the amount of cut/fill on the slope.
11. To minimize impacts to the Jenkins House historic property, a retaining wall was used reducing the area requiring tree clearing from 1 acre to 0.7 acre.

STIP Project R-5763
Concurrence Point 4A

The Merger Team has concurred on this date of July 15, 2020, on the Avoidance and Minimization Measures for STIP Project R-5763.

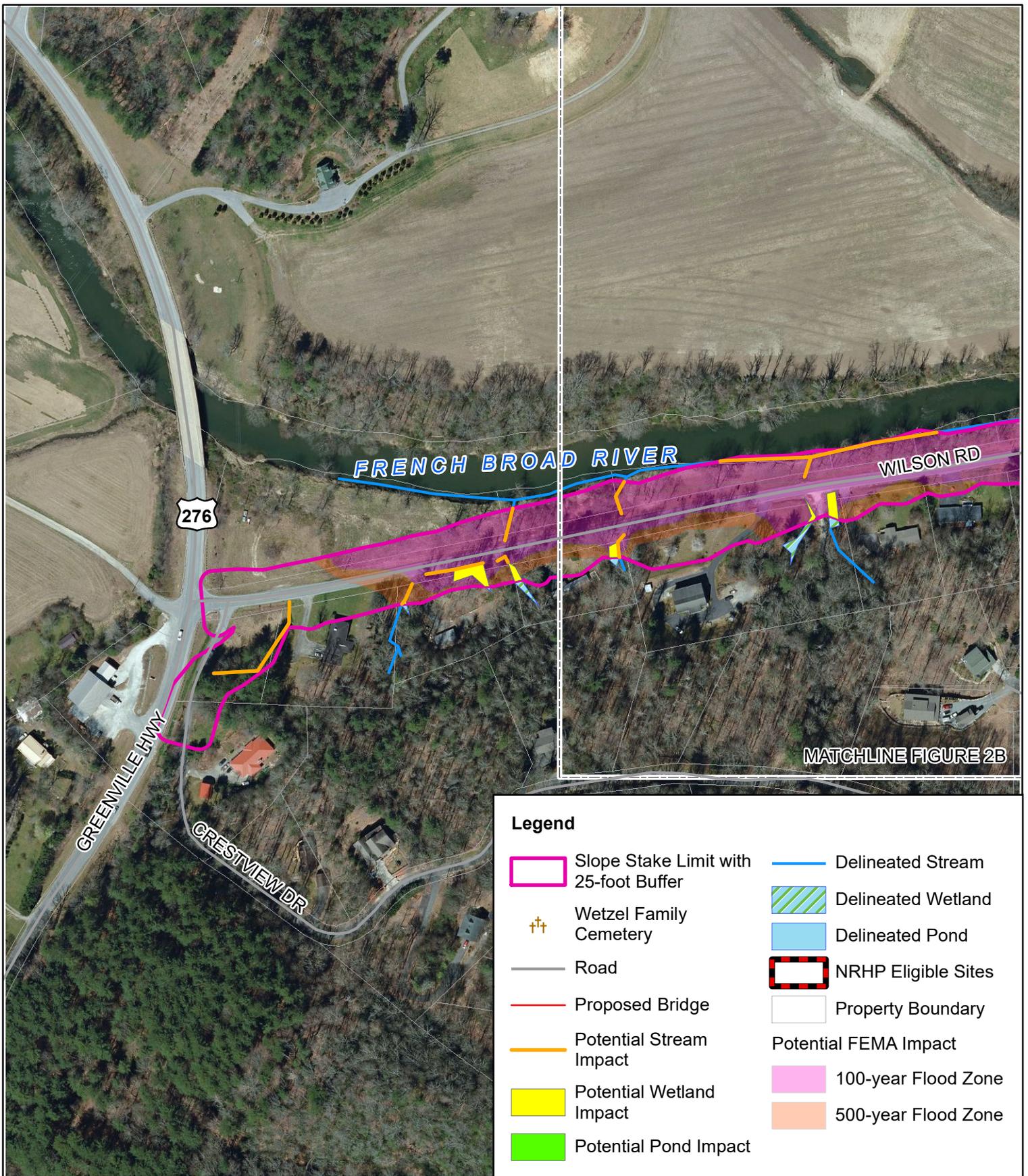
USACE	NCDOT
USEPA	Land of Sky RPO
USFWS	Eastern Band of Cherokee Indians
NCDWR	Cherokee Nation
NCWRC	United Keetowah Band
NC HPO	



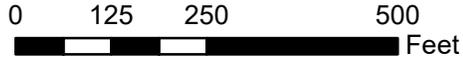
- Legend**
- Study Area
 - US Route
 - Road
 - Stream
 - Water Body
 - Brevard Municipal Boundary



Figure 1
Study Area
STIP Project No. R-5763
 Upgrades to Wilson Road (SR 1540)
 from US 264 to Old US 64/
 Old Hendersonville Highway (SR 1504)
 Brevard, Transylvania County



MATCHLINE FIGURE 2B

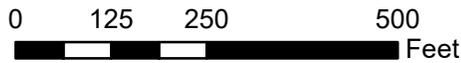
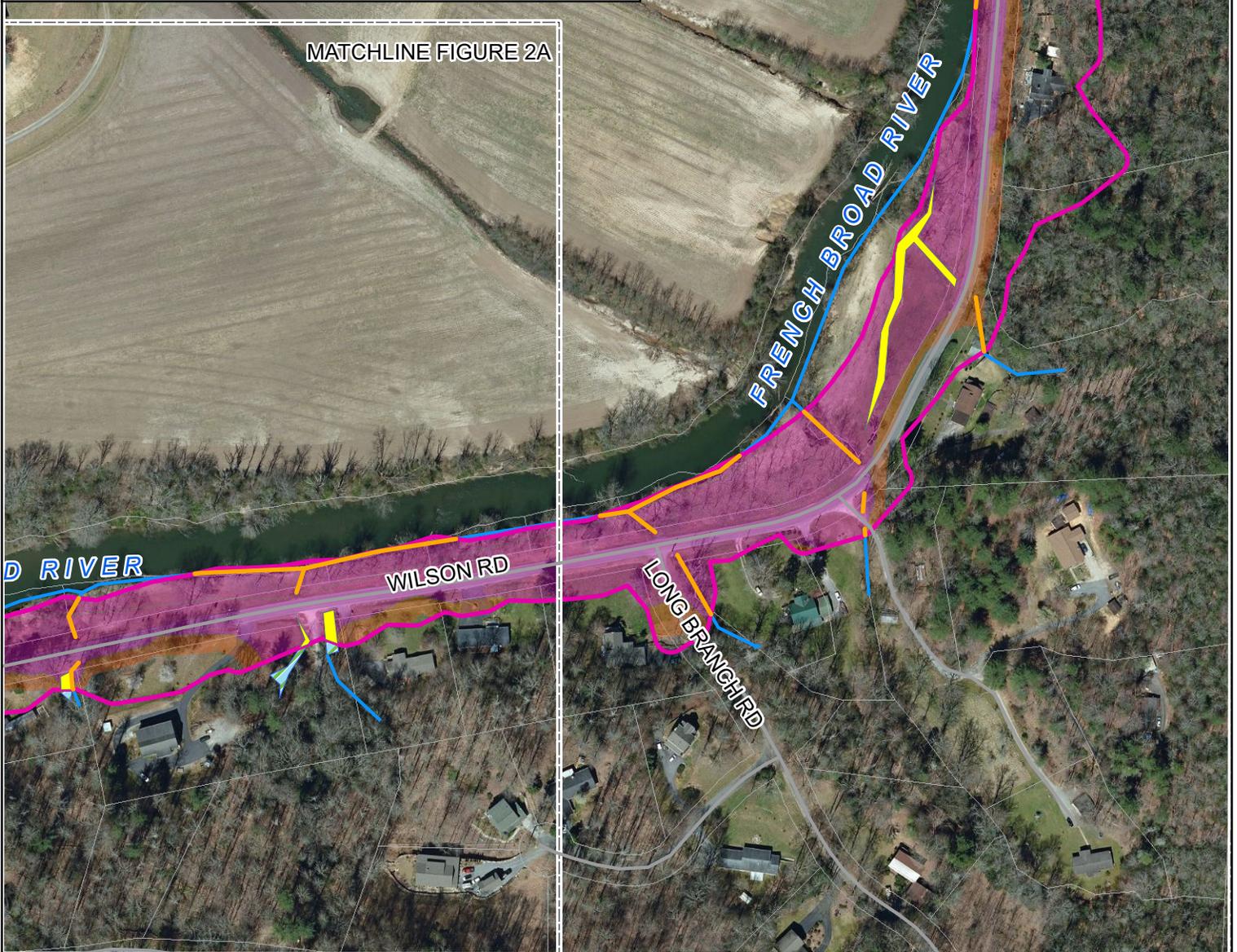


Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2A
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

Legend

-  Slope Stake Limit with 25-foot Buffer
-  Delineated Stream
-  Delineated Wetland
-  Delineated Pond
-  Wetzel Family Cemetery
-  Road
-  NRHP Eligible Sites
-  Property Boundary
-  Proposed Bridge
-  Potential Stream Impact
-  Potential Wetland Impact
-  Potential Pond Impact
-  Potential FEMA Impact
-  100-year Flood Zone
-  500-year Flood Zone

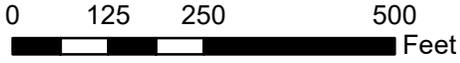
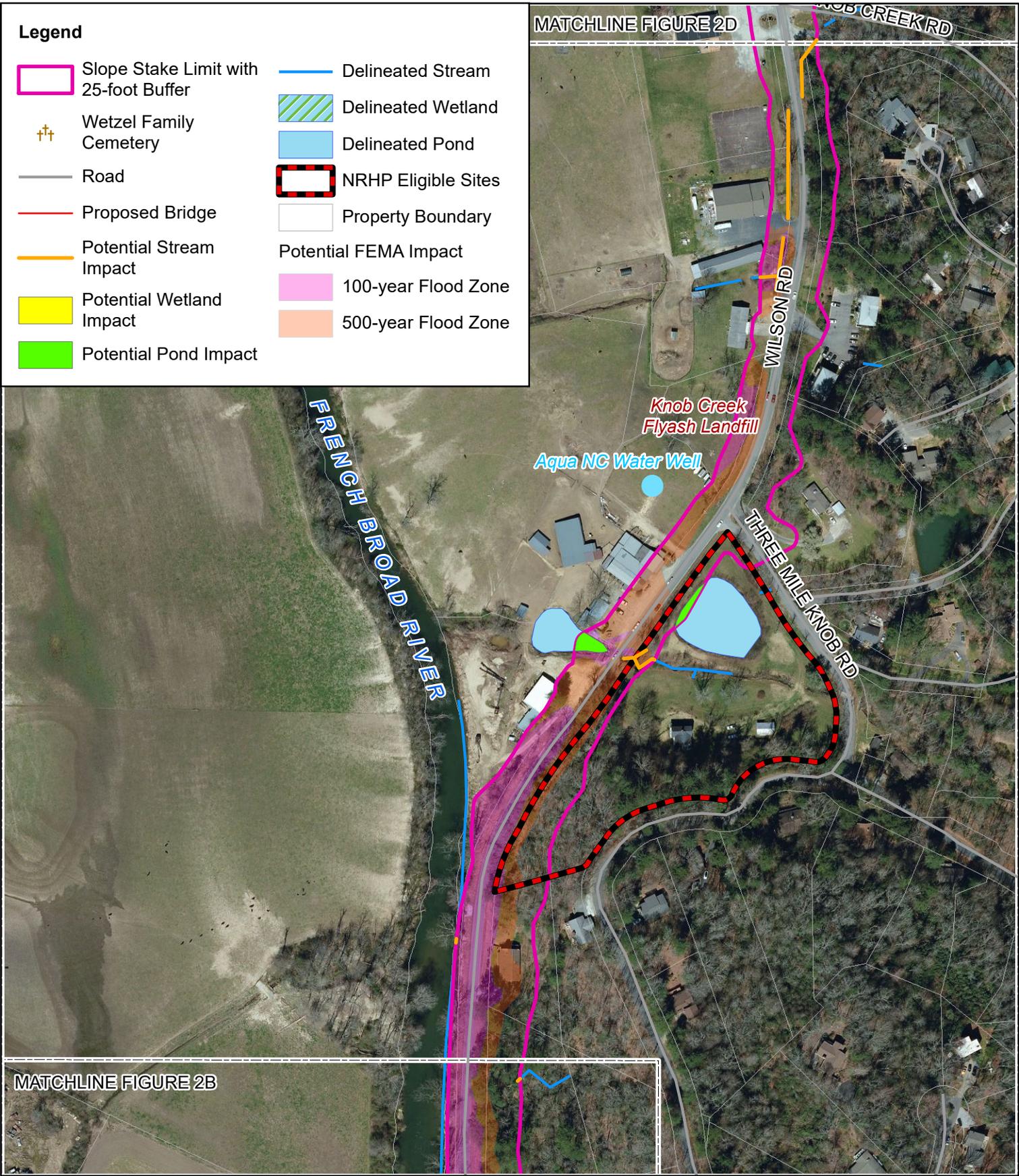


Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2B
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

Legend

- | | | | |
|---|---------------------------------------|---|---------------------|
|  | Slope Stake Limit with 25-foot Buffer |  | Delineated Stream |
|  | Wetzel Family Cemetery |  | Delineated Wetland |
|  | Road |  | Delineated Pond |
|  | Proposed Bridge |  | NRHP Eligible Sites |
|  | Potential Stream Impact |  | Property Boundary |
|  | Potential Wetland Impact | Potential FEMA Impact | |
|  | Potential Pond Impact |  | 100-year Flood Zone |
| | |  | 500-year Flood Zone |

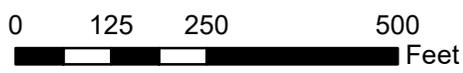
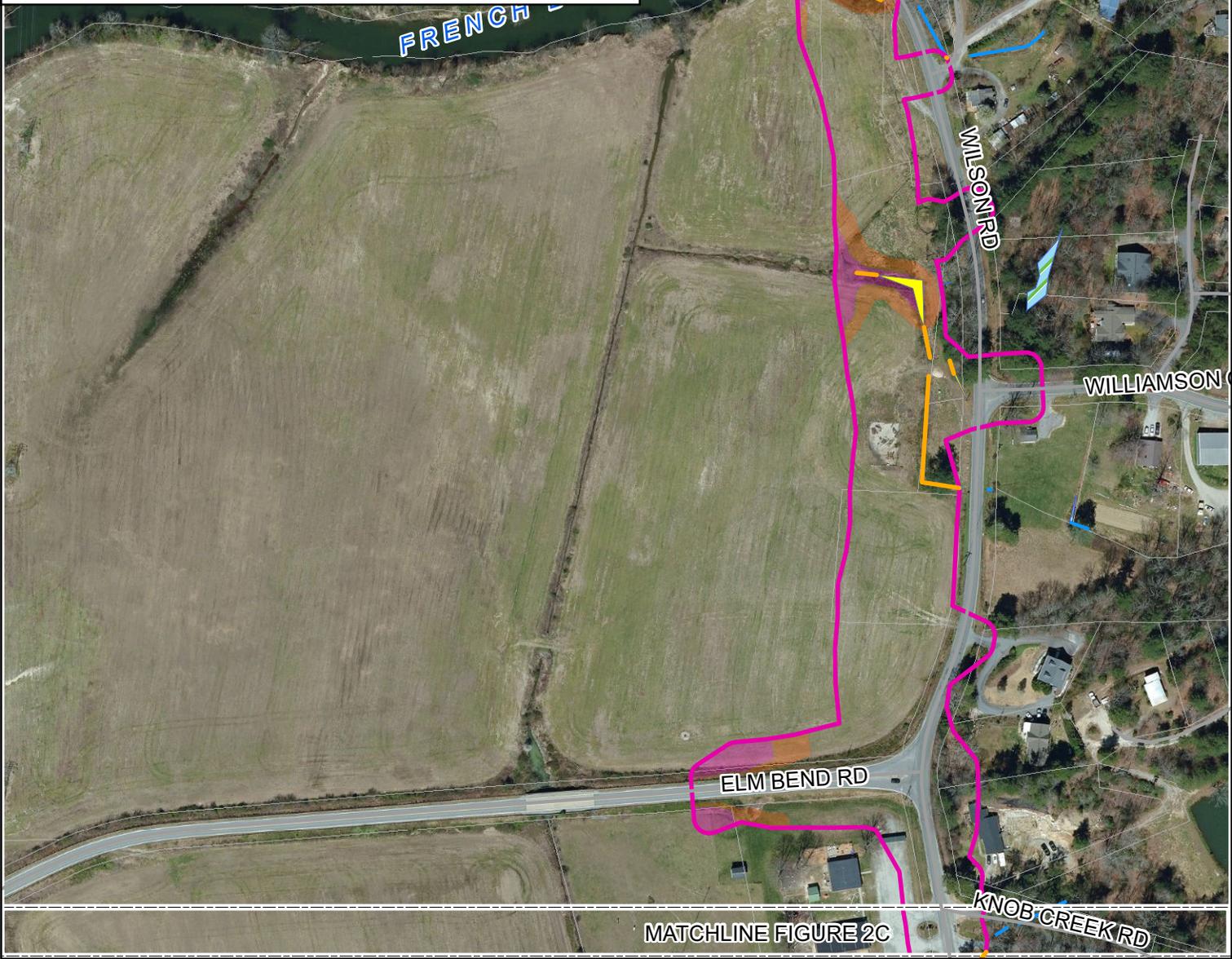


Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2C
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

Legend

- | | | | |
|---|---------------------------------------|---|-----------------------|
|  | Slope Stake Limit with 25-foot Buffer |  | Delineated Stream |
|  | Wetzel Family Cemetery |  | Delineated Wetland |
|  | Road |  | Delineated Pond |
|  | Proposed Bridge |  | NRHP Eligible Sites |
|  | Potential Stream Impact |  | Property Boundary |
|  | Potential Wetland Impact |  | Potential FEMA Impact |
|  | Potential Pond Impact |  | 100-year Flood Zone |
| | |  | 500-year Flood Zone |

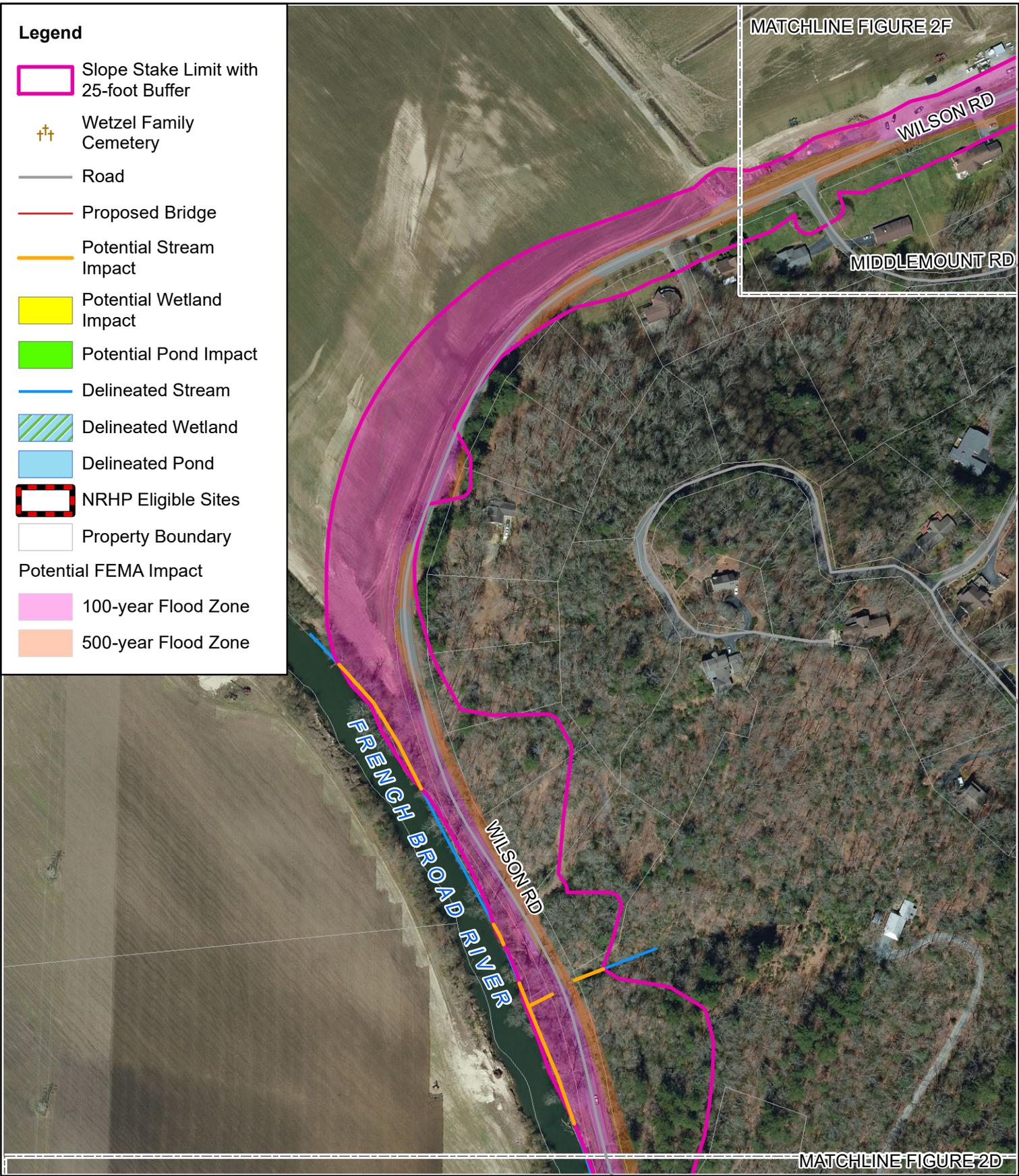


Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2D
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

Legend

-  Slope Stake Limit with 25-foot Buffer
-  Wetzel Family Cemetery
-  Road
-  Proposed Bridge
-  Potential Stream Impact
-  Potential Wetland Impact
-  Potential Pond Impact
-  Delineated Stream
-  Delineated Wetland
-  Delineated Pond
-  NRHP Eligible Sites
-  Property Boundary
- Potential FEMA Impact**
 -  100-year Flood Zone
 -  500-year Flood Zone



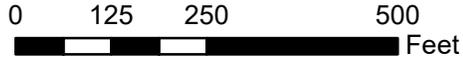
MATCHLINE FIGURE 2F

MIDDLEMOUNT RD

FRENCH BROAD RIVER

WILSON RD

MATCHLINE FIGURE 2D

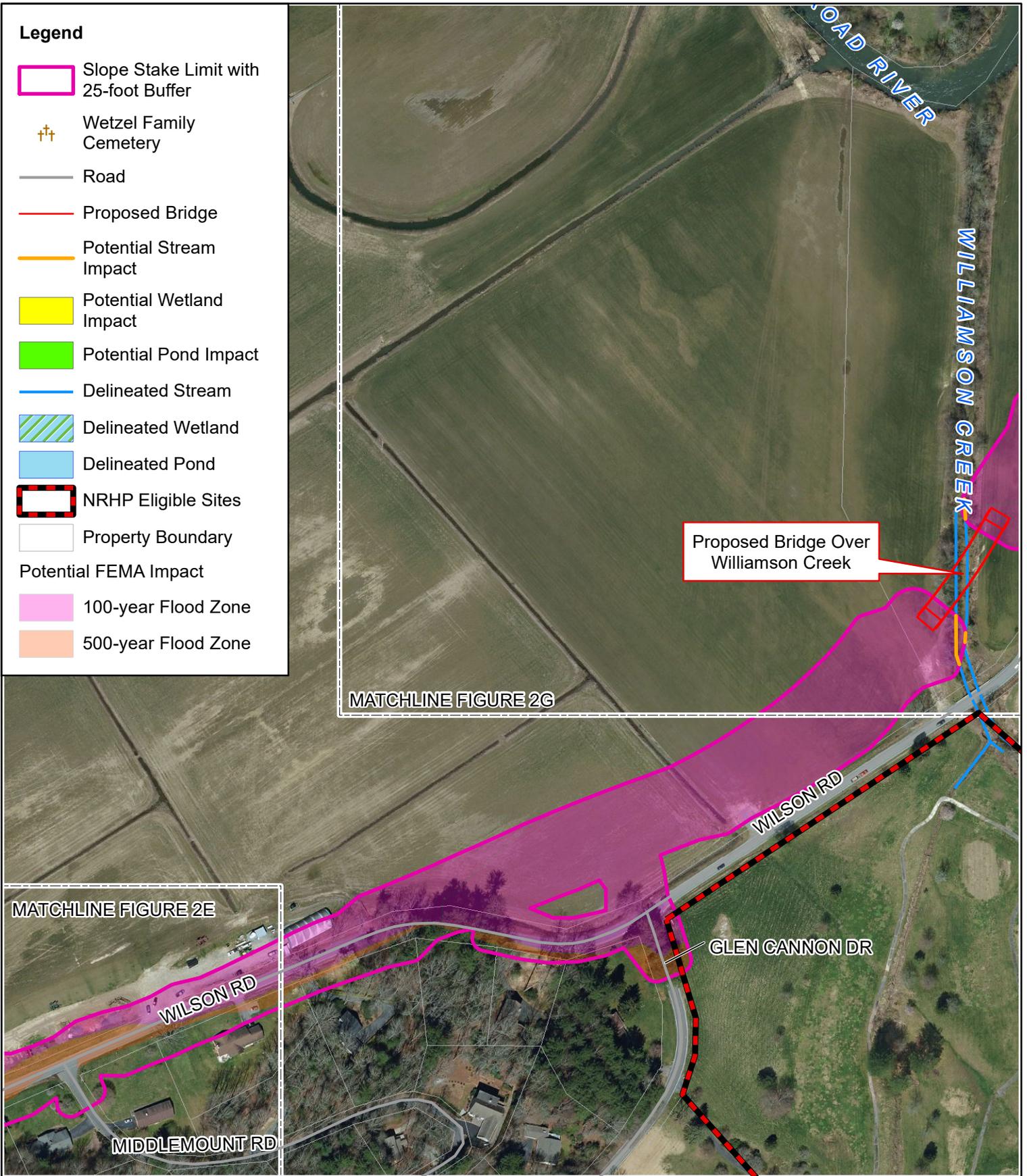


Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2E
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

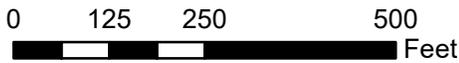
Legend

-  Slope Stake Limit with 25-foot Buffer
-  Wetzel Family Cemetery
-  Road
-  Proposed Bridge
-  Potential Stream Impact
-  Potential Wetland Impact
-  Potential Pond Impact
-  Delineated Stream
-  Delineated Wetland
-  Delineated Pond
-  NRHP Eligible Sites
-  Property Boundary
- Potential FEMA Impact**
-  100-year Flood Zone
-  500-year Flood Zone



MATCHLINE FIGURE 2G

MATCHLINE FIGURE 2E

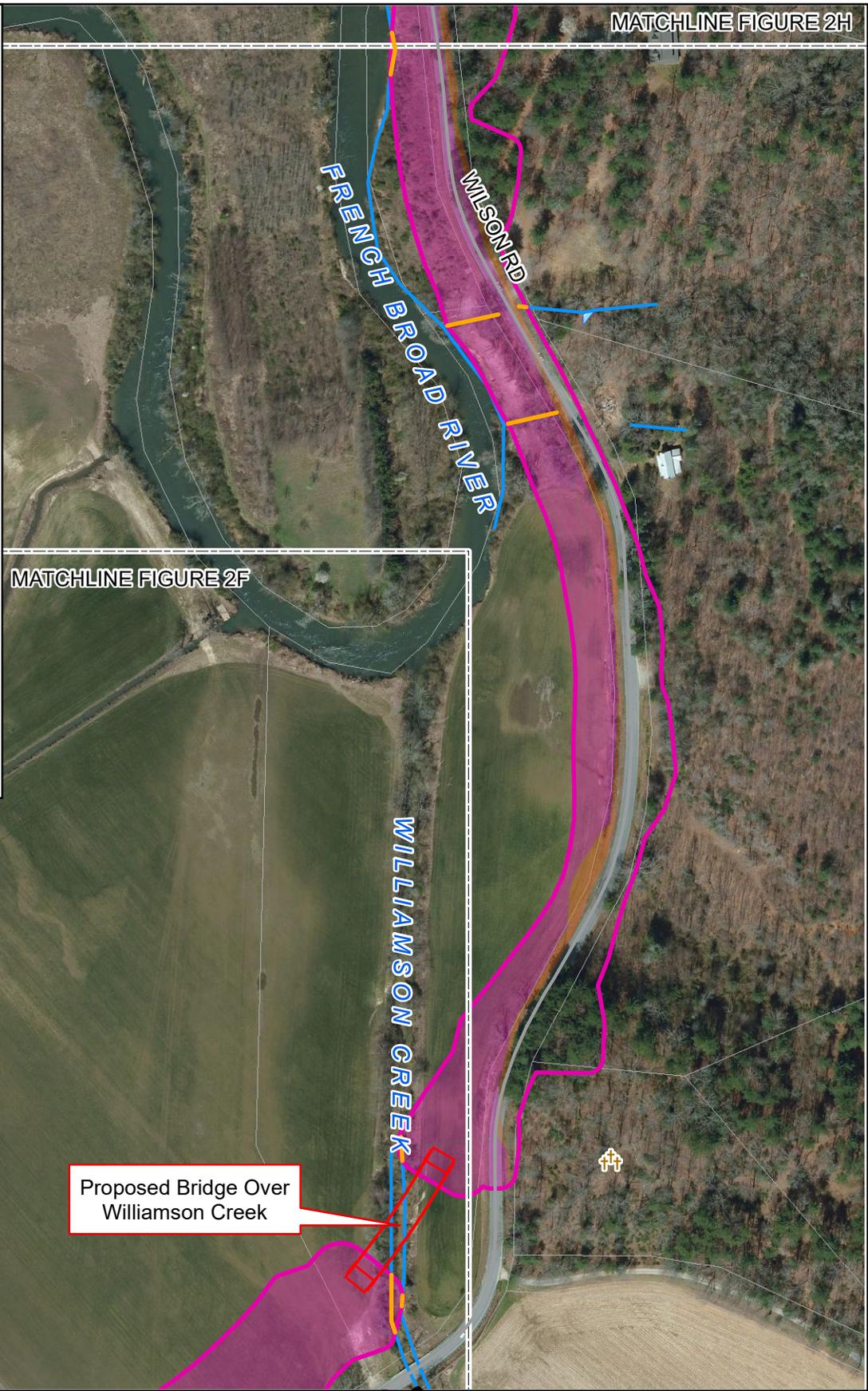


Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2F
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

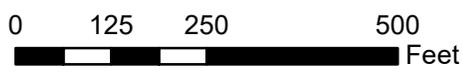
Legend

-  Slope Stake Limit with 25-foot Buffer
-  Wetzel Family Cemetery
-  Road
-  Proposed Bridge
-  Potential Stream Impact
-  Potential Wetland Impact
-  Potential Pond Impact
-  Delineated Stream
-  Delineated Wetland
-  Delineated Pond
-  NRHP Eligible Sites
-  Property Boundary
- Potential FEMA Impact**
-  100-year Flood Zone
-  500-year Flood Zone



MATCHLINE FIGURE 2F

Proposed Bridge Over Williamson Creek



Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2G
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
 STIP Project No. R-5763
 Improvements to Wilson Road from US 276
 to Old US 64/Old Hendersonville Hwy
 Brevard, Transylvania County

Legend

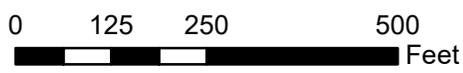
-  Slope Stake Limit with 25-foot Buffer
-  Wetzel Family Cemetery
-  Road
-  Proposed Bridge
-  Potential Stream Impact
-  Potential Wetland Impact
-  Potential Pond Impact
-  Delineated Stream
-  Delineated Wetland
-  Delineated Pond
-  NRHP Eligible Sites
-  Property Boundary
- Potential FEMA Impact**
 -  100-year Flood Zone
 -  500-year Flood Zone

MATCHLINE FIGURE 2I

FRENCH BROAD RIVER

WILSON RD

MATCHLINE FIGURE 2G



Data Source: HNTB, Transylvania Co GIS, NCDOT
HNTB, July 2020

FIGURE 2H
POTENTIAL IMPACTS OF
PREFERRED ALTERNATIVE
STIP Project No. R-5763
Improvements to Wilson Road from US 276
to Old US 64/Old Hendersonville Hwy
Brevard, Transylvania County

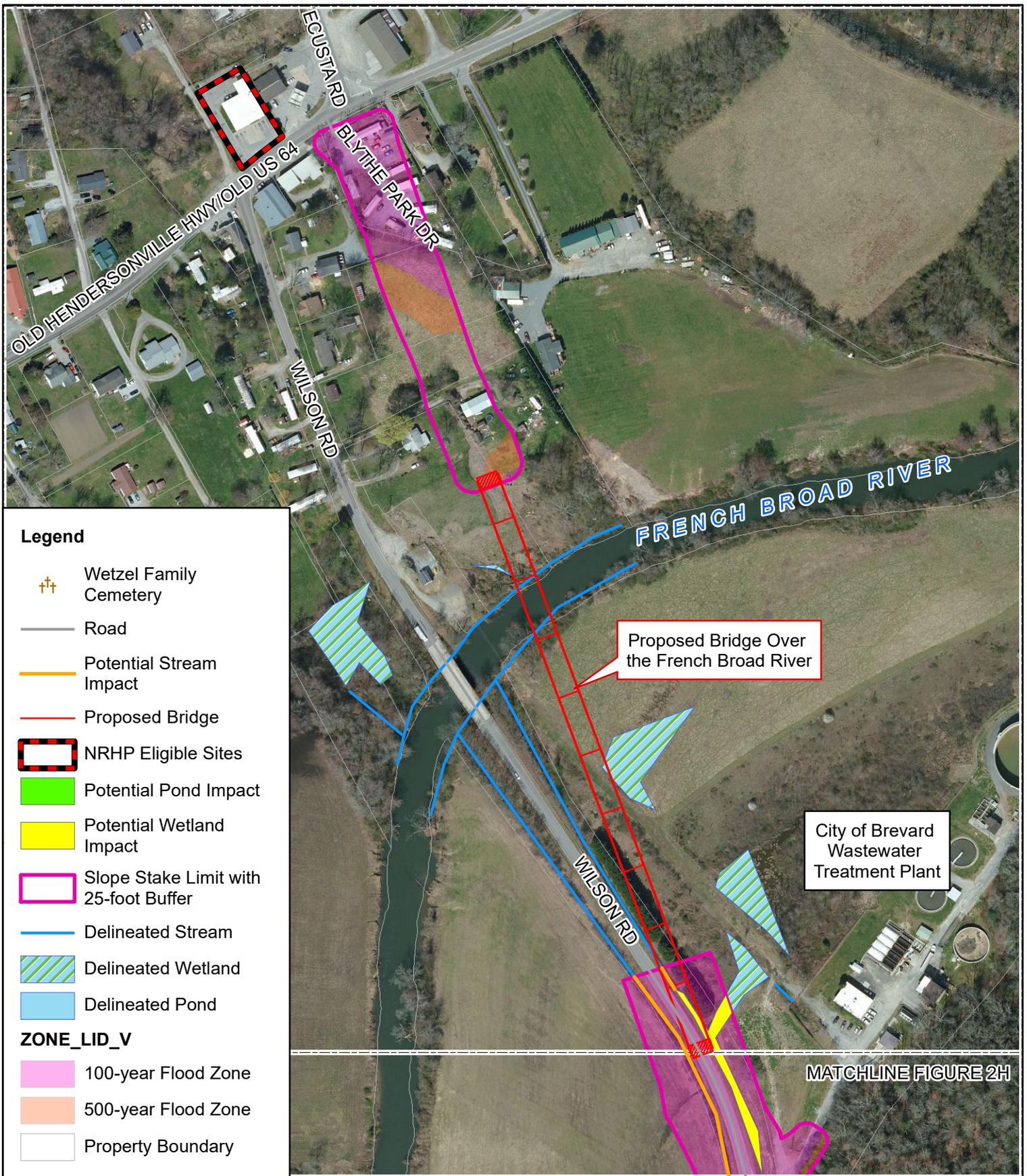


FIGURE 21
 POTENTIAL IMPACTS OF PREFERRED ALTERNATIVE
 STIP Project No. R-5763
 Improvements to Wilson Road from US 276
 to Old US 64/Old Hendersonville Hwy
 Brevard, Transylvania County

Data Source: HNTB, Transylvania Co GIS, NCDOT
 HNTB, July 2020