

Document Type: EA-Administrative Record
Index Field: Supplemental Environmental Assessment
Project Name: TDOT State Route 29 Improvements
Project Number: 2013-18

STATE ROUTE 29 (U.S. 27) FROM STATE ROUTE 61 EAST OF
HARRIMAN TO STATE ROUTE 328/ BELFOUR DRIVE
SECTION 26A APPROVAL, EASEMENT, AND DEED MODIFICATION

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
ROANE AND MORGAN COUNTIES, TENNESSEE

Prepared by:
TENNESSEE VALLEY AUTHORITY
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November 2014

Cooperating Agency:
U.S. Department of Army, Corps of Engineers

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Proposed Action and Need

In November 2011, the Tennessee Department of Transportation (TDOT) submitted a land use application (land use application) to the Tennessee Valley Authority¹ (TVA) requesting the grant of a permanent easement and modification of a deed to abandon certain flowage easement rights on private property in order to allow for the expansion of State Route 29 (SR 29) over the Little Emory River on Watts Bar Reservoir in Roane County, Tennessee. The request is associated with TDOT's proposal to widen SR 29 from a two-lane highway to a divided, four-lane highway for public use along a 12.3-mile stretch in Roane and Morgan Counties, between the towns of Harriman and Wartburg.

In the land use application, TDOT requested the land rights to widen the existing roadway and right-of-way and to replace the existing bridge over the Little Emory River at river mile 3.91 with a wider bridge. In order to replace the bridge, TDOT is requesting a 0.48-acre permanent easement on fee land owned by the United States of America for the use and benefit of TVA (tract XTWBR-150H) and that the United States of America through its agent, TVA, modify a deed by abandoning certain flowage easement rights affecting 1.27 acres of TVA flowage easement (tract WBR-1177F, S.1X).

In addition to the land use application, TDOT submitted a joint TVA/Department of the Army, Corps of Engineers (USACE) permit application (permit application) in May 2013, requesting TVA's approval under Section 26a of the TVA Act for construction at the crossings at the Little Emory River, Bitter Creek, and numerous tributaries along a 4.9-mile portion of the 12.3-mile stretch of SR 29. In April 2014, TDOT modified the application to request approval of improvements to approximately 5.7 miles of SR 29 along two contiguous stretches of SR 29 (see Figure 1 below). The first stretch is from SR 61 east of the city of Harriman to just south of Whetstone Road in Morgan County (3.7 miles). The second stretch is approximately 2 miles in length from just south of Whetstone Road north along SR 29 to Balfour Drive. TVA is considering the improvements to the two stretches of SR 29 as one action.

TDOT is proposing the improvements to SR 29 because the existing facility is substandard with poor alignment and operational and structural problems. According to TDOT, the primary benefits of the project are:

1. Additional capacity to handle increased traffic volumes (i.e., reduced congestion).
2. Improved movement of goods and emergency services.
3. Improved traffic flow to and from commercial areas.
4. Improved safety by reducing the accident rate.
5. Establishment of a four-lane facility from the county seat (Wartburg) to the nearest interstate, a goal of the State of Tennessee for each county seat.

¹ TVA is as an executive branch corporate agency and instrumentality of the United States of America organized and existing pursuant to the Tennessee Valley Authority Act of 1933, and title to all real property is held in the name of the United States of America for the benefit and use of TVA.

The decisions to be made by TVA, acting as agent for the United States of America, are whether (a) to grant the 0.48-acre permanent easement, (b) to modify the TVA deed to abandon the right to remove structures over 1.27 acres of TVA flowage easement land, and/or (c) to grant Section 26a approval to TDOT to allow for the improvements along the 5.7-mile stretch of SR 29. TVA's interest in this project arises from its commitment to support sustainable economic growth and to provide for public infrastructure needs within the Tennessee Valley. These decisions would improve the area's economic base and public safety and are consistent with TVA's goals for regional economic development and with TVA's Watts Bar Reservoir Land Management Plan (2009).

Background

TDOT collaborated with the Federal Highway Administration (FHWA) to prepare a joint environmental assessment (2003 EA) to evaluate the improvement of a 12.3-mile stretch of SR 29, from the intersection with SR 61 in the city of Harriman to SR 62 near Wartburg. The 2003 EA was completed in January 2003. On May 18, 2004, FHWA completed a finding of no significant impact (FONSI) statement for the entire SR 29 improvement project. In November 2013, FHWA reevaluated the EA and found that it remains valid.

TVA and USACE were cooperating agencies in the preparation of the 2003 EA. TVA has independently reviewed the 2003 EA and, upon receipt of TDOT's April 2014 land use and permit applications, decided to adopt the 2003 EA and to supplement it. (Supplemental EA). The Supplemental EA includes additional environmental information made available since 2004; describes the ongoing coordination efforts; and identifies specific mitigation measures to address impacts to wetlands and streams. TVA adopts the 2003 FHWA EA and incorporates it herein by reference (see Attachment A).

This Supplemental EA pertains only to the current TDOT request involving 5.7 miles of SR 29. Improvements to other sections of SR 29 (i.e., between Balfour Drive and Wartburg) are in various stages of design and planning and will be addressed by TVA once TDOT applies for additional permits for completing these sections.

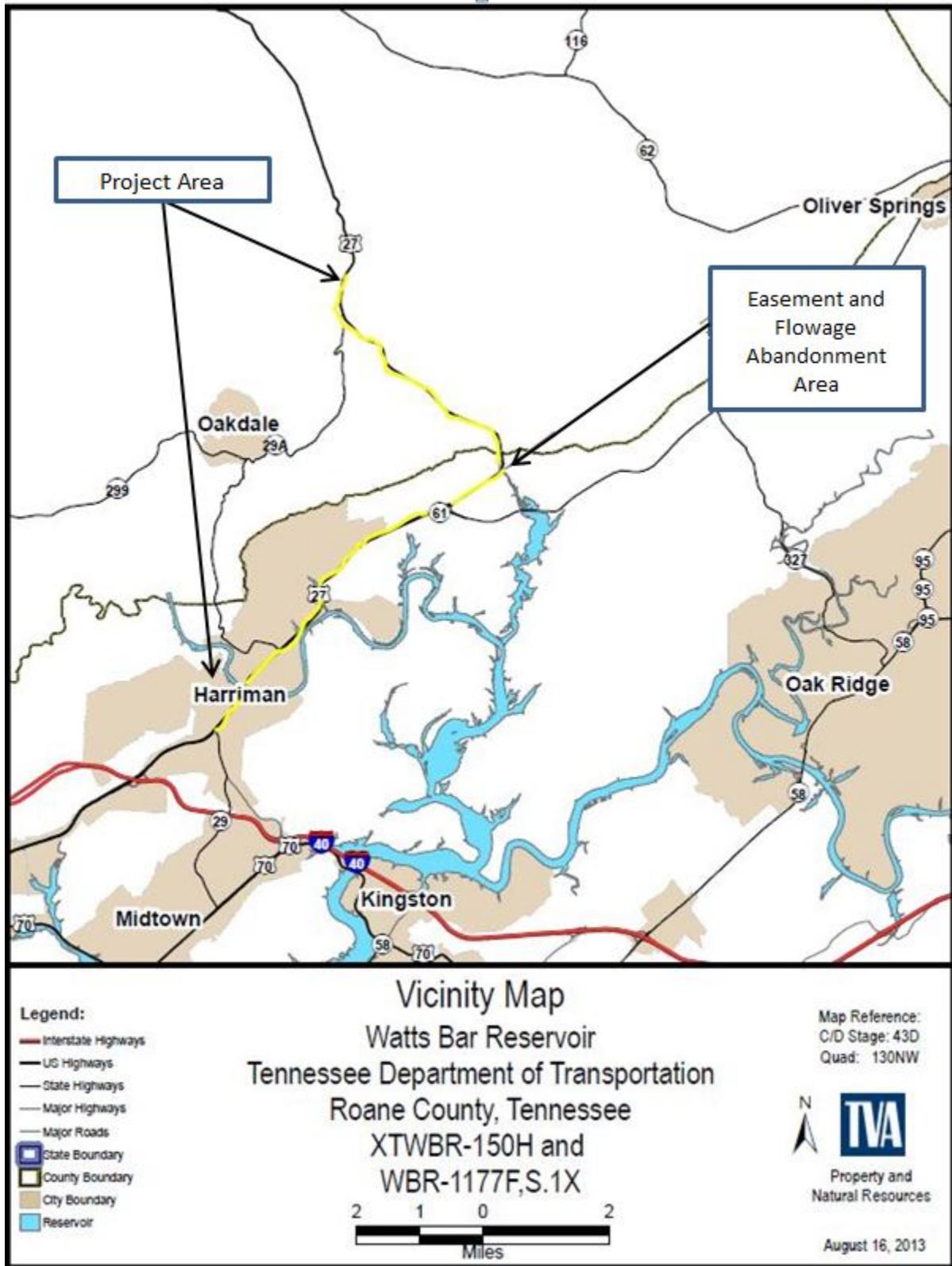
Upon its receipt of the application, USACE decided to conduct additional environmental review for project impacts to each of the two contiguous stretches of SR 29 and issued separate permits in September and October 2014 approving the TDOT proposal, with respective Memoranda for Record. These Memoranda are likewise incorporated by reference herein (see Attachments B and C).

Alternatives

In the 2003 EA, FHWA considered two alternatives: the No Build (No Action) Alternative and the Build Alternative². Under the No Build Alternative, SR 29 would not be

² Included in the Build Alternative is a sub-alternative for improvements to a section of SR 29 near Wartburg that is not included in the current application and, therefore, is not relevant at this time.

Figure 1. Project Vicinity



improved and the road would remain in its present condition. TDOT would not need an easement across property belonging to the United States of America or the abandonment of certain flowage rights belonging to the United States of America, or Section 26a approval for the project. Foreseeable safety and level of service improvements would be foregone and design of the roadway would remain substandard. The existing bridge across the Little Emory River would remain in place.

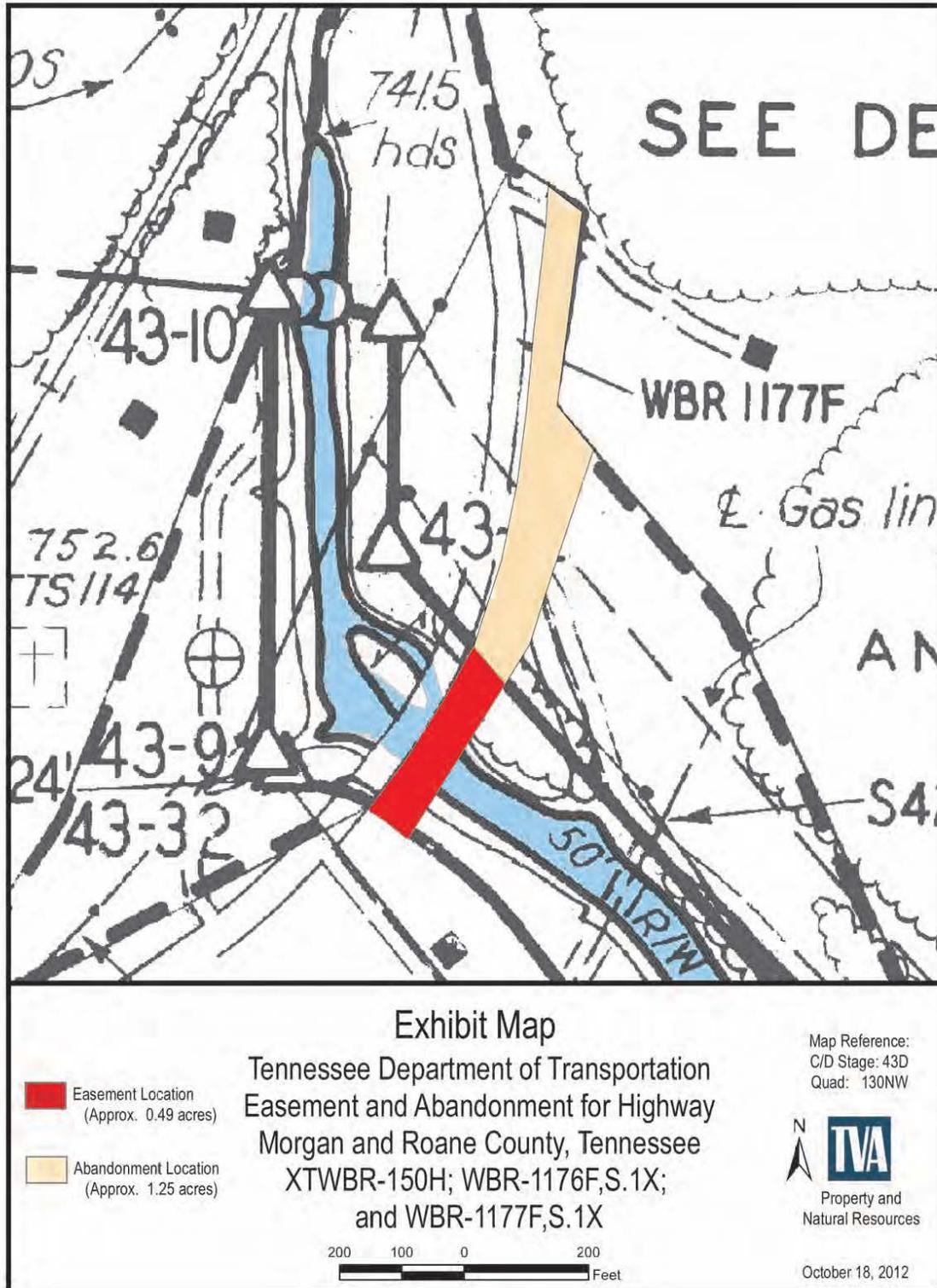
Under the Build Alternative, TDOT would improve SR 29, from SR 61 east of Harriman to SR 62 in Wartburg, by widening the existing roadway and right-of-way and replacing existing bridges crossing the Little Emory River and Bitter Creek. TDOT preferred the improvements as laid out in the Build Alternative for this section. As noted above, while the EA's Build Alternative considered improvements to 12.3 miles of SR 29, the current application and TVA's current proposed action apply to improvements to only 5.7 miles of SR 29 along the existing and modified alignment (in the EA, this stretch of SR 29 coincides with Sections 1 and 2).

For this stretch of SR 29, TDOT proposes a typical cross section for a 4-lane divided highway with 12-foot-wide lanes and 2 shoulder lanes also 12-feet-wide. There would be a minimum right-of-way width of 250 feet and varied guardrails. In one section (from 0.7 miles south of State Route 328 to Belfour Drive), there would be four lanes with a 12-foot wide center turn lane.

Bridges would be constructed to replace existing bridges at two locations. The existing 5-span, concrete deck girder bridge over the Little Emory River (157 feet long by 60 feet wide) would be replaced with a 3-span bridge (195 feet long by 120 feet wide) with 5 concrete piers constructed downstream of the existing bridge. The river at this location is approximately 120 feet wide. The requested easement includes the underlying river channel and lies within a 23-acre parcel that possesses natural resource values and receives some informal recreation use.

Construction of the new Little Emory River bridge requires a 0.48-acre permanent easement (on tract XTWBR-150H) and the abandonment (through deed modification) of certain flowage easement rights affecting 1.27 acres of TVA flowage easement (on tract WBR-1177F, S.1X); see Figure 2 below. Construction of this bridge would include placement of fill material for new pier installation (Piers 1-4). Pier 1 would be constructed outside of the normal base flow with minimal bank sloping and will replace a structure that would be removed from the channel. Pier 2 would be constructed in the same location as the existing pier in the shallow portion near the bottom of the bank. Piers 3 and 4 would be constructed up gradient and outside the normal base flow. Riprap would be installed at the bridge piers and abutments. A 10-inch water main on the existing bridge would be retired and replaced by a 12-inch water main that would be attached to the southbound lanes of the new bridge. The existing bridge would remain open during construction and would later be removed upon completion of the new bridge and roadway.

Figure 2: Little Emory River easement and deed modification area.



TDOT also proposes to replace the existing 142-foot-long, 5-span concrete deck girder bridge over Bitter Creek (mile 0.1) with a 200-foot-long, 3-span bridge and a 331-foot-long, 4-span bridge. Replacement of this bridge would require installation of riprap around the abutments. In addition, the project would require the removal or modification of existing structures at numerous unnamed stream crossings. At these crossings, TDOT would make site-specific modifications, including relocating and/or encapsulating stream sections, installing riprap, culverts, piers, and other control measures, replacing fill materials, and changing slopes.

Impacts Assessment

Potential impacts of the project to numerous resources were evaluated in the 2003 EA and are summarized below. New information about the proposed easement and deed modification, the continuation of coordination activities, the presence of threatened and endangered species, and potential impacts of the project to wetlands and streams is also provided.

In the 2003 EA, FHWA and TDOT found that no significant impacts to farmlands, air quality, water quality, and wildlife would be expected, and that unique or sensitive areas near the project area, including state parks, a wildlife management area, the Obed River National Wild and Scenic River, and Watts Bar Reservoir, would not be directly or adversely affected. In addition, some visual and noise impacts would be anticipated but are not significant. According to the 2003 EA, the project would improve traffic service and public safety along the SR 29 corridor. Up to six residences and two businesses would be displaced along this section of SR 29, which would likely alter community cohesion; two of the six residences are mobile homes which may be relocated. Generally, positive economic effects on the industrial base of Roane and Morgan Counties are expected.

The 2003 EA describes impacts from construction activities as well as the standard measures taken to avoid or minimize those impacts. These impacts would primarily be short-term in duration, existing during the construction period only. Activities may result in soil erosion and siltation of waters, noise, and public safety issues. Because the disturbance and movement of soil may be a vector for the introduction and spread of non-native invasive species, clean rock would be used for bank and roadside stabilization and areas of soil disturbance would be revegetated with native or non-native/non-invasive plant species. With these measures, the potential for this project to contribute to the spread of invasive plants would be minimized.

Underground storage tanks may be encountered during construction activities within the right-of-way; if tanks are located, tanks would be removed. If any hazardous substance/waste is encountered during the project, it would be disposed of in a manner consistent with all applicable Federal and State laws and regulations. Construction activities, including waste removal, will be conducted according to the latest guidelines and best management practices, in accordance with all applicable State rules and regulations.

Significant impacts to cultural resources are not anticipated. As described in the 2004 FONSI, FHWA and TDOT determined that no archaeological, architectural, or historical resources eligible for listing in the National Register of Historic Places would be impacted. By letters of May 12, 1999, and April 9, 2002, the Tennessee State Historic Preservation Officer (SHPO) concurred with the findings. Since 2004, additional consultation has taken place that affirms the previous findings. On February 5, 2008, pursuant to 36 CFR§ 800.2 (c)(2)(ii), 800.3 (f)(2), and 800.4 (a)(4)(b), TDOT contacted nine federally recognized Indian tribes about the improvements to SR 29. TDOT did not receive any responses from the tribes.

Additional consultation has also taken place since 2003 between FHWA, TDOT and the U.S. Fish and Wildlife Service (USFWS), in accordance with Section 7 of the Endangered Species Act (ESA). In 2007, USFWS reaffirmed its previous determination that the project “is not likely to adversely affect” the federally listed as threatened Cumberland rosemary, spotfin chub, and Virginia spiraea, and the federally listed as endangered Cumberland elktoe and purple bean. USFWS reaffirmed this again in an August 2013 letter to the USACE.

In 2008, communications between the Tennessee Wildlife Resources Agency (TWRA) and TDOT³ indicated that the proposed project may potentially impact the endangered Alabama lampmussel, historically known from the Little Emory River. Although the Alabama lampmussel was rediscovered in the upper Emory River near river mile 38 in 2011⁴, a 2009 mussel survey of the proposed action area by Civil & Environmental Consultants, Inc. (CEC) and TDOT biologists reported no live mussels or relic shells of any species⁵. CEC also indicated that potential habitat for the Alabama lampmussel was extremely sparse in the project area and restricted to the upstream half of the study area. Therefore, based on the absence of mussels and lack of suitable habitat at the project site in 2009, in conjunction with the overall lack of records for Alabama lampmussel in the Emory River system in nearly 40 years, TVA has determined that the project would have no effect on the Alabama lampmussel. In August 2013, the USFWS agreed that no adverse effects to the Alabama lampmussel are anticipated from the proposal.

The August 2013 letter from USFWS to USACE also stated that the fine-rayed pigtoe, a species which has been extirpated from the Emory River system, would not be adversely impacted by the project. TVA has found that three other endangered species which have been extirpated from the Emory River system were not mentioned in the previous ESA consultation: pink mucket, spectaclecase, and turgid blossom

³ Todd, Robert. Email correspondence between Robert Todd (Biologist, Tennessee Wildlife Resources Agency) and Mark Doty (Biologist, TDOT) dated July 25 and August 27, 2008.

⁴ Dinkins, G. 2011. Personal communication between Gerry Dinkins (Curator of Mollusk Collection, McClung Museum, University of Tennessee) and Charles Howard (TVA Aquatic Endangered Species Biologist).

⁵ Civil & Environmental Consultants, Inc. Letter report from CEC to TDOT (Mark Doty) dated September 11, 2009.

pearlymussel. Because of their extirpation from the area, none of these species would be affected by the project.

In September 2013, TWRA and TDOT surveyed three sites within and one site near the 5.7-mile stretch of SR 29 to determine occurrence of the state-listed valley flame crayfish. No individuals of the species were observed within the limits of the project area. TWRA and TDOT found a population of the valley flame crayfish at the site that is near and downstream from the project area (along an unnamed tributary of the Emory River approximately 200 yards southwest of SR 61, just north of a railroad track). Because no individuals were observed within the project limits, no adverse impacts to this species are anticipated.

In July 2011, the FHWA and TDOT performed joint mist netting and acoustical studies to determine the presence or absence of the endangered Indiana bat. No Indiana bats were discovered or recorded during the study. In February 2012, the FHWA and TDOT determined that the project would not likely adversely affect the Indiana bat and the USFWS concurred. In August 2014, FHWA and TDOT conducted additional surveys for Indiana bats and initial surveys for northern long-eared bats. Because no bats were found in the project area, FHWA and TDOT concluded that the project is “not likely to adversely affect” Indiana bats and would not likely jeopardize northern long-eared bats. By letter dated September 16, 2014, the USFWS concurred. TVA concurs with these findings.

During the review of the current permit application, TVA found that the description of wetlands affected by the improvements to the 5.7-mile stretch of SR 29 differed from those described in the 2003 EA, wherein wetlands were identified based on the National Wetlands Inventory Map. Since 2004, TDOT has conducted extensive surveys of the project area (including ecological surveys in 2008) and developed project designs that have generated additional and more accurate, site-specific data on the wetlands along SR 29. In its current applications, TDOT identifies 13 wetlands on the 5.7-mile stretch that would be impacted permanently and/or temporarily by the project (see Table 1). The project would require the permanent impacts to 2.39 acres of wetland and the temporary filling of 0.10 acre of wetland for construction and haul roads. The impacts to each wetland are identified in the following table.

TDOT proposes to mitigate these wetland impacts in two ways. Impacts to wetlands 1, 2, 3, 5, 6, 6A, 8, 9, 10, and 11 will be mitigated by debiting 3.72 acres at Wall Mitigation Site near the project area (a ratio of 2:1); TDOT would provide an adaptive management statement for the Walls site. Because there are no additional credits available at the Walls Mitigation Bank, impacts to wetlands 12, 13, and 14 will be mitigated at a ratio of 2:1 by making a payment to the in-lieu Tennessee Mitigation Fund operated by the Tennessee Wildlife Federation (1.02 federal in-lieu fee credits). TVA concurs that these measures are sufficient to offset cumulative, permanent wetland impacts.

Table 1. Affected Wetlands.

Wetland Name	Permanent Impact Area (acre)	Temporary Impact Area (acre)
WTL-1	0.03	0
WTL-2	0.30	0
WTL-3	0.07	0
WTL-5	0.10	0
WTL-6	0.07	0.06
WTL-6A	0.1	0
WTL-8	0.03	0.04
WTL-9	0.92	0
WTL-10	0.07	0
WTL-11	0.17	0
WTL-12	0.18	0
WTL-13	0.02	0.18
WTL-14	0.33	0
Total Impacts	2.39 acres	0.28 acres

Temporary wetland impacts would be remediated by stockpiling topsoil removed from all areas. Temporary impacted areas would first be restored to preconstruction contour and then the stockpiled topsoil would be reapplied. With these measures, impacts to these resources would be insignificant.

TDOT identified 19 stream crossings along the 5.7-mile section of SR 29, eight of which occur at perennial streams that fall under TVA's jurisdiction under Section 26a of the TVA Act. To address these impacts to all streams, including those ephemeral and intermittent streams that are outside of TVA's jurisdiction, TDOT proposes to mitigate the relocation of 1,492 linear feet of roadside stream at a 1:1 ratio with in-kind, on-site replacement of streams. TDOT would also mitigate 8,176 linear feet of impacts to perennial, ephemeral, and intermittent streams (encapsulation, length loss, and rip-rap fill) by purchasing 4,052 credits from the Tennessee In-Lieu-Fee Stream Mitigation Program. TVA concurs that these measures would sufficiently mitigate impacts to streams in the project area.

In addition, TDOT identified several locations in the project area with acid-producing pyrite rock that may affect the acidity levels of streams if excavated. TDOT proposes to mitigate potential impacts to streams by transferring all excavated waste pyritic material to the Rhea County Landfill for disposal. To address potential impacts of acid producing rocks, TDOT has provided adaptive management and monitoring plans that will be implemented prior to, during, and after construction activities (the plans are included in Attachments B and C below and are entitled "*Adaptive Management and Advance Planning Report Water Quality Monitoring Plan for SR 29 (US-27) From SR-61 Near Harriman in Roane County to South of Whetstone Road in Morgan County, PIN 101.411.04; Project No. 65001-3266-14, 73008-3243-14;*" and "*Adaptive Management and Advance Planning Report Water Quality Monitoring Plan for SR 29 (US-27) from South of Whetstone Road to North of SR-328 in Morgan County PIN 101411.05; Project No. 65001-3268-14*").

These adaptive management and monitoring plans address acid-producing rock handling and disposal, exposure during construction, retaining walls, permanent stabilization, and water monitoring at 10 locations. TDOT's adaptive management actions will be implemented if water quality tests indicate adverse effects on water quality. With the implementation of these plans, potential impacts to stream resources from acid producing rock would be insignificant. After reviewing TDOT's proposal, the Tennessee Department of Environment and Conservation issued two Water Quality Certifications (under Section 401 of the Clean Water Act): one permit was issued on July 2, 2014 for the stretch of SR 29 from south of Whetstone Road to Balfour Drive, and on September 10, 2014, a second permit was issued for the stretch of SR 29 from SR 61 in Harriman to south of Whetstone Road.

Finally, the applicant also evaluated the impacts of the project on floodplains in its 2003 EA and found that floodplains along the Little Emory River and several tributaries would be affected by construction, though no adverse impacts were anticipated to the beneficial floodplain values within the project area. TVA has reviewed TDOT's applications and concurs with the determination that there is no practicable alternative to the proposed stream channel relocations. Therefore, the proposed action would comply with Executive Order 11988, "Floodplain Management." In addition, the project would comply with the TVA Flood Control Storage Loss Guideline because there would be less than one acre-foot of displaced flood control storage. There would be no loss of power storage.

Public and Intergovernmental Review

The 2003 EA and 2004 FONSI describe the public and intergovernmental efforts made by FHWA and TDOT in developing the 2003 EA. The effort began in 1998 when the initial interagency coordination packages were sent to federal, state, and local agencies and officials, wherein TDOT sought comments on their proposal to improve the 12.3-mile stretch of SR 29. A public meeting was hosted by TDOT in Wartburg in October 1998 to present the preliminary design plans. Once the draft EA was released for public review and comment, in April 2003 a public hearing took place in Wartburg for the public to discuss the action alternatives included in the EA. The 2004 FONSI describes the public's concerns and input for the draft EA as well as the continued coordination with federal, state, and local agencies. As noted above, TDOT and FHWA have maintained communication since 2004 with USFWS, tribes, and the State Historic Preservation Officer, as well as TVA and the USACE on the status of and updated plans for the SR 29 improvements.

TVA issued a public notice of the proposed easement and deed modification request on January 12, 2013. No comments were received in response to the public notice. In addition, on July 7, 2013, USACE and TVA issued Joint Public Notice 13-31 for a 30-day public comment period. In response, the USFWS and SHPO submitted letters confirming their previous determinations. TWRA requested information on the measures being proposed to address impacts to a number of federally- and state-listed

aquatic species. The Environmental Protection Agency (EPA) submitted a letter expressing concern with the adequacy of the public notice, the 2003 EA, and the FHWA's June 2013 re-evaluation of its previous NEPA analysis. EPA also expressed concern with potential impacts to water quality from acid producing rocks; in response, TDOT worked with EPA to develop the monitoring and adaptive management plans addressing acid-producing rocks described above. One interest group requested that a second public notice be published to provide additional information on the proposed mitigation. The United Keetoowah Band of Cherokee Indians submitted comments expressing its desire to be informed should sensitive cultural resources be located during construction. These comments were considered by TVA and contributed to the decision to complete a Supplemental EA.

Mitigation and Special Permit Conditions

The applicant will adhere to the routine environmental measures listed in the applications and the 2003 EA including standard conditions requiring the use of best management practices, and other measures to avoid potential environmental impacts (including bank stabilization and revegetation measures to avoid spread of invasive plant species, stockpiling of topsoil to minimize temporary wetland impacts, and off-site disposal of pyritic materials). As described above, the applicant has committed to mitigate impacts to wetlands and streams in the project area, as follows:

- To mitigate permanent impacts to wetlands, TDOT will debit the area of permanent wetland fills at the Walls Mitigation Site, and make a fee payment to the Tennessee Mitigation Fund for an equivalent amount of wetland credits.
- TDOT will mitigate impacts to stream crossings from encapsulation, length losses, and rip rap by purchasing an appropriate number of credits from the Tennessee In-Lieu-Fee Stream Mitigation Program (TSMP) and will also implement on-site in-kind replacements of streams.

TDOT must provide TVA with suitable documentation of these purchases and payments prior to commencing work in the affected wetlands and perennial streams, and must adhere to the additional requirements identified in its application and in the monitoring and adaptive management plans addressing acid-producing rock.

TVA Preparers

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Attachment A: *U.S. Department of Transportation Federal Highway Administration and Tennessee Department of Transportation Environmental Assessment, State Route 29 (U.S. 27) from State Route 61 East of Harriman to State Route 62 Roan/Morgan Counties, January 16, 2003.*

Attachment B: *Department of Army, Corps of Engineers Memorandum for Record, Environmental Assessment and Statement of Finding (State Route 29 from SR 51 East of the City of Harriman to South of Whetstone Road in Morgan County, Tennessee), October 9, 2014.*

Attachment C: *Department of Army, Corps of Engineers Memorandum for Record Documenting Nationwide Permit/Regional General Permit Verification (State Route 29 from Just South of Whetstone Road to Balfour Drive, in the Town of Harriman, Morgan County, Tennessee), September 24, 2014.*