



# **Appendix H**

SR-66 Natural Resources  
Technical Memorandum

# STATE ROUTE

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From State Route 34 (US-11E, Andrew Johnson Highway) in Bulls Gap to  
Near Speedwell Road/Old Highway 66, Hawkins County, Tennessee  
PIN 107579.00, Federal Project #: STP-66(38)

Appendix H: SR-66 Natural Resources Technical Memorandum  
April 2025

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Attachment 5: Tennessee Wildlife Resources Agency Email (Dated December 13, 2019)

Attachment 6: Memorandum of Agreement between TDOT, FHWA, and the Tennessee Department of Environment and Conservation Division of Natural Areas (Dated March 2023)

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Appendix B: U.S. Department of Agriculture Web Soil Survey (Dated October 8, 2024)

Appendix C: Federal Emergency Management Agency Flood Insurance Rate Maps

\*Please note that copies of the appendices listed above are available for download via the <https://tinyurl.com/SR-66Hawkins> or by scanning the QR code and have not been printed. If you would like to receive a printed version of the appendix material, please call 1-800-546-0949 or email at [TDOT.Comments@tn.gov](mailto:TDOT.Comments@tn.gov).



# 1. Introduction

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to widen and realign State Route (SR) 66, from the intersection with SR-34 (US-11E, Andrew Johnson Highway) in the Town of Bulls Gap to near the intersection with Speedwell Road/Old Highway 66, in Hawkins County.

Because the proposed project involves the use of federal funds, the project is subject to the requirements of the [National Environmental Policy Act \(NEPA\)](#).<sup>1</sup> TDOT and FHWA are preparing an Environmental Assessment (EA) in accordance with the NEPA to identify and evaluate the environmental effects of the proposed project and to identify measures to minimize harm.

## 2. Alternatives Under Consideration

A No-Build Alternative and one Build Alternative are being evaluated in the EA. Each alternative is described in the subsequent text below.

### 2.1. No-Build Alternative

The No-Build Alternative has been retained for detailed study and serves as a benchmark for comparison against the Build Alternative. The No-Build Alternative would retain the existing state route and roadway configuration throughout the SR-66 project area except for those modifications to the roadway network that have been programmed and approved for implementation, as identified in [TDOT's 25-Year Long Range Transportation Policy Plan](#),<sup>2</sup> [State Transportation Improvement Program \(STIP\)](#),<sup>3</sup> and the [TDOT 10-Year Project Plan](#)<sup>4</sup> and would allow for routine maintenance and safety upgrades.

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<sup>1</sup> <https://www.govinfo.gov/content/pkg/COMPS-10352/pdf/COMPS-10352.pdf>

<sup>2</sup> <https://www.tn.gov/tdot/long-range-planning-home/25-year-transportation-policy-plan.html>

<sup>3</sup> <https://www.tn.gov/tdot/program-development-and-administration-home/program-development-and-administration-state-programs.html>

<sup>4</sup> <https://www.tn.gov/tdot/build-with-us.html>

## 2.2. Build Alternative

According to the Right-of-Way Plans (dated August 9, 2024),<sup>5</sup> which serve as the basis of the EA, the Build Alternative would generally follow the existing SR-66 roadway alignment, except in locations where minor alignment shifts are needed to correct roadway geometric deficiencies. The Build Alternative would also widen the existing two-lane roadway configuration (which currently consists of one 10-foot-wide lane in each direction) to include the following (see **Figure 1**):

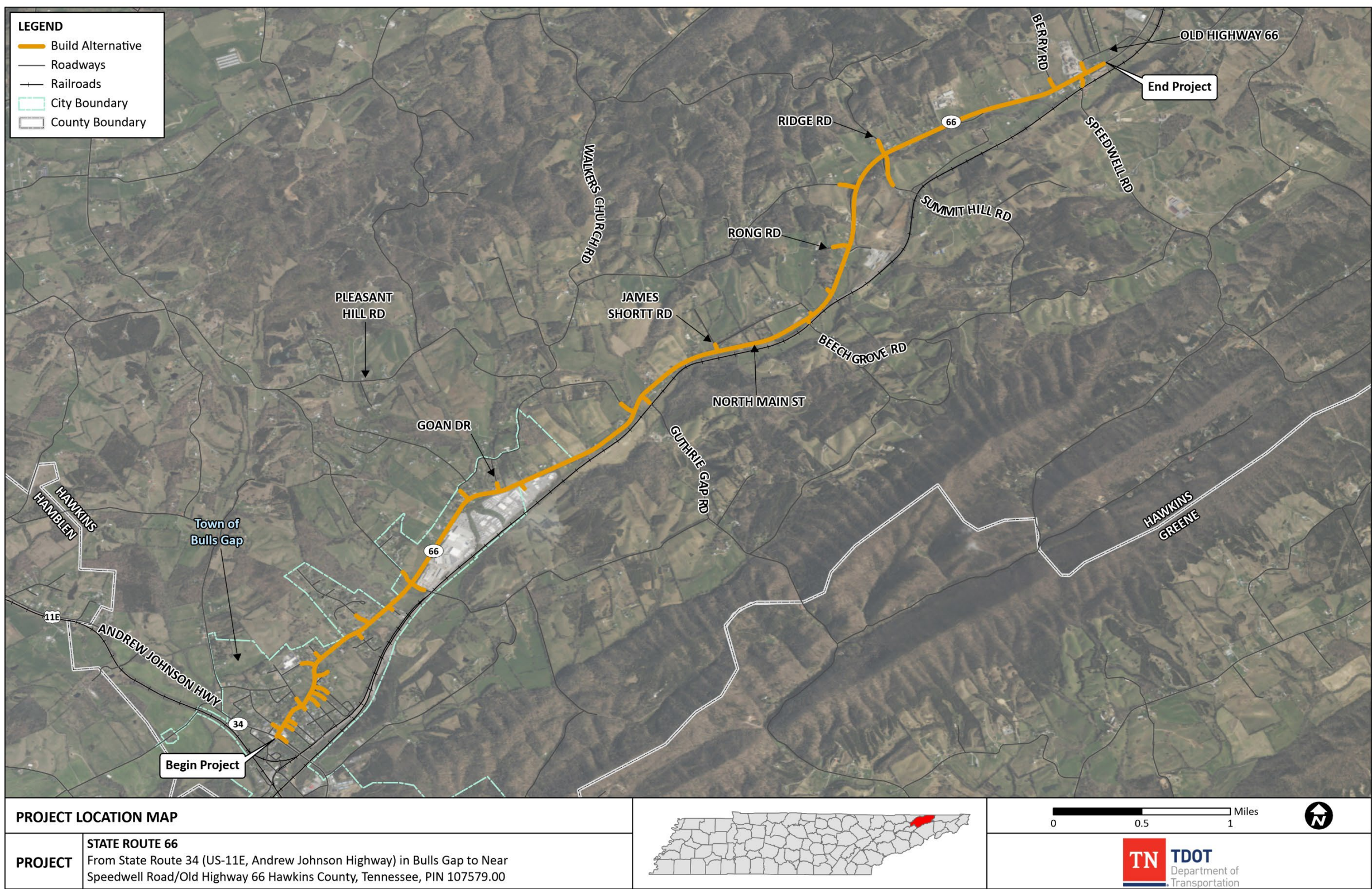
- Two 12-foot travel lanes (one travel lane in each direction) and paved shoulders four- to ten-feet in width.
- An intermittent 12-foot-wide two-way left-turn lane from SR-34 (US-11E, Andrew Johnson Highway) to north of Goan Drive and from north of Berry Road to near Speedwell Road/Old Highway 66.
- Five-foot wide sidewalks from SR-34 (US-11E, Andrew Johnson Highway) to north of Goan Drive.
- Intermittent curb and gutter.
- Guardrail, as required.

Once completed, the Build Alternative would provide a consistent typical section along SR-66 from SR-34 (US-11E, Andrew Johnson Highway) to the county seat of Rogersville, as well as provide a link from Rogersville to Interstate 81 (I-81). The total proposed project length is approximately 5.70 miles.

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<sup>5</sup> Please see **Appendix C** of the EA for a copy of the Right-of-Way Plans (dated August 9, 2024).

Figure 1: Project Location Map



### 3. Focus of this Technical Memorandum

This technical memorandum describes aquatic resources, wetlands, water quality, threatened and endangered species, wild and scenic rivers, geology, and floodplains within the SR-66 project area and provides an estimated impacts determination for both the No-Build and Build Alternatives.

### 4. Natural Resources

An ecological evaluation was conducted for the proposed project to examine the natural resources present in the SR-66 project area. A December 2024 Environmental Boundaries Report (EBR) was prepared and is summarized in this technical memorandum. Refer to **Appendix A** for a copy of the December 2024 EBR.<sup>6</sup>

#### 4.1. Aquatic Resources

The U.S. Army Corps of Engineers (USACE) has jurisdiction over “waters of the United States” under the [Clean Water Act of 1972](#)<sup>7</sup> and subsequent amendments. Waters of the U.S. include waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide, the territorial seas, or interstate waters, including interstate wetlands; impoundments of waters otherwise defined as waters of the United States; tributaries of certain waters; certain wetlands; and certain intrastate lakes, ponds, and streams ([33 CFR § 328.3](#)).<sup>8</sup>

The [Tennessee Department of Environment and Conservation \(TDEC\) Division of Water Resources \(DWR\)](#)<sup>9</sup> has regulatory authority over “waters of the state” as per the [Tennessee Water Quality Control Act of 1977](#).<sup>10</sup> Waters of the state are defined as: “any and all water, public or private, on or beneath the surface of the ground, that are contained within, flow through, or border upon Tennessee or any portion thereof, except those bodies of water confined to and retained within the limits of private property in single ownership that do not combine or effect a junction with natural surface or underground waters” ([Tennessee Code Annotated \(TCA\) 69-3-103](#)).<sup>11</sup>

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<sup>6</sup> Please note that portions of the December 2024 EBR were prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

<sup>7</sup> <https://www.law.cornell.edu/uscode/text/33/1251>

<sup>8</sup> <https://www.law.cornell.edu/cfr/text/33/328.3>

<sup>9</sup> <https://www.tn.gov/environment/program-areas/wr-water-resources/watershed-stewardship/wetlands/state-and-federal-wetland-regulations.html>

<sup>10</sup> <https://law.justia.com/codes/tennessee/2021/title-69/chapter-3/part-1/>

<sup>11</sup> <https://law.justia.com/codes/tennessee/2021/title-69/chapter-3/part-1/section-69-3-103/>

[The Tennessee Valley Authority Act of 1933 \(TVA Act\)](#)<sup>12</sup> delegated authority to the TVA for activities related to the conservation and development of the Tennessee River Valley and the surrounding areas. In particular, [Section 26a](#)<sup>13</sup> of the Act requires that TVA's approval be obtained prior to the construction, operation, or maintenance of any dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations along or in the Tennessee River or any of its tributaries. The proposed project is not located within the Tennessee River Valley; therefore, stream impacts such as bridge crossings or culvert placements, stream channel modifications or relocations, and/or wetland impacts are not subject to review and/or approval by the TVA.

Studies to determine the impacts of the Build Alternative on aquatic resources were conducted by biologists in October and November 2015 and October 2018. Studies included literature and database surveys as well as field investigations. Particular attention was given to locating streams and specialized habitats (such as glades and streams) that could harbor protected species or influence water quality.

### 4.1.1. Identified Aquatic Resources within the Limits of the Build Alternative

Waters of the U.S. (other than wetlands, which are discussed in **Section 4.2**) were identified in the field by evidence of standing or flowing water, the presence of a stream channel, and lack of terrestrial vegetation. A stream or drainage course was considered to be a water of the U.S. provided a definable channel bed and bank existed. Jurisdictional limits for non-wetland waters were based upon the "ordinary high-water mark (OHWM)." Stream channels are considered regulated waters of the U.S. by the USACE.

Streams were determined to be perennial based upon:

- Symbology shown on U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps;
- Presence of flowing water; and
- The presence of aquatic organisms, most notably fish and benthic macroinvertebrates.

A non-flowing stream was deemed intermittent streambed if the channel intercepted the groundwater table or standing water was present. Watercourses that were considered wet weather conveyances lacked standing or flowing water and showed evidence of flow only after a short duration of rainfall events.

According to the Aquatic Resource Impact Table included within the December 2024 EBR,<sup>14</sup> 22 perennial streams (approximately 2,340 linear feet), six intermittent streams (approximately 1,235 linear feet), and four wet weather conveyances (approximately 185 linear feet) were identified within the limits of the Build Alternative. Additionally, the Impact Table shows that nine ponds (0.33 acres) were identified within the limits of the Build Alternative. The quality of streams was considered "undetermined at this time."

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<sup>12</sup> <https://www.law.cornell.edu/uscode/text/16/chapter-12A>

<sup>13</sup> <https://www.law.cornell.edu/uscode/text/16/831y-1>

<sup>14</sup> Please note that the Aquatic Resource Impact Table included within the December 2024 EBR was prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

Refer to **Table 1** below for more information about each aquatic resource. Refer to the December 2024 EBR, included in **Appendix A**, for a copy of the Aquatic Resource Impact Table, which includes impact determinations for aquatic resources within the limits of the Build Alternative.

### 4.2. Wetlands

Wetlands are defined by the USACE and the U.S. Environmental Protection Agency (EPA) as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration to sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas” ([33 CFR § 328.3](#)). The USACE, through [Section 404 of the Clean Water Act](#),<sup>15</sup> has regulatory authority over waters of the U.S., which includes wetlands.

In order to be considered a wetland, an area must have all of the following characteristics:

- Wetland vegetation;
- Wetland soil types; and
- Wetland hydrology.

Studies to determine the impacts of the Build Alternative on wetlands were conducted by biologists in October and November 2015 and October 2018. Studies included literature and database surveys as well as field investigations. Wetlands were identified and delineated during field investigations according to the criteria set forth in the [1987 Corps of Engineers Wetlands Delineation Manual](#)<sup>16</sup> and the [2012 Regional Supplement: Eastern Mountains and Piedmont Region, Version 2.0](#).<sup>17</sup>

#### 4.2.1. Identified Wetlands Within the Limits of the Build Alternative

According to the Wetland Impact Table included within the December 2024 EBR,<sup>18</sup> 16 wetlands (0.539 acres) were identified within the limits of the Build Alternative. Refer to **Table 2** below for more information about each wetland. Refer to the December 2024 EBR, included in **Appendix A**, for a copy of the Wetland Impact Table, which includes impact determination for wetlands within the limits of the Build Alternative.

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<sup>15</sup> <https://www.law.cornell.edu/uscode/text/33/1344>

<sup>16</sup> [https://www.sac.usace.army.mil/Portals/43/docs/regulatory/1987\\_wetland\\_delineation\\_manual\\_reg.pdf](https://www.sac.usace.army.mil/Portals/43/docs/regulatory/1987_wetland_delineation_manual_reg.pdf)

<sup>17</sup> [https://www.nap.usace.army.mil/Portals/39/docs/regulatory/reg\\_supplements/EMP\\_Piedmont\\_v2.pdf](https://www.nap.usace.army.mil/Portals/39/docs/regulatory/reg_supplements/EMP_Piedmont_v2.pdf)

<sup>18</sup> Please note that the Wetland Impact Table included within the December 2024 EBR was prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

Table 1: Aquatic Resources (Non-Wetland) Within the Limits of the Build Alternative<sup>19</sup>

Labels	Type	Quality	Impacts*
Streams			
Stream (STR)-1	Perennial	Undetermined	90 Linear Feet (LF)
STR-2	Perennial	Undetermined	80 LF
STR-3	Intermittent	Undetermined	250 LF
STR-4	Perennial	Undetermined	90 LF
STR-5	Intermittent	Undetermined	120 LF
STR-6	Intermittent	Undetermined	125 LF
STR-7	Perennial	Undetermined	110 LF
STR-8	Perennial	Undetermined	130 LF
STR-9	Perennial	Undetermined	65 LF
STR-10	Perennial	Undetermined	70 LF
STR-11	Perennial	Undetermined	110 LF
STR-12	Perennial	Undetermined	160 LF
STR-13	Perennial	Undetermined	110 LF
STR-14	Perennial	Undetermined	0 LF
Spring (SPG)-1 / STR-15	Perennial	Undetermined	0 LF
STR-16	Perennial	Undetermined	90 LF
STR-17	Perennial	Undetermined	120 LF
STR-18	Perennial	Undetermined	270 LF
STR-19	Intermittent	Undetermined	325 LF
STR-20	Intermittent	Undetermined	325 LF
STR-21	Perennial	Undetermined	350 LF
STR-22	Perennial	Undetermined	100 LF
STR-23	Intermittent	Undetermined	90 LF
STR-24	Perennial	Undetermined	110 LF
STR-25	Perennial	Undetermined	80 LF
STR-26	Perennial	Undetermined	75 LF
STR-27	Perennial	Undetermined	90 LF
STR-28	Perennial	Undetermined	40 LF
Wet Weather Conveyance (WWC)-1	Ephemeral	Undetermined	0 LF

<sup>19</sup> Please note that the Aquatic Resource Impact Table included within the December 2024 EBR was prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

Labels	Type	Quality	Impacts*
WWC-2	Ephemeral	Undetermined	60 LF
WWC-3	Ephemeral	Undetermined	0 LF
WWC-4	Ephemeral	Undetermined	125 LF
Ponds			
Pond (PND)-1	Pond	Not Applicable (N/A)	None
PND-2	Pond	N/A	None
PND-3	Pond	N/A	None
PND-4	Pond	N/A	None
PND-5	Pond	N/A	0.33 Acres
PND-6	Pond	N/A	None
PND-7	Pond	N/A	None
PND-8	Pond	N/A	None
PND-9	Pond	N/A	None
Total Perennial Stream Impact			2,340 Linear Feet
Total Intermittent Stream Impact			1,235 Linear Feet
Total Wet Weather Conveyance Impact			185 Linear Feet
Total Pond Impact			0.33 Acres
<i>*Estimated impacts are considered “preliminary” and will not be accurate until the time of permit application.</i>			
<i>Source: Aquatic Resource Impact Table, included within the December 2024 EBR in <b>Appendix A</b>.</i>			

Table 2: Aquatic Resources (Wetland) Within the Limits of the Build Alternative<sup>20</sup>

Labels	Type	Quality	Function	Impacts*
Wetlands				
Wetland (WTL)-1	Emergent	Undetermined	Stormwater Storage	0.0 Acre (ac.)
WTL-2	Emergent	Undetermined	Stormwater Storage	0.002 ac.
WTL-3	Scrub/Shrub	Undetermined	Stormwater Storage	0.06 ac.
WTL-4	Scrub/Shrub	Undetermined	Stormwater Storage	0.0 ac.
WTL-5	Scrub/Shrub	Undetermined	Stormwater Storage	0.03 ac.
WTL-6	Emergent	Undetermined	Stormwater Storage	0.0 ac.
WTL-7	Scrub/Shrub	Undetermined	Stormwater Storage	0.0 ac.
WTL-8	Emergent	Undetermined	Stormwater Storage	0.01 ac.
WTL-9	Scrub/Shrub	Undetermined	Stormwater Storage	0.23 ac.
WTL-10	Emergent	Undetermined	Stormwater Storage	0.03 ac.
WTL-11	Emergent	Undetermined	Stormwater Storage	0.03 ac.
WTL-12	Emergent	Undetermined	Stormwater Storage	0.07 ac.
WTL-13	Emergent	Undetermined	Stormwater Storage	0.0 ac.
WTL-14	Scrub/Shrub	Undetermined	Stormwater Storage	0.007 ac.
WTL-15	Emergent	Undetermined	Stormwater Storage	0.0 ac.
WTL-16	Emergent	Undetermined	Stormwater Storage	0.07 ac.
Total Wetland Impact				0.539 Acres
<i>*Estimated impacts are considered “preliminary” and will not be accurate until the time of permit application. Source: Wetland Impact Table, included within the December 2024 EBR in <b>Appendix A</b>.</i>				

<sup>20</sup> Please note that the Wetland Impact Table included within the December 2024 EBR was prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

## 4.3. Impacts to Aquatic Resources and Wetlands

### 4.3.1. No-Build Alternative

The No-Build Alternative would not make changes to existing roadway network. Therefore, the No-Build Alternative would have no direct impacts to aquatic resources or wetlands.

### 4.3.2. Build Alternative

According to the Aquatic Resource and Wetland Impact Table included within the December 2024 EBR,<sup>21</sup> 22 perennial streams (approximately 2,340 linear feet), six intermittent streams (approximately 1,235 linear feet), four wet weather conveyances (approximately 185 linear feet), nine ponds (0.33 acres), and 16 wetlands (approximately 0.539 acres) are located within the limits of the Build Alternative.

At this time, the determinations as to which are waters of the State and/or of the U.S. have not been confirmed by TDEC or the USACE. The determination as to which features are waters of the State and/or U.S. will occur during later project development phases (permitting).

## 4.4. Minimization/Mitigation Measures to Address Impacts

Throughout the design process, TDOT will endeavor to mitigate impacts to streams, wetlands, or any other jurisdictional water features through avoidance and minimization. Where impacts cannot be avoided or sufficiently minimized, compensatory mitigation for permanent stream/wetland impacts would be accomplished either through permittee-responsible mitigation, mitigation banking, or In-Lieu Fee mitigation to satisfy statutory requirements.

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<sup>21</sup> Please note that the Aquatic Resource and Wetland Impact Table included within the December 2024 EBR was prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

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**Table 3: Potential Aquatic Resource Impacts<sup>22,23</sup>**

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Perennial Streams	No Effect	Twenty-two perennial streams (approximately 2,340 linear feet) are located within the limits of the Build Alternative.	Throughout the design process, TDOT will endeavor to mitigate impacts to streams, wetlands, or any other jurisdictional water features through avoidance and minimization. Where impacts cannot be avoided or sufficiently minimized, compensatory mitigation for permanent stream/wetland impacts would be accomplished either through permittee-responsible mitigation, mitigation banking, or In-Lieu Fee mitigation to satisfy statutory requirements.
Intermittent Streams	No Effect	Six intermittent streams (approximately 1,235 linear feet) are located within the limits of the Build Alternative.	
Wet Weather Conveyances	No Effect	Four wet weather conveyances (approximately 185 linear feet) are located within the limits of the Build Alternative.	
Ponds	No Effect	Nine ponds (approximately 0.33 acres) are located within the limits of the Build Alternative.	
Wetlands	No Effect	Sixteen wetlands (approximately 0.539 acres) are located within the limits of the Build Alternative.	

<sup>22</sup> Aquatic resource impacts were identified based on the Aquatic Resource and Wetland Impact Table included within the December 2024 Environmental Boundaries Report, which is included in **Appendix A**.

<sup>23</sup> At this time, the determinations as to which are waters of the State and/or of the U.S. have not been confirmed by Tennessee Department of Environment and Conservation or the U.S. Army Corps of Engineers. The determination as to which features are waters of the State and/or U.S. will occur during later project development phases (permitting).

## 4.5. Water Quality

Water quality can be affected by various sources such as surrounding land uses, point and non-point source pollution, and the amount of impervious surfaces within an area. Currently, several factors are contributing to the degradation of water quality in the SR-66 project area, including grazing livestock and agriculture. These activities and land uses could likely all contribute to increased amounts of sediments, pollutants, and increases in surface water temperature.

[Section 303\(d\) of the Clean Water Act](#)<sup>24</sup> mandates each state to identify and develop a list of waters (i.e., rivers and lakes) that do not meet water quality standards. States are required to develop action plans to improve the water quality of these waters that are listed as impaired. The EPA compiled a list in April 2024 of 303(d) impaired waters throughout the country, which includes [Tennessee's 2024 303\(d\) List of Impaired and Threatened Waters](#).<sup>25</sup>

### 4.5.1. Identified 303(d) Listed Streams Within the Limits of the Build Alternative

Within the SR-66 project area, the [Tennessee's 2024 303\(d\) List of Impaired and Threatened Waters](#) lists Whitehorn Creek. The following existing impairments have been identified for Whitehorn Creek:

- Alteration in stream-side or littoral vegetative covers, due to grazing in riparian or shoreline zones and crop production (non-irrigated);
- Dissolved oxygen due to grazing in riparian or shoreline zones and crop production (non-irrigated);
- *Escherichia coli* (*E. coli*) due to grazing in riparian or shoreline zones; and
- Sedimentation/siltation due to grazing in riparian or shoreline zones and crop production (non-irrigated).

## 4.6. Impacts to Water Quality

### 4.6.1. No-Build Alternative

The No-Build Alternative would not make changes to existing roadway network. Therefore, the No-Build Alternative would have no direct impacts to water quality.

### 4.6.2. Build Alternative

One 303(d) listed stream, Whitehorn Creek, is found within the limits of the Build Alternative. The following existing impairments have been identified for Whitehorn Creek:

- Alteration in stream-side or littoral vegetative covers, due to grazing in riparian or shoreline zones and crop production (non-irrigated);
- Dissolved oxygen due to grazing in riparian or shoreline zones and crop production (non-irrigated);
- *Escherichia coli* (*E. coli*) due to grazing in riparian or shoreline zones; and

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<sup>24</sup> <http://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title33-section1313&num=0&edition=prelim>

<sup>25</sup> <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html>

- Sedimentation/siltation due to grazing in riparian or shoreline zones and crop production (non-irrigated).

Water quality may be impacted as a result of the Build Alternative.

### **4.7. Minimization/Mitigation Measures to Address Impacts**

Some of the projected impacts to water quality would be offset by the roadway design and by the federal, state, and local regulations that require erosion and sediment control plans, the implementation of best management practices (BMPs), and various water quality permits that require water quality monitoring.

**Table 4: Potential Water Quality Impacts**

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Water Quality	No Effect	<p>One 303(d)<sup>26</sup> listed stream, Whitehorn Creek, is found within the limits of the Build Alternative. The following existing impairments have been identified for Whitehorn Creek:</p> <ul style="list-style-type: none"> <li>• Alteration in stream-side or littoral vegetative covers, due to grazing in riparian or shoreline zones and crop production (non-irrigated);</li> <li>• Dissolved oxygen due to grazing in riparian or shoreline zones and crop production (non-irrigated);</li> <li>• <i>Escherichia coli</i> (<i>E. coli</i>) due to grazing in riparian or shoreline zones; and</li> <li>• Sedimentation/siltation due to grazing in riparian or shoreline zones and crop production (non-irrigated).</li> </ul> <p>Water quality may be impacted as a result of the Build Alternative.</p>	<p>Some of the projected impacts to water quality would be offset by the roadway design and by the federal, state, and local regulations that require erosion and sediment control plans, the implementation of best management practices, and various water quality permits that require water quality monitoring.</p>

<sup>26</sup> The Environmental Protection Agency compiled a list in April 2024 of 303(d) impaired waters that do not meet water quality standards. Tennessee's 2024 303(d) List of Impaired and Threatened Waters can be accessed at: <https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html>

## 4.8. Threatened and Endangered Species

Threatened and endangered species are protected under federal law by the [Endangered Species Act \(ESA\) of 1973](#).<sup>27</sup> As defined by the ESA, an endangered species is any resident species in danger of extinction throughout all or a significant portion of its range. A threatened species is any resident species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The U.S. Fish and Wildlife Service (USFWS) is the federal agency responsible for determining whether a species should be listed. Once a species has been listed, it is protected until its population has recovered to the point it can be taken off the list (delisted). If a federally listed species is present in the SR-66 project area, the federal agency responsible for the proposed project (in this case, the FHWA) must consult with the USFWS. The FHWA, in consultation with the USFWS, determines whether the proposed project is likely to adversely affect the species or habitat.

Information from several sources, as well as prior experience with habitats in the area, was used to prepare for field surveys to locate protected species or habitats. These sources included database information provided by TDEC, the USFWS, and books and/or databases of cave records.

### 4.8.1. Identified Threatened or Endangered Species Within the Limits of the Build Alternative

As part of the December 2024 EBR, coordination was completed with the USFWS and the Tennessee Wildlife Resources Agency (TWRA), and a review of the TDEC Rare Species Data Viewer was completed. The results of these coordination efforts are summarized the section below.

#### U.S. FISH AND WILDLIFE SERVICE

Coordination with the USFWS was initially completed for the Build Alternative on April 9, 2012. In their response, the USFWS stated that they were not aware of any federally listed or proposed endangered or threatened species located in the SR-66 project area. Therefore, the requirements of [Section 7 of the ESA](#) are fulfilled for all species that currently receive protection under the ESA. The USFWS also stated that the obligations under [Section 7 of the ESA](#) should be reconsidered if:

- New information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, or
- The proposed action is subsequently modified to include activities which were not considered during this consultation, or
- New species are listed or critical habitat designated that might be affected by the proposed action.

Additionally, the USFWS stated that according to their [National Wetlands Inventory maps](#)<sup>28</sup> no wetlands are present within the SR-66 project area. However, if evidence of wetlands are observed, or if wetland impacts would occur, coordination is required with the USACE.

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<sup>27</sup> <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter35&edition=prelim>

<sup>28</sup> <https://www.fws.gov/program/national-wetlands-inventory>

Subsequent coordination with the USFWS was completed on November 21, 2016. In their response, USFWS stated that some potentially suitable roosting habitat for the federally endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) may be removed for the Build Alternative, particularly where stream crossings occur. The USFWS stated if necessary protective measures for wintertime forest clearing within 100-feet of roadway surface that do not remove known roosts or document foraging/travel corridors and is no closer than one-half mile from the entrance of a documented hibernaculum are implemented, the Build Alternative would be eligible for programmatic consultation with a “not likely to adversely affect” determination for Indiana bat and NLEB. The USFWS also reiterated that no wetlands are present within the SR-66 project area, but if evidence of wetlands is obtained, coordination is required with the USACE.

Additional coordination with the USFWS was completed on December 17, 2019. The USFWS stated that they were not aware of any federally listed or proposed species located in the SR-66 project area. Therefore, the requirements of [Section 7 of the ESA](#) are fulfilled for all species that currently receive protection under the ESA. The obligations under [Section 7 of the ESA](#) should be reconsidered under the same circumstances as were discussed in the 2012 correspondence.

Further coordination with the USFWS was completed on December 18, 2024. The USFWS reiterated that they were not aware of any federally listed or proposed species located in the SR-66 project area. Therefore, the requirements of the [Section 7 of the ESA](#) are fulfilled for all species that currently receive protection under the ESA. The obligations under [Section 7 of the ESA](#) should be reconsidered under the same circumstances as were discussed in the 2012 correspondence. The USFWS also requested that standard construction BMPs be implemented to ensure that project-related pollutants are kept out of the SR-66 project area streams, that equipment staging and maintenance areas should be developed an adequate distance away from streams to prevent the introduction of petroleum-based pollutants into the water, that fresh concrete and cement dust should be kept out of the water as they alter chemical properties and can be toxic to aquatic species, and that work at crossings should be scheduled during a lower flow period.

Refer to **Attachment 1** for a copy of the USFWS response dated April 9, 2012. Refer to **Attachment 2** for a copy of the USFWS response dated November 21, 2016. Refer to **Attachment 3** for a copy of the USFWS response dated December 17, 2019. Refer to **Attachment 4** for a copy of the USFWS response dated December 18, 2024. Please note that these responses are also included in the December 2024 EBR, located in **Appendix A**.

### TENNESSEE WILDLIFE RESOURCES AGENCY

Coordination with the TWRA was completed for the Build Alternative on December 13, 2019. In their response, the TWRA stated that their original comments from 2012<sup>29</sup> remain valid. The 2012 findings stated the current (2012) data shows no occurrences of state-listed species within four miles of the Build Alternative. The TWRA also requested that in addition to the implementation of BMPs, a site visit should be conducted by qualified TDOT personnel to ensure erosion control measures are followed.

Refer to **Attachment 5** for a copy of the TWRA response dated December 13, 2019. Please note that this response is also included in the December 2024 EBR, located in **Appendix A**.

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<sup>29</sup> Please note that the TWRA response dated March 26, 2012 was not included in the December 2024 EBR, and is only referenced by the TWRA in their response dated December 13, 2019.

## TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

The TDEC Rare Species Data Viewer, reviewed on December 11, 2019, identified one state-listed species known to occur within a one-mile radius of the Build Alternative. In addition, the TDEC Rare Species Data Viewer documented two<sup>30</sup> state-listed rare species within a four-mile radius of the Build Alternative. One federally-listed rare species was identified within a four-mile radius of the Build Alternative. Refer to **Table 5** and **Table 6** below for more information about the identified threatened or endangered species.

**Table 5: Rare Species Within a One-Mile Radius of the Build Alternative<sup>31</sup>**

Type	Scientific Name	Common Name	Federally Protected	State Protected	Habitat
Plant	<i>Trillium tennesseense</i>	Tennessee trillium	--	E	Wooded floodplains
Acronyms: E = endangered					

**Table 6: Rare Species Within a Four-Mile Radius of the Build Alternative<sup>32</sup>**

Type	Scientific Name	Common Name	Federally Protected	State Protected	Habitat
Plant	<i>Trillium tennesseense</i>	Tennessee trillium	--	E	Wooded floodplains
Plant	<i>Berberis canadensis</i>	American barberry	--	S	Open woods, on bluffs and cliffs, and along river banks
Animal	<i>Quadrula intermedia</i>	Cumberland monkeyface	LE, XN	E	Shallow riffle and shoal areas of headwater streams and bigger rivers
Acronyms: E = endangered; S = special concern; LE = listed endangered; XN = non-essential experimental population in portion of range.					

<sup>30</sup> Please note that the Tennessee trillium was identified within both a one-mile radius and four-mile radius of the Build Alternative.

<sup>31</sup> See the December 2024 Environmental Boundaries Report, included in **Appendix A**, for additional details.

<sup>32</sup> See the December 2024 Environmental Boundaries Report, included in **Appendix A**, for additional details.

As part of the December 2024 EBR, TDOT determined that the Build Alternative is covered under the 2023 Memorandum of Agreement (MOA) between TDOT, FHWA, and TDEC Division of Natural Areas (DNA). Specifically, the Build Alternative falls within the criteria listed in the 2023 MOA between TDOT, FHWA, and TDEC DNA, Condition Number (1), *“Based on a review of the project study area and the TDEC Natural Heritage Database, both of the following criteria must be met: TDOT ecology project review staff have determined that there are no known records of State- or Federally listed plant species within the project study area; and TDOT ecology project review staff or qualified consultants have determined the project area does not contain habitat for State-listed plant species documented within four miles, or if potential habitat is present, an appropriately timed presence/absence survey has been conducted for State-listed plant species with negative results.”* Therefore, coordination with the TDEC DNA was not completed.

Refer to **Attachment 6** for a copy of the 2023 MOA between TDOT, FHWA, and TDEC DNA. Refer to the December 2024 EBR, located in **Appendix A**, for a more details.

## 4.9. Impacts to Threatened and Endangered Species

### 4.9.1. No-Build Alternative

The No-Build Alternative would not make changes to existing roadway network. Therefore, the No-Build Alternative would have no direct impacts to threatened and endangered species.

### 4.9.2. Build Alternative

Per the USFWS coordination letter, dated December 18, 2024, there are no federally listed or proposed species that would be impacted by the Build Alternative and Section 7 clearance of the [ESA](#) has been received. There will be “No Effect” to any federally listed species. The USFWS also requested that standard construction BMPs be implemented to avoid and minimize impacts to the SR-66 project area streams and aquatic species.

Per the TWRA coordination letter, dated December 13, 2019, implementation of standard BMPs would satisfy the needs of TWRA. The TWRA also requested that a site visit should be conducted by qualified TDOT personnel to ensure erosion control measures are followed.

Based on a review of the TDEC Rare Species Data Viewer, dated December 11, 2019, one state-listed species (Tennessee trillium (*Trillium tennesseense*)) was identified within a one-mile radius of the Build Alternative. In addition, two<sup>33</sup> state-listed rare species (Tennessee trillium (*Trillium tennesseense*) and American barberry (*Berberis canadensis*)) were identified within a one- to four-mile radius of the Build Alternative. One federally-listed rare species (Cumberland monkeyface (*Quadrula intermedia*)) was identified within a one- to four-mile radius of the Build Alternative.

As indicated in the December 2024 EBR, the Build Alternative is covered under the 2023 MOA between TDOT, FHWA, and TDEC DNA; therefore, coordination with the TDEC DNA was not completed.

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<sup>33</sup> Please note that the Tennessee trillium was identified within both a one-mile radius and four-mile radius of the Build Alternative.

## **4.10. Minimization/Mitigation Measures to Address Impacts**

To satisfy the requirements of the USFWS and the TWRA, standard BMPs would be implemented to avoid and minimize impacts to protected species.

Table 7: Potential Threatened and Endangered Species Impacts

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Threatened and Endangered Species	No Effect	<p>Per the U.S. Fish and Wildlife Service coordination letter, dated December 18, 2024, there are no federally listed or proposed species that would be impacted by the Build Alternative and Section 7 clearance of the <a href="#">Endangered Species Act of 1973</a><sup>34</sup> has been received. There will be “No Effect” to any federally listed species. The U.S. Fish and Wildlife Service also requested that standard construction best management practices be implemented to avoid and minimize impacts to the SR-66 project area streams and aquatic species.</p> <p>Per the Tennessee Wildlife Resources Agency coordination letter, dated December 13, 2019, implementation of standard best management practices would satisfy the needs of the Tennessee Wildlife Resources Agency. The Tennessee Wildlife Resources Agency also requested that a site visit should be conducted by qualified TDOT personnel to ensure erosion control measures are followed. Based on a review of the Tennessee Department of Environment and Conservation Rare Species Data Viewer, reviewed December 11, 2019, one state-listed species (Tennessee trillium (<i>Trillium tennesseense</i>)) was identified within a one-mile radius of the Build Alternative. In addition, two<sup>35</sup> state-listed rare species (Tennessee trillium (<i>Trillium tennesseense</i>) and American barberry (<i>Berberis canadensis</i>)) were identified within a one-to four-mile radius of the Build Alternative. One federally-listed rare species (Cumberland monkeyface (<i>Quadrula intermedia</i>)) was identified within a one- to four-mile radius of the Build Alternative.</p> <p>As indicated in the December 2024 Environmental Boundaries Report, the Build Alternative is covered under the 2023 Memorandum of Agreement between TDOT, FHWA, and Tennessee Department of Environment and Conservation Division of Natural Areas; therefore, coordination with the Tennessee Department of Environment and Conservation Division of Natural Areas was not completed.</p>	To satisfy the requirements of the U.S Fish and Wildlife Service and the Tennessee Wildlife Resources Agency, standard best management practices would be implemented to avoid and minimize impacts to protected species.

<sup>34</sup> <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter35&edition=prelim>

<sup>35</sup> Please note that the Tennessee trillium was identified within both a one-mile radius and a one- to four-mile radius of the Build Alternative.

## 4.11. Wild and Scenic Rivers

Wild and scenic rivers and streams are federally protected under the [Wild and Scenic Rivers Act](#)<sup>36</sup> for their scenic, cultural, historic, recreational, wildlife, geologic, or other values. The U.S. Department of Agriculture (USDA), through the U.S. Forest Service, and the U.S. Department of Interior, through the USFWS, the Bureau of Land Management, and the National Park Service, maintain the National Inventory of Rivers. The National Inventory of Rivers lists rivers that are designated or may be eligible for wild and scenic rivers designation.

### 4.11.1. Identified Wild and Scenic Rivers Within the Limits of the Build Alternative

No water courses listed on the National Wild and Scenic River System (NWSRS) and no rivers listed in the Nationwide Inventory of Rivers with potential inclusion in the NWSRS exist within the SR-66 project area.

## 4.12. Impacts to Wild and Scenic Rivers

### 4.12.1. No-Build Alternative

The No-Build Alternative would not make changes to existing roadway network. Therefore, the No-Build Alternative would have no direct impacts to wild and scenic rivers.

### 4.12.2. Build Alternative

No rivers listed on the NWSRS are located within the limits of the Build Alternative. Therefore, the Build Alternative would not impact any wild and scenic rivers.

## 4.13. Minimization/Mitigation Measures to Address Impacts

The Build Alternative would not result in adverse impacts to wild and scenic rivers; therefore, no mitigation is proposed.

**Table 8: Potential Wild and Scenic Rivers Impacts**

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Wild and Scenic Rivers	No Effect	No Effect	Not Applicable

<sup>36</sup> <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter28&edition=prelim>

## 4.14. Geology

Soils within the SR-66 project area are primarily silt loam (Hamblen, Leadvale, Litz, Needmore, Sequoia, Taft, and Whitesburg series) or shaly silty clay loam (Dandridge series), as described in the [USDA Web Soil Survey](#),<sup>37</sup> accessed on October 8, 2024. According to the [USDA Web Soil Survey](#), slopes within the SR-66 project area range from zero to 60 percent, and portions of the SR-66 project area are eroded and occasionally flooded. Refer to **Appendix B** for a copy of the USDA Web Soil Survey dated October 8, 2024. Please note that TDOT is likely to prepare a subsurface investigation the proposed SR-66 project as the project moves through the development process.

## 4.15. Impacts to Geology

### 4.15.1. No-Build Alternative

The No-Build Alternative would not make changes to existing roadway network. Therefore, no direct impacts to geology would occur.

### 4.15.2. Build Alternative

Construction of the Build Alternative may result in impacts to geology, such as impacts to drainage and ground and slope instability.

## 4.16. Minimization/Mitigation Measures to Address Impacts

As per TDOT standard practice, TDOT would likely conduct a subsurface investigation during subsequent phases of project development and develop a project-specific design to address any geotechnical or geological concerns that are identified at that time.

**Table 9: Potential Geology Impacts**

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Geology	No Effect	Construction of the Build Alternative may result in impacts to geology, such as impacts to drainage and ground and slope instability.	As per TDOT standard practice, TDOT would likely conduct a subsurface investigation during subsequent phases of project development and develop a project-specific design to address any geotechnical or geological concerns that are identified at that time.

<sup>37</sup> <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

## 4.17. TDOT Ecology Section's Environmental Studies Request Response

An Environmental Studies Request (ESR) was submitted to TDOT's Ecology Section on September 11, 2024 for the Build Alternative.<sup>38</sup> The TDOT Ecology Section provided the following response on December 19 2024:

*"The ecology information in the EBR dated 1-27-20<sup>39</sup> remains valid at this time. USFWS species information was updated on 12-18-24 and there are no species concerns."*

Refer to **Attachment 7** for a copy of the TDOT Ecology Section's ESR response dated December 19, 2024.

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<sup>38</sup> Please note that the TDOT Ecology Section utilized the December 2024 EBR as the basis of their ESR response, portions of which were prepared based on a prior set of Right-of-Way Plans (dated March 12, 2019). This is inconsistent with all other technical memorandums, which were developed based on the Right-of-Way Plans (dated August 9, 2024). The focus of this EA remains the Right-of-Way Plans (dated August 9, 2024).

<sup>39</sup> Please note that the TDOT Ecology Section originally prepared an EBR for the proposed SR-66 project on January 27, 2020. This EBR was updated on December 19, 2024 to include the USFWS coordination dated December 18, 2024. Apart from the cover sheet and the USFWS coordination dated December 18, 2024, all other content within the December 2024 EBR remained consistent with the January 2020 EBR. Therefore, this EBR is referred to as the December 2024 EBR throughout this technical memorandum.

## 4.18. Floodplains

Floodplains are low-lying areas located adjacent to the channel of a river, stream, or other type of water body. These areas are subject to periodic flooding during heavy rains and/or long periods of wet weather. Protection of floodways and floodplains is required under [23 CFR § 650A](#);<sup>40</sup> [Executive Order \(EO\) 11988, Floodplain Management](#);<sup>41</sup> and the [U.S. Department of Transportation \(USDOT\) Order 5650.2, Floodplain Management and Protection](#).<sup>42</sup> The intention of these directives is to avoid, or minimize, highway encroachments within the 100-year (base) floodplains or regulatory floodway, where practicable, and to avoid supporting land use development that is incompatible with floodplain values. In accordance with these directives, an assessment of impacts to the floodplains associated with the SR-66 project area streams was conducted.

This section of the technical memorandum identifies the floodplains with the limits of the SR-66 project area as well as provides an estimated impact determination for both the No-Build and Build Alternatives.

### 4.18.1. Existing Conditions

The SR-66 project area is located on the following Federal Emergency Management Area (FEMA) Flood Insurance Rate Maps (FIRMs) for Hawkins County:

- Hawkins County
  - Panel 365 of 435, Map Number 47073C0365D (accessed on December 11, 2024)
  - Panel 370 of 435, Map Number 47073C0370D (accessed on December 11, 2024)

Portions of the Build Alternative are located in or near a FEMA defined floodplain; however, there is no detailed study. Specifically, approximately 2.36 acres of the 100-year floodplain associated with Whitehorn Creek, including McPhernon Branch and Moore Branch, is located within the limits of the Build Alternative. Whitehorn Creek is one of many tributary streams to the Nolichucky River, which is located south of the SR-66 project area.

Refer to **Figure 2** below for a map of the floodplains found within the limits of the Build Alternative. Copies of each individual FIRM can be found below in **Appendix C**.

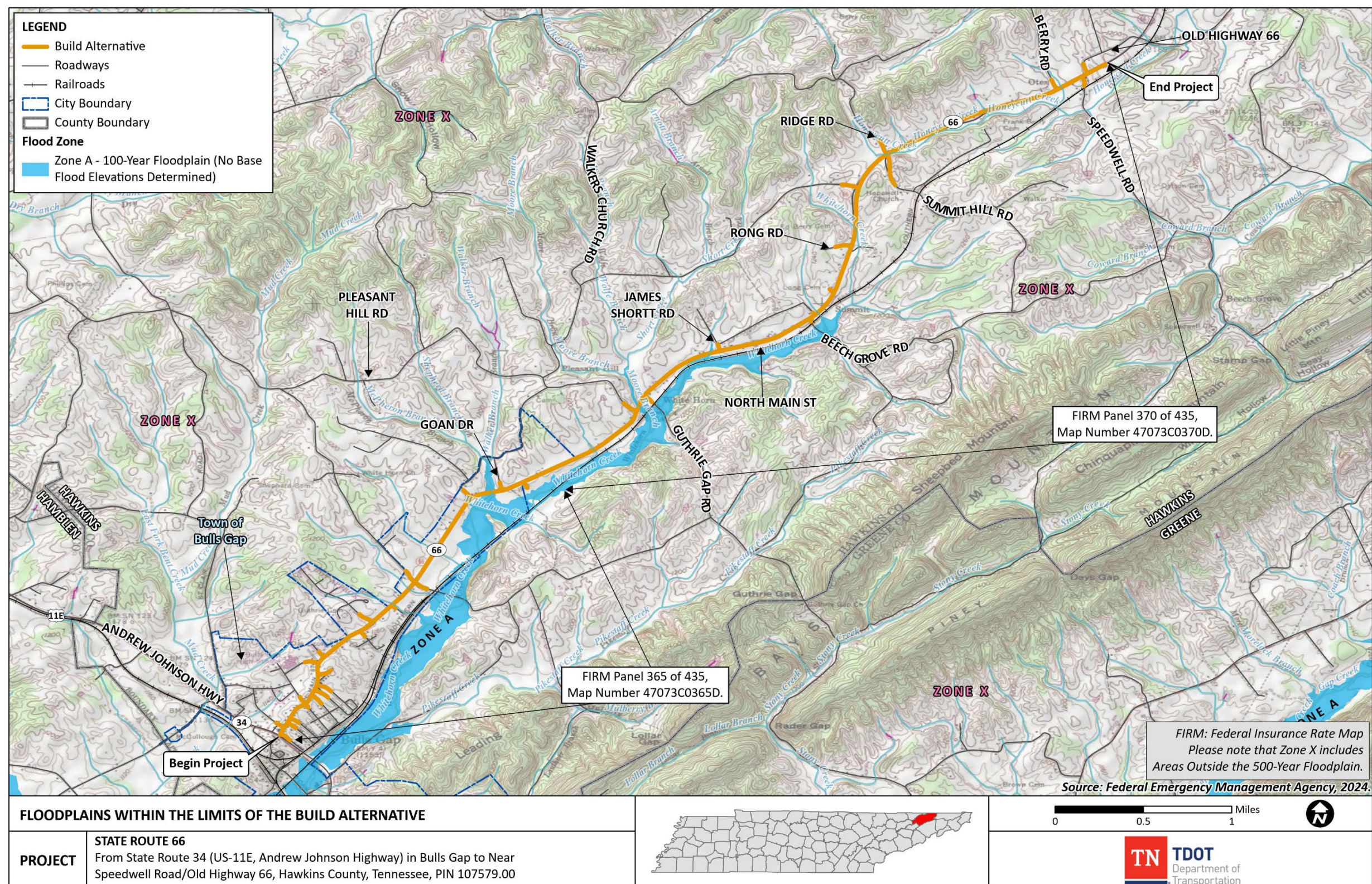
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<sup>40</sup> <https://www.ecfr.gov/current/title-23/chapter-I/subchapter-G/part-650/subpart-A>

<sup>41</sup> <https://www.archives.gov/federal-register/codification/executive-order/11988.html>

<sup>42</sup> <https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/order56502.pdf>

### Figure 2: Floodplains Within the Limits of the Build Alternative



## 4.19. Impacts to Floodplains

### 4.19.1. No-Build Alternative

The No-Build Alternative would not make changes to the existing roadway network. Therefore, the No-Build Alternative would not impact floodplains.

### 4.19.2. Build Alternative

Portions of the Build Alternative are located in or near a FEMA defined floodplain; however, there is no detailed study. Specifically, approximately 2.36 acres of the 100-year floodplain associated with Whitehorn Creek, including McPhernon Branch and Moore Branch, are located within the limits of the Build Alternative. Whitehorn Creek is one of many tributary streams to the Nolichucky River, which is located south of the SR-66 project area.

## 4.20. Minimization/Mitigation Measures to Address Impacts

The design of the Build Alternative would be consistent with the Memorandum of Understanding (MOU) between FHWA and FEMA and with the floodplain management criteria set forth in the National Flood Insurance Regulations of [44 CFR](#).<sup>43</sup> It would be consistent with the requirements of floodplain management guidelines for implementing [EO 11988](#) and [23 CFR § 650A](#).<sup>44</sup>

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<sup>43</sup> <https://www.ecfr.gov/current/title-44>

<sup>44</sup> <https://www.ecfr.gov/current/title-23/chapter-I/subchapter-G/part-650/subpart-A>

Table 10: Potential Floodplain Impacts

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Floodplains	No Effect	<p>Portions of the Build Alternative are located in or near a Federal Emergency Management Agency defined floodplain; however, there is no detailed study.</p> <p>Specifically, approximately 2.36 acres of the 100-year floodplain associated with Whitehorn Creek, including McPherson Branch and Moore Branch, are located within the limits of the Build Alternative.</p> <p>Whitehorn Creek is one of many tributary streams to the Nolichucky River, which is located south of the SR-66 project area.</p>	<p>The design of the Build Alternative would be consistent with the Memorandum of Understanding between the FHWA and the Federal Emergency Management Agency and with the floodplain management criteria set forth in the National Flood Insurance Regulations of <a href="#">Title 44 of the Code of Federal Regulations</a>.<sup>45</sup></p> <p>It would be consistent with the requirements of floodplain management guidelines for implementing <a href="#">Executive Order 11988</a><sup>46</sup> and <a href="#">23 Code of Federal Regulations § 650A</a>.<sup>47</sup></p>

<sup>45</sup> <https://www.ecfr.gov/current/title-44>

<sup>46</sup> <https://www.archives.gov/federal-register/codification/executive-order/11988.html>

<sup>47</sup> <https://www.ecfr.gov/current/title-23/chapter-I/subchapter-G/part-650/subpart-A>



# **Attachment 1**

U.S. Fish and Wildlife Service Letter  
(Dated April 9, 2012)



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

446 Neal Street  
Cookeville, TN 38501

April 9, 2012

Mr. Keven Brown  
Tennessee Department of Transportation  
Environmental Planning and Permits  
James K. Polk Building, Suite 900  
505 Deaderick Street  
Nashville, Tennessee 37243-0349

Subject: FWS# 12-CPA-0382. State Route 66 construction from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66; P.E. 37005-1237-14, PIN# 107579.00, Hawkins County, Tennessee.

Dear Mr. Brown:


Thank you for your correspondence dated March 20, 2012, regarding the proposal to construct State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. The Tennessee Department of Transportation has requested a list of threatened or endangered species that may be present within the project area. Personnel of the U.S. Fish and Wildlife Service have reviewed the subject proposal and offer the following comments.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact area of the project. We note, however, that collection records available to the Service may not be all-inclusive. Our data base is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitat and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality. However, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Information available to the Service does not indicate that wetlands exist in the vicinity of the proposed project. However, our wetland determination has been made in the absence of a field inspection and does not constitute a wetland delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted if other evidence, particularly that obtained during an on-site inspection, indicates the potential presence of wetlands.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at [john\\_griffith@fws.gov](mailto:john_griffith@fws.gov).

Sincerely,

A handwritten signature in black ink that reads "Mary E. Jennings". The signature is written in a cursive style with a large, stylized "M" and "J".

Mary E. Jennings  
Field Supervisor



## **Attachment 2**

U.S. Fish and Wildlife Service Letter  
(Dated November 21, 2016)



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Tennessee ES Office  
446 Neal Street  
Cookeville, Tennessee 38501



November 21, 2016

Mr. Keven Brown  
T.E.S.S. Supervisor  
Region 1 Project Development  
Environmental Technical Office  
7345 Region Lane, Knoxville, Tennessee 37914

Subject: FWS# 17-CPA-0142. State Route 66 construction from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66, P.E. 37005-1237-14, PIN# 107579.00, Hawkins County, Tennessee.

Dear Mr. Brown:

Thank you for your correspondence dated November 1, 2016, regarding the proposal to construct State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. The Tennessee Department of Transportation (TDOT) has requested a list of threatened or endangered species that may be affected by the project. Personnel of the U.S. Fish and Wildlife Service (Service) have reviewed the subject proposal and offer the following comments.

A review of the information provided indicates that some potentially suitable roosting habitat for the federally endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) may be removed for the project, particularly where stream crossings occur. A Range-wide Programmatic Consultation between the Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, and the Service identifies transportation-related activities that are not anticipated to result in adverse effects to the Indiana bat or NLEB. These activities include all wintertime forested clearing within 100 feet of roadway surface or railroad ballast that do not remove known roosts or documented foraging/travel corridors and is no closer than one-half mile from the entrance of a documented hibernaculum. If TDOT can implement necessary protective measures, the project would be eligible for placement under the consultation herein referenced with determinations of "not likely to adversely affect" for the Indiana bat and NLEB. In order to identify any project placed under this consultation, TDOT should complete the Project Submittal Form located under Appendix B of the User's Guide and submit it to our office. If we do not notify your agency within fourteen (14) days, TDOT can assume that no further coordination with our office is required for these species.

Information available to the Service does not indicate that wetlands exist in the vicinity of the proposed project. However, our wetland determination has been made in the absence of a field inspection and does not constitute a wetland delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted if other evidence, particularly that obtained during an on-site inspection, indicates the potential presence of wetlands.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at [john\\_griffith@fws.gov](mailto:john_griffith@fws.gov).

Sincerely,



Mary E. Jennings  
Field Supervisor



## **Attachment 3**

U.S. Fish and Wildlife Service Letter  
(Dated December 17, 2019)



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Tennessee ES Office  
446 Neal Street  
Cookeville, Tennessee 38501



December 17, 2019

Mr. Keven Brown  
T.E.S.S. Supervisor  
Region 1 Project Development  
Environmental Technical Office  
7345 Region Lane, Knoxville, Tennessee 37914

Subject: FWS# 17-I-0088. State Route 66 construction from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66; P.E. 37005-1237-14, PIN# 107579.00, Hawkins County, Tennessee.

Dear Mr. Brown:

Thank you for your correspondence dated December 11, 2019, requesting an updated coordination for the proposal to construct State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. Since last coordinated with our office, the design has changed from construction along a partially new alignment to constructing entirely along the existing alignment. The Tennessee Department of Transportation (TDOT) has requested a list of threatened or endangered species that may be affected by the project. Personnel of the U.S. Fish and Wildlife Service (Service) have reviewed the subject proposal and offer the following comments.

Upon review of the information provided and our database, we would not anticipate impacts to any federally listed or proposed species as a result of the project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at [john\\_griffith@fws.gov](mailto:john_griffith@fws.gov).

Sincerely,

Virgil Lee Andrews, Jr.  
Field Supervisor



## **Attachment 4**

U.S. Fish and Wildlife Service Email  
(Dated December 18, 2024)

**Keven Brown**

---

**From:** Griffith, John <john\_griffith@fws.gov>  
**Sent:** Wednesday, December 18, 2024 5:01 PM  
**To:** Keven Brown  
**Cc:** Dennis Crumby; Mark Doty; Giddens, David W; Martin, Santiago; Sikula, Nicole R  
**Subject:** Re: [EXTERNAL] SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy. 66, Hawkins Co. PIN 107579.00

**This Message Is From an External Sender**

This message came from outside your organization.

Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security

Keven,

Thank you for the telephone conversation and correspondence requesting a project update for the proposed improvements to State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. The scope of work has not changed significantly since last coordinated with our office in December of 2019. However, due to the time elapsed and new species listings, you are requesting any additional concerns and our updated project section 7 clearance.

A review of the information provided and our database does not indicate that any federally listed or proposed species or designated critical habitat would be impacted by the project. Therefore, based on the best information available at this time, we believe that the requirements of the Endangered Species Act (ESA) are fulfilled for all species that currently receive protection under the ESA. Obligations under section 7 of the ESA should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Standard construction BMPs would be necessary to ensure that project-related pollutants are kept out of project area streams. Equipment staging and maintenance areas should be developed an adequate distance away from streams to prevent the introduction of petroleum-based pollutants into the water. Fresh concrete and cement dust must be kept out of the water as they alter chemical properties and can be toxic to aquatic species. Work at crossings should be scheduled during a lower flow period.

This email will serve as our official project response. Please let me know if we can offer further assistance. Thanks,

John Griffith  
Transportation Biologist  
U.S. Fish and Wildlife Service  
Tennessee Field Office  
931-444-1393 (office)  
931-261-3755 (cell)

---

**From:** Keven Brown <Keven.Brown@tn.gov>  
**Sent:** Wednesday, December 4, 2024 2:42 PM  
**To:** Griffith, John <john\_griffith@fws.gov>

**Cc:** Dennis Crumby <Dennis.Crumby@tn.gov>; Mark Doty <Mark.Doty@tn.gov>

**Subject:** [EXTERNAL] SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy. 66, Hawkins Co. PIN 107579.00

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

John,

Due to the length of time that has passed since the last species review, I'm requesting an update of the previous species coordination (response attached) for the subject project. If you have any questions, or need any additional information, please let me know. Thanks!



**Keven Brown** | Team Lead  
Region 1 Environmental Section  
Admin. Building, 2<sup>nd</sup> Floor  
7345 Region Lane, Knoxville, TN 37914  
p. 865-594-2437 c. 865-469-7348  
[keven.brown@tn.gov](mailto:keven.brown@tn.gov)  
[tn.gov/tdot](http://tn.gov/tdot)



# **Attachment 5**

Tennessee Wildlife Resources Agency  
Email (Dated December 13, 2019)

**Keven Brown**

---

**From:** Vincent Pontello  
**Sent:** Friday, December 13, 2019 12:29 PM  
**To:** Keven Brown  
**Cc:** Rob Todd  
**Subject:** Re: SR-66 from SR-34 to south of Old Speedwell Rd. / Old Hwy 66, Hawkins Co. PIN 107579.00

Keven,

Thank you for the update. My original comments dated March 26, 2012 noted below still stand as the TWRA response. Please contact me if you need further assistance.

"My current data shows no occurrences of state listed species within four miles of project location. In addition to the implementation of TDOT BMPs, I ask that site visits are made by qualified TDOT personnel, to insure erosion control measures are being followed, wherever aquatic resource protection is warranted throughout project area. Please contact me if you have any further questions."

Vincent L. Pontello  
Wildlife Biologist  
Liaison to Federal Highway Admin. & TDOT  
Tennessee Wildlife Resources Agency  
Environmental Services Division

---

**From:** Keven Brown <Keven.Brown@tn.gov>  
**Sent:** Wednesday, December 11, 2019 2:15 PM  
**To:** Vincent Pontello <Vincent.Pontello@tn.gov>  
**Cc:** John Barrett <John.Barrett@tn.gov>; Michael W. Palmer <Michael.W.Palmer@tn.gov>; B M. Richards <B.M.Richards@tn.gov>; Dennis Crumby <Dennis.Crumby@tn.gov>; Rob Todd <Rob.Todd@tn.gov>; TDOT.Env NEPA <TDOT.Env.NEPA@tn.gov>  
**Subject:** SR-66 from SR-34 to south of Old Speedwell Rd. / Old Hwy 66, Hawkins Co. PIN 107579.00

Vince,

Please find attached a request for updated species information on the subject project. The previous alignment has been changed slightly so that the entire project is now proposed to be constructed along the existing alignment. I've included the previous responses from your office for your use. If you have any questions, please let me know.



**Keven Brown** | TESS Sup.  
Region 1 Project Development  
Environmental Technical Office  
Admin. Building, 2<sup>nd</sup> Floor  
7345 Region Lane, Knoxville, TN 37914



## **Attachment 6**

Memorandum of Agreement between  
TDOT, FHWA, and the Tennessee  
Department of Environment and  
Conservation Division of Natural Areas  
(Dated March 2023)

MEMORANDUM OF AGREEMENT

BETWEEN

TENNESSEE DEPARTMENT OF TRANSPORTATION

AND

FEDERAL HIGHWAY ADMINISTRATION  
TENNESSEE DIVISION OFFICE

AND

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
DIVISION OF NATURAL AREAS

March 2023

**SUBJECT:**

This Memorandum of Agreement (MOA) is being instituted between the Tennessee Department of Environment and Conservation Division of Natural Areas (TDEC DNA), the Tennessee Department of Transportation (TDOT), and the Federal Highway Administration, Tennessee Division Office (FHWA) to streamline TDOT projects and activities which typically result in no adverse effects to state listed plant species or their habitats in Tennessee.

**PURPOSE:**

FHWA is required, pursuant to the Fish and Wildlife Coordination Act, (Title 16 United States Code (U.S.C) 662(a)) to consult with the head of the State agency exercising administration over wildlife resources if any stream or water body is "controlled or modified for any purpose whatever." "Wildlife resources" includes animals as well as "all types of aquatic and land vegetation upon which wildlife is dependent" (16 U.S.C. 666b). TDOT, on behalf of FHWA, coordinates these projects, in part, with TDEC DNA.

TDEC DNA is charged with conserving rare plant species and their habitats as well as administering a system of state natural areas within Tennessee. In this role, TDEC DNA maintains data on the location and status of rare species and natural communities within the state and maintains a list of rare plants classified as endangered, threatened, or as a species of concern. TDEC DNA provides technical

support regarding the use and interpretation of such data and provides written comments (as needed) regarding potential effects to rare plants (sometimes animals), natural communities, and conservation sites for federally funded and state funded projects.

This MOA applies to both State- and Federally funded projects and is intended to define conditions and provide example categories of projects and activities for which project-specific consultation with TDEC DNA is not required. Documentation for projects covered under this MOA will include a copy of this agreement and a statement from the TDOT Ecology staff citing the applicability of this agreement, rather than written correspondence to and from TDEC DNA. This documentation will be included in the Appendices of all applicable environmental documents (e.g., NEPA, TEER) and in the documentation for all applicable permit applications.

**SCOPE:**

The following conditions and example projects and activities have been evaluated and a conclusion reached by TDEC DNA, FHWA and TDOT that specific work meeting these conditions within these categories will not result in adverse effects to state listed plant species or their habitats. As a result, this MOA constitutes programmatic consultation/coordination between TDEC DNA, FHWA and TDOT.

**CONDITIONS FOR COVERAGE UNDER THIS MEMORANDUM**

1. Based on a review of the project study area and the TDEC Natural Heritage Database, both of the following criteria must be met:

- TDOT ecology project review staff have determined that there are no known records of State- or Federally listed plant species within the project study area; and
- TDOT ecology project review staff or qualified consultants have determined the project area does not contain habitat for State-listed plant species documented within four miles, or if potential habitat is present, an appropriately timed presence/absence survey has been conducted for State-listed plant species with negative results.

**OR**

2. TDOT ecology project review staff have determined that proposed activity is such

that it would not impact undeveloped areas or natural vegetation outside the current developed footprint. Examples of such projects are listed below as a project type covered under this MOA which can be completed without regard to proximity of known or potential occurrences of rare plant species.

- A. Typical bridge repair projects confined to the structure above the waterline and not requiring disturbance of waterways, provided construction debris or other construction-related materials can be prevented from entering the waterway by implementing Best Management Practices (BMP's) or properly installed erosion controls. Activities in this category include the following:
- Bridge deck repair (scarification, patching, replacement, etc.)
  - Installation and repair of expansion joints
  - Removal and resurfacing of bridge and approach roadway pavement
  - Patching of substructures
  - Removal, replacement, and repair of beams
  - Removal and replacement of bridge deck cantilevers
  - Modification of piers and abutments above the surface of the water
  - Repair and replacement of bridge and approach guardrails
  - Sand blasting, painting, and sealing
- B. Installation of impact attenuators on bridge piers, providing substrate work is not involved, and they do not affect flow downstream
- C. Bridge inspections, including the portions of the piers under the surface of the water, if no soil or substrate is disturbed
- D. Addition of intersection turning lanes provided new lanes are within the developed footprint of the roadway.
- E. Installation, replacement, or addition of traffic control signals or information signs. Included are Intelligent Transportation Systems (ITS), fog detection systems, traffic information systems, flashing lights, reflectors, striping, rumble

strips and stripes, signs, and sidewalks provided such work is in the current developed footprint.

- F. Turning radius improvement at intersections
- G. Removal and replacement of existing pavement, provided that all old pavement is properly disposed of according to current regulations.
- H. Installation and repair of guardrails, cable barriers, and jersey barriers
- I. Installation of railroad signals, signs, and other improvements at crossings
- J. Maintenance of roadway ditches and catch basins, provided that the original size and dimensions are not increased. This category is confined to sloped ditches which only convey water for a short period during storm events. No work under this exception can occur within 50 feet of any stream.
- K. Replacement of overpasses which span roadways or railways
- L. Placement of riprap adjacent to existing bridge abutments to repair/prevent scour and protect the integrity of the structure. Work may not extend past the top of bank and no equipment or material is allowed in the stream channel.
- M. Enhancement of Rest Areas (e.g., repaving, landscaping, sprinkler system installation, lighting, building replacement or additions, sidewalk refurbishing)
- N. Addition of intersection lighting
- O. Installation of noise walls
- P. Removal of vegetation along roads or under bridges provided such work is within the current developed footprint
- Q. Items deemed eligible for Transportation Alternatives Set-Aside (or other) funding, including:
  - Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other

safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.

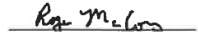
- Inventory, control, and removal of outdoor advertising
- Construction of turnouts, overlooks, and viewing areas provided such work is within the current developed footprint
- Historic preservation and rehabilitation of historic transportation facilities
- Any environmental mitigation activity, including pollution prevention and pollution abatement activities and mitigation to (1) address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff and (2) to reduce vehicle-caused wildlife mortality or to restore and maintain connectivity among terrestrial or aquatic habitats

**GENERAL PROVISIONS:**

Any signatory agency may unilaterally withdraw from this agreement with 30 days written notice. This MOA will be reviewed every five years and revised as appropriate. Revisions may be requested at any time by any signatory agency. All revisions will be made in writing and require the concurrence of the signatory agencies.

**AGREEMENT BY:**

**Tennessee Department of Environment and Conservation, Division of Natural Areas**

  
Roger McCoy (Mar 1, 2023 13:33 CST)

Date: Mar 1, 2023

Roger McCoy, Director TDEC DNA

**Tennessee Department of Transportation**



Date: Mar 6, 2023

Howard H. Eley, Deputy Governor and Commissioner

**Federal Highway Administration, Tennessee Division Office**



Date: Mar 20, 2023

Pamela M. Kordenbrock, Division Administrator



# **Attachment 7**

TDOT Ecology Section's Environmental  
Studies Request Response  
(Dated December 19, 2024)

# Environmental Studies

## Ecology

# Environmental Studies Request

## Project Information

**Route:** State Route 66  
**Termini:** From State Route 34 in Bulls Gap to North of Speedwell Road/Old Highway 66  
**County:** Hawkins  
**PIN:** 107579.00

## Request

**Request Type:** Environmental Study Reevaluation  
**Project Plans:** Right-of-Way  
**Date of Plans:** 08/09/2024  
**Location:** FTP  
**Link:** <https://kimley-horn.securevdr.com/public/share/web-s1304e6f4b4b94d0f9bb3f3f6f6bdf6a7>

## Certification

**Requestor:** Katie Evans  
**Title:** Environmental Planner

**Signature:**  Katie Evans  
Digitally signed by Katie Evans  
Date: 2024.09.11 17:02:15 -05'00'

# Environmental Study

## Technical Section

Section: Ecology

## Study Results

The ecology information in the EBR dated 1-27-20 remains valid at this time. USFWS species information was updated on 12-18-24 and there are no species concerns.

## Commitments

Did the study of this project result in any environmental commitments?

No

## Additional Information

Is there any additional information or material included with this study?

Yes

Type: Environmental Boundaries Report (EBR)

Location: FileNet

## Certification

Responder: Keven Brown

Title: Team Lead

Signature:



Digitally signed by  
Keven Brown  
Date: 2024.12.19  
10:59:30 -05'00'



# **Appendix A**

Environmental Boundaries Report  
(Dated December 2024)



**STATE OF TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**  
**ENVIRONMENTAL DIVISION**  
**ENVIRONMENTAL TECHNICAL STUDIES OFFICE**  
SUITE 900, JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-1402  
(615) 741-3655

**BUTCH ELEY**  
DEPUTY GOVERNOR &  
COMMISSIONER OF TRANSPORTATION

**BILL LEE**  
GOVERNOR

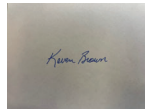
**MEMORANDUM**

To: Stacy Weaver  
Region 1 Project Development

From: Keven Brown  
Region 1 ETO

Date: 12-19-24

Subject: REVISED Environmental Boundaries Report for:  
*Hawkins County, SR-66 from SR-34 in Bulls Gap to south of  
Speedwell Rd. / Old Hwy. 66*  
PIN: 107579.00



Digitally signed by  
Keven Brown  
Date: 2024.12.19  
10:53:41 -05'00'

An ecological evaluation of the subject project has been conducted in response to the need for updated species coordination with USFWS with the following results:

**STREAMS:** *Twenty-two (22) perennial streams, six (6) intermittent streams, and four (4) WWC/EPH's were identified within proposed project limits.*

**WETLANDS:** *Sixteen (16) wetlands identified within proposed project limits.*

**OTHER FEATURES:** *One (1) spring was identified within the project limits.*

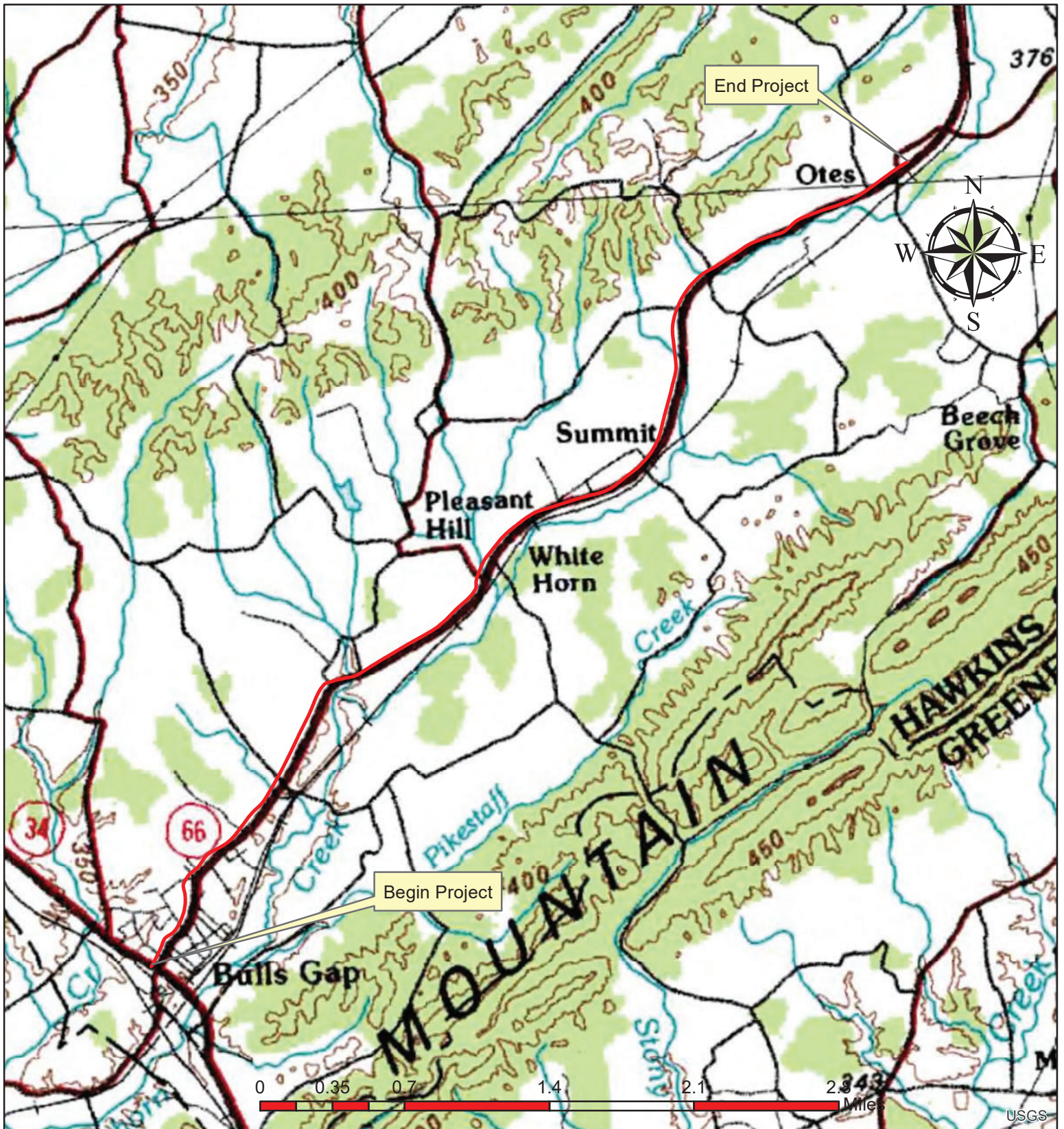
**SPECIES:**

- *USFWS: USFWS coordination was completed on 12-18-19 and updated on 12-18-24. There will be No Effect for any federally listed species.*
- *TWRA: TWRA coordination was completed on 12-13-19 and there were no concerns for any state listed species.*
- *TDEC DNA: The proposed project will be covered under Condition #1 of the March 2023 MOA between TDOT, FHWA and TDEC/DNA.*

**COMMITMENTS:** *There are no project commitments at this time.*

Thank you for your assistance with this project. If you have any questions or comments please contact Keven Brown in the Region 1 Ecology Section at 865-594-2437 or [Keven.Brown@tn.gov](mailto:Keven.Brown@tn.gov).

xc:     *Region 1 Project Development:* Dexter Justis, John Barrett, Mark Doty  
          *Design Lead:* Stacy Weaver  
          *Region 1 Permits:* Chad Weaver  
          *HQ Ecology:* Dennis Crumby  
          *HQ Permits:* Claire Sichko  
          [TDOT.Env.Ecology@tn.gov](mailto:TDOT.Env.Ecology@tn.gov)  
          [TDOT.Env.Permits@tn.gov](mailto:TDOT.Env.Permits@tn.gov)  
          [TDOT.Env.Mitigation@tn.gov](mailto:TDOT.Env.Mitigation@tn.gov)  
          [TDOT.Env.NEPA@tn.gov](mailto:TDOT.Env.NEPA@tn.gov)



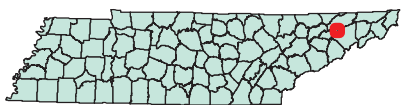
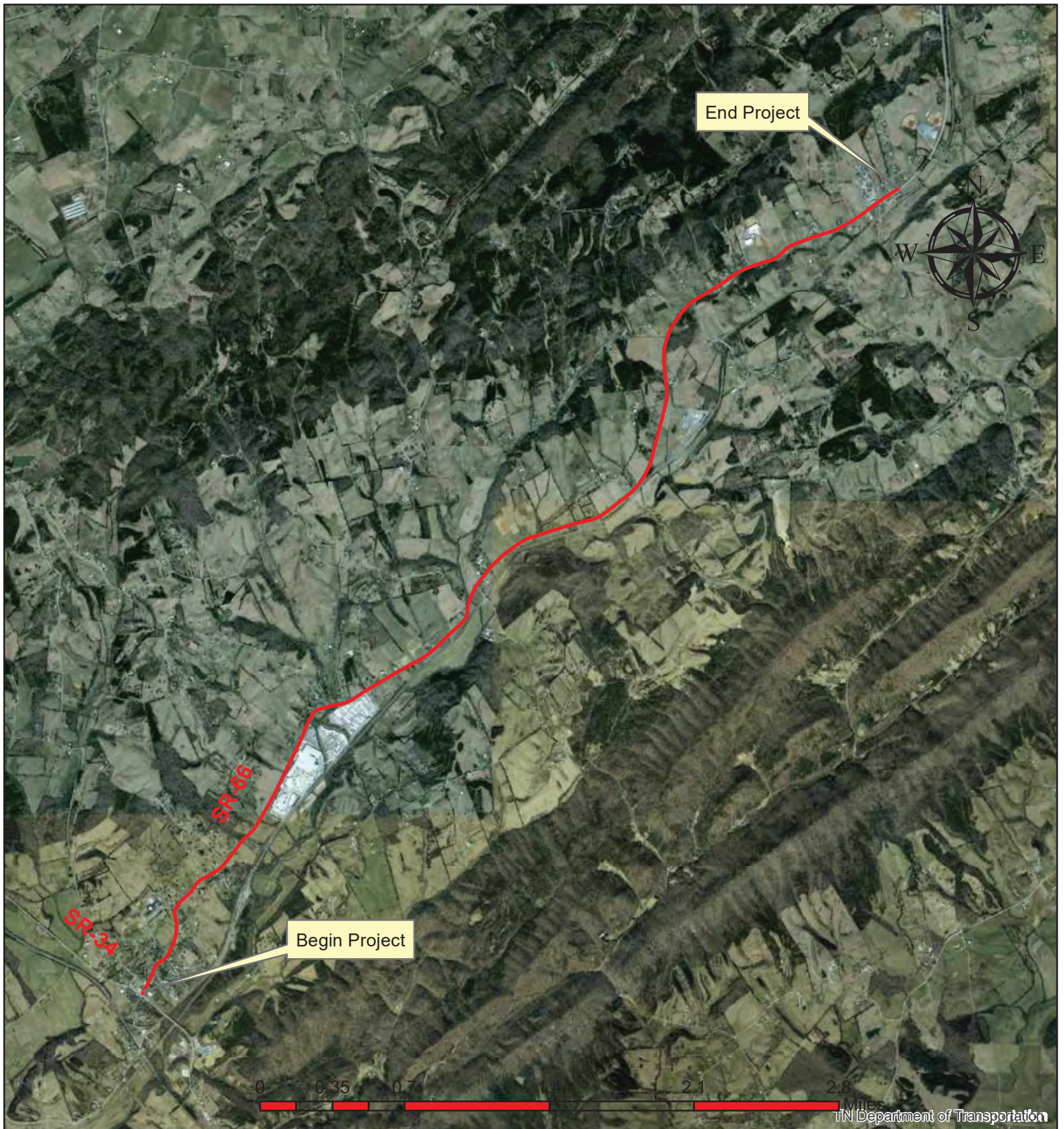
Project Location Map - topo  
SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66  
Hawkins County

Bulls Gap 171-SE

12-11-19

PIN 107579.00 P.E. No. 37005-1237-14





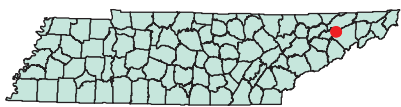
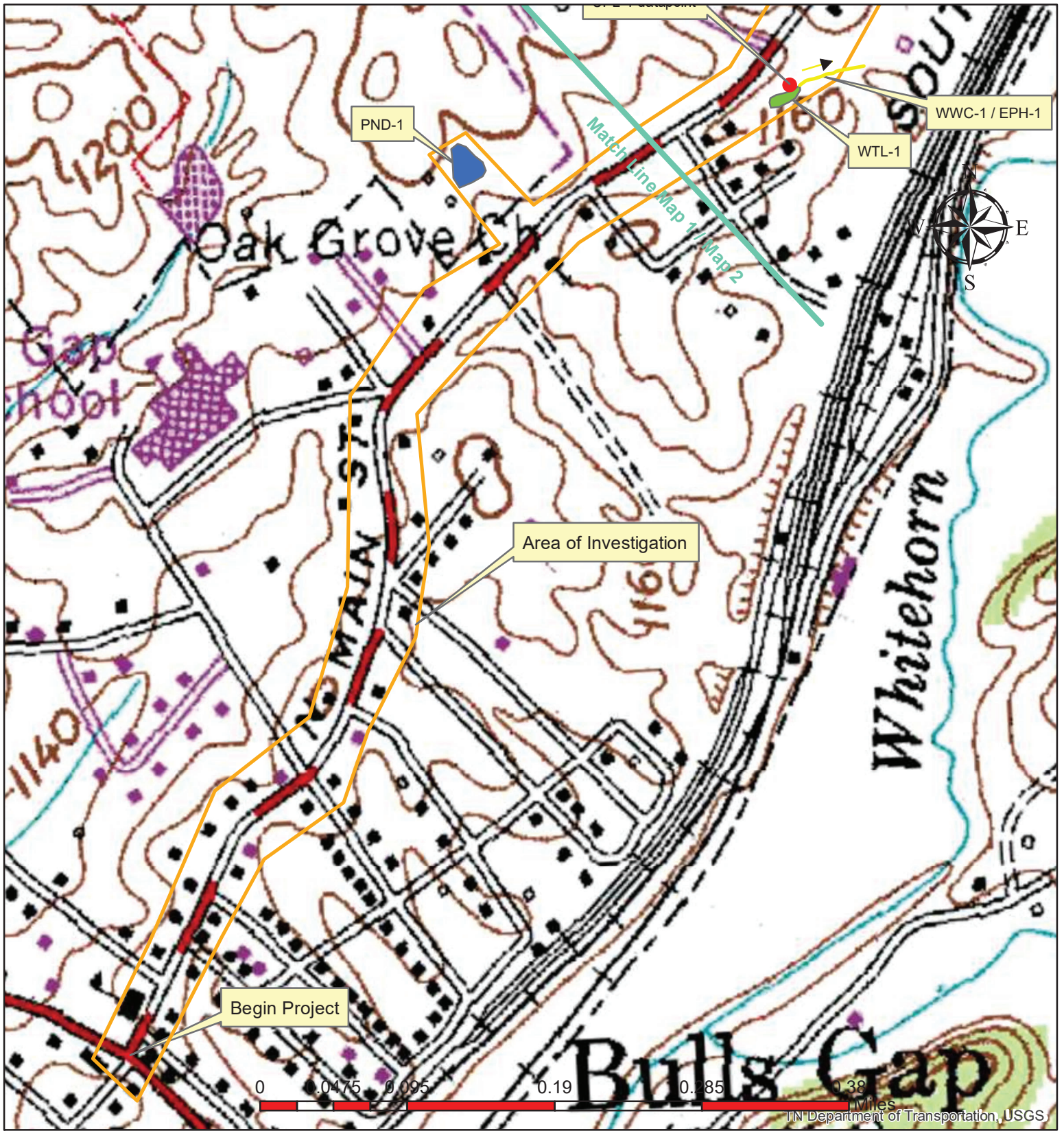
**Project Location Map - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-11-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





Water Resource Map 1 - topo  
SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66  
Hawkins County

Bulls Gap 171-SE

12-13-19

PIN 107579.00 P.E. No. 37005-1237-14



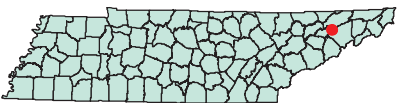


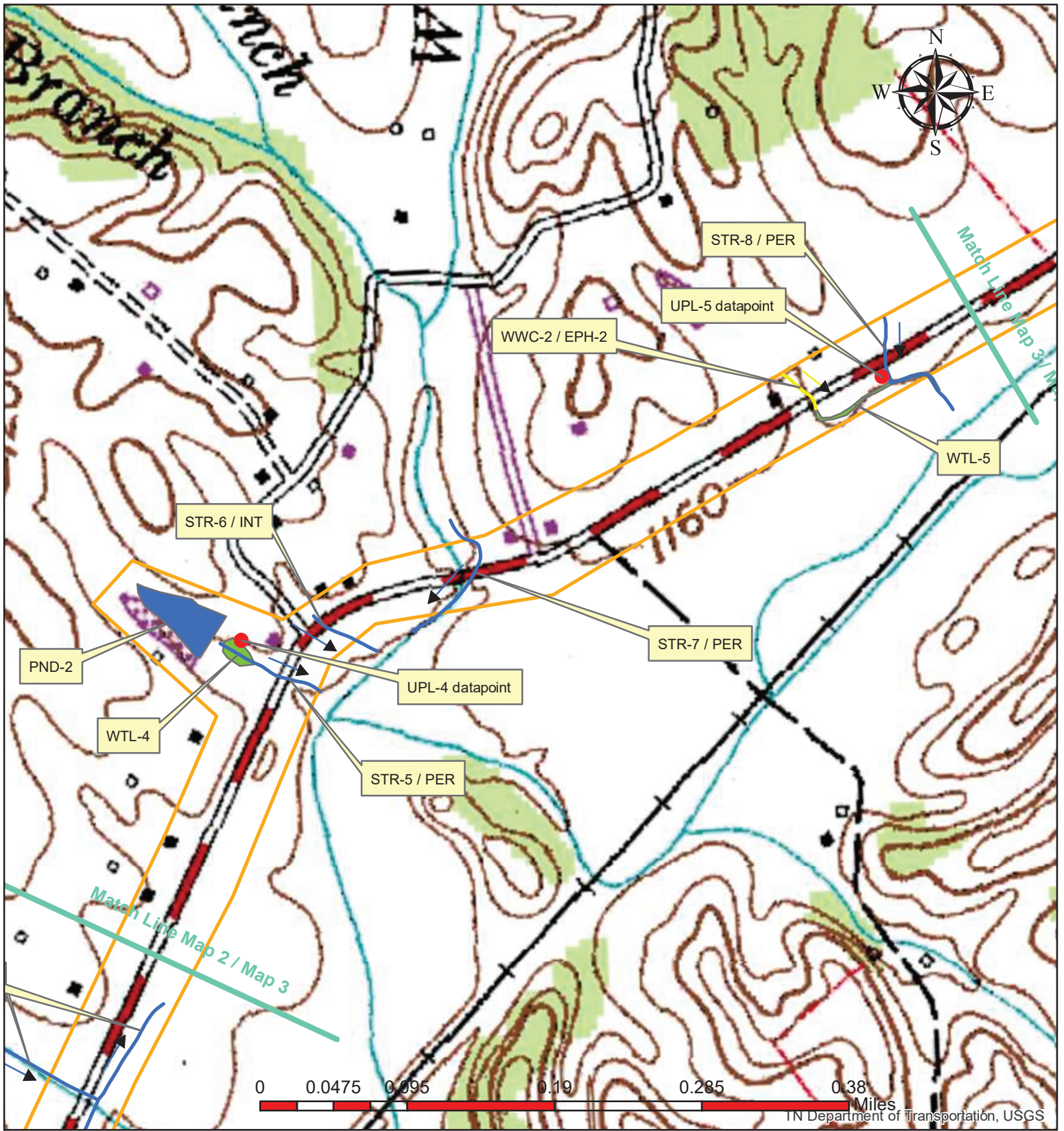
**Water Resource Map 2 - topo**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**



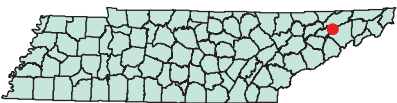


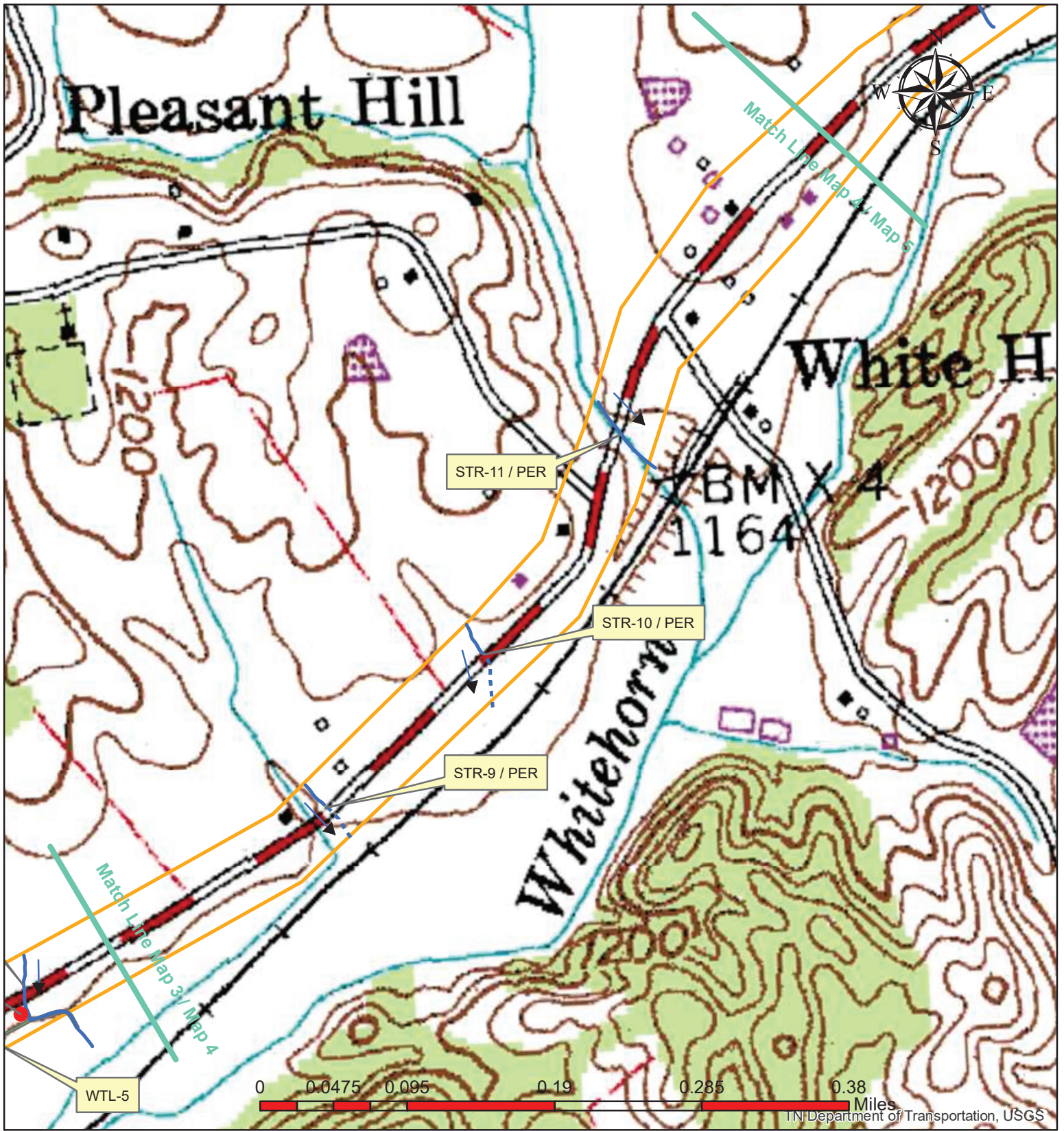
**Water Resource Map 3 - topo**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**



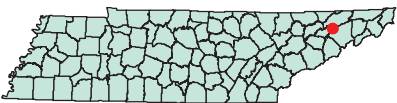


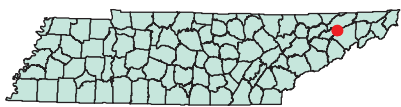
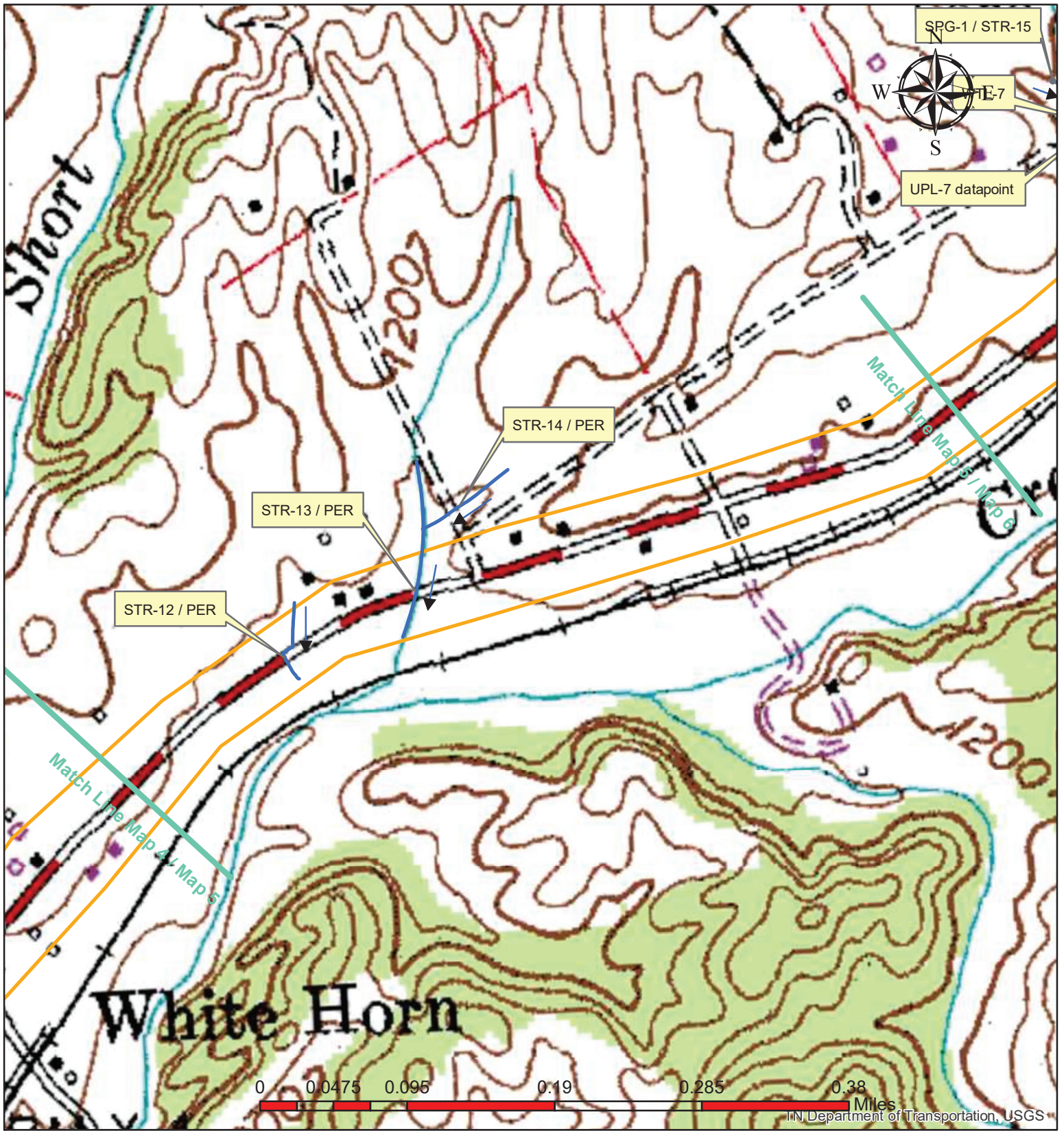
Water Resource Map 4 - topo  
SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66  
Hawkins County

Bulls Gap 171-SE

12-13-19

PIN 107579.00 P.E. No. 37005-1237-14





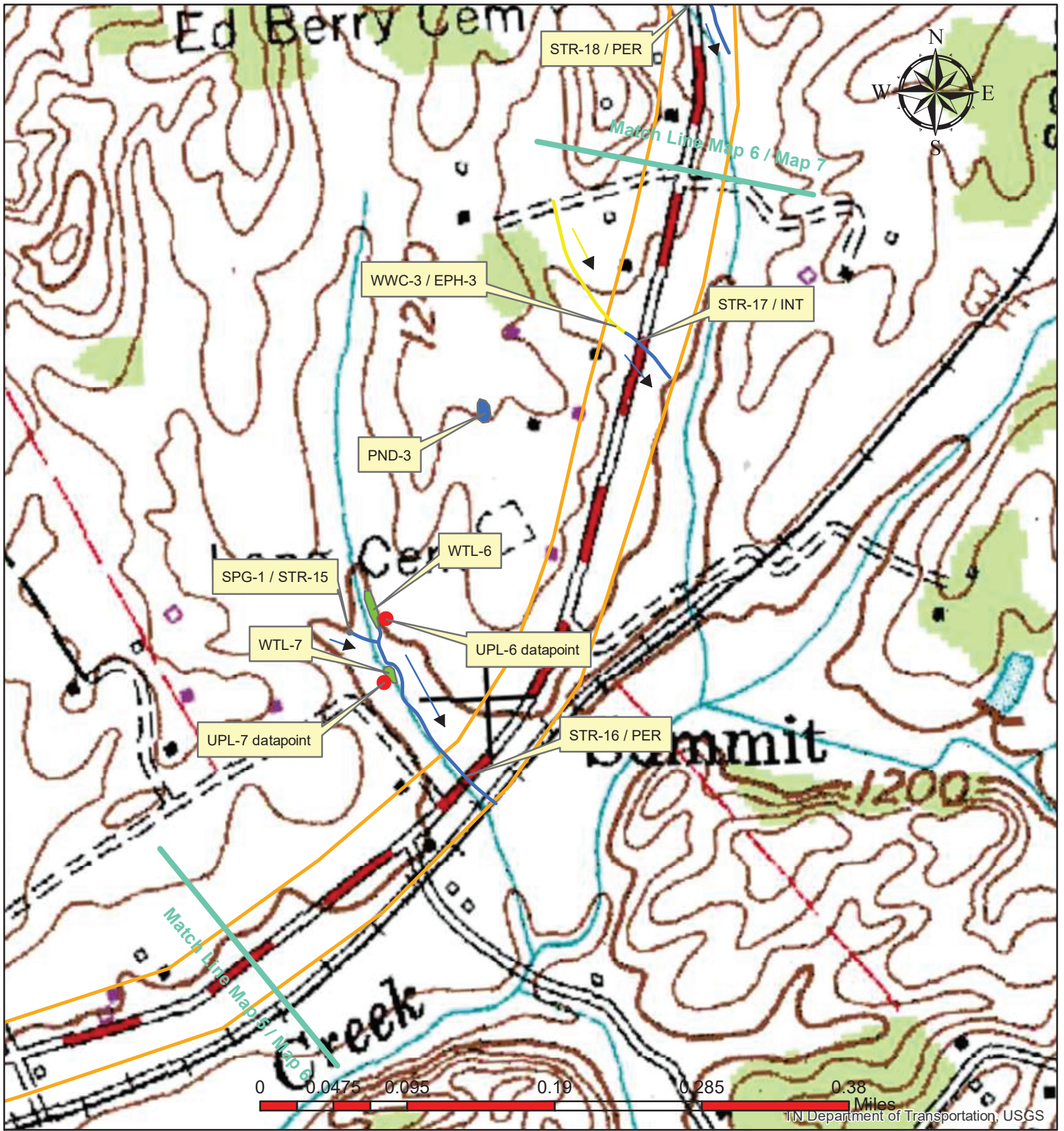
**Water Resource Map 5 - topo**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**



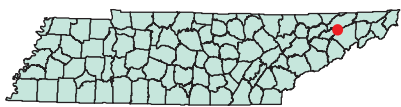


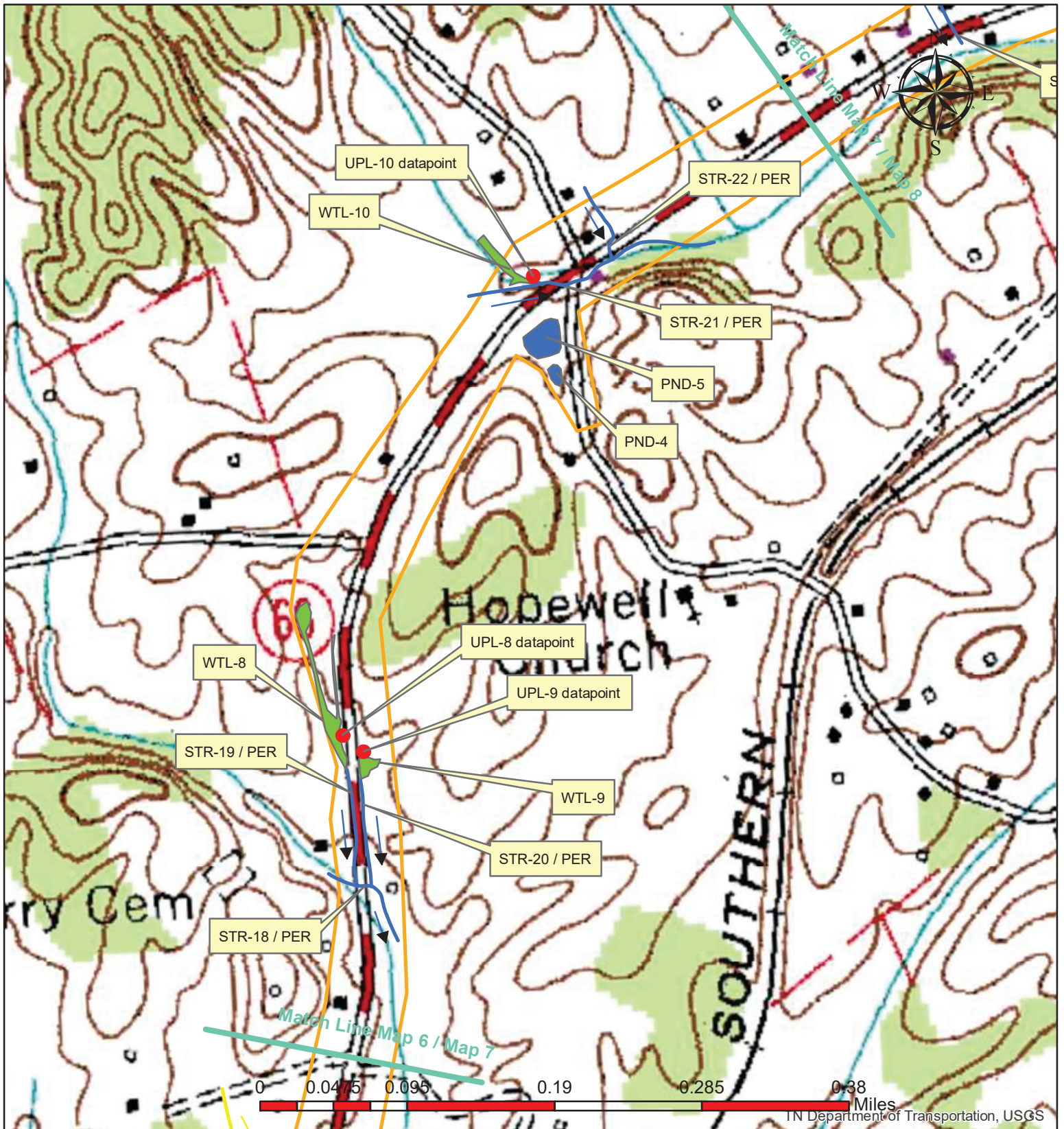
Water Resource Map 6 - topo  
SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66  
Hawkins County

Bulls Gap 171-SE

12-13-19

PIN 107579.00 P.E. No. 37005-1237-14



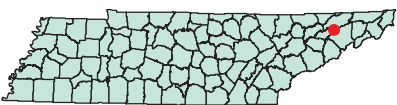


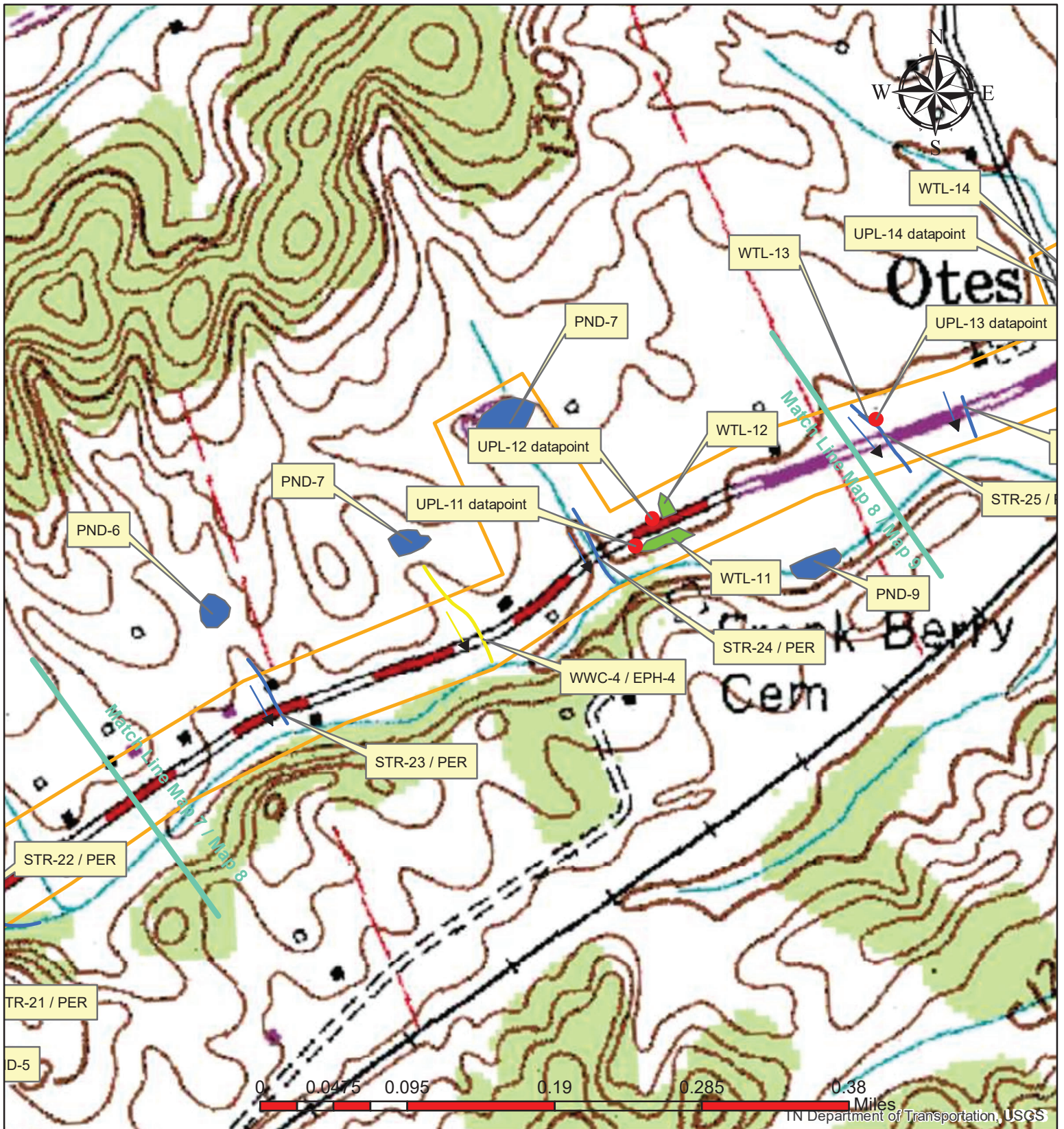
**Water Resource Map 7 - topo**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





**Water Resource Map 8 - topo**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





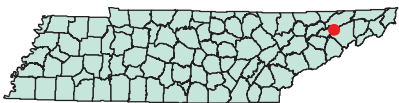
**Water Resource Map 9 topo**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





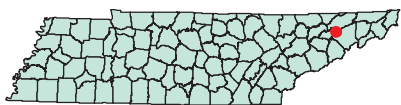
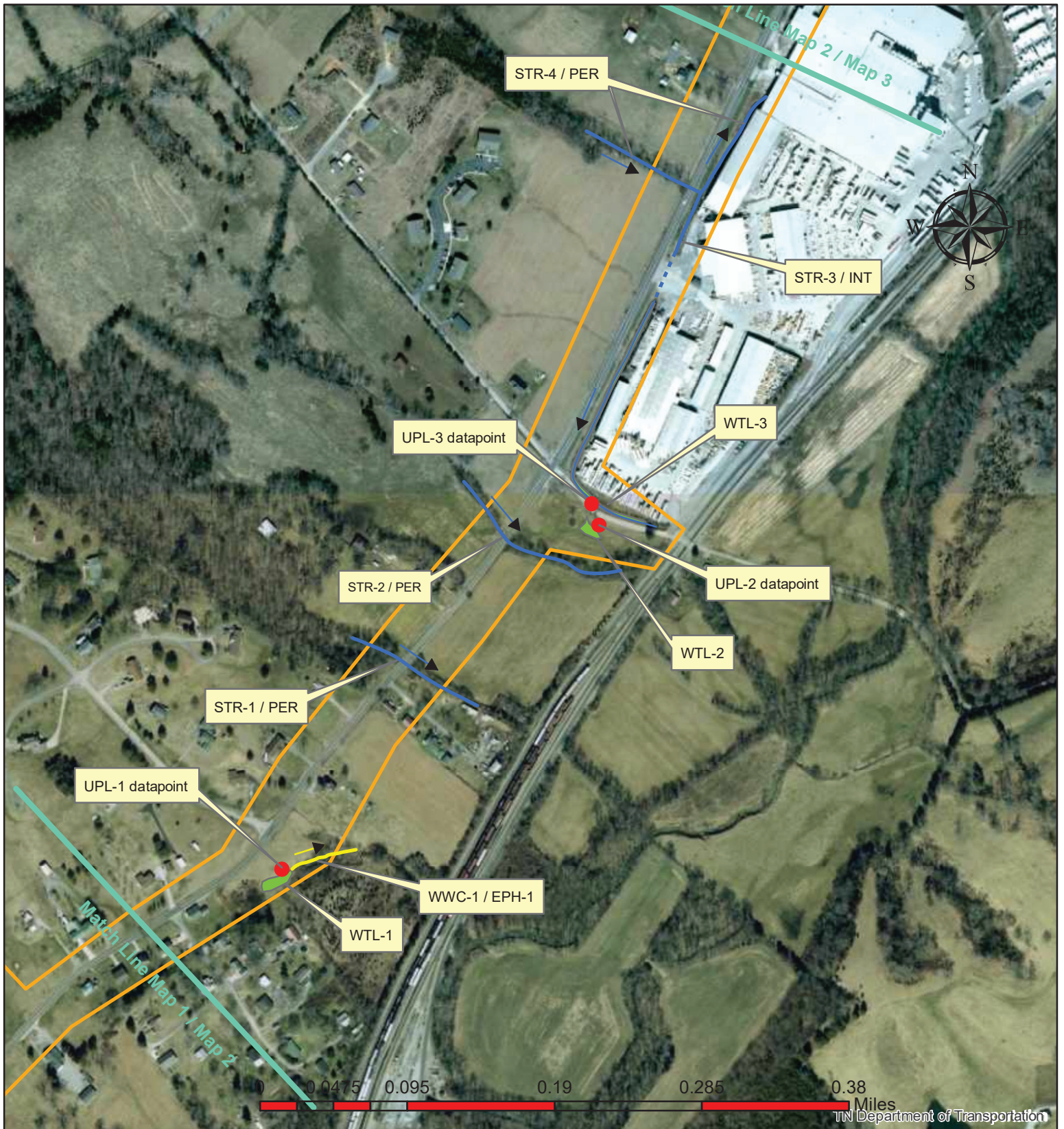
**Water Resource Map 1 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





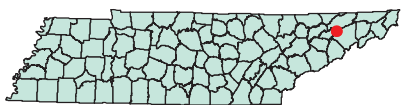
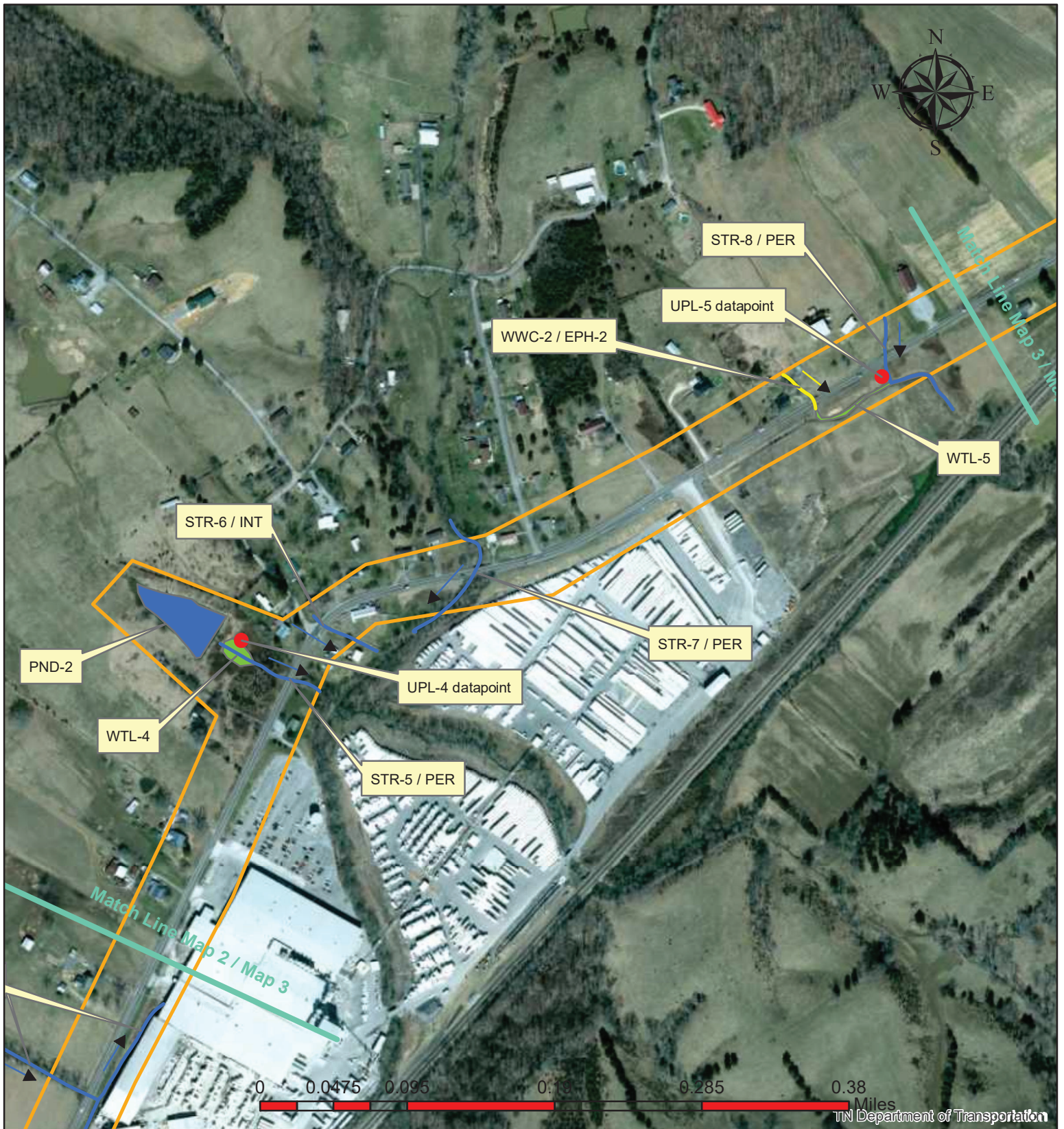
**Water Resource Map 2 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





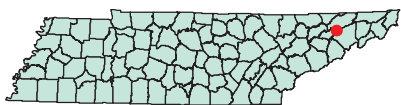
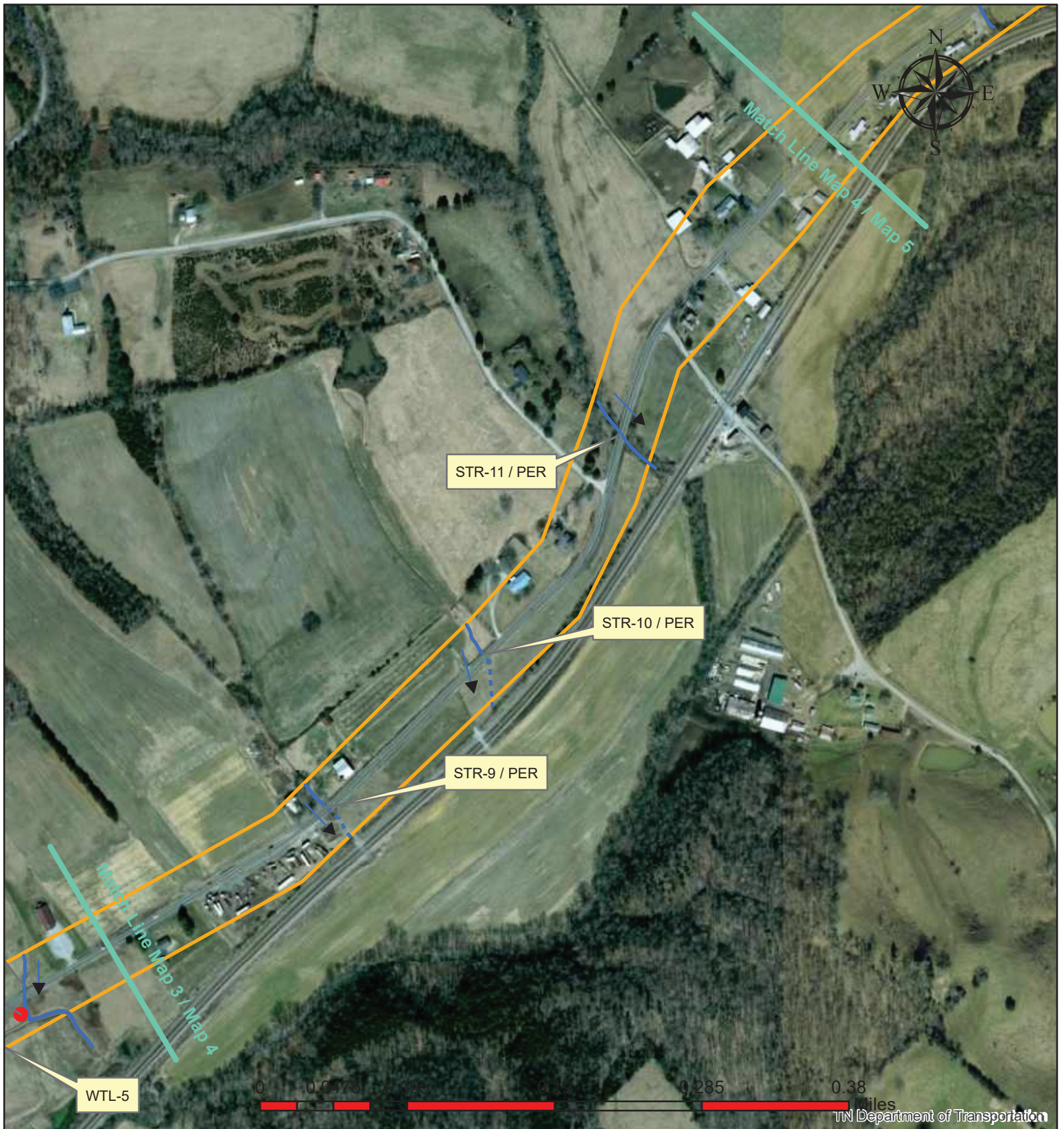
**Water Resource Map 3 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





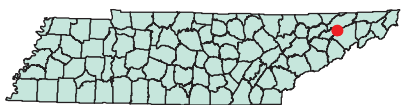
**Water Resource Map 4 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





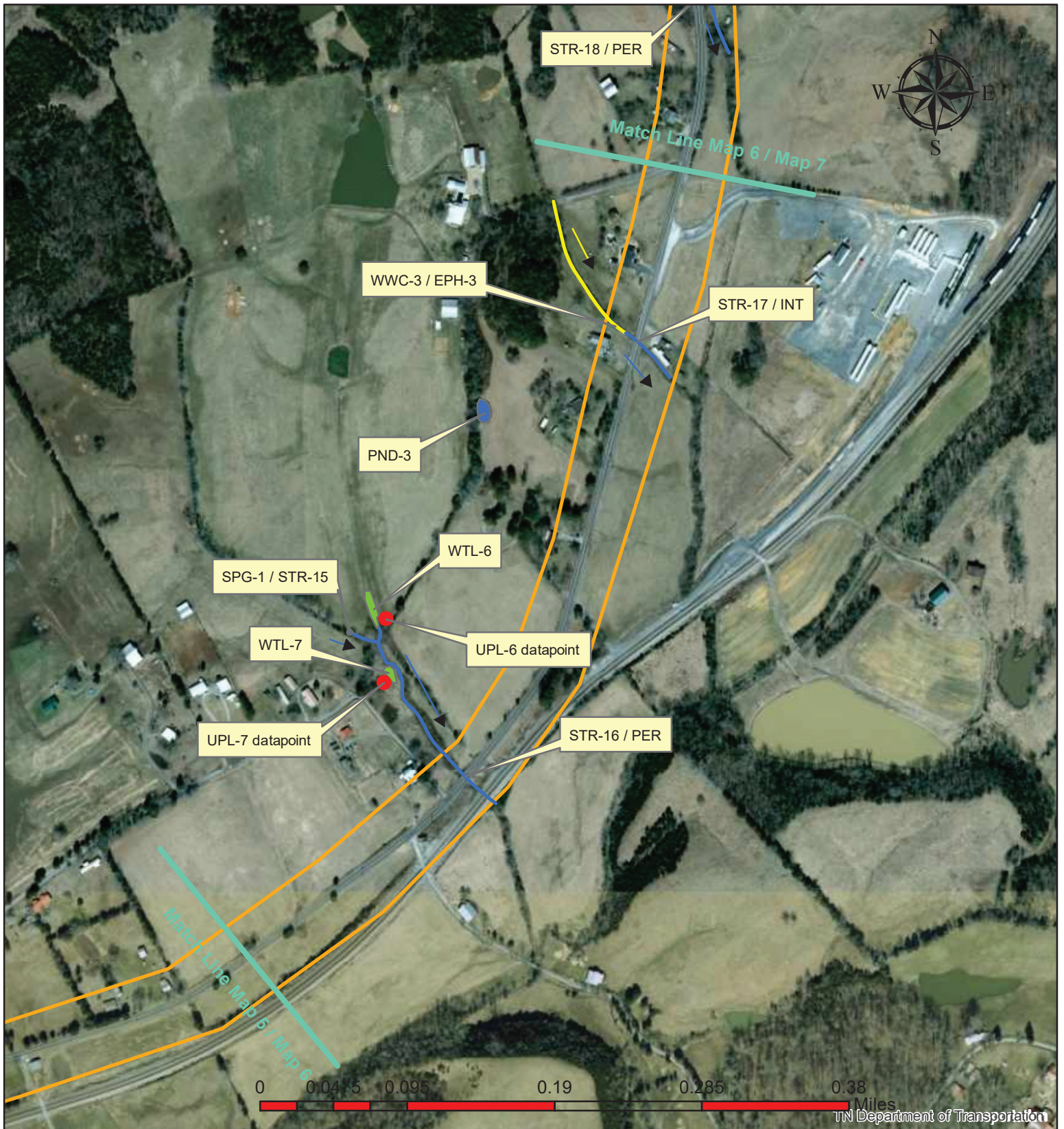
**Water Resource Map 5 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**



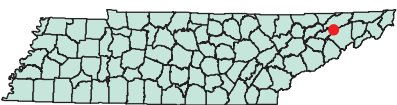


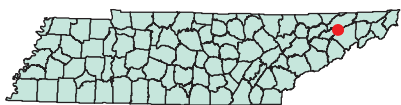
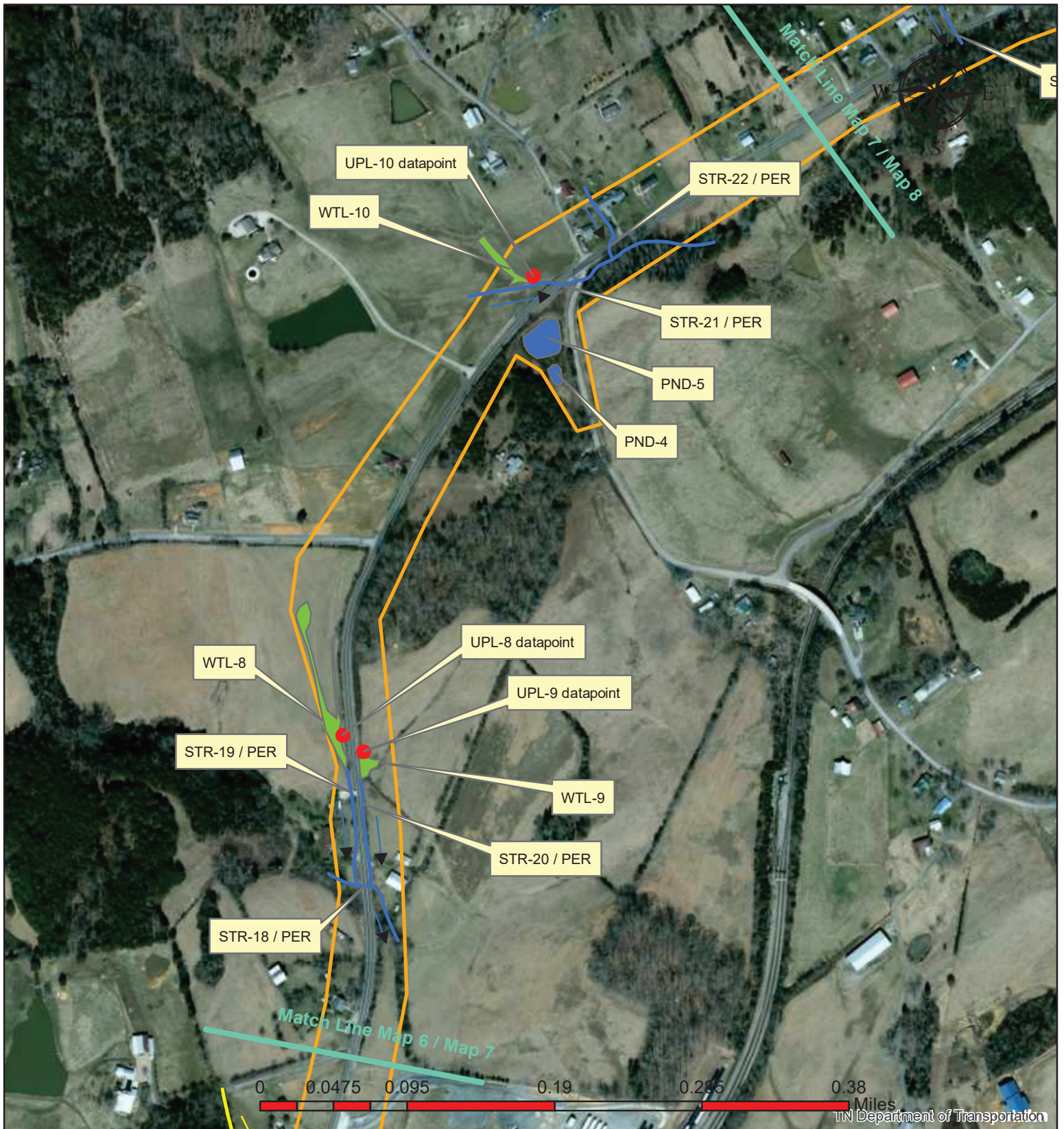
**Water Resource Map 6 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





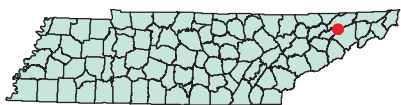
**Water Resource Map 7 - aerial**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**





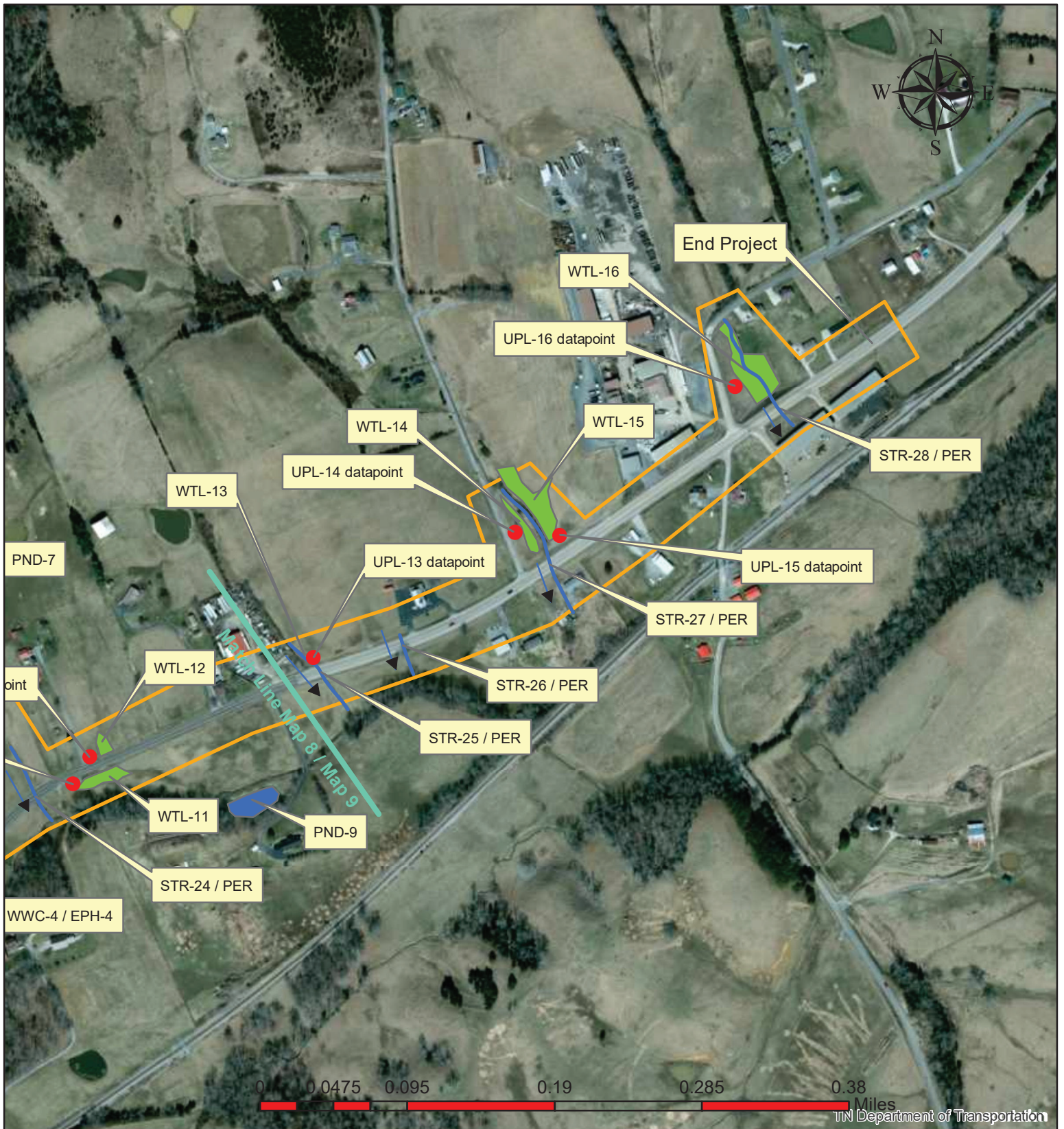
Water Resource Map 8 - aerial  
SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66  
Hawkins County

Bulls Gap 171-SE

12-13-19

PIN 107579.00 P.E. No. 37005-1237-14





**Water Resource Map 9 aerial  
SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66  
Hawkins County**

**Bulls Gap 171-SE**

**12-13-19**

**PIN 107579.00 P.E. No. 37005-1237-14**



# Ecology Field Data Sheet: **Other Resource Features**

(Caves/Rock Houses; Sinkholes; Specialized Habitats; Other)

**Project:** Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00

**Date of survey:** 10-6-15, 10-9-18, 10-19- **Biologist:** K.A. Brown, R.L. Howard **Affiliation:** TDOT

<b>1-Station:</b> from plans	132+00 LT	184+25 LT
<b>2-Map label</b>	PND-1	PND-2
<b>3- Lat/Long</b>	36.264588°N, -83.081752°W	36.275927°N, -83.071647°W
<b>4-Potential impact</b>		
<b>5-Feature name</b>	PND-1	PND-2
<b>6-Feature description:</b>		
what is it	pond	pond
portion affected	none	none
approximate size	100' x 150'	150' x 300'
photo number	1	13
other		
<b>7- HUC code &amp; name</b> if applicable (12-digit)	06010108-0902, Bent Creek	06010108-0902, Bent Creek
<b>8-Determination:</b> TDOT/ consultant	TDOT	TDOT
<b>9-Determination:</b> Confirmed? By?		
<b>10-Mitigation:</b> to be included in design		
<b>11-Notes</b>	There is no outflow channel for PND-1.	PND-2 feeds WTL-4 and STR-5.

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to south of Speedwell Rd. City/County: Hawkins Sampling Date: 10-9-18

Applicant/Owner: TDOT State: TN Sampling Point: WTL-1

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Slope Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LRR N Lat: 36.265315 Long: -83.077801 Datum: \_\_\_\_\_

Soil Map Unit Name: Ws - Whitesburg silt loam NWI classification: PEM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____</p> <p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____</p> <p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____</p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____</p>
<p>Remarks:</p> <p>Located in small hayfield at Sta. 141+25R and is mowed on a regular basis. Photo #2.</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WTL-1

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. NONE				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____ )				
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____ )				
1. Rush - Juncus effusus	20	Y	FACW+	
2. Sedge - Carex sp.	50	Y	FACW	
3. Fescue - Festuca arundinacea	10	N	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
80 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <u>40</u> 20% of total cover: <u>16</u>				
Woody Vine Stratum (Plot size: _____ )				
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.) Site located in small hayfield. Vegetation is mown on regular basis throughout growing season.				

## SOIL

Sampling Point: WTL-1

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) (**LRR N**)
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/>            | Dark Surface (S7)                                    |
| <input type="checkbox"/>            | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/>            | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/>            | Loamy Gleyed Matrix (F2)                             |
| <input checked="" type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/>            | Redox Dark Surface (F6)                              |
| <input type="checkbox"/>            | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/>            | Redox Depressions (F8)                               |
| <input type="checkbox"/>            | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/>            | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/>            | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/>            | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to south of Speedwell Rd. City/County: Hawkins Sampling Date: 10-9-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-1

Investigator(s): Keven Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Slope Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LRR N Lat: 36.265246 Long: -83.077989 Datum: \_\_\_\_\_

Soil Map Unit Name: Ws - Whitesburg silt loam NWI classification: non wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>No primary indicators of wetland hydrology present at this location.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-1

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. NONE				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____ )				
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____ )				
1. Fescue - Schedonorus arundinacea	50	Y	FACU	
2. Johnson grass - Sorghum halepense	20	Y	FACU	
3. White clover - Trifolium repens	10	N	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
80 _____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: 40 _____ 20% of total cover: 16 _____				
Woody Vine Stratum (Plot size: _____ )				
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.) <b>Vegetation is mowed on a regular basis at this site.</b>				

## SOIL

Sampling Point: UPL-1

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No primary hydric soil indicators present at this location.

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-9-18				

<b>1-Station: from plans</b>	143+00R										
<b>2-Map label and name</b>	WWC-1 / EPH-1										
<b>3-Latitude/Longitude</b>	36.265453 N, -83.077436 W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>			
-HD score (if applicable)	12.0										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	2 ft.				-top of bank width			3 ft.			
- avg. gradient of stream (%)	< 5%										
-bank height and slope ratio	LDB - 1 ft.				RDB - 1 ft.						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input checked="" type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	< 1 in.				water width (riffles / pools)			1 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: Green ash, fescue, Johnson Grass, boxelder, honeysuckle										
------(LDB /RDB)-----	RDB: Boxelder, American elm, honeysuckle, chinkapin oak										
-habitat assessment score	28										
	epifaunal substrate		4		channel alteration		5				
	riffle embeddedness		0		frequency of re-ox zones		1				
	velocity / depth regime		0		bank stability		LDB	2	RDB	2	
	sediment deposition		2		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		2		riparian veg zone width		LDB	1	RDB	7	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	3										
<b>7-rainfall information</b>	no rainfall from 10/2 to 10/8										
<b>8-HUC -12 Code &amp; Name</b>	060101080902 - Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	Feature begins at lower end of WTL-1.										

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Hawkins	Named Waterbody: WWC-1 / EPH-1	Date/Time: 10-9-18
Assessors/Affiliation: Keven Brown		Project ID: 107579.00
Site Name/Description: SR-66 from SR-34 to south of Speedwell Rd.		
Site Location: Sta. 143+00R		
USGS quad: Bulls Gap 171-SE	HUC (12 digit): 06010108-0902	Lat/Long: 36.265453 N -83.077436 W
Previous Rainfall (7-days) : no rainfall from 10/2/18 to 10/8/18		
Precipitation this Season vs. Normal :    very wet    wet    average    dry    drought    unknown		
Source of recent & seasonal precip data :		
Watershed Size :	Photos: Yes	Number : 3
Soil Type(s) / Geology : Ws - Whitesburg silt loam		
Surrounding Land Use : Residential, agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :		
<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">Severe</span> Moderate                                  Slight                                  Absent		

### Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions Assessed during October		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except <i>Gambusia</i> )	✓	Stream
7. Presence of naturally occurring ground water table connection	✓	Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

**NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.**

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

**Overall Hydrologic Determination = WWC / EPH**

**Secondary Indicator Score (if applicable) = 12**

**Justification / Notes :**

Feature is adjacent to small hayfield and is outflow for WTL-1.

## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank	3	0	1	2	3
2. Sinuous channel	1	0	1	2	3
3. In-channel structure: riffle-pool sequences	1	0	1	2	3
4. Sorting of soil textures or other substrate	1	0	1	2	3
5. Active/relic floodplain	0	0	1	2	3
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	1.5	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0			

<b>B. Hydrology</b> (Subtotal = )	1.5	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel	0	0	1	2	3
15. Water in channel and >48 hours since sig. rain	1	0	1	2	3
16. Leaf litter in channel (January – September)	0	1.5	1	0.5	0
17. Sediment on plants or on debris	0.5	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		No = 0			

<b>C. Biology</b> (Subtotal = )	<b>3</b>	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in channel <sup>1</sup>	1	3	2	1	0
21. Rooted plants in channel <sup>1</sup>	1	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0	0.5	1	1.5
23. Bivalves/mussels	0	0	1	2	3
24. Amphibians	0	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	0	1	2	3
26. Filamentous algae; periphyton	1	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0	0.5	1	1.5
28. Wetland plants in channel <sup>2</sup>	0	0	0.5	1	2

<sup>1</sup> Focus is on the presence of upland plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 12

*Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points*

**Notes :**

[illegible]

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-6-15, 10-9-18				

<b>1-Station: from plans</b>	149+60										
<b>2-Map label and name</b>	STR-1 / PER										
<b>3-Latitude/Longitude</b>	36.2672° N, -83.0765° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	3-4 ft				-top of bank width			4-5 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 2 ft.; 2:1				RDB - 2 ft.; 2:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	4-8 in				water width (riffles / pools)			1-3 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: box elder, red maple, privet, bush honeysuckle, jewel weed										
	RDB: box elder, red maple, privet, bush honeysuckle, jewel weed										
-habitat assessment score	85										
	epifaunal substrate		16		channel alteration		8				
	riffle embeddedness		6		frequency of re-ox zones		7				
	velocity / depth regime		10		bank stability		LDB	8	RDB	8	
	sediment deposition		3		bank vegetative protection		LDB	4	RDB	4	
	channel flow status		8		riparian veg zone width		LDB	1	RDB	2	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	4										
<b>7-rainfall information</b>	no rainfall from 10/2 to 10/8										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>											

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-6-15, 10-9-18				

<b>1-Station: from plans</b>	155+25										
<b>2-Map label and name</b>	STR-2 / PER										
<b>3-Latitude/Longitude</b>	36.2683° N, -83.0753° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input checked="" type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	2-5 ft				-top of bank width			6-7 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 2-3 ft @ 1:1				RDB - 2-3 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	4 in.				water width (riffles / pools)			2-4 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: box elder, red maple, privet, bush honeysuckle, goldenrod										
	RDB: box elder, red maple, privet, bush honeysuckle, goldenrod										
-habitat assessment score	77										
	epifaunal substrate		16		channel alteration		3				
	riffle embeddedness		12		frequency of re-ox zones		7				
	velocity / depth regime		10		bank stability		LDB	4	RDB	1	
	sediment deposition		4		bank vegetative protection		LDB	6	RDB	1	
	channel flow status		11		riparian veg zone width		LDB	1	RDB	1	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	crayfish, algae, water striders										
<b>6-photo numbers</b>	5										
<b>7-rainfall information</b>	no rainfall from 10/2 to 10/8										
<b>8-HUC -12 Code &amp; Name</b>	060101080902 - Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>					
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>	<input type="checkbox"/>								
<b>13-Notes</b>											

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd. City/County: Hawkins Sampling Date: 10-6-15, 10-9-18

Applicant/Owner: TDOT State: TN Sampling Point: WTL-2

Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LRR N Lat: 36.26840°N Long: -83.07438°W Datum: WGS-84

Soil Map Unit Name: LaB- Leadvale Silt Loam, 2 to 5 percent slopes NWI classification: PEM2B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes \_\_\_\_\_ No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes <u>X</u> No _____</p> <p>Hydric Soil Present? Yes <u>X</u> No _____</p> <p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____</p>
<p>Remarks:</p> <p>WTL-2 located at 156+75R in a small open field that is mowed on a regular basis. Photo #6. No TRAM completed due to small size and low resource value based on TRAM user guide.</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><input checked="" type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input checked="" type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> </div> <div style="width: 48%;"> <p><input checked="" type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"-3"</u></p> <p>Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>WTL-2 boundary is defined by the the hydric soil boundary, the water stained area and the vegetation change. The surrounding upland and WTL-2 is closely cropped. WTL-2 marked on the project plans near mainline STA 156+75 RT (and STA 52+50 RT S. Shepherd Rd). The feature is not mapped on the USFWS NWI Mapper site. WTL-2 is photograph #6 in the photograph summary.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: 10 m )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. Red maple - <i>Acer rubrum</i>	10	Y	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: 5 (B)
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
7. _____	_____	_____	_____	
10 = Total Cover 50% of total cover: 5 20% of total cover: 2				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Sapling/Shrub Stratum</b> (Plot size: _____) 1. NONE 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ _____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				
<b>Herb Stratum</b> (Plot size: _____) 1. Sedges - <i>Carex</i> sp. 10 Y FACW 2. Virginia buttonweed - <i>Diodia virginiana</i> 30 Y FACW 3. Curly dock - <i>Rumex crispus</i> 10 Y FAC 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ 50 = Total Cover 50% of total cover: 25 20% of total cover: 10				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
<b>Woody Vine Stratum</b> (Plot size: _____) 1. Virginia creeper - <i>Campsis radicans</i> 5 Y FAC 2. _____ 3. _____ 4. _____ 5. _____ 5 = Total Cover 50% of total cover: 2.5 20% of total cover: 1				
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

## SOIL

Sampling Point: WTL-2

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydro Sulfide Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☒ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/>            | Dark Surface (S7)                                    |
| <input type="checkbox"/>            | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/>            | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/>            | Loamy Gleyed Matrix (F2)                             |
| <input checked="" type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/>            | Redox Dark Surface (F6)                              |
| <input type="checkbox"/>            | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/>            | Redox Depressions (F8)                               |
| <input type="checkbox"/>            | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/>            | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/>            | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/>            | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to south of Speedwell Rd. City/County: Hawkins Sampling Date: 10-9-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-2

Investigator(s): Keven Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LRR N Lat: 36.268386 Long: -83.074210 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 2 to 5 percent slopes NWI classification: non wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes \_\_\_\_\_ No X  
Hydric Soil Present? Yes \_\_\_\_\_ No X  
Wetland Hydrology Present? Yes \_\_\_\_\_ No X

Is the Sampled Area within a Wetland? Yes \_\_\_\_\_ No X

Remarks:

This site is in a small field and is mowed on a regular basis.

## HYDROLOGY

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> True Aquatic Plants (B14)                  |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                 |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Presence of Reduced Iron (C4)              |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Thin Muck Surface (C7)                     |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Other (Explain in Remarks)                 |
| <input type="checkbox"/> Iron Deposits (B5)                        |   |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |   |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 |   |
| <input type="checkbox"/> Aquatic Fauna (B13)                       |   |

### Secondary Indicators (minimum of two required)

- |  |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |
| <input type="checkbox"/> Drainage Patterns (B10)                   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |
| <input type="checkbox"/> Geomorphic Position (D2)                  |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |
| <input type="checkbox"/> Microtopographic Relief (D4)              |
| <input type="checkbox"/> FAC-Neutral Test (D5)                     |

### Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

There were no indicators of wetland hydrology at this location.

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-2

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. NONE				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____ )				
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____ )				
1. Fescue - Schedonorus arundinacea	50	Y	FACU	
2. broomsedge - Andropogon virginicus	20	Y	FACU	
3. plantain - Plantago lanceolata	10	N	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
80 _____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: 40 _____ 20% of total cover: 16 _____				
Woody Vine Stratum (Plot size: _____ )				
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.) There was no hydrophytic vegetation at this location.				

## SOIL

Sampling Point: UPL-2

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                      |
| <input type="checkbox"/> | Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )  |
| <input type="checkbox"/> | Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                               |
| <input type="checkbox"/> | Depleted Matrix (F3)                                   |
| <input type="checkbox"/> | Redox Dark Surface (F6)                                |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                             |
| <input type="checkbox"/> | Redox Depressions (F8)                                 |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> ) |
| <input type="checkbox"/> | Umbric Surface (F13) ( <b>MLRA 136, 122</b> )          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )    |
| <input type="checkbox"/> | Red Parent Material (F21) ( <b>MLRA 127, 147</b> )     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

There were no indicators of hydric soils at this location.

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-2 STA. 156+75R

### 0.25 Function 1: Maintain Hydrologic Regime

0.75  $(V1 \times V2)^{(1/2)}$

FCI 1 =

0.43 Final Tree =

#VALUE!

GOTOV5

N/A

### Function 2: Maintain Biogeochemical Processes

GOTOV6

1

0.70

0.66

0

3

0

0.75

1

0.165

0.5

0.33

$$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$$

FCI 2 trees=

#VALUE! Final Shrubs=

#VALUE!

$$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$$

FCI 2 shrubs=

#VALUE!

Final Herbaceous =

0.34

$$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$$

FCI 2 ground =

0.42

### Function 3: Maintain Characteristic Plant Community

$$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$$

FCI 3 trees=

#VALUE!

$$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$$

FCI 3 shrubs=

#VALUE!

$$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$$

FCI 3 ground =

0.24

### Function 4: Maintain Characteristic Wildlife Community:

FCI 4 trees=

#VALUE!

$$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$$

FCI 4 shrubs=

#VALUE!

$$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$$

FCI 4 ground =

0.26

$$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$$

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-2 Sta. 165+50R	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> Located in small open field.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.43
	Function: Biogeochemical Processes	0.42
	Function: Retain Particulates	N/A
	Function: Plant Community	0.24
	Function: Wildlife Community	0.26
	Quantitative Score (Average of FCIs x 100)	33.75
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-6-15, 10-9-18				

<b>1-Station:</b> from plans	157+50R to 168+70R										
<b>2-Map label and name</b>	STR-3 / INT										
<b>3-Latitude/Longitude</b>	36.2716° N, -83.0731° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1-2 ft				-top of bank width			3-4 ft			
- avg. gradient of stream (%)	5 %										
-bank height and slope ratio	LDB - 2-3 ft @ 1:1				RDB - 2-3 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2-3 in			water width (riffles / pools)				6-12 in			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: box elder, red maple, privet, bush honeysuckle, goldenrod, red cedar										
------(LDB /RDB)-----	RDB: box elder, red maple, privet, bush honeysuckle, goldenrod, red cedar										
-habitat assessment score	71										
	epifaunal substrate		11		channel alteration		1				
	riffle embeddedness				frequency of re-ox zones		2				
	velocity / depth regime		4		bank stability		LDB	8	RDB	8	
	sediment deposition		20		bank vegetative protection		LDB	3	RDB	3	
	channel flow status		11		riparian veg zone width		LDB	0	RDB	0	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	water striders, filamentous algae										
<b>6-photo numbers</b>	7, 8, 10										
<b>7-rainfall information</b>	no rainfall from 10/2 to 10/8										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-3 flows from a constructed box off ROW that diverts a small portion of STR-4 and flows through WTL-3. Refer to marked plans for details.										

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10-6-15, 10-9-18

Applicant/Owner: TDOT State: TN Sampling Point: WTL-3

Investigator(s): KAB, RLH Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.268607 Long: -83.074198 Datum: WGS-84

Soil Map Unit Name: LaB- Leadvale Silt Loam, 2 to 5 percent slopes NWI classification: PSS1d

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
---	--

### Remarks:

WTL-3 is confined to the ditch between industrial site, SR-66 and S. Shepherd Rd. WTL-3 marked on the project plans near mainline STA 157+50 RT to STA 164+50 RT. The feature is not mapped on the USFWS NWI Mapper site. WTL-3 is photographs #7 and #8 in the photograph summary. WTL-3 is a roadside ditch so no TRAM completed based on TRAM user guide.

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 2"-6"

Water Table Present? Yes ☐ No ☐ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☐ No ☐ Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

**Wetland Hydrology Present?** Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

### Remarks:

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WTL-3

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. NONE				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. Liquidambar styraciflua (sweetgum)	25	Y	FAC	
2. Salix nigra (black willow)	40	Y	OBL	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
65 = Total Cover				
50% of total cover: 32 20% of total cover: 13				
<b>Herb Stratum</b> (Plot size: _____ )				
1. Eleocharis acicularis (needle spikerush)	20	Y	OBL	
2. Leersia oryzoides (rice cutgrass)	30	Y	OBL	
3. Ludwigia alternifolia (seedbox)	15	Y	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
65 = Total Cover				
50% of total cover: 32 20% of total cover: 13				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				

**Remarks:** (Include photo numbers here or on a separate sheet.)

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)  
  
 Total Number of Dominant Species Across All Strata: 5 (B)  
  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by:  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
☒ 1 - Rapid Test for Hydrophytic Vegetation  
☐ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**  
  
**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
  
**Sapling/Shrub** – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  
  
**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  
  
**Woody vine** – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐

## SOIL

Sampling Point: WTL-3

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrogen Sulfide Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☒ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) (**LRR N**)
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/>            | Dark Surface (S7)                                    |
| <input type="checkbox"/>            | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/>            | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/>            | Loamy Gleyed Matrix (F2)                             |
| <input checked="" type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/>            | Redox Dark Surface (F6)                              |
| <input type="checkbox"/>            | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/>            | Redox Depressions (F8)                               |
| <input type="checkbox"/>            | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/>            | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/>            | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/>            | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-9-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-3

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.268588 Long: -83.074282 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 2 to 5 percent slopes NWI classification: non wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p> <p>Site located along toe of road slope for Shepherd Drive and is mowed on a regular basis.</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-3

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																																								
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)																																																								
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Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																																								

## SOIL

Sampling Point: UPL-3

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-6-15, 10-9-18				

<b>1-Station:</b> from plans	168+60 to 172+50R										
<b>2-Map label and name</b>	STR-4 / PER										
<b>3-Latitude/Longitude</b>	36.27160° N, -83.07285° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	3-4 ft				-top of bank width			5-6 ft			
- avg. gradient of stream (%)	5 %										
-bank height and slope ratio	LDB - 1 ft @ 1:1				RDB - 1 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	6-8 in				water width (riffles / pools)			3-4 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: hackberry, walnut, honeysuckle, knot weed										
	RDB: hackberry, walnut, honeysuckle, knot weed										
-habitat assessment score	73										
	epifaunal substrate		11		channel alteration		2				
	riffle embeddedness		10		frequency of re-ox zones		2				
	velocity / depth regime		4		bank stability		LDB	8	RDB	8	
	sediment deposition		4		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		20		riparian veg zone width		LDB	1	RDB	1	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	9, 10, 11										
<b>7-rainfall information</b>	no rainfall from 10/2 to 10/8										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-4 flows beneath SR-66 into a constructed box off ROW and then under large warehouse. Refer to marked plans for details.										

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-6-15, 10-19-18				

<b>1-Station:</b> from plans	184+40										
<b>2-Map label and name</b>	STR-5 / INT										
<b>3-Latitude/Longitude</b>	36.27540° N, -83.07050° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	3-4 ft				-top of bank width			5-6 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 0.5-1 ft @ 1:1					RDB - 0.5-1 ft @ 1:1					
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	<input type="checkbox"/>
-water depth (riffles / pools)	1-2 in				water width (riffles / pools)			2-3 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: boxelder, black willow, bush honeysuckle, privet										
	RDB: boxelder, black willow, bush honeysuckle, privet										
-habitat assessment score	94										
	epifaunal substrate		6		channel alteration		2				
	riffle embeddedness		19		frequency of re-ox zones		7				
	velocity / depth regime		10		bank stability		LDB	9	RDB	9	
	sediment deposition		13		bank vegetative protection		LDB	3	RDB	3	
	channel flow status		11		riparian veg zone width		LDB	1	RDB	1	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	12										
<b>7-rainfall information</b>	0.76 in. from 10/12 to 10/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input type="checkbox"/>									
<b>13-Notes</b>	<p>STR-5 impounded west of project limits (PND-2) and discharges to McPherson Branch (STR-7). WTL-4 is adjacent to STR-5 below PND-2.</p>										

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: WTL-4

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Slope Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LRR N Lat: 36.275566 Long: -83.071121 Datum: \_\_\_\_\_

Soil Map Unit Name: LaC - Leadvale silt loam, 5%-12% slopes NWI classification: PSS1B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____</p> <p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____</p> <p>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____</p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____</p>
<p>Remarks:</p> <p>WTL-4 is located at Sta. 184+50L down gradient of PND-2. STR-5 flows through WTL-4. WTL-4 is shown in photo #14 of the photo summary.</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input checked="" type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1" - 2"</u>                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: WTL-4

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. NONE				<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>85.7</u> (A/B)
2.				
3.				
4.				
5.				
6.				
7.				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling/Shrub Stratum</b> (Plot size: _____)				
1. Green ash - Fraxinus pennsylvanica	5	Y	FACW	
2. Black willow - Salix nigra	5	Y	OBL	
3.				
4.				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				
<b>Herb Stratum</b> (Plot size: _____)				
1. Sedge - Carex Sp.	20	Y	FACW	
2. Common rush - Juncus effusus	15	Y	OBL	
3. Cattail - Typha latifolia	5	N	OBL	
4. Mint - Mentha arvensis	5	N	FACW	
_____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				
<b>Woody Vine Stratum</b> (Plot size: _____)				
1. Japanese honeysuckle - Lonicera japonica	10	Y	FACU	
2.				
3.				
4.				
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-4

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-4

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.275721 Long: -83.071098 Datum: \_\_\_\_\_

Soil Map Unit Name: LaC - Leadvale silt loam, 5%-12% slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>No primary indicators of wetland hydrology present.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-4

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. Red cedar - <i>Juniperus virginiana</i>	10	Y	FACU	
2. Bradford pear - <i>Pyrus calleryana</i>	20	Y		
3. Winged elm - <i>Ulmus alata</i>	5	N	FACU	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
35 = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: 18 20% of total cover: 7				
<b>Herb Stratum</b> (Plot size: _____ )				
1. Green onions - <i>Allium vineale</i>	5	Y	FACU	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
5 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: 3 20% of total cover: 1				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. Honeysuckle - <i>Lonicera japonica</i>	40	Y	FACU	
2. Blackberry - <i>Rubus</i> sp.	30	Y	FACU	
3. Virgins bower - <i>Clematis</i>	10	N	FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
80 = Total Cover				
50% of total cover: 40 20% of total cover: 16				
Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation not present at this location.				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

## SOIL

Sampling Point: UPL-4

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No primary indicators of hydric soil at this location.

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-6-15, 10-19-18				
<b>1-Station: from plans</b>	186+60										
<b>2-Map label and name</b>	STR-6 / INT										
<b>3-Latitude/Longitude</b>	36.27583° N, -83.07013° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft			-top of bank width			1-1.5 ft				
- avg. gradient of stream (%)	5-10%										
-bank height and slope ratio	LDB - 2 ft @ 1:1				RDB - 2 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1-2 in			water width (riffles / pools)			0.5-1 ft				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: lawn grasses										
	RDB: lawn grasses										
-habitat assessment score	39										
	epifaunal substrate			2			channel alteration			3	
	riffle embeddedness						frequency of re-ox zones			7	
	velocity / depth regime			5			bank stability			LDB	0
	sediment deposition			9			bank vegetative protection			LDB	0
	channel flow status			11			riparian veg zone width			LDB	1
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	15										
<b>7-rainfall information</b>	0.76 in. from 10/12 to 10/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-6 originates at catch basin at SR-66 intersection with Meadow View Rd. Channel appears constructed and is highly eroded.										

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-19-18				
<b>1-Station: from plans</b>	192+00										
<b>2-Map label and name</b>	STR-7 (McPherson Branch)										
<b>3-Latitude/Longitude</b>	36.27615° N, -83.06846° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input checked="" type="checkbox"/>	presence of litter / debris	<input checked="" type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	5-10 ft				-top of bank width			8-12 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 6 ft @ 1:1				RDB - 1-4 ft @ 1.5:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	4-10 in				water width (riffles / pools)			5-10 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: boxelder, stilt grass, honeysuckle, privet										
------(LDB /RDB)-----	RDB: boxelder, stilt grass, honeysuckle, privet										
-habitat assessment score	100										
	epifaunal substrate	17			channel alteration	8					
	riffle embeddedness	17			frequency of re-ox zones	18					
	velocity / depth regime	10			bank stability	LDB	1	RDB	1		
	sediment deposition	9			bank vegetative protection	LDB	0	RDB	2		
	channel flow status	15			riparian veg zone width	LDB	1	RDB	1		
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	crayfish, salamander, relic mollusk shells, numerous caddisflies, mayflies, chironimids, minnows										
<b>6-photo numbers</b>	16										
<b>7-rainfall information</b>	0.76 in. from 10/12 to 10/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input checked="" type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>		
	no	<input type="checkbox"/>									
<b>13-Notes</b>											

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-19-18				
<b>1-Station: from plans</b>	204+90										
<b>2-Map label and name</b>	WWC-2 / EPH-2										
<b>3-Latitude/Longitude</b>	36.277815° N, -83.064413° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>			
-HD score (if applicable)	8.5										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	0.5 ft.			-top of bank width			0.75 ft.				
- avg. gradient of stream (%)	5 %										
-bank height and slope ratio	LDB - 0.25 ft.				RDB - 0.25 ft.						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1 in.			water width (riffles / pools)			2 in. - 4 in.				
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Fescue										
	RDB: Fescue										
-habitat assessment score	52										
	epifaunal substrate	2			channel alteration	5					
	rifle embeddedness				frequency of re-ox zones	2					
	velocity / depth regime	4			bank stability	LDB	9	RDB	9		
	sediment deposition	15			bank vegetative protection	LDB	1	RDB	1		
	channel flow status	2			riparian veg zone width	LDB	1	RDB	1		
-OHWM	No										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	None observed.										
<b>6-photo numbers</b>	17										
<b>7-rainfall information</b>	0.76 in. from 10/12 to 10/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	WWC-2 / EPH-2 drains into WTL-5.										

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Hawkins	Named Waterbody: WWC-2 / EPH-1	Date/Time: 10.08.2015 @ 0950, 1
Assessors/Affiliation: K.A. Brown, R.L. Howard / TDOT	Project ID: P.E. 37005-1237-14 PIN 107579.00	
Site Name/Description: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd		
Site Location: STA 204+90		
USGS quad: Bulls Gap, TN (171-SE)	HUC (12 digit): 06010108-0902	Lat/Long: 36.27787°N , -83.06446°W
Previous Rainfall (7-days) : 0.76 in. from 10/12/18 to 10/18/18		
Precipitation this Season vs. Normal : very wet wet <u>average</u> dry drought unknown		
Source of recent & seasonal precip data : (NOAA NCDC BULLS GAP 3.6 W, TN US GHCND:US1TNHB0004)		
Watershed Size : 14.38 acres	Photos: Yes	17
Soil Type(s) / Geology : Leadvale Silt Loam, 2 to 5%		
Surrounding Land Use : agriculture, residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <u>Moderate</u> Slight Absent		

### Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except <i>Gambusia</i> )	✓	Stream
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

**NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.**

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

<b>Overall Hydrologic Determination =</b>	WWC / EPH
<b>Secondary Indicator Score (if applicable) =</b>	8.5

**Justification / Notes :**


## Secondary Field Indicator Evaluation

**A. Geomorphology** (Subtotal = ) 2.5

A. Geomorphology (Subtotal = )		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	2	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	0	0	1	2	3
5. Active/relic floodplain	0	0	1	2	3
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	0.5	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0			

**B. Hydrology** (Subtotal = ) 3

<b>B. Hydrology</b> (Subtotal = ) 3		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel	0	0	1	2	3
15. Water in channel and >48 hours since sig. rain	1	0	1	2	3
16. Leaf litter in channel (January – September)	0	1.5	1	0.5	0
17. Sediment on plants or on debris	0.5	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	Yes = 1.5				

**C. Biology** (Subtotal = ) 3

<b>C. Biology</b> (Subtotal = )	3	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in channel <sup>1</sup>	1	3	2	1	0
21. Rooted plants in channel <sup>1</sup>	1	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0	0.5	1	1.5
23. Bivalves/mussels	0	0	1	2	3
24. Amphibians	0	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	0	1	2	3
26. Filamentous algae; periphyton	0	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0	0.5	1	1.5
28. Wetland plants in channel <sup>2</sup>	1	0	0.5	1	2

<sup>1</sup> Focus is on the presence of upland plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 8.5

*Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points*

**Notes :**

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10.06.2015  
 Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-5  
 Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
 Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.27797°N Long: -83.06344°W Datum: WGS-84  
 Soil Map Unit Name: LaB- Leadvale Silt Loam, 2 to 5 percent slopes NWI classification: PSS1x  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: WTL-5 is confined to the constructed ditch on a graded industrial building site. WTL-5 is marked on the project plans near mainline STA 204+75 RT to STA 209+00 RT. The feature is not mapped on the USFWS NWI Mapper site. WTL-5 is photograph #18 in the photograph summary. WTL-5 is a constructed drainage ditch so no TRAM completed based on TRAM user guide.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>1-8"</u>	Wetland Hydrology Present? Yes <u>X</u> No _____	
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: WTL-5 receives flow from WWC- 1 / EPH-1 and STR-8 and discharges to STR-10.		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-5

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				<b>Prevalence Index worksheet:</b>  Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
<b>Sapling Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum (Plot size: <u>5m</u> )</b>				<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation</u> <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <i>Salix nigra</i> (black willow)	10	Y	FACW	
2. <i>Hibiscus moscheutos</i> (crimson-eyed rose mallow)	10	Y	OBL	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>20</u> = Total Cover  50% of total cover: <u>10</u> 20% of total cover: <u>4</u>				
<b>Herb Stratum (Plot size: <u>1.5m</u> )</b>				<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
1. <i>Eleocharis acicularis</i> (needle spikerush)	20	Y	OBL	
2. <i>Leersia oryzoides</i> (rice cutgrass)	30	Y	OBL	
3. <i>Ludwigia alternifolia</i> (seedbox)	10	N	FACW	
4. <i>Typha latifolia</i> (broadleaf cattail)	20	Y	OBL	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>80</u> = Total Cover  50% of total cover: <u>40</u> 20% of total cover: <u>16</u>				
<b>Woody Vine Stratum (Plot size: <u>10m</u> )</b>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-5

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N**, **MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ☐ Umbric Surface (F13) (**MLRA 136, 122**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ☐ Red Parent Material (F21) (**MLRA 127, 147**)

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes X No       

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-5

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.278008 Long: -83.063607 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 5 to 12 percent slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>No primary indicators of wetland hydrology present.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-5

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. Broomsedge - <i>Andropogon virginicus</i>	60	Y	FACU	
2. Teasel - <i>Dipsacus fullonum</i>	10	N	FACU	
3. White oldfield aster - <i>Symphyotrichum ericoides</i>	5	N	FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
75 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>38</sup> 20% of total cover: <sup>15</sup>				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

**Hydrophytic Vegetation Present?**
 Yes ☐ No ☒

## SOIL

Sampling Point: UPL-5

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                      |
| <input type="checkbox"/> | Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )  |
| <input type="checkbox"/> | Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                               |
| <input type="checkbox"/> | Depleted Matrix (F3)                                   |
| <input type="checkbox"/> | Redox Dark Surface (F6)                                |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                             |
| <input type="checkbox"/> | Redox Depressions (F8)                                 |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> ) |
| <input type="checkbox"/> | Umbria Surface (F13) ( <b>MLRA 136, 122</b> )          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )    |
| <input type="checkbox"/> | Red Parent Material (F21) ( <b>MLRA 127, 147</b> )     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15				
<b>1-Station: from plans</b>	207+80										
<b>2-Map label and name</b>	STR-8										
<b>3-Latitude/Longitude</b>	36.27826° N, -83.06358° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1-3 ft				-top of bank width			4-5 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1-3 ft @ 2:1				RDB - 1-3 ft @ 2:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2-4 in				water width (riffles / pools)			1-2 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: lawn grasses										
	RDB: lawn grasses										
-habitat assessment score	61										
	epifaunal substrate		11		channel alteration		5				
	riffle embeddedness				frequency of re-ox zones		6				
	velocity / depth regime		10		bank stability		LDB	6	RDB	6	
	sediment deposition		2		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		11		riparian veg zone width		LDB	1	RDB	1	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	fish, algae										
<b>6-photo numbers</b>	19										
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input checked="" type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-8 is a channelized feature between church and residence. Feature drains to WTL-5.										

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-19-18				

<b>1-Station: from plans</b>	220+00										
<b>2-Map label and name</b>	STR-9										
<b>3-Latitude/Longitude</b>	36.27990° N, -83.06007° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input checked="" type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1-2 ft				-top of bank width			1-4 ft			
- avg. gradient of stream (%)	5-10%										
-bank height and slope ratio	LDB - 1-2 ft @ 1:1				RDB - 1-2 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	4-6 in				water width (riffles / pools)			1-2 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Johnson grass. stilt grass, daisy fleabane										
	RDB: Johnson grass. stilt grass, daisy fleabane										
-habitat assessment score	48										
	epifaunal substrate			11			channel alteration			5	
	riffle embeddedness						frequency of re-ox zones			6	
	velocity / depth regime			4			bank stability			LDB	3
	sediment deposition			4			bank vegetative protection			LDB	0
	channel flow status			10			riparian veg zone width			LDB	1
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae, no other aquatic species observed										
<b>6-photo numbers</b>	20										
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>					
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>											

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-19-18				
<b>1-Station: from plans</b>	227+40										
<b>2-Map label and name</b>	STR-10										
<b>3-Latitude/Longitude</b>	36.28127° N, -83.05817° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft			-top of bank width			1-2 ft				
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1 ft @ 1:1				RDB - 1 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2 in			water width (riffles / pools)			6-12 in				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: fescue, iron weed, cockle bur										
------(LDB /RDB)-----	RDB: fescue, iron weed, cockle bur										
-habitat assessment score	43										
	epifaunal substrate	6			channel alteration	5					
	rifle embeddedness				frequency of re-ox zones	6					
	velocity / depth regime	4			bank stability	LDB	3	RDB	3		
	sediment deposition	5			bank vegetative protection	LDB	0	RDB	0		
	channel flow status	9			riparian veg zone width	LDB	1	RDB	1		
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	21										
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>					
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-10 drains right at STA 227+40. The owner of tract 151 reports the stream is encapsulated beneath the field in a 24" pipe. STR-10 daylight on the railroad ROW.										

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-19-18				
<b>1-Station: from plans</b>	236+60										
<b>2-Map label and name</b>	STR-11, Moore Branch										
<b>3-Latitude/Longitude</b>	36.28329° N, -83.05652° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	8-12 ft				-top of bank width			12-20 ft			
- avg. gradient of stream (%)	5-10%										
-bank height and slope ratio	LDB - 3-4 ft @ 1:1				RDB - 3-4 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	6-12 in				water width (riffles / pools)			8-10 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: boxelder, sycamore, black walnut										
------(LDB /RDB)-----	RDB: boxelder, sycamore, black walnut										
-habitat assessment score	99										
	epifaunal substrate		17		channel alteration		8				
	riffle embeddedness		17		frequency of re-ox zones		12				
	velocity / depth regime		13		bank stability		LDB	3	RDB	2	
	sediment deposition		4		bank vegetative protection		LDB	3	RDB	3	
	channel flow status		15		riparian veg zone width		LDB	1	RDB	1	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	several ephemeropterans and trichopterans, algae										
<b>6-photo numbers</b>	22										
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	
	no	<input type="checkbox"/>	<input type="checkbox"/>								
<b>13-Notes</b>											

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-19-18				
<b>1-Station: from plans</b>	256+00										
<b>2-Map label and name</b>	STR-12										
<b>3-Latitude/Longitude</b>	36.28729° N, -83.05212° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft			-top of bank width			1-2 ft				
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1-1.5 ft @ 1:1				RDB - 1-1.5 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2-4 in			water width (riffles / pools)			6-12 in				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: lawn grasses										
	RDB: lawn grasses										
-habitat assessment score	39										
	epifaunal substrate			6			channel alteration			5	
	riffle embeddedness						frequency of re-ox zones			1	
	velocity / depth regime			4			bank stability			LDB	2
	sediment deposition			11			bank vegetative protection			LDB	0
	channel flow status			7			riparian veg zone width			LDB	1
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	23										
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-12 flows between a residence and a tennis court on Tract 163.										

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-18-19				

<b>1-Station: from plans</b>	260+50										
<b>2-Map label and name</b>	STR-13										
<b>3-Latitude/Longitude</b>	36.28856° N, -83.05057° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input checked="" type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	2-3 ft				-top of bank width			3-4 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1 ft @ 1:1				RDB - 1 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	3-6 in				water width (riffles / pools)			2-3 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: boxelder, black locust, elm, privet										
	RDB: boxelder, black locust, elm, privet										
-habitat assessment score	55										
	epifaunal substrate		16		channel alteration		5				
	riffle embeddedness		6		frequency of re-ox zones		1				
	velocity / depth regime		4		bank stability		LDB	1	RDB	1	
	sediment deposition		3		bank vegetative protection		LDB	0	RDB	0	
	channel flow status		11		riparian veg zone width		LDB	6	RDB	1	
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	24										
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>					
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>											

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-8-15, 10-30-18				
<b>1-Station: from plans</b>	47+25 on Old Hwy Rd. (263+00L on SR-66)										
<b>2-Map label and name</b>	STR-14										
<b>3-Latitude/Longitude</b>	36.29003° N, -83.04769° W										
<b>4-Potential impact</b>	Runoff										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1-2 ft				-top of bank width			2-3 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1 ft @ 1:1					RDB - 1 ft @ 1:1					
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2-4 in				water width (riffles / pools)			1-2 ft			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input checked="" type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: boxelder, red bud, red mulberry										
	RDB: boxelder, red bud, red mulberry										
-habitat assessment score	64										
	epifaunal substrate			6			channel alteration			5	
	riffle embeddedness						frequency of re-ox zones			11	
	velocity / depth regime			4			bank stability			LDB	4
	sediment deposition			13			bank vegetative protection			LDB	2
	channel flow status			11			riparian veg zone width			LDB	1
-OHWM	yes										
-riffle pool complex	no										
-fish, benthos,algae, aquatic life	algae										
<b>6-photo numbers</b>	25										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>											

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-27-15, 10-19-18				

<b>1-Station: from plans</b>	291+00L												
<b>2-Map label and name</b>	SPG-1 / STR-15												
<b>3-Latitude/Longitude</b>	36.29207° N, -83.04269° W												
<b>4-Potential impact</b>	None												
<b>5-Feature description:</b>													
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>					
-HD score (if applicable)	N/A												
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>			
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>			
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>			
-sinuosity	absent	<input type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	strong	<input type="checkbox"/>					
-channel bottom width	1-2 ft				-top of bank width			3-4 ft					
- avg. gradient of stream (%)	5%												
-bank height and slope ratio	LDB - 1-2 ft @ 1:1					RDB - 1-2 ft @ 1:1							
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>			
-water depth (riffles / pools)	2-3 in				water width (riffles / pools)			1-2 ft					
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input type="checkbox"/>		
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>		
-dominant riparian species: ------(LDB /RDB)-----	LDB: sycamore, boxelder, privet												
	RDB: boxelder, sycamore, privet, blackberry, honeysuckle												
-habitat assessment score	56												
	epifaunal substrate			6			channel alteration			5			
	riffle embeddedness						frequency of re-ox zones			12			
	velocity / depth regime			4			bank stability			LDB	6	RDB	3
	sediment deposition			3			bank vegetative protection			LDB	2	RDB	2
	channel flow status			11			riparian veg zone width			LDB	1	RDB	1
-OHWM	yes												
-riffle pool complex	no												
-fish, benthos,algae, aquatic life	algae												
<b>6-photo numbers</b>	26												
<b>7-rainfall information</b>	0.76 in. from 10/12/18 to 10/18/18												
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek												
<b>9-Confirmed by:</b>													
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>	<input type="checkbox"/>										
<b>13-Notes</b>	STR-15 lies just outside the project limits and is fed by a small spring.												

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-27-15, 10-30-18				
<b>1-Station: from plans</b>	289+75										
<b>2-Map label and name</b>	STR-16										
<b>3-Latitude/Longitude</b>	36.29207° N, -83.04269° W										
<b>4-Potential impact</b>	Encapsulation, runoff										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft. -2 ft.				-top of bank width			3 ft. - 4 ft.			
- avg. gradient of stream (%)	5 %										
-bank height and slope ratio	LDB - 1 ft. -2 ft., 1:1				RDB - 1 ft. -2 ft., 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2 in. -3 in.			water width (riffles / pools)				1 ft. - 2 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: Sycamore, boxelder, privet										
------(LDB /RDB)-----	RDB: Boxelder, sycamore, privet, blackberry, honeysuckle										
-habitat assessment score	56										
	epifaunal substrate	6				channel alteration	5				
	riffle embeddedness	0				frequency of re-ox zones	12				
	velocity / depth regime	4				bank stability	LDB	6	RDB	3	
	sediment deposition	3				bank vegetative protection	LDB	2	RDB	2	
	channel flow status	11				riparian veg zone width	LDB	1	RDB	1	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae,										
<b>6-photo numbers</b>	27, 28										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	STR-16 flows out of WTL-6 and adjacent to WTL-7.										

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10-27-15, 10-19-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-6  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.29290°N Long: -83.04292°W Datum: WGS-84  
Soil Map Unit Name: LaB - Leadvale Silt Loam, 2 to 5 % Slopes NWI classification: PEM2f  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: WTL-6 is located at Sta. 293+00L and lies within a pasture and vegetation is close-cropped. Additionally, livestock use is trampling the soil profile. The feature is not mapped on the USFWS NWI Mapper site. WTL-6 is photograph #28 in the photograph summary. WTL-6 is outside the project impact limits as currently designed.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2-10"</u>		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Wetland Hydrology Present? Yes <u>X</u> No _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: WTL-6 receives discharges from STR-16.		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-6

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: <u>1.5m</u> )				
1. <i>Eleocharis acicularis</i> (needle spikerush)	10	Y	OBL	
2. <i>Leersia oryzoides</i> (rice cutgrass)	20	Y	OBL	
3. <i>Ludwigia alternifolia</i> (seedbox)	5	N	FACW	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>17</u> 20% of total cover: <u>7</u>				
Woody Vine Stratum (Plot size: <u>10m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)  
 Total Number of Dominant Species Across All Strata: 3 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**  

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: <u>0</u> (A)	<u>0</u> (B)

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
3 - Prevalence Index is ≤3.0<sup>1</sup>  
4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
   Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

## SOIL

Sampling Point: WTL-6

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-6

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.292441 Long: -83.042703 Datum: \_\_\_\_\_

Soil Map Unit Name: Hamblen silt loam, deep, 0 to 2 percent slopes, occasionally flooded NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-6

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Woody Vine Stratum</b> (Plot size: _____ )
<b>Herb Stratum</b> (Plot size: _____ )				
1. Tall fescue - Schedonorus arundinacea	90	Y	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	50% of total cover: <u>45</u> 20% of total cover: <u>18</u>
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	50% of total cover: _____ 20% of total cover: _____
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	50% of total cover: _____ 20% of total cover: _____
90 = Total Cover				
50% of total cover: <u>45</u> 20% of total cover: <u>18</u>				
<b>Remarks:</b> (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: UPL-6

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

	Dark Surface (S7)
	Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )
	Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )
	Loamy Gleyed Matrix (F2)
	Depleted Matrix (F3)
	Redox Dark Surface (F6)
	Depleted Dark Surface (F7)
	Redox Depressions (F8)
	Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> )

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10-27-15, 10-19-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-7  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.29186°N Long: -83.04253°W Datum: WGS-84  
Soil Map Unit Name: LaB - Leadvale Silt Loam, 2 to 5 % Slopes NWI classification: PSS1  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: WTL-7 is marked on the project plans near STA 290+00L and is adjacent to STR-16. The feature is not mapped on the USFWS NWI Mapper site. WTL-7 is photograph #29 in the photograph summary. WTL-7 is outside the project impact limits as currently designed.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2-10"</u>		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-7

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				<b>Prevalence Index worksheet:</b>  Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
<b>Sapling Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum (Plot size: <u>5m</u> )</b>				<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation</u> <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Liquidambar styraciflua (sweetgum)</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Acer rubrum (red maple)</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>35</u> = Total Cover  50% of total cover: <u>17</u> 20% of total cover: <u>7</u>				
<b>Herb Stratum (Plot size: <u>1.5m</u> )</b>				<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
1. <u>Juncus effusus (common rush)</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Eutrochium maculatum (Joe Pye weed)</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Ludwigia alternifolia (seedbox)</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>40</u> = Total Cover  50% of total cover: <u>20</u> 20% of total cover: <u>8</u>				
<b>Woody Vine Stratum (Plot size: <u>10m</u> )</b>				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				

Remarks: (Include photo numbers here or on a separate sheet.)  
**Some of the WTL-7 vegetation is mowed.**

## SOIL

Sampling Point: WTL-7

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-7

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.291870 Long: -83.042733 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 2 to 5 percent slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-7

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. Sassafras - Sassafras albidum	25	Y	FACU	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: <sup>13</sup> 20% of total cover: <sup>5</sup>				
<b>Herb Stratum</b> (Plot size: _____ )				
1. sedge - Carex sp.	30	Y	FACW	
2. goldenrod - Solidago sp.	5	_____	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>18</sup> 20% of total cover: <sup>7</sup>				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. Honeysuckle - Lonicera japonica	40	Y	FACU	
2. blackberry - Rubus sp.	25	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <sup>33</sup> 20% of total cover: <sup>13</sup>				
<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: UPL-7

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

**Ecology Field Data Sheet: Other Resource Features**  
(Caves/Rock Houses; Sinkholes; Specialized Habitats; Other)

**Project:** Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00

**Date of survey:** 10.27.2015, 10-30-18 **Biologist:** K.A. Brown, R.L. Howard **Affiliation:** TDOT

<b>1-Station:</b> from plans	STA 302+50 LT	STA 337+50R and 54+50 RT (Summit Hill R <sub>+</sub> )
<b>2-Map label</b>	PND-3	PND-4
<b>3- Lat/Long</b>	36.294365°N, -83.041488°W	36.302892°N, -83.036514°
<b>4-Potential impact</b>		
<b>5-Feature name</b>	PND-3	PND-4
<b>6-Feature description:</b>		
what is it	pond	pond
portion affected	none	none
approximate size	50' x 50'	50' x 100'
photo number	30	38
other		
<b>7- HUC code &amp; name</b> if applicable (12-digit)	06010108-0902, Bent Creek	06010104-0204, Cherokee Lake - Dod <sub>+</sub>
<b>8-Determination:</b> TDOT/ consultant	TDOT	TDOT
<b>9-Determination:</b> Confirmed? By?		
<b>10-Mitigation:</b> to be included in design		
<b>11-Notes</b>	Behind Long & Berry Cemetery	PND-4 was dry on 10-27-15 and 10-30-18.

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-27-15, 10-30-18				

<b>1-Station: from plans</b>	Sta. 306+00L on SR-66 and Sta. 45+00R on Stubblefield Road										
<b>2-Map label and name</b>	WWC-3 / EPH-3										
<b>3-Latitude/Longitude</b>	36.295113°N , -83.039913°W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>			
-HD score (if applicable)	6.0										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input checked="" type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	2 ft.				-top of bank width			3 ft.			
- avg. gradient of stream (%)	<5 %										
-bank height and slope ratio	LDB - 0.5 ft. - 1 ft.				RDB - 0.5 ft. - 1 ft.						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input checked="" type="checkbox"/>	
-water depth (riffles / pools)	N/A				water width (riffles / pools)			N/A			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Fescue										
	RDB: Johnson grass, poke weed, fescue										
-habitat assessment score	70										
	epifaunal substrate		1		channel alteration		5				
	riffle embeddedness		0		frequency of re-ox zones		1				
	velocity / depth regime		4		bank stability		LDB	9	RDB	9	
	sediment deposition		20		bank vegetative protection		LDB	9	RDB	9	
	channel flow status		1		riparian veg zone width		LDB	1	RDB	1	
-OHWM	No										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	None observed, no water present on 10/30/18										
<b>6-photo numbers</b>	31										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	<p>Isolated pools of water were present in the channel during the 10/27/15 field visit.</p> <p>No water was present in the channel during the 10/30/18 field visit.</p>										

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Hawkins	Named Waterbody: WWC- 3 / EPH-3	Date/Time: 10/27/15 and 10/30/18
Assessors/Affiliation: K.A. Brown, R.L. Howard / TDOT	Project ID: P.E. 37005-1237-14 PIN 107579.00	
Site Name/Description: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd		
Site Location: Sta. 306+00L on SR-66 and Sta. 45+00R on Stubblefield Road		
USGS quad: Bulls Gap, TN (171-SE)	HUC (12 digit): 06010108-0902	Lat/Long: 36.295113°N -83.039913°W
Previous Rainfall (7-days) : The area received 0.32" of rain in the week prior to the field studies.		
Precipitation this Season vs. Normal :    very wet    wet <u>average</u> dry    drought    unknown		
Source of recent & seasonal precip data : (NOAA NCDC BULLS GAP 3.6 W, TN US GHCND:US1TNHB0004)		
Watershed Size :	Photos: Yes	31
Soil Type(s) / Geology : Ws - Whitesburg Silt Loam		
Surrounding Land Use : agriculture, residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <u>Moderate</u> Slight                      Absent		

### Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	✓	WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except <i>Gambusia</i> )	✓	Stream
7. Presence of naturally occurring ground water table connection	✓	Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

**NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.**

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination =	WWC / EPH
Secondary Indicator Score (if applicable) =	6

**Justification / Notes :**


## Secondary Field Indicator Evaluation

**A. Geomorphology** (Subtotal = ) 2.5

A. Geomorphology (Subtotal = )		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	1	0	1	2	3
2. Sinuous channel	0.5	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	0	0	1	2	3
5. Active/relic floodplain	0	0	1	2	3
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	0	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	1	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0			

**B. Hydrology** (Subtotal = ) 2.5

<b>B. Hydrology</b> (Subtotal = )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel	0	0	1	2	3
15. Water in channel and >48 hours since sig. rain	1	0	1	2	3
16. Leaf litter in channel (January – September)	0	1.5	1	0.5	0
17. Sediment on plants or on debris	0.5	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	1	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0				

**C. Biology** (Subtotal = ) 1

<b>C. Biology</b> (Subtotal = )	1	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in channel <sup>1</sup>	1	3	2	1	0
21. Rooted plants in channel <sup>1</sup>	0	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0	0.5	1	1.5
23. Bivalves/mussels	0	0	1	2	3
24. Amphibians	0	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	0	1	2	3
26. Filamentous algae; periphyton	0	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0	0.5	1	1.5
28. Wetland plants in channel <sup>2</sup>	0	0	0.5	1	2

<sup>1</sup> Focus is on the presence of upland plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 6

*Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points*

**Notes :**

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10/30/18				
<b>1-Station: from plans</b>	306+00										
<b>2-Map label and name</b>	STR-17										
<b>3-Latitude/Longitude</b>	36.294992, -83.039686										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft. - 2 ft.				-top of bank width			2' - 3 ft.			
- avg. gradient of stream (%)	<5%										
-bank height and slope ratio	LDB - 0.5 ft.				RDB - 0.5 ft.						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1 in. - 2 in./ no pools				water width (riffles / pools)			0.5 ft. - 1 ft. / no pools			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: Fescue										
------(LDB /RDB)-----	RDB: Johnson grass, poke weed										
-habitat assessment score	32										
	epifaunal substrate	1			channel alteration	1					
	rifle embeddedness				frequency of re-ox zones	1					
	velocity / depth regime	4			bank stability	LDB	0	RDB	1		
	sediment deposition	13			bank vegetative protection	LDB	1	RDB	1		
	channel flow status	7			riparian veg zone width	LDB	1	RDB	1		
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, crayfish holes along channel										
<b>6-photo numbers</b>	32										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	Water flow in channel begins approximately 25 ft. upstream of pipe under SR-66.										

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-30-18				

<b>1-Station:</b> from plans	315+00R to 318+00L downstream of SR-66											
<b>2-Map label and name</b>	STR-18											
<b>3-Latitude/Longitude</b>	36.298168, -83.038875											
<b>4-Potential impact</b>	Runoff, encapsulation											
<b>5-Feature description:</b>												
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>				
-HD score (if applicable)	N/A											
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>		
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>		
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>		
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>				
-channel bottom width	5 ft. - 7 ft.				-top of bank width			7 ft. - 10 ft.				
- avg. gradient of stream (%)	< 5%											
-bank height and slope ratio	LDB - 1 ft. - 2 ft., 1:1				RDB - 1 ft. - 2 ft., 1:1							
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>		
-water depth (riffles / pools)	2 in. - 4 in. / 6 in. - 10 in.				water width (riffles / pools)			5 ft. - 6 ft. / 5 ft. - 6 ft.				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>	
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>	
-dominant riparian species: ------(LDB /RDB)-----	LDB: Sugar maple, black walnut, red cedar, privet											
	RDB: Sugar maple, black walnut, boxelder, privet											
-habitat assessment score	106											
	epifaunal substrate			20		channel alteration			6			
	riffle embeddedness			17		frequency of re-ox zones			18			
	velocity / depth regime			4		bank stability			LDB	1	RDB	1
	sediment deposition			15		bank vegetative protection			LDB	0	RDB	6
	channel flow status			16		riparian veg zone width			LDB	1	RDB	1
-OHWM	Yes											
-riffle pool complex	No											
-fish, benthos,algae, aquatic life	Algae, caddisflies, crayfish											
<b>6-photo numbers</b>	33											
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18											
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek											
<b>9-Confirmed by:</b>												
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>						
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>						
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	
	no	<input type="checkbox"/>	<input type="checkbox"/>									
<b>13-Notes</b>												

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-30-18				

<b>1-Station:</b> from plans	318+00L to 322+00L										
<b>2-Map label and name</b>	STR-19										
<b>3-Latitude/Longitude</b>	36.298696, -83.038973										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft. - 2 ft.				-top of bank width			2 ft. - 3 ft.			
- avg. gradient of stream (%)	< 5%										
-bank height and slope ratio	LDB - 1 ft. - 2 ft., 1:1				RDB - 1 ft. - 2 ft., 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2 in. - 4 in.			water width (riffles / pools)				1 ft. - 2 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: none, road surface										
	RDB: lawn grasses										
-habitat assessment score	69										
	epifaunal substrate		6		channel alteration		1				
	riffle embeddedness				frequency of re-ox zones		17				
	velocity / depth regime		5		bank stability		LDB	8	RDB	7	
	sediment deposition		11		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		11		riparian veg zone width		LDB	0	RDB	1	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, no fish or aquatic invertebrates observed										
<b>6-photo numbers</b>	34										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	<p>STR-19 is confined to the ditch on the west side of SR-66. STR-19 flows out of WTL-8 at approx. Sta. 322+00L on Tract 184 and flows into STR-18 at approx. Sta. 318+00L.</p>										

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-30-18				

<b>1-Station: from plans</b>	318+00R to 321+50R										
<b>2-Map label and name</b>	STR-20										
<b>3-Latitude/Longitude</b>	36.298792, -83.038881										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft. - 2 ft.				-top of bank width			3 ft. - 5 ft.			
- avg. gradient of stream (%)	< 5%										
-bank height and slope ratio	LDB - 1 ft. - 2 ft., 1:1				RDB - 1 ft. - 2 ft., 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2 in. - 4 in. / no pools			water width (riffles / pools)			1 ft. - 2 ft. / no pools				
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: -----(LDB /RDB)-----	LDB: Fescue, Johnson grass										
	RDB: None, road surface										
-habitat assessment score	71										
	epifaunal substrate		6		channel alteration		2				
	riffle embeddedness				frequency of re-ox zones		17				
	velocity / depth regime		5		bank stability		LDB	7	RDB	8	
	sediment deposition		11		bank vegetative protection		LDB	2	RDB	1	
	channel flow status		11		riparian veg zone width		LDB	1	RDB	0	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, no fish or aquatic invertebrates observed										
<b>6-photo numbers</b>	35										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010108-0902, Bent Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	no	<input type="checkbox"/>	<input type="checkbox"/>					
<b>11-ETW</b>	yes	<input type="checkbox"/>	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>					
<b>12-303 (d) List</b>	yes	<input checked="" type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input checked="" type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	<p>STR-20 flows out of WTL-9 at approx. Sta. 321+50R and is confined to the ditch on the east side of SR-66. STR-20 flows into STR-18 at approx. Sta. 318+00R.</p>										

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10.27.2015, 10-30-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-8  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.29987°N Long: -83.03937°W Datum: WGS-84  
Soil Map Unit Name: SkC2 - Sequoia Silt Loam / Ws - Whitesburg Silt Loam NWI classification: PEM2f  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: WTL-8 lies in a large hayfield on Tract 184 between STA 321+50L and 327+50L and is the hydrology source for STR-19. The feature is not mapped on the USFWS NWI Mapper site. WTL-8 is photograph #36 in the photograph summary.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2-4"</u> Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-8

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				<b>Prevalence Index worksheet:</b>  Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
<b>Sapling Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation</u> <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>85</u> = Total Cover  50% of total cover: <u>42</u> 20% of total cover: <u>17</u>				
<b>Herb Stratum (Plot size: <u>1.5m</u> )</b>				
1. <u>Juncus effusus (common rush)</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Eutrochium maculatum (Joe Pye weed)</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Schedonorus arundinaceus (tall fescue)</u>	<u>50</u>	<u>Y</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>85</u> = Total Cover  50% of total cover: <u>42</u> 20% of total cover: <u>17</u>				
<b>Woody Vine Stratum (Plot size: <u>10m</u> )</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>0</u> = Total Cover  50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-8

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-8

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.299579 Long: -83.039094 Datum: \_\_\_\_\_

Soil Map Unit Name: Whitesburg silt loam NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> </div> <div style="width: 48%;"> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p>		<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-8

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____ )				
1. Tall fescue - Schedonorus arundinacea	40	Y	FACU	
2. Broomsedge - Andropogon virginicus	30	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
70 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <u>35</u> 20% of total cover: <u>14</u>				
Woody Vine Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.) Site located in a hay field and vegetation is mowed on a regular basis.				

## SOIL

Sampling Point: UPL-8

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-8 STA. 321+50L to 327+50L

0.75	<b>Function 1: Maintain Hydrologic Regime</b>			
0.75	$(V1 \times V2)^{(1/2)}$	FCI 1 =	0.75 Final Tree =	#VALUE!
GOTOV5				
N/A	<b>Function 2: Maintain Biogeochemical Processes</b>			
GOTOV6				
1	FCI (trees present) = $\left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$	FCI 2 trees=	#VALUE!	Final Shrubs=
0.66				
0				
3	FCI (shrubs present) = $\left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$	FCI 2 shrubs=	#VALUE!	Final Herbaceous =
0				0.42
0.75				
1	FCI (ground cover) = $\left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$	FCI 2 ground =	0.55	
0.1				
0.1				
	<b>Function 3: Maintain Characteristic Plant Community</b>			
	FCI (trees present) = $\frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$	FCI 3 trees=	#VALUE!	
	FCI (shrubs present) = $\frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$	FCI 3 shrubs=	#VALUE!	
	FCI (groundcover) = $\frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$	FCI 3 ground =	0.19	
	<b>Function 4: Maintain Characteristic Wildlife Community:</b>			
		FCI 4 trees=	#VALUE!	
	FCI (trees) = $\frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$			
		FCI 4 shrubs=	#VALUE!	
	FCI (shrubs present) = $\frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$			
		FCI 4 ground =	0.19	
	FCI (groundcover) = $\frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$			

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-8 Sta. 321+50L to 327+50L	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-8 appears to provide hydrology for STR-19.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.75
	Function: Biogeochemical Processes	0.55
	Function: Retain Particulates	N/A
	Function: Plant Community	0.19
	Function: Wildlife Community	0.19
	Quantitative Score (Average of FCIs x 100)	42.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10.27.2015, 10-30-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-9  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.29930°N Long: -83.03882°W Datum: WGS-84  
Soil Map Unit Name: Ws - Whitesburg Silt Loam NWI classification: \_\_\_\_\_  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: WTL-9 is located in the corner of a hayfield on Tract 186 at 321+50 RT and is mowed on a regular basis. The feature is not mapped on the USFWS NWI Mapper site. WTL-9 provides hydrology for STR-20. WTL-9 is photograph #37 in the photograph summary.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes _____ No _____	Depth (inches): _____	
Water Table Present? Yes _____ No _____	Depth (inches): _____	
Saturation Present? Yes <u>X</u> No _____	Depth (inches): <u>1-3"</u>	
(includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-9

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
0 = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling Stratum</b> (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
0 = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum</b> (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
0 = Total Cover				
50% of total cover: <u>17</u> 20% of total cover: <u>7</u>				
<b>Herb Stratum</b> (Plot size: <u>1.5m</u> )				
1. <i>Juncus effusus</i> (common rush)	30	Y	OBL	
2. <i>Eutrochium maculatum</i> (Joe Pye weed)	5	N	FACW	
3. <i>Schedonorus arundinaceus</i> (tall fescue)	20	Y	FACU	
4. <i>Sorghum halepense</i> (Johnsongrass)	20	Y	FACU	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
75 = Total Cover				
50% of total cover: <u>37</u> 20% of total cover: <u>15</u>				
<b>Woody Vine Stratum</b> (Plot size: <u>10m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Remarks:</b> (Include photo numbers here or on a separate sheet.)				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)  
  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  

Total % Cover of:	Multiply by:
OBL species <u>30</u>	x 1 = <u>30</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species _____	x 3 = _____
FACU species <u>40</u>	x 4 = <u>160</u>
UPL species _____	x 5 = _____
Column Totals: <u>75</u> (A)	<u>200</u> (B)

Prevalence Index = B/A = 2.66

**Hydrophytic Vegetation Indicators:**  
 \_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_\_\_ 2 - Dominance Test is >50%  
☒ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

## SOIL

Sampling Point: WTL-9

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-9

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.299421 Long: -83.038861 Datum: \_\_\_\_\_

Soil Map Unit Name: Whitesburg silt loam NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-9

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Herb Stratum</b> (Plot size: _____ )				
1. tall fescue - Schedonorus arundinacea	50	Y	FACU	
2. broomsedge - Andropogon virginicus	30	Y	FACU	
3. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: <u>40</u> 20% of total cover: <u>16</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Remarks:</b> (Include photo numbers here or on a separate sheet.) Site located in a hay field and vegetation is mowed on a regular basis.				

## SOIL

Sampling Point: UPL-9

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-9 STA. 321+50R

<b>0.75 Function 1: Maintain Hydrologic Regime</b>					
<b>0.8</b>	$(V1 \times V2)^{(1/2)}$	<b>FCI 1 =</b>	<b>0.77</b>	<b>Final Tree =</b>	<b>#VALUE!</b>
<b>GOTOV5</b>					
<b>N/A</b>	<b>Function 2: Maintain Biogeochemical Processes</b>				
<b>GOTOV6</b>		<b>FCI 2 trees=</b>	<b>#VALUE!</b>	<b>Final Shrubs=</b>	<b>#VALUE!</b>
<b>1</b>	$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$				
<b>0.22</b>				<b>Final Herbaceous =</b>	<b>0.43</b>
<b>0</b>		<b>FCI 2 shrubs=</b>	<b>#VALUE!</b>		
<b>1</b>	$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$				
<b>2</b>					
<b>0.25</b>		<b>FCI 2 ground =</b>	<b>0.56</b>		
<b>1</b>	$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$				
<b>0.1</b>					
<b>0.1</b>					
<b>Function 3: Maintain Characteristic Plant Community</b>					
	$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$	<b>FCI 3 trees=</b>	<b>#VALUE!</b>		
		<b>FCI 3 shrubs=</b>	<b>#VALUE!</b>		
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$				
		<b>FCI 3 ground =</b>	<b>0.20</b>		
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$				
<b>Function 4: Maintain Characteristic Wildlife Community:</b>					
	$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$	<b>FCI 4 trees=</b>	<b>#VALUE!</b>		
		<b>FCI 4 shrubs=</b>	<b>#VALUE!</b>		
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$				
		<b>FCI 4 ground =</b>	<b>0.20</b>		
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$				

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-9 Sta. 321+50R	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-9 appears to provide hydrology for STR-20.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.77
	Function: Biogeochemical Processes	0.56
	Function: Retain Particulates	N/A
	Function: Plant Community	0.20
	Function: Wildlife Community	0.20
	Quantitative Score (Average of FCIs x 100)	43.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

**Ecology Field Data Sheet: Other Resource Features**  
(Caves/Rock Houses; Sinkholes; Specialized Habitats; Other)

**Project:** Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00

**Date of survey:** 10.27.2015, 10-30-18 **Biologist:** K.A. Brown, R.L. Howard **Affiliation:** TDOT

<b>1-Station:</b> from plans	Sta. 338+50 R (53+00R Summit Hill Rd)	Sta. 351+50L
<b>2-Map label</b>	PND-5	PND-6
<b>3- Lat/Long</b>	36.303239°N, -83.036649°W	36.307047°N, -83.032365°W
<b>4-Potential impact</b>		
<b>5-Feature name</b>	PND-5	PND-6
<b>6-Feature description:</b>		
what is it	pond	pond
portion affected	entire pond	none
approximate size	120' x 120'	100' x 150'
photo number	39	44
other		
<b>7- HUC code &amp; name</b> if applicable (12-digit)	06010104-0204, Dodson Creek	06010104-0204, Dodson Creek
<b>8-Determination:</b> TDOT/ consultant	TDOT	TDOT
<b>9-Determination:</b> Confirmed? By?		
<b>10-Mitigation:</b> to be included in design		
<b>11-Notes</b>	PND-5 will likely be drained during construction.	PND-6 provides hydrology for STR-23.

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-27-15, 10-30-18				

<b>1-Station:</b> from plans	339+00L to 344+00R										
<b>2-Map label and name</b>	STR-21, Honeycutt Creek										
<b>3-Latitude/Longitude</b>	36.30381 N / -83.03686 W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input checked="" type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	3 ft. - 4 ft.				-top of bank width			4 ft. - 5 ft.			
- avg. gradient of stream (%)	< 5%										
-bank height and slope ratio	LDB - 2 ft. - 3 ft., 1:1				RDB - 2 ft. - 3 ft., 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input checked="" type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	4 in. - 6 in.				water width (riffles / pools)			3 ft. - 4 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input checked="" type="checkbox"/>	Sloughing	<input checked="" type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: Cattails, rushes, privet, multiflora rose										
------(LDB /RDB)-----	RDB: Cattails, rushes, privet, multiflora rose, tulip poplar										
-habitat assessment score	0										
	epifaunal substrate				channel alteration						
	riffle embeddedness				frequency of re-ox zones						
	velocity / depth regime				bank stability			LDB	<input type="checkbox"/>	RDB	<input type="checkbox"/>
	sediment deposition				bank vegetative protection			LDB	<input type="checkbox"/>	RDB	<input type="checkbox"/>
	channel flow status				riparian veg zone width			LDB	<input type="checkbox"/>	RDB	<input type="checkbox"/>
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, numerous benthic species										
<b>6-photo numbers</b>	40, 42										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake - Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	<p>Hydrology for STR-21 is provided by seepage from a large pond outside the limits of the project plans and WTL-10. Surface flow begins within the lower limits of WTL-10.</p>										

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10.27.2015, 10-30-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-10  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.30388°N Long: -83.03702°W Datum: WGS-84  
Soil Map Unit Name: Ws - Whitesburg Silt Loam NWI classification: PEM2Bf  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: WTL-10 lies in a large hayfield at STA 339+50 LT and is mowed on a regular basis. The feature is not mapped on the USFWS NWI Mapper site. WTL-10 provides some of the hydrology for STR-21 and is photograph # 40 and #41 in the photograph summary.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> ____ Surface Soil Cracks (B6) ____ Sparsely Vegetated Concave Surface (B8) ____ Drainage Patterns (B10) ____ Moss Trim Lines (B16) ____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) ____ Stunted or Stressed Plants (D1) ____ Geomorphic Position (D2) ____ Shallow Aquitard (D3) ____ Microtopographic Relief (D4) ____ FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>4-6"</u> Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-10

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>5m</u> )				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: <u>5m</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: <u>1.5m</u> )				
1. <i>Eleocharis acicularis</i> (needle spikerush)	10	N	OBL	
2. <i>Ludwigia alternifolia</i> (seedbox)	5	N	FACW	
3. <i>Leersia oryzoides</i> (rice cutgrass)	30	Y	OBL	
4. <i>Eupatorium perfoliatum</i> (common boneset)	10	N	FACW	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>27</u> 20% of total cover: <u>11</u>				
Woody Vine Stratum (Plot size: <u>10m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>		
0-10"	10YR 4/1	70	7.5YR 6/8	25	C	PL	Clay

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators:</b>		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) ( <b>MLRA 147</b> )
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )	<input checked="" type="checkbox"/> ( <b>MLRA 147, 148</b> )
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> ( <b>MLRA 136, 147</b> )
<input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR N</b> )	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR N,</b>	<input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR N,</b>	
<input type="checkbox"/> <b>MLRA 147, 148</b> )	<input type="checkbox"/> <b>MLRA 136</b> )	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) ( <b>MLRA 136, 122</b> )	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) ( <b>MLRA 127, 147</b> )	

**Restrictive Layer (if observed):**  
Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present?   Yes X   No \_\_\_\_\_

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-10

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.303812 Long: -83.036725 Datum: \_\_\_\_\_

Soil Map Unit Name: Whitesburg silt loam NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> </div> <div style="width: 50%;"> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-10

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. tall fescue - Schedonorus arundinacea	60	Y	FACU	
2. plantain - Plantago lanceolata	20	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
80 _____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <u>40</u> 20% of total cover: <u>16</u>				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Site located in hayfield and is mowed on a regular basis.				

## SOIL

Sampling Point: UPL-10

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-10 STA. 339+50L

<b>0.5 Function 1: Maintain Hydrologic Regime</b>				
0.75	$(V1 \times V2)^{(1/2)}$	FCI 1 =	0.61	Final Tree = #VALUE!
GOTOV5				
N/A	<b>Function 2: Maintain Biogeochemical Processes</b>			
GOTOV6		FCI 2 trees=	#VALUE!	Final Shrubs= #VALUE!
1	$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$			
0.66				Final Herbaceous = 0.37
0		FCI 2 shrubs=	#VALUE!	
1	$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$			
0				
0.25		FCI 2 ground =	0.49	
1				
0.1	$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$			
0.1				
	<b>Function 3: Maintain Characteristic Plant Community</b>			
		FCI 3 trees=	#VALUE!	
	$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$			
		FCI 3 shrubs=	#VALUE!	
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$			
		FCI 3 ground =	0.18	
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$			
	<b>Function 4: Maintain Characteristic Wildlife Community:</b>			
		FCI 4 trees=	#VALUE!	
	$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$			
		FCI 4 shrubs=	#VALUE!	
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$			
		FCI 4 ground =	0.18	
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$			

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-10 Sta. 339+50L	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-10 appears to provide some hydrology for STR-21.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.61
	Function: Biogeochemical Processes	0.49
	Function: Retain Particulates	N/A
	Function: Plant Community	0.18
	Function: Wildlife Community	0.18
	Quantitative Score (Average of FCIs x 100)	37.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>					

<b>1-Station: from plans</b>	342+50										
<b>2-Map label and name</b>	STR-22										
<b>3-Latitude/Longitude</b>	36.30418 N / -83.03581 W										
<b>4-Potential impact</b>	Runoff, encapsulation, relocation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft. - 2 ft.			-top of bank width			2 ft. - 3 ft.				
- avg. gradient of stream (%)	<5 %										
-bank height and slope ratio	LDB - 2 ft., 1:1				RDB - 2 ft., 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1 in. - 2 in.			water width (riffles / pools)			1 ft. - 2 ft.				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: lawn grasses										
	RDB: lawn grasses										
-habitat assessment score	57										
	epifaunal substrate		6		channel alteration		2				
	riffle embeddedness				frequency of re-ox zones		1				
	velocity / depth regime		4		bank stability		LDB	7	RDB	7	
	sediment deposition		15		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		11		riparian veg zone width		LDB	1	RDB	1	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae										
<b>6-photo numbers</b>	43										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake - Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>		
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	STR-22 flows out of a pipe between Tract 194 and Tract 195.										

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	10-27-15, 10-30-18				
<b>1-Station: from plans</b>	351+40										
<b>2-Map label and name</b>	STR-23										
<b>3-Latitude/Longitude</b>	36.30601° N, -83.03181° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input checked="" type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1-2 ft			-top of bank width			3-4 ft				
- avg. gradient of stream (%)											
-bank height and slope ratio	LDB - 1ft @ 2:1				RDB - 1ft @ 2:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	3-4 in			water width (riffles / pools)			1 ft.				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species:	LDB: black willow, honeysuckle, Johnson grass, privet										
------(LDB /RDB)-----	RDB: black willow, honeysuckle, Johnson grass, privet										
-habitat assessment score	57										
	epifaunal substrate	2			channel alteration	5					
	rifle embeddedness				frequency of re-ox zones	2					
	velocity / depth regime	4			bank stability	LDB	9	RDB	9		
	sediment deposition	15			bank vegetative protection	LDB	3	RDB	3		
	channel flow status	3			riparian veg zone width	LDB	1	RDB	1		
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae										
<b>6-photo numbers</b>	45										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake -Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	PND-6 appears to be the hydrology source for STR-23.										

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	11-3-15, 10-30-18				

<b>1-Station: from plans</b>	363+50												
<b>2-Map label and name</b>	STR-24												
<b>3-Latitude/Longitude</b>	36.30741 N / -83.02807 W												
<b>4-Potential impact</b>	Runoff, encapsulation												
<b>5-Feature description:</b>													
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>					
-HD score (if applicable)	N/A												
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>			
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>			
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>			
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>					
-channel bottom width	1 ft. - 2 ft.				-top of bank width			4 ft. - 6 ft.					
- avg. gradient of stream (%)	5%												
-bank height and slope ratio	LDB - 2 ft. ; 1:1					RDB - 2 ft. ; 1:1							
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>			
-water depth (riffles / pools)	2 in. - 4 in. / no pools				water width (riffles / pools)			1 ft. - 2 ft. / no pools					
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>		
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>		
-dominant riparian species: ------(LDB /RDB)-----	LDB: Pasture grasses												
	RDB: Pasture grasses												
-habitat assessment score	69												
	epifaunal substrate			11			channel alteration			2			
	riffle embeddedness						frequency of re-ox zones			16			
	velocity / depth regime			10			bank stability			LDB	2	RDB	2
	sediment deposition			7			bank vegetative protection			LDB	3	RDB	3
	channel flow status			11			riparian veg zone width			LDB	1	RDB	1
-OHWM	Yes												
-riffle pool complex	No												
-fish, benthos,algae, aquatic life	Algae, no benthos or fish observed												
<b>6-photo numbers</b>	49												
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18												
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake -Dodson Creek												
<b>9-Confirmed by:</b>													
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>									
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>									
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>					
	no	<input type="checkbox"/>											
<b>13-Notes</b>	PND-8 provides hydrology for STR-24.												

**Ecology Field Data Sheet: Other Resource Features**  
(Caves/Rock Houses; Sinkholes; Specialized Habitats; Other)

**Project:** Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00

**Date of survey:** 10.27.2015, 10-30-18 **Biologist:** K.A. Brown, R.L. Howard **Affiliation:** TDOT

<b>1-Station:</b> from plans	Sta. 358+00L	Sta. 362+50L
<b>2-Map label</b>	PND-7	PND-8
<b>3- Lat/Long</b>	36.307528°N, -83.030234°W	36.308578°N, -83.029063°W
<b>4-Potential impact</b>		
<b>5-Feature name</b>	PND-7	PND-8
<b>6-Feature description:</b>		
what is it	pond	pond
portion affected	none	none
approximate size	150' x 150'	175' x 200'
photo number	46	48
other		
<b>7- HUC code &amp; name</b> if applicable (12-digit)	06010104-0204, Dodson Creek	06010104-0204, Dodson Creek
<b>8-Determination:</b> TDOT/ consultant	TDOT	TDOT
<b>9-Determination:</b> Confirmed? By?		
<b>10-Mitigation:</b> to be included in design		
<b>11-Notes</b>	PND-7 drains to WWC-4 / EPH-4.	PND-8 provides hydrology for STR-24.

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	11-3-15, 10-30-18				
<b>1-Station: from plans</b>	358+50										
<b>2-Map label and name</b>	WWC-4										
<b>3-Latitude/Longitude</b>	36.306621°N -83.029423°W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input checked="" type="checkbox"/>	wwc	<input checked="" type="checkbox"/>			
-HD score (if applicable)	11.5										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input type="checkbox"/>	veg absent, bent, matted	<input checked="" type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft.				-top of bank width			2 ft.			
- avg. gradient of stream (%)	< 5%										
-bank height and slope ratio	LDB - 0.5 ft.				RDB - 0.5 ft.						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1 in. - 2 in. / no pools			water width (riffles / pools)			1 ft. / no pools				
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Fescue, Johnson grass										
	RDB: Fescue, Johnson grass										
-habitat assessment score	59										
	epifaunal substrate		4		channel alteration		5				
	riffle embeddedness				frequency of re-ox zones		1				
	velocity / depth regime		4		bank stability		LDB	9	RDB	9	
	sediment deposition		15		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		8		riparian veg zone width		LDB	1	RDB	1	
-OHWM	No										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae										
<b>6-photo numbers</b>	47										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake - Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	<p>PND-7 drains to this feature. Flow present in channel this day appears be from leak in pond dam. Water flows for a distance of approx. 100 ft. then goes into small hole.</p>										

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Hawkins	Named Waterbody: WWC- 4 / EPH-4	Date/Time: 11.03.15, 10-30-18
Assessors/Affiliation: K.A. Brown, R.L. Howard / TDOT	Project ID: P.E. 37005-1237-14 PIN 107579.00	
Site Name/Description: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd		
Site Location: STA 358+50		
USGS quad: Bulls Gap, TN (171-SE)	HUC (12 digit): 06010104-0204	Lat/Long: 36.306621°N -83.029423°W
Previous Rainfall (7-days) : The area received 0.32" of rain in the week prior to the field studies.		
Precipitation this Season vs. Normal :    very wet    wet <u>average</u> dry    drought    unknown		
Source of recent & seasonal precip data : (NOAA NCDC BULLS GAP 3.6 W, TN US GHCND:US1TNHB0004)		
Watershed Size :	Photos: Yes	47
Soil Type(s) / Geology : LaC - Leadvale Silt Loam, 5 to 12 % Slopes		
Surrounding Land Use : agriculture, residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <u>Moderate</u> Slight                      Absent		

### Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	✓	WWC
2. Defined bed and bank absent, dominated by upland vegetation / grass	✓	WWC
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions		WWC
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall		WWC
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	✓	Stream
6. Presence of fish (except <i>Gambusia</i> )	✓	Stream
7. Presence of naturally occurring ground water table connection		Stream
8. Flowing water in channel and 7 days since last precipitation in local watershed	✓	Stream
9. Evidence watercourse has been used as a supply of drinking water	✓	Stream

**NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.**

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination =	WWC / EPH
Secondary Indicator Score (if applicable) =	11.5

#### Justification / Notes :

PND-7 appears to be the source for hydrology in the upper portion of the channel. Surface flow was for a distance of approximately 100 ft. down gradient of PND-7 where flow disappears into a small hole in the channel bottom.

## Secondary Field Indicator Evaluation

**A. Geomorphology** (Subtotal = ) 4

A. Geomorphology (Subtotal = )		Absent	Weak	Moderate	Strong
1. Continuous bed and bank	1	0	1	2	3
2. Sinuous channel	0	0	1	2	3
3. In-channel structure: riffle-pool sequences	0	0	1	2	3
4. Sorting of soil textures or other substrate	1	0	1	2	3
5. Active/relic floodplain	0	0	1	2	3
6. Depositional bars or benches	0	0	1	2	3
7. Braided channel	0	0	1	2	3
8. Recent alluvial deposits	0.5	0	0.5	1	1.5
9. Natural levees	0	0	1	2	3
10. Headcuts	1	0	1	2	3
11. Grade controls	0	0	0.5	1	1.5
12. Natural valley or drainageway	0.5	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0			

**B. Hydrology** (Subtotal = ) 5

<b>B. Hydrology</b> (Subtotal = )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel	3	0	1	2	3
15. Water in channel and >48 hours since sig. rain	1.5	0	1	2	3
16. Leaf litter in channel (January – September)	0	1.5	1	0.5	0
17. Sediment on plants or on debris	0.5	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel	No = 0				

**C. Biology** (Subtotal = ) 2.5

<b>C. Biology</b> (Subtotal = 2.5)	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in channel <sup>1</sup>	3	2	1	0
21. Rooted plants in channel <sup>1</sup>	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	0	0.5	1	1.5
23. Bivalves/mussels	0	1	2	3
24. Amphibians	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	0	1	2	3
26. Filamentous algae; periphyton	0	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in channel <sup>2</sup>	0	0.5	1	2

<sup>1</sup> Focus is on the presence of upland plants. <sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 11.5

*Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points*

**Notes :**

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 10.27.2015, 10-30-18  
 Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-11  
 Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
 Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.30774°N Long: -83.03753°W Datum: WGS-84  
 Soil Map Unit Name: LaC - Leadvale Silt Loam NWI classification: PEM2f  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: WTL-11 is marked on the project plans near mainline STA 364+00 RT to STA 367+00 RT. The feature is not mapped on the USFWS NWI Mapper site. WTL-11 is photograph #50 in the photograph summary. WTL-11 is located mostly in a pasture field and vegetation is grazed/mowed on a regular basis.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>1-2"</u> (includes capillary fringe)	<b>Wetland Hydrology Present? Yes <u>X</u> No _____</b>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-11

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>17</u> 20% of total cover: <u>7</u>				
Herb Stratum (Plot size: <u>1.5m</u> )				
1. <i>Juncus effusus</i> (common rush)	25	Y	FACW	
2. <i>Schedonorus arundinaceus</i> (tall fescue)	25	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>				
Woody Vine Stratum (Plot size: <u>10m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				

Remarks: (Include photo numbers here or on a separate sheet.)

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)  
  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species <u>25</u>	x 2 = <u>50</u>
FAC species _____	x 3 = _____
FACU species <u>25</u>	x 4 = <u>100</u>
UPL species _____	x 5 = _____
Column Totals: <u>50</u> (A)	<u>150</u> (B)

Prevalence Index = B/A = 3

**Hydrophytic Vegetation Indicators:**  
 \_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_ 2 - Dominance Test is >50%  
☒ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

## SOIL

Sampling Point: WTL-11

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-11

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.307442 Long: -83.027618 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 5 to 12 percent slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> </div> <div style="width: 48%;"> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p>		<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>There were no indicators of wetland hydrology at this location.</p>		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-11

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. tall fescue - Schedonorus arundinacea	40	Y	FACU	
2. broomsedge - Andropogon virginicus	20	Y	FACU	
3. Johnson grass - Sorghum halepense	10	N	FACU	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
70 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>35</sup> 20% of total cover: <sup>14</sup>				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Site located in pasture and is affected by grazing and regular mowing.				

## SOIL

Sampling Point: UPL-11

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-11 STA. 364+00R to 367+00R

<b>0.5 Function 1: Maintain Hydrologic Regime</b>				
0.75	$(V1 \times V2)^{(1/2)}$	FCI 1 =	0.61	Final Tree = #VALUE!
GOTOV5				
N/A	<b>Function 2: Maintain Biogeochemical Processes</b>			
GOTOV6		FCI 2 trees=	#VALUE!	Final Shrubs= #VALUE!
1	$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$			
0.33				Final Herbaceous = 0.37
0		FCI 2 shrubs=	#VALUE!	
1	$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$			
1				
0.25		FCI 2 ground =	0.49	
1				
0.1	$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$			
0.1				
	<b>Function 3: Maintain Characteristic Plant Community</b>			
		FCI 3 trees=	#VALUE!	
	$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$			
		FCI 3 shrubs=	#VALUE!	
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$			
		FCI 3 ground =	0.18	
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$			
	<b>Function 4: Maintain Characteristic Wildlife Community:</b>			
		FCI 4 trees=	#VALUE!	
	$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$			
		FCI 4 shrubs=	#VALUE!	
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$			
		FCI 4 ground =	0.18	
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$			

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-11 Sta. 364+00R to 367+00R	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-11 appears to provide some hydrology for STR-21.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.61
	Function: Biogeochemical Processes	0.49
	Function: Retain Particulates	N/A
	Function: Plant Community	0.18
	Function: Wildlife Community	0.18
	Quantitative Score (Average of FCIs x 100)	37.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 11.03.2015  
 Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-12  
 Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
 Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.30781°N Long: -83.02718°W Datum: WGS-84  
 Soil Map Unit Name: LaC - Leadvale Silt Loam NWI classification: PEM2f  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks: WTL-12 is marked on the project plans near mainline STA 366+25 LT. The feature is not mapped on the USFWS NWI Mapper site. WTL-12 is photograph #51 in the photograph summary. WTL-12 is located in a large pasture and vegetation is grazed/mowed on a regular basis.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>1-2"</u> Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-12

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ 0 = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling Stratum</b> (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ 0 = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum</b> (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ 0 = Total Cover				
50% of total cover: <u>17</u> 20% of total cover: <u>7</u>				
<b>Herb Stratum</b> (Plot size: <u>1.5m</u> )				
1. <i>Juncus effusus</i> (common rush)	25	Y	FACW	
2. <i>Schedonorus arundinaceus</i> (tall fescue)	25	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ 50 = Total Cover				
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>				
<b>Woody Vine Stratum</b> (Plot size: <u>10m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ 0 = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Remarks:</b> (Include photo numbers here or on a separate sheet.)				

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A)  
  
 Total Number of Dominant Species Across All Strata: \_\_\_\_\_ (B)  
  
 Percent of Dominant Species That Are OBL, FACW, or FAC: \_\_\_\_\_ (A/B)

**Prevalence Index worksheet:**  

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species <u>25</u>	x 2 = <u>50</u>
FAC species _____	x 3 = _____
FACU species <u>25</u>	x 4 = <u>100</u>
UPL species _____	x 5 = _____
Column Totals: <u>50</u> (A)	<u>150</u> (B)
Prevalence Index = B/A = <u>3.00</u>	

**Hydrophytic Vegetation Indicators:**  
 \_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
 \_\_\_\_\_ 2 - Dominance Test is >50%  
☒ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_\_\_ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

## SOIL

Sampling Point: WTL-12

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-12

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.307680 Long: -83.027405 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 5 to 12 percent slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> </div> <div style="width: 48%;"> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> </div> </div>	
--	--

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-12

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. tall fescue - <i>Schedonorus arundinacea</i>	40	Y	FACU	
2. plantain - <i>Plantago lanceolata</i>	30	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
70 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>35</sup> 20% of total cover: <sup>14</sup>				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Remarks: (Include photo numbers here or on a separate sheet.) Site located in hayfield/pasture and is mowed on a regular basis.				

## SOIL

Sampling Point: UPL-12

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) **(LRR N)**
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-12 STA. 366+25L

<b>0.75 Function 1: Matintain Hydrologic Regime</b>					
<b>0.75</b>	$(V1 \times V2)^{(1/2)}$	<b>FCI 1 =</b>	<b>0.75</b>	<b>Final Tree =</b>	<b>#VALUE!</b>
<b>GOTOV5</b>					
<b>N/A</b>	<b>Function 2: Maintain Biogeochemical Processes</b>				
<b>GOTOV6</b>		<b>FCI 2 trees=</b>	<b>#VALUE!</b>	<b>Final Shrubs=</b>	<b>#VALUE!</b>
<b>1</b>	$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$				
<b>0.33</b>				<b>Final Herbaceous =</b>	<b>0.42</b>
<b>0</b>		<b>FCI 2 shrubs=</b>	<b>#VALUE!</b>		
<b>1</b>	$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$				
<b>1</b>					
<b>0.25</b>		<b>FCI 2 ground =</b>	<b>0.55</b>		
<b>1</b>					
<b>0.1</b>	$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$				
<b>0.1</b>					
	<b>Function 3: Maintain Characteristic Plant Community</b>				
		<b>FCI 3 trees=</b>	<b>#VALUE!</b>		
	$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$				
		<b>FCI 3 shrubs=</b>	<b>#VALUE!</b>		
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$				
		<b>FCI 3 ground =</b>	<b>0.19</b>		
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$				
	<b>Function 4: Maintain Characteristic Wildlife Community:</b>				
		<b>FCI 4 trees=</b>	<b>#VALUE!</b>		
	$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$				
		<b>FCI 4 shrubs=</b>	<b>#VALUE!</b>		
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$				
		<b>FCI 4 ground =</b>	<b>0.19</b>		
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$				

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-12 Sta. 366+25L	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-11 appears to provide some hydrology for STR-21.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.75
	Function: Biogeochemical Processes	0.55
	Function: Retain Particulates	N/A
	Function: Plant Community	0.19
	Function: Wildlife Community	0.19
	Quantitative Score (Average of FCIs x 100)	42.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

**Ecology Field Data Sheet: Other Resource Features**  
(Caves/Rock Houses; Sinkholes; Specialized Habitats; Other)

**Project:** Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00

**Date of survey:** 10.27.2015, 10-30-18 **Biologist:** K.A. Brown, R.L. Howard **Affiliation:** TDOT

<b>1-Station:</b> from plans	STA 370+50 RT	
<b>2-Map label</b>	PND-9	
<b>3- Lat/Long</b>	36.307217°N, -83.025553°W	
<b>4-Potential impact</b>		
<b>5-Feature name</b>	PND-9	
<b>6-Feature description:</b>		
what is it	pond	
portion affected	none	
approximate size	50' x 200'	
photo number	52	
other		
<b>7- HUC code &amp; name</b> if applicable (12-digit)	060101040204 - Dodson Creek	
<b>8-Determination:</b> TDOT/ consultant	TDOT	
<b>9-Determination:</b> Confirmed? By?		
<b>10-Mitigation:</b> to be included in design		
<b>11-Notes</b>	PND-9 drains to STR-21.	

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	11-3-15, 10-30-18				
<b>1-Station: from plans</b>	374+00										
<b>2-Map label and name</b>	STR-25										
<b>3-Latitude/Longitude</b>	36.30853° N, -83.02482° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	3 ft. - 4 ft.				-top of bank width			4 ft. - 6 ft.			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 2 ft. , 1:1				RDB - 2 ft. , 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	4 in. - 6 in.				water width (riffles / pools)			1 ft. - 3 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Pasture grasses										
	RDB: Pasture grasses										
-habitat assessment score	40										
	epifaunal substrate		2		channel alteration		5				
	riffle embeddedness				frequency of re-ox zones		7				
	velocity / depth regime		10		bank stability		LDB	2	RDB	2	
	sediment deposition		2		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		6		riparian veg zone width		LDB	1	RDB	1	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae										
<b>6-photo numbers</b>	53, 54										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake -Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>											

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 11.03.2015, 10-30-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-13  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.30857°N Long: -83.02493°W Datum: WGS-84  
Soil Map Unit Name: Ws- Whitesburg Silt Loam NWI classification: PEM2  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: WTL-13 is marked on the project plans near mainline STA 373+75. The feature is not mapped on the USFWS NWI Mapper site. WTL-13 is photograph #53 in the photograph summary. WTL-13 is slightly impounded by existing culvert beneath SR-66 discharging to STR-25. No TRAM completed due to small size and low resource value based on TRAM user guide.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>4-6"</u> Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-13

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																																												
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																																												
2. _____	_____	_____	_____																																													
3. _____	_____	_____	_____																																													
4. _____	_____	_____	_____																																													
5. _____	_____	_____	_____																																													
6. _____	_____	_____	_____																																													
<u>0</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>20</u></td> <td>x 1 = <u>20</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>65</u> (A)</td> <td><u>150</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.31</u>	Total % Cover of:	Multiply by:	OBL species <u>20</u>	x 1 = <u>20</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species _____	x 3 = _____	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species _____	x 5 = _____	Column Totals: <u>65</u> (A)	<u>150</u> (B)																														
Total % Cover of:	Multiply by:																																															
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FACW species <u>25</u>	x 2 = <u>50</u>																																															
FAC species _____	x 3 = _____																																															
FACU species <u>20</u>	x 4 = <u>80</u>																																															
UPL species _____	x 5 = _____																																															
Column Totals: <u>65</u> (A)	<u>150</u> (B)																																															
<b>Sapling Stratum (Plot size: <u>5m</u> )</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ <u>0</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																												
<b>Shrub Stratum (Plot size: <u>5m</u> )</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ <u>0</u> = Total Cover 50% of total cover: <u>17</u> 20% of total cover: <u>7</u>																																																
<b>Herb Stratum (Plot size: <u>1.5m</u> )</b> <table style="width: 100%;"> <tr> <td>1. <u>Juncus effusus (common rush)</u></td> <td style="text-align: center;">10</td> <td style="text-align: center;">N</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td>2. <u>Ludwigia alternifolia (seedbox)</u></td> <td style="text-align: center;">5</td> <td style="text-align: center;">N</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td>3. <u>Typha latifolia (broadleaf cattail)</u></td> <td style="text-align: center;">20</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">OBL</td> </tr> <tr> <td>4. <u>Sorghum halepense (Johnsongrass)</u></td> <td style="text-align: center;">20</td> <td style="text-align: center;">Y</td> <td style="text-align: center;">FACU</td> </tr> <tr> <td>5. <u>Eupatorium perfoliatum (common boneset)</u></td> <td style="text-align: center;">10</td> <td style="text-align: center;">N</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td>6. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>7. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>8. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>9. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>10. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>11. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table> <u>65</u> = Total Cover 50% of total cover: <u>32</u> 20% of total cover: <u>13</u>					1. <u>Juncus effusus (common rush)</u>	10	N	FACW	2. <u>Ludwigia alternifolia (seedbox)</u>	5	N	FACW	3. <u>Typha latifolia (broadleaf cattail)</u>	20	Y	OBL	4. <u>Sorghum halepense (Johnsongrass)</u>	20	Y	FACU	5. <u>Eupatorium perfoliatum (common boneset)</u>	10	N	FACW	6. _____	_____	_____	_____	7. _____	_____	_____	_____	8. _____	_____	_____	_____	9. _____	_____	_____	_____	10. _____	_____	_____	_____	11. _____	_____	_____	_____
1. <u>Juncus effusus (common rush)</u>	10	N	FACW																																													
2. <u>Ludwigia alternifolia (seedbox)</u>	5	N	FACW																																													
3. <u>Typha latifolia (broadleaf cattail)</u>	20	Y	OBL																																													
4. <u>Sorghum halepense (Johnsongrass)</u>	20	Y	FACU																																													
5. <u>Eupatorium perfoliatum (common boneset)</u>	10	N	FACW																																													
6. _____	_____	_____	_____																																													
7. _____	_____	_____	_____																																													
8. _____	_____	_____	_____																																													
9. _____	_____	_____	_____																																													
10. _____	_____	_____	_____																																													
11. _____	_____	_____	_____																																													
<b>Woody Vine Stratum (Plot size: <u>10m</u> )</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ <u>0</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.																																												
Remarks: (Include photo numbers here or on a separate sheet.)																																																

## SOIL

Sampling Point: WTL-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Texture		Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-10"	7.5 YR 4/2	80	7.5YR 5/8	10	C	PL	Clay	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators:</b>						<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) ( <b>MLRA 147</b> )						
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )	<input type="checkbox"/> Coast Prairie Redox (A16)						
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )	<input checked="" type="checkbox"/> ( <b>MLRA 147, 148</b> )						
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)						
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> ( <b>MLRA 136, 147</b> )						
<input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR N</b> )	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)						
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)						
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)							
<input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR N, MLRA 147, 148</b> )	<input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> )							
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) ( <b>MLRA 136, 122</b> )							
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )							
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) ( <b>MLRA 127, 147</b> )							

**Restrictive Layer (if observed):**  
Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**    Yes X    No \_\_\_\_\_

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-13

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.308564 Long: -83.024799 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 5 to 12 percent slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-13

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: _____ (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
4. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Herb Stratum</b> (Plot size: _____ )				
1. broomsedge - Andropogon virginicus	30	Y	FACU	
2. tall fescue - Schedonorus arundinacea	20	Y	FACU	
3. White oldfield aster - Symphyotrichum ericoides	10	N	FAC	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: <sup>30</sup> _____ 20% of total cover: <sup>12</sup> _____				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____				

Remarks: (Include photo numbers here or on a separate sheet.)  
 Vegetation is mowed at this site on a regular basis.

## SOIL

Sampling Point: UPL-13

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalue Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbric Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

# Ecology Field Data Sheet: Water Resources

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	11-3-15, 10-30-18				

<b>1-Station: from plans</b>	377+00										
<b>2-Map label and name</b>	STR-26										
<b>3-Latitude/Longitude</b>	36.30875° N, -83.02381° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input checked="" type="checkbox"/>	weak	<input type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1 ft. - 2 ft.				-top of bank width			3 ft. - 4 ft.			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1 ft. - 2 ft. / 1:1				RDB - 1 ft. - 2 ft. / 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1 in. - 4 in. / 1 in. - 4 in.				water width (riffles / pools)			1 ft. / 1 ft.			
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: -----(LDB /RDB)-----	LDB: Pasture grasses										
	RDB: Pasture grasses										
-habitat assessment score	41										
	epifaunal substrate		6		channel alteration		5				
	riffle embeddedness				frequency of re-ox zones		7				
	velocity / depth regime		4		bank stability		LDB	2	RDB	2	
	sediment deposition		3		bank vegetative protection		LDB	1	RDB	1	
	channel flow status		8		riparian veg zone width		LDB	1	RDB	1	
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, no benthos or fish observed										
<b>6-photo numbers</b>	55, 56										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	06010104-0204, Cherokee Lake -Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	no	<input type="checkbox"/>									
<b>13-Notes</b>	Flow for STR-26 emerges from a pipe approximately 5 ft. from the inlet of the existing pipe under SR-66.										

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	11-3-15, 10-30-18				

<b>1-Station:</b> from plans	382+80										
<b>2-Map label and name</b>	STR-27										
<b>3-Latitude/Longitude</b>	36.30950° N, -83.02208° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	4-6 ft				-top of bank width			6-8 ft			
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 2-3 ft @ 1:1				RDB - 2-3 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input checked="" type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	1 ft.			water width (riffles / pools)			3-4 ft.				
-bank stability: LDB, RDB	LDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input type="checkbox"/>	Eroding	<input checked="" type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: Bradford pear, tickseed, fescue, Spanish needle										
	RDB: Bradford pear, tickseed, fescue, Spanish needle										
-habitat assessment score	52										
	epifaunal substrate			2			channel alteration			1	
	riffle embeddedness						frequency of re-ox zones			2	
	velocity / depth regime			5			bank stability			LDB	5
	sediment deposition			13			bank vegetative protection			LDB	3
	channel flow status			11			riparian veg zone width			LDB	1
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, no fish or benthos observed										
<b>6-photo numbers</b>	57, 58										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	060101040204 - Cherokee Lake -Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	<p>STR-27 flows between WTL-14 and WTL-15 upstream of SR-66, then under SR-66, and goes into a pipe under several mini-storage units downstream of SR-66.</p>										

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 11.03.2015, 10-30-18  
 Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-14  
 Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
 Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.30952°N Long: -83.02219°W Datum: WGS-84  
 Soil Map Unit Name: Ws- Whitesburg Silt Loam NWI classification: PSS1  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: WTL-14 is adjacent to STR-27 near mainline STA 382+95L. The feature is not mapped on the USFWS NWI Mapper site. WTL-14 is photograph #59 in the photograph summary.	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes _____ No _____ Depth (inches): _____	Wetland Hydrology Present? Yes <u>X</u> No _____	
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>1-3"</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-14

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum (Plot size: <u>5m</u> )</b>				
1. <i>Acer rubrum (red maple)</i>	10	Y	FAC	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Acer negundo (boxelder)</i>	10	Y	FAC	
3. <i>Rubus arvensis (field blackberry)</i>	20	Y	FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>20</u> 20% of total cover: <u>8</u>				
<b>Herb Stratum (Plot size: <u>1.5m</u> )</b>				
1. <i>Cyperus esculentus (yellow nutsedge)</i>	10	Y	FACW	<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
2. <i>Juncus effusus (common rush)</i>	5	Y	FACW	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>7.5</u> 20% of total cover: <u>3</u>				
<b>Woody Vine Stratum (Plot size: <u>10m</u> )</b>				
1. <i>Lonicera japonica (Japanese honeysuckle)</i>	50	Y	FAC	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-14

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-14

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.309665 Long: -83.022423 Datum: \_\_\_\_\_

Soil Map Unit Name: Whitesburg silt loam NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Surface Water (A1)  <input type="checkbox"/> High Water Table (A2)  <input type="checkbox"/> Saturation (A3)  <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2)  <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)  <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> Aquatic Fauna (B13)                 </div> <div style="width: 50%;"> <input type="checkbox"/> True Aquatic Plants (B14)  <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Other (Explain in Remarks)                 </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____                  (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p>		
<p>Remarks:</p> <p>No primary indicators of hydrology were observed.</p>		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-14

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. red cedar - Juniperus virginiana	10	Y	FACU	
2. Bradford pear - Pyrus calleryana	5	Y	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
15 = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: <sup>8</sup> 20% of total cover: <sup>3</sup>				
Herb Stratum (Plot size: _____)				
1. broomsedge - Andropogon virginicus	25	Y	FACU	
2. Johnson grass - Sorghum halepense	15	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
40 = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft in height.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>20</sup> 20% of total cover: <sup>8</sup>				
Woody Vine Stratum (Plot size: _____)				
1. blackberry - Rubus sp.	15	Y	FACU	
2. honeysuckle - Lonicera japonica	10	Y	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
25 = Total Cover				
50% of total cover: <sup>13</sup> 20% of total cover: <sup>5</sup>				
<b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: UPL-14

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Hydrate Soil Indicators:**
- ☐ Histosol (A1)
  - ☐ Histic Epipedon (A2)
  - ☐ Black Histic (A3)
  - ☐ Hydrogen Sulfide (A4)
  - ☐ Stratified Layers (A5)
  - ☐ 2 cm Muck (A10) (**LRR N**)
  - ☐ Depleted Below Dark Surface (A11)
  - ☐ Thick Dark Surface (A12)
  - ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
  - ☐ Sandy Gleyed Matrix (S4)
  - ☐ Sandy Redox (S5)
  - ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                    |
| <input type="checkbox"/> | Polyvalve Below Surface (S8) <b>(MLRA 147, 148)</b>  |
| <input type="checkbox"/> | Thin Dark Surface (S9) <b>(MLRA 147, 148)</b>        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                             |
| <input type="checkbox"/> | Depleted Matrix (F3)                                 |
| <input type="checkbox"/> | Redox Dark Surface (F6)                              |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                           |
| <input type="checkbox"/> | Redox Depressions (F8)                               |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) <b>(LRR N, MLRA 136)</b> |
| <input type="checkbox"/> | Umbria Surface (F13) <b>(MLRA 136, 122)</b>          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) <b>(MLRA 148)</b>    |
| <input type="checkbox"/> | Red Parent Material (F21) <b>(MLRA 127, 147)</b>     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-14 STA. 382+95L

<b>0.75 Function 1: Matintain Hydrologic Regime</b>					
<b>0.75</b>	$(V1 \times V2)^{(1/2)}$	<b>FCI 1 =</b>	<b>0.75</b>	<b>Final Tree =</b>	<b>#VALUE!</b>
<b>GOTOV5</b>					
<b>N/A</b>	<b>Function 2: Maintain Biogeochemical Processes</b>				
<b>GOTOV6</b>		<b>FCI 2 trees=</b>	<b>#VALUE!</b>	<b>Final Shrubs=</b>	<b>#VALUE!</b>
<b>1</b>	$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$				
<b>0.55</b>				<b>Final Herbaceous =</b>	<b>0.42</b>
<b>0</b>		<b>FCI 2 shrubs=</b>	<b>#VALUE!</b>		
<b>5</b>	$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$				
<b>1</b>					
<b>1</b>		<b>FCI 2 ground =</b>	<b>0.55</b>		
<b>1</b>					
<b>0.1</b>	$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$				
<b>0.1</b>					
<b>Function 3: Maintain Characteristic Plant Community</b>					
		<b>FCI 3 trees=</b>	<b>#VALUE!</b>		
	$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$				
		<b>FCI 3 shrubs=</b>	<b>#VALUE!</b>		
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$				
		<b>FCI 3 ground =</b>	<b>0.19</b>		
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$				
<b>Function 4: Maintain Characteristic Wildlife Community:</b>					
		<b>FCI 4 trees=</b>	<b>#VALUE!</b>		
	$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$				
		<b>FCI 4 shrubs=</b>	<b>#VALUE!</b>		
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$				
		<b>FCI 4 ground =</b>	<b>0.19</b>		
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$				

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-14 Sta. 366+25L	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-14 is located adjacent to STR-27.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.75
	Function: Biogeochemical Processes	0.55
	Function: Retain Particulates	N/A
	Function: Plant Community	0.19
	Function: Wildlife Community	0.19
	Quantitative Score (Average of FCIs x 100)	42.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 11.03.2015, 10-30-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-15  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.30990°N Long: -83.02219°W Datum: WGS-84  
Soil Map Unit Name: LaC - Leadvale Silt Loam NWI classification: PEM2  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: WTL-15 is adjacent to STR-27 and is marked on the project plans near mainline STA 383+50 LT. The feature is not mapped on the USFWS NWI Mapper site. WTL-15 lies in a large field and the vegetation is mowed on a regular basis. WTL-15 is photograph #60 in the photograph summary.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>1-2"</u>		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-15

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>35</u> x 2 = <u>70</u> FAC species _____ x 3 = _____ FACU species <u>50</u> x 4 = <u>20</u> UPL species _____ x 5 = _____ Column Totals: <u>85</u> (A) <u>90</u> (B)  Prevalence Index = B/A = <u>1.06</u>
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling Stratum</b> (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum</b> (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
50% of total cover: _____ 20% of total cover: _____				
<b>Herb Stratum</b> (Plot size: <u>1.5m</u> )				
1. <i>Cyperus esculentus</i> (yellow nutsedge)	10	N	FACW	
2. <i>Eupatorium perfoliatum</i> (common boneset)	5	N	FACW	
3. <i>Juncus effusus</i> (common rush)	20	Y	FACW	
4. <i>Schedonorus arundinaceus</i> (tall fescue)	50	Y	FACU	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
50% of total cover: <u>42</u> 20% of total cover: <u>17</u>				
<b>Woody Vine Stratum</b> (Plot size: <u>10m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>		
0-10"	7.5 YR 4/2	80	7.5YR 5/8	10	C	PL	Clay

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators:</b>			<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>		
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) ( <b>MLRA 147</b> )			
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )	<input type="checkbox"/> Coast Prairie Redox (A16)			
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )	<input type="checkbox"/> <b>(MLRA 147, 148)</b>			
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)			
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> <b>(MLRA 136, 147)</b>			
<input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR N</b> )	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)			
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)			
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)				
<input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR N,</b>	<input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR N,</b>				
<input type="checkbox"/> <b>MLRA 147, 148)</b>	<input type="checkbox"/> <b>MLRA 136)</b>				
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) ( <b>MLRA 136, 122)</b>				
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 148)</b>				
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) ( <b>MLRA 127, 147)</b>				

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present?

Yes ☒

No \_\_\_\_\_

Remarks:

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-15

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.309630 Long: -83.021885 Datum: \_\_\_\_\_

Soil Map Unit Name: Leadvale silt loam, 5 to 12 percent slopes NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: No primary indicators of hydrology were observed.		

**VEGETATION (Four Strata) – Use scientific names of plants.**

 Sampling Point: UPL-15

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. tall fescue - <i>Schedonorus arundinacea</i>	40	Y	FACU	
2. Johnson grass - <i>Sorghum halepense</i>	5	N	FACU	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
45 _____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>23</sup> _____ 20% of total cover: <sup>9</sup> _____				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.) <b>Vegetation is mowed on a regular basis.</b>				

## SOIL

Sampling Point: UPL-15

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                      |
| <input type="checkbox"/> | Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )  |
| <input type="checkbox"/> | Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                               |
| <input type="checkbox"/> | Depleted Matrix (F3)                                   |
| <input type="checkbox"/> | Redox Dark Surface (F6)                                |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                             |
| <input type="checkbox"/> | Redox Depressions (F8)                                 |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> ) |
| <input type="checkbox"/> | Umbria Surface (F13) ( <b>MLRA 136, 122</b> )          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )    |
| <input type="checkbox"/> | Red Parent Material (F21) ( <b>MLRA 127, 147</b> )     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

# Ecology Field Data Sheet: **Water Resources**

<b>Project:</b>		Hawkins Co., SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd, P.E. 37005-1237-14, PIN 107579.00									
<b>Biologist:</b>	K. Brown, R. Howard	<b>Affiliation:</b>	TDOT R1 Ecology			<b>Date:</b>	11-3-15, 10-30-18				

<b>1-Station: from plans</b>	392+25										
<b>2-Map label and name</b>	STR-28										
<b>3-Latitude/Longitude</b>	36.31091° N, -83.01939° W										
<b>4-Potential impact</b>	Runoff, encapsulation										
<b>5-Feature description:</b>											
-channel identification	perennial stream	<input checked="" type="checkbox"/>	intermittent stream	<input type="checkbox"/>	ephemeral stream	<input type="checkbox"/>	wwc	<input type="checkbox"/>			
-HD score (if applicable)	N/A										
-OHWM indicators	bed & banks	<input checked="" type="checkbox"/>	deposition	<input type="checkbox"/>	presence of litter / debris	<input type="checkbox"/>	scour	<input checked="" type="checkbox"/>	veg absent, bent, matted	<input type="checkbox"/>	
	change in plant community	<input type="checkbox"/>	destruction of terrestrial veg	<input type="checkbox"/>	multiple observed flow events	<input checked="" type="checkbox"/>	sediment sorting	<input type="checkbox"/>	water staining	<input type="checkbox"/>	
	change in soil character	<input type="checkbox"/>	leaf litter disturbed absent	<input type="checkbox"/>	natural line impressed on bank	<input type="checkbox"/>	shelving	<input type="checkbox"/>	wracking	<input type="checkbox"/>	
-sinuosity	absent	<input type="checkbox"/>	weak	<input checked="" type="checkbox"/>	moderate	<input type="checkbox"/>	strong	<input type="checkbox"/>			
-channel bottom width	1-2 ft			-top of bank width			3-4 ft				
- avg. gradient of stream (%)	5%										
-bank height and slope ratio	LDB - 1-2 ft @ 1:1				RDB - 1-2 ft @ 1:1						
-water flow	fast	<input type="checkbox"/>	moderate	<input type="checkbox"/>	slow	<input type="checkbox"/>	isolated pools	<input type="checkbox"/>	none	<input type="checkbox"/>	
-water depth (riffles / pools)	2-4 in			water width (riffles / pools)			1-2 ft				
-bank stability: LDB, RDB	LDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
	RDB:	Stable	<input checked="" type="checkbox"/>	Eroding	<input type="checkbox"/>	Undercutting	<input type="checkbox"/>	Sloughing	<input type="checkbox"/>	Exposed Roots	<input type="checkbox"/>
-dominant riparian species: ------(LDB /RDB)-----	LDB: fescue, Carex sp., Juncus sp., cattail										
	RDB: fescue, Carex sp., Juncus sp., cattail										
-habitat assessment score	112										
	epifaunal substrate	15			channel alteration	5					
	riffle embeddedness	15			frequency of re-ox zones	13					
	velocity / depth regime	10			bank stability	LDB	9	RDB	9		
	sediment deposition	15			bank vegetative protection	LDB	2	RDB	2		
	channel flow status	15			riparian veg zone width	LDB	1	RDB	1		
-OHWM	Yes										
-riffle pool complex	No										
-fish, benthos,algae, aquatic life	Algae, no fish or benthos observed										
<b>6-photo numbers</b>	61, 62										
<b>7-rainfall information</b>	0.99 in. from 10/23/18 to 10/29/18										
<b>8-HUC -12 Code &amp; Name</b>	060101040204 - Cherokee Lake -Dodson Creek										
<b>9-Confirmed by:</b>											
<b>10-Assessed</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>11-ETW</b>	yes	<input type="checkbox"/>	no	<input checked="" type="checkbox"/>							
<b>12-303 (d) List</b>	yes	<input type="checkbox"/>	siltation	<input type="checkbox"/>	habitat:	<input type="checkbox"/>	other:	<input type="checkbox"/>			
	no	<input checked="" type="checkbox"/>									
<b>13-Notes</b>	STR-28 flows through WTL-16 upstream of SR-66 then goes into a large CMP located under SR-66 and a warehouse downstream of SR-66.										

## WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: SR-66, From SR-34 in Bulls Gap to South of Speedwell Rd City/County: Hawkins Sampling Date: 11.03.2015, 10-30-18  
Applicant/Owner: Tennessee Department of Transportation State: TN Sampling Point: WTL-16  
Investigator(s): K.A. Brown, R.L. Howard Section, Township, Range: --  
Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): concave Slope (%): <5%  
Subregion (LRR or MLRA): LRR N, MLRA 128 Lat: 36.31102°N Long: -83.01947°W Datum: WGS-84  
Soil Map Unit Name: Ws- Whitesburg Silt Loam NWI classification: PEM2  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Remarks: WTL-16 surrounds STR-28 and is marked on the project plans near mainline STA 392+00 LT. The feature is not mapped on the USFWS NWI Mapper site. WTL-16 is photograph #61 in the photograph summary.	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b>		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)		<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Aquatic Fauna (B13)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b>		
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>4-6"</u>		
Water Table Present? Yes _____ No _____ Depth (inches): _____		
Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		
Wetland Hydrology Present? Yes <u>X</u> No _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WTL-16

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Sapling Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = <u>2.2</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Shrub Stratum (Plot size: <u>5m</u> )</b>				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
<b>Herb Stratum (Plot size: <u>1.5m</u> )</b>				
1. <i>Typha latifolia</i> (broadleaf cattail)	40	Y	OBL	<b>Definitions of Five Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  <b>Woody vine</b> – All woody vines, regardless of height.
2. <i>Leersia oryzoides</i> (rice cutgrass)	30	Y	OBL	
3. <i>Cyperus esculentus</i> (yellow nutsedge)	15	N	FACW	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: <u>42</u> 20% of total cover: <u>17</u>				
<b>Woody Vine Stratum (Plot size: <u>10m</u> )</b>				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

## SOIL

Sampling Point: WTL-16

[illegible]

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

TDOT PE: 37005-1237-14

TDOT PIN: 107579.00

Project/Site: SR-66 from SR-34 to Speedwell Rd. / Old Hwy. 66 City/County: Hawkins Sampling Date: 10-19-18

Applicant/Owner: TDOT State: TN Sampling Point: UPL-16

Investigator(s): K. Brown Section, Township, Range: \_\_\_\_\_

Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_

Subregion (LRR or MLRA): LLR N Lat: 36.310964 Long: -83.019828 Datum: \_\_\_\_\_

Soil Map Unit Name: Whitesburg silt loam NWI classification: non-wetland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

<p>Hydrophytic Vegetation Present? Yes _____ No <u>X</u></p> <p>Hydric Soil Present? Yes _____ No <u>X</u></p> <p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>	<p><b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u></p>
<p>Remarks:</p>	

## HYDROLOGY

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> </div> <div style="width: 48%;"> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> </div> </div>		<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Moss Trim Lines (B16)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> Microtopographic Relief (D4)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:</p> <p>Remarks:</p> <p><b>No indicators of wetland hydrology were observed.</b></p>		

# VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UPL-16

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)  Total Number of Dominant Species Across All Strata: _____ (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B)  Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____ )				
1. broomsedge - Andropogon virginicus	50	Y	FACU	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50 _____ = Total Cover				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vine</b> – All woody vines greater than 3.28 ft in height.
50% of total cover: <sup>25</sup> _____ 20% of total cover: <sup>10</sup> _____				
Woody Vine Stratum (Plot size: _____ )				
1. honeysuckle - Lonicera japonica	10	Y	FACU	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
10 _____ = Total Cover				
50% of total cover: <sup>5</sup> _____ 20% of total cover: <sup>2</sup> _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

US Army Corps of Engineers

Eastern Mountains and Piedmont – Version 2.0

## SOIL

Sampling Point: UPL-16

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) (**LRR N**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- |                          |  |
|--------------------------|--|
| <input type="checkbox"/> | Dark Surface (S7)                                      |
| <input type="checkbox"/> | Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )  |
| <input type="checkbox"/> | Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )        |
| <input type="checkbox"/> | Loamy Gleyed Matrix (F2)                               |
| <input type="checkbox"/> | Depleted Matrix (F3)                                   |
| <input type="checkbox"/> | Redox Dark Surface (F6)                                |
| <input type="checkbox"/> | Depleted Dark Surface (F7)                             |
| <input type="checkbox"/> | Redox Depressions (F8)                                 |
| <input type="checkbox"/> | Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> ) |
| <input type="checkbox"/> | Umbria Surface (F13) ( <b>MLRA 136, 122</b> )          |
| <input type="checkbox"/> | Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )    |
| <input type="checkbox"/> | Red Parent Material (F21) ( <b>MLRA 127, 147</b> )     |

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

## Slope Wetland

**V1: HYDROPERIOD**  
**V2: WETLAND WATERSHED INTEGRITY**  
**V3: CANOPY TREE CLASS**  
**V4: CANOPY TREE DENSITY**  
**V5: SHRUB COVER**  
**V6: GROUND VEGETATION COVER**  
**V7: VEGETATION COMPOSITION AND DIVERSITY**  
 2. Q =  
 # of Group 1 Dominants  
 # of Group 2 Dominants  
 # of Group 3 Dominants  
 SPECIES RICHNESS CONSTANT  
**V8: SOIL ORGANIC MATTER**  
**V9: BUFFER**  
 1. Connection Index  
 2. Buffer width value (0-1)

## WTL-16 STA.392+00L

<b>0.5 Function 1: Matintain Hydrologic Regime</b>				
0.68	$(V1 \times V2)^{(1/2)}$	FCI 1 =	0.58	Final Tree = #VALUE!
<b>GOTOV5</b>				
N/A	<b>Function 2: Maintain Biogeochemical Processes</b>			
GOTOV6		FCI 2 trees=	#VALUE!	Final Shrubs= #VALUE!
1	$\text{FCI (trees present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V3+V4}{2} + V8 \right) \right)^{1/2}$			
0.66				Final Herbaceous = 0.35
0		FCI 2 shrubs=	#VALUE!	
3	$\text{FCI (shrubs present)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V5+V8}{3} \right) \right)^{1/2}$			
0				
0.75		FCI 2 ground =	0.48	
1				
0.1	$\text{FCI (ground cover)} = \left( (V1 \times V2)^{1/2} \times \left( \frac{V6+V8}{5} \right) \right)^{1/2}$			
0.1				
<b>Function 3: Maintain Characteristic Plant Community</b>				
	$\text{FCI (trees present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right)}{3}$	FCI 3 trees=	#VALUE!	
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right)}{6}$	FCI 3 shrubs=	#VALUE!	
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right)}{9}$	FCI 3 ground =	0.18	
<b>Function 4: Maintain Characteristic Wildlife Community:</b>				
	$\text{FCI (trees)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V3+V4+V7}{3} \right) + V9}{4}$	FCI 4 trees=	#VALUE!	
	$\text{FCI (shrubs present)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V5+V7}{2} \right) + V9}{6}$	FCI 4 shrubs=	#VALUE!	
	$\text{FCI (groundcover)} = \frac{(V1 \times V2)^{1/2} + 2 \left( \frac{V6+V7}{2} \right) + V9}{9}$	FCI 4 ground =	0.18	

An affirmative response to 1-6 of the Decision Table identifies the wetland per rule as an Outstanding Natural Resource Water (ONRW) or Exceptional Tennessee Waters (ETW). A positive response to 7-13 requires a final determination by the Department.

#	Wetland Feature Decision Table	Yes/No	Affirmative Result
1	The wetland has been designated as an <b>Outstanding Natural Resource Water (ONRW)</b> by the Department under 0400-40-03-.06(5)(a).	NO	ONRW
2	The wetland has previously been designated and documented as an Exceptional Tennessee Water (ETW) by the Department under 0400-40-03-.06(4)(a)(7)	NO	ETW
3	The wetland is within state or national parks, wildlife refuges, forests, wilderness areas, natural areas, or is a designated State Scenic Rivers or Federal Wild and Scenic Rivers.	NO	ETW
4	The wetland is known to contain a documented non-experimental population of state or federally listed threatened or endangered aquatic or semi-aquatic plants, or aquatic animals.	NO	ETW
5	The wetland or the area it is in has been designated by the U.S. Fish and Wildlife Service as " <b>Critical Habitat</b> " for any threatened or endangered aquatic or semi-aquatic plant or aquatic animal species.	NO	ETW
6	The wetland falls within an area designated as Lands Unsuitable for Mining pursuant to the federal Surface Mining Control and Reclamation Act where such designation is based in whole or in part on impacts to water resource values	NO	ETW
7	<b>The wetland exhibits outstanding ecological or recreational values such as, but not limited to, those as outlined in 8-12</b>		Determination Required by TDEC
8	The wetland fits within the species composition concept for any plant community found in the state of Tennessee <b>ranked G2, G1, or more imperiled</b> at the "Association" classification level according to the NatureServe and Natural Heritage Ranking system (e.g. "bog", "fen", and "wet prairie/barren" communities).		Determination Required by TDEC
9	The wetland is <b>an uncommon resource</b> (e.g. vernal pools, headwater wetlands, sinks, spring/seeps, glades, newly described communities, high recreational or socioeconomic value) in the region and/or is deemed such by concurrence of qualified scientists.		Determination Required by TDEC
10	The wetland is an <b>older aged forested wetland</b> comprised of overstory trees with an average diameter at breast height (dbh) being <b>greater than or equal to 30</b> in within the WAA.		Determination Required by TDEC
11	The wetland is observed and documented to be a <b>significant waterfowl, songbird, shorebird, amphibian, bat, fish habitat area</b> . These may include rookeries, migratory congregations, nesting sites, breeding areas, etc.		Determination Required by TDEC
12	The wetland is <b>hydrologically connected</b> to and/or has significant ecological contribution to an <b>ETW</b>		Determination Required by TDEC
13	The wetland has High Resource Value as determined by a <b>score of 75 and above</b> using the TRAM or non-HGM TRAM (to be determined after completing the quantitative portion of this manual)		Determination Required by TDEC

End of Narrative Rating. Begin Quantitative Rating on Next Page.

## TRAM Summary Worksheet

<b>Exceptional Status Wetlands</b>	WTL-16 Sta. 392+00L	<b>Check if applicable</b>
	1. <b>ONRW</b>	NO
	2. <b>ETW</b>	NO
	3. <b>Further Review Requested:</b> Attach Wetland Background and Exceptional Status Wetlands Worksheet	NO
	<b>COMMENTS/NOTES:</b> WTL-16 is located adjacent to STR-28.	
<b>Quantitative Rating scores</b>	Function: Hydrologic Regime	0.58
	Function: Biogeochemical Processes	0.48
	Function: Retain Particulates	N/A
	Function: Plant Community	0.18
	Function: Wildlife Community	0.18
	Quantitative Score (Average of FCIs x 100)	35.0
	Value Added (Significant Size) Total	0
	<b>Total of Quantitative and Value Added Scores</b>	<b>TOTAL SCORE</b>



**Photo 1:** Southeast view of PND-1 at Sta. 132+00L.



**Photo 2.** Northwest view of WTL-1 at Sta. 141+25R.



**Photo 3:** Downgradient view of WWC-1 / EPH-1 at Sta. 143+00R.



**Photo 4:** Downstream view of STR-1 at Sta. 149+60.



**Photo 5:** Downstream view of STR-2 at Sta. 155+25



**Photo 6:** South view of WTL-2 at Sta. 156+75R.



**Photo 7:** Upstream (north) view of STR-3 and WTL-3 at Sta. 158+00R.



**Photo 8.** Downstream view of STR-3 and WTL-3 along Shepherd Dr. at Sta. 157+50R.



**Photo 9:** Upstream view of STR-4 at Sta. 168+60.



**Photo 10:** Drainage structure at Sta. 168+75R where STR-4 flows in and flow splits into STR-3 and STR-4.



**Photo 11:** Downstream view of STR-4 where it flows under warehouse at Sta. 172+50R.



**Photo 12:** Upstream view of STR-5 at Sta. 184+40.



**Photo 13:** Northwest view of PND-2 at Sta. 184+25L. PND-2 provides hydrology for STR-5 and WTL-4.



**Photo 14.** Northwest view of WTL-4 at Sta. 184+50L.



**Photo 15:** Downstream view of STR-6 at Sta. 186+60.



**Photo 16:** Downstream view of STR-7 (McPherson Branch) at Sta. 192+00.



**Photo 17:** Upgradient view of WWC-2 / EPH-2 at Sta. 204+90.



**Photo 18:** Northeast view of WTL-5 from approx. Sta. 205+50R.



**Photo 19:** Upstream view of STR-8 at Sta. 207+80.



**Photo 20.** Upstream view of STR-9 at Sta. 220+00.



**Photo 21:** Upstream view of STR-10 at Sta. 227+40.



**Photo 22:** Upstream view of STR-11 (Moore Branch) at Sta. 236+60.



**Photo 23:** Upstream view of STR-12 at Sta. 256+00 flowing out of yard on left and into ditch line of SR-66.



**Photo 24:** Upstream view of STR-13 at Sta. 260+50.



**Photo 25:** Upstream view of STR-14 at Sta. 263+00.



**Photo 26.** Upstream view of SPG-1 / STR-15 at Sta. 291+00L. This feature is outside the project limits.



**Photo 27:** Downstream view of STR-16 at Sta. 289+75.



**Photo 28:** Upstream view of STR-16 and WTL-6 at Sta. 293+00L. WTL-6 is outside the project limits.



**Photo 29:** Northwest view of WTL-7 at Sta. 290+00L. Feature is outside the project limits.



**Photo 30:** North view of PND-3 at Sta. 302+50L. Feature is outside the project limits.



**Photo 31:** Upgradient view of WWC-3 / EPH-3 at Sta. 306+00L.



**Photo 32.** Downstream view of STR-17 at Sta. 306+00R.



**Photo 33:** Upstream view of STR-18 at Sta. 316+00R.



**Photo 34:** Upstream view of STR-19 in ditchline of SR-66 at Sta. 319+00L.



**Photo 35:** Downstream view of STR-20 in ditchline of SR-66 at Sta. 321+00R.



**Photo 36:** Upgradient view of WTL-8 from Sta. 322+00L.



**Photo 37:** Upgradient view of WTL-9 at Sta. 321+50 RT.



**Photo 38.** Northwest view of PND-4 at Sta. 337+50R (Sta. 54+50R on Summit Hill Rd.). No water was present at the time of the field visits on 10-27-15 and 10-30-18.



**Photo 39:** Northwest view of PND-5 at Sta. 338+50R (Sta. 53+00R Summit Hill Rd).



**Photo 40:** Upstream view of STR-21 and WTL-10 at Sta. 339+00L.



**Photo 41:** Northwest view of WTL-10 at Sta. 339+50L.



**Photo 42:** Downstream view of STR-21 at Sta. 341+00R.



**Photo 43:** Upstream view of STR-22 at Sta. 342+50L.



**Photo 44.** Southeast view of PND-6 at Sta. 351+50L.



**Photo 45:** Upstream view of STR-23 at Sta. 351+40.



**Photo 46:** Northwest view of PND-7 at Sta. 358+00L.



**Photo 47:** Downgradient view of WWC-4 / EPH-4 at Sta. 358+50.



**Photo 48:** Northeast view of PND-8 at Sta. 362+50L.



**Photo 49:** Upstream view of STR-24 at Sta. 363+50.



**Photo 50.** Southwest view of WTL-11 at Sta. 365+75R.



**Photo 51:** Northview of WTL-12 at Sta. 366+25L.



**Photo 52:** Southwest view of PND-9 at Sta. 370+50R. feature is outside the project limits.



**Photo 53:** Upstream view of WTL-13 and STR-25 at Sta. 373+75L.



**Photo 54:** Downstream view of STR-25 at Sta. 374+00.



**Photo 55:** View of pipe outlet where flow for STR-26 begins at Sta. 377+00L. No inlet for this structure was located.



**Photo 56.** Downstream view of STR-26 at Sta. 377+00.



**Photo 57:** Upstream view of STR-27 at Sta. 382+80.



**Photo 58:** Downstream view of STR-27 flowing into pipe under mini-storage business at Sta. 382+80R.



**Photo 59:** Northwest view of WTL-14 at Sta. 382+75L.



**Photo 60:** Northwest view of WTL-15 at Sta. 385+50L.



**Photo 61:** Upstream view of STR-28 and WTL-16 at Sta. 392+25L.



**Photo 62.** Area drain where STR-28 flows under warehouse at Sta. 392+25R.

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1	TITLE SHEET
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3L-3M	REFERENCE DIAGRAMS
4-27	PRESENT LAYOUTS *
4A-27A	R.O.W. DETAILS **
4B-27B	PROPOSED LAYOUTS ***
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- \* INCLUDES THE FOLLOWING
- 8D PRESENT LAYOUT (N. SHEPHERD DRIVE)
- \*\* INCLUDES THE FOLLOWING
- 8E R.O.W. DETAILS (N. SHEPHERD DRIVE)
- \*\*\* INCLUDES THE FOLLOWING
- 8F PROPOSED LAYOUT (N. SHEPHERD DRIVE)

STATE OF TENNESSEE

DEPARTMENT OF TRANSPORTATION

BUREAU OF ENGINEERING

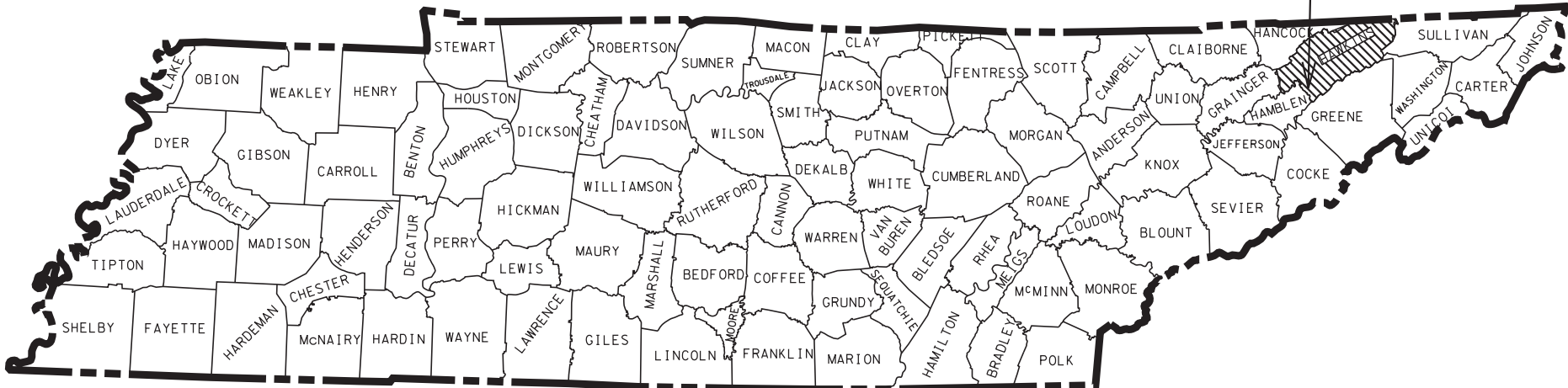
HAWKINS COUNTY

STATE ROUTE 66  
FROM S.R. 34 IN BULLS GAP TO SOUTH OF SPEEDWELL RD/OLD HIGHWAY 66

PRELIMINARY

STATE HIGHWAY NO. 66 F.A.H.S. NO.

PROJECT LOCATION



37005-1237-14  
BEGIN PROJ. NO. STP-66(38) PRELIM.  
STA. 99+60.00  
N: 712839.1915  
E: 2827772.9556



SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2015 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1 OR  
TDOT DESIGN MANAGER 1 PETE FALKENBERG, P.E.

DESIGNED BY CHA CONSULTING, INC.  
DESIGNER JOSSHE PALM CHECKED BY ELIZABETH MEULENDYKE, P.E.

P.E. NO. 37005-1237-14

PIN NO. 107579.00

ROADWAY LENGTH 5.612 MILES  
BRIDGE LENGTH 0.000 MILES  
BOX BRIDGE LENGTH 0.000 MILES  
PROJECT LENGTH 5.612 MILES

SCALE: 1"= 5280'

EQUATION

DESCRIPTION	NET EFFECT ON ENUMERATION
STA. 345+85.27 BK. = STA. 341+00.00 AH.	-485.27
TOTAL	-485.27

NO EXCLUSIONS

SURVEY

DATE: JUNE 2014  
UPDATED: OCTOBER 2016

37005-1237-14  
END PROJ. NO. STP-66(38) PRELIM.  
STA. 395+90.75  
N: 733440.3159  
E: 2847094.6417

TRAFFIC DATA

ADT (2018)	4380
ADT (2038)	5260
DHV (2038)	578
D	60 - 40
T (ADT)	10 %
T (DHV)	7 %
V	30/45/60 MPH

STA. 99+60.00 TO STA. 127+00.00 FOR 30 MPH  
STA. 127+00.00 TO STA. 248+00.00 FOR 45 MPH  
STA. 248+00.00 TO STA. 395+90.75 FOR 60 MPH

PRELIMINARY  
FIELD  
REVIEW

SEALED BY

APPROVED: Paul D. Degges  
PAUL D. DEGGES, CHIEF ENGINEER

DATE:

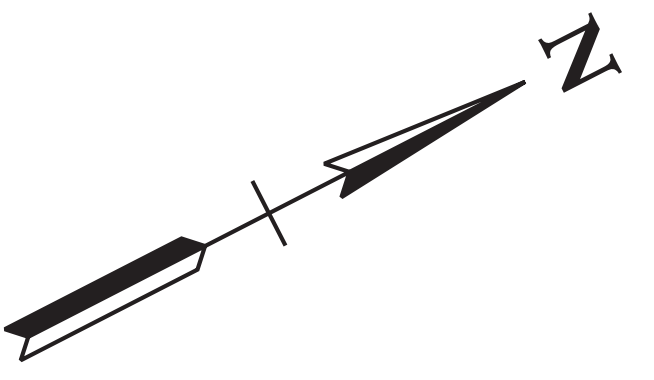
APPROVED: John Schroer  
JOHN SCHROER, COMMISSIONER

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

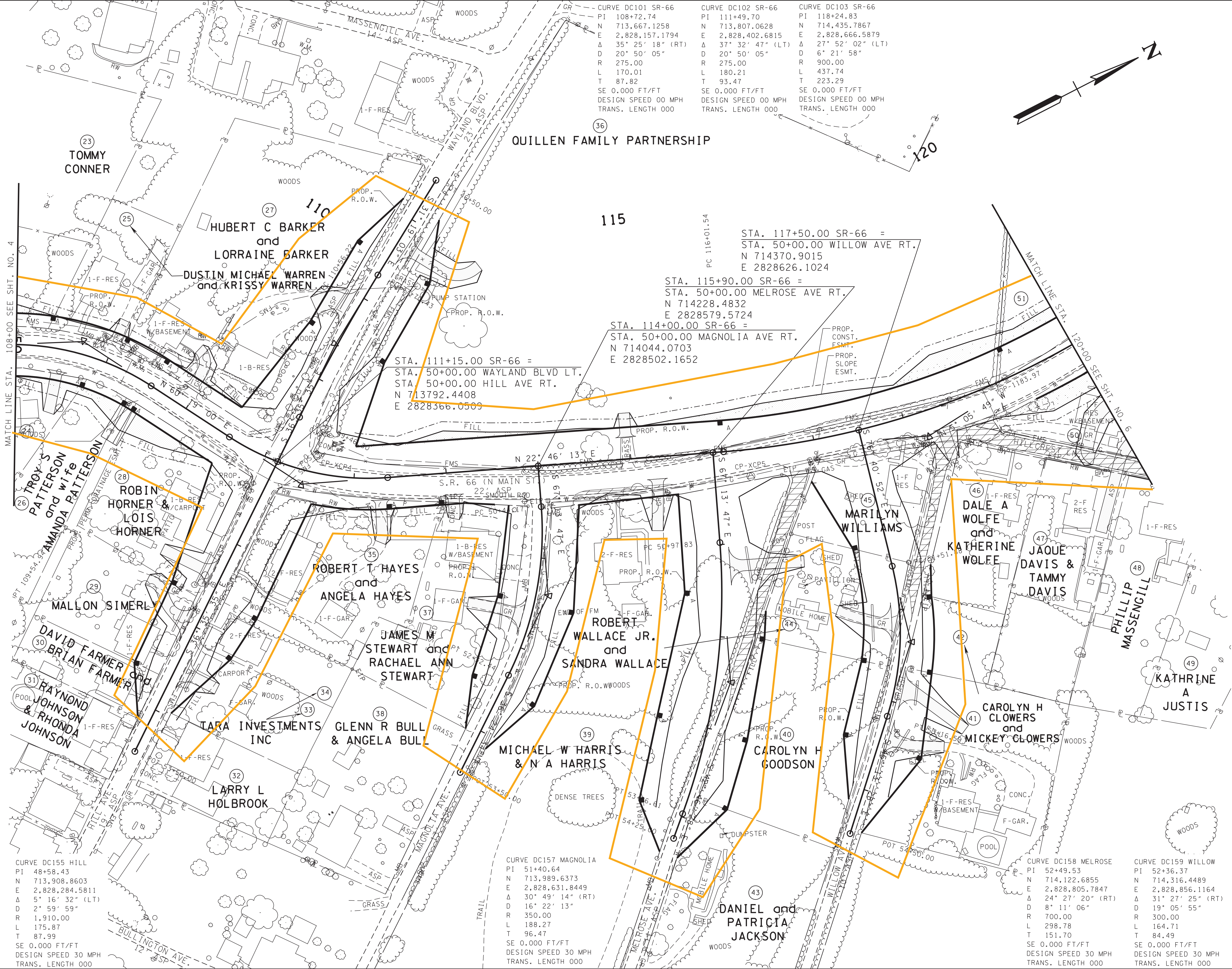
APPROVED:  
DIVISION ADMINISTRATOR DATE



TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	5



CURVE DC101 SR-66 PI 108+72.74 N 713,667.1258 E 2,828,157.1794 Δ 35° 25' 18" (RT) D 20° 50' 05" R 275.00 L 170.01 T 87.82 SE 0.000 FT/FT DESIGN SPEED 00 MPH TRANS. LENGTH 000	CURVE DC102 SR-66 PI 111+49.70 N 713,807.0628 E 2,828,402.6815 Δ 37° 32' 47" (LT) D 20° 50' 05" R 275.00 L 180.21 T 93.47 SE 0.000 FT/FT DESIGN SPEED 00 MPH TRANS. LENGTH 000	CURVE DC103 SR-66 PI 118+24.83 N 714,435.7867 E 2,828,666.5879 Δ 27° 52' 02" (LT) D 6° 21' 58" R 900.00 L 437.74 T 223.29 SE 0.000 FT/FT DESIGN SPEED 00 MPH TRANS. LENGTH 000
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**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY \_\_\_\_\_

COORDINATES ARE NAD/83(1995),  
ARE DATUM ADJUSTED BY THE  
FACTOR OF 1.000070 AND TIED TO  
THE TGRN. ALL ELEVATIONS ARE  
REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**

STA. 108+00 TO STA. 120+00

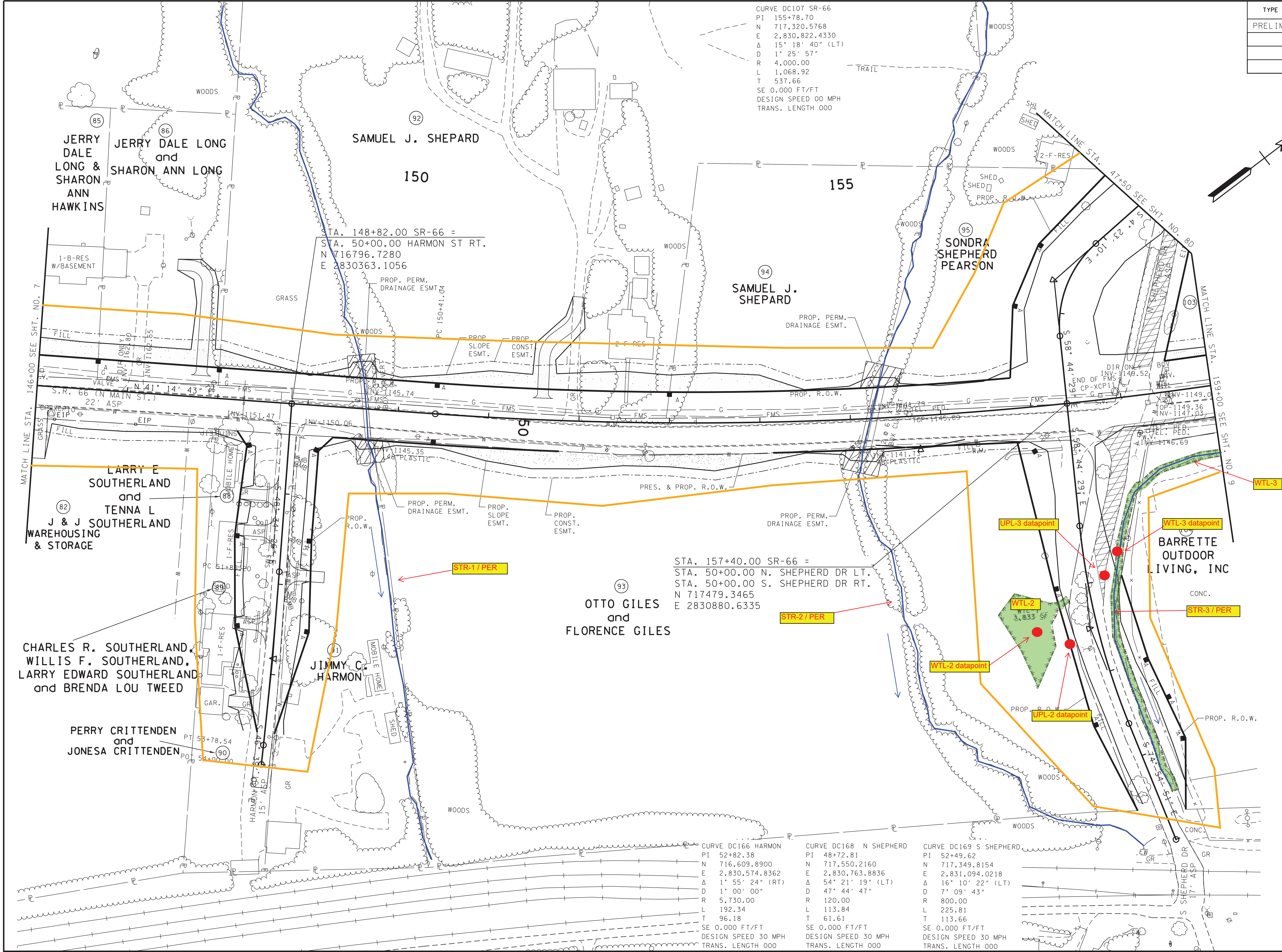
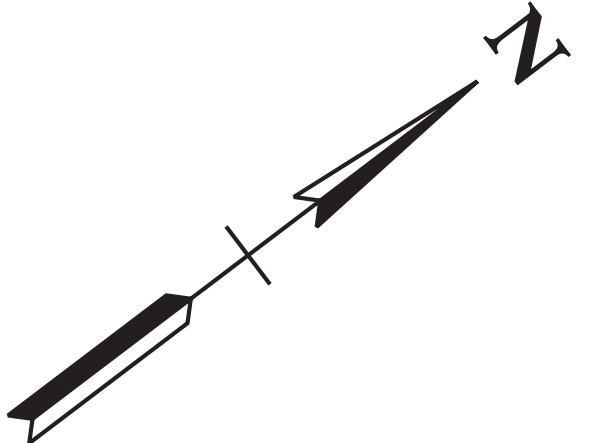
SCALE: 1"= 50'





TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	8

CURVE DC107 SR-66  
PI 155+78.70  
N 717,320.5768  
E 2,830,822.4330  
Δ 15° 18' 40" (LT)  
D 1° 25' 57"  
R 4,000.00  
L 1,068.92  
T 537.66  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000



**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY \_\_\_\_\_

COORDINATES ARE NAD/83(1995),  
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**

STA. 146+00 TO STA. 159+00

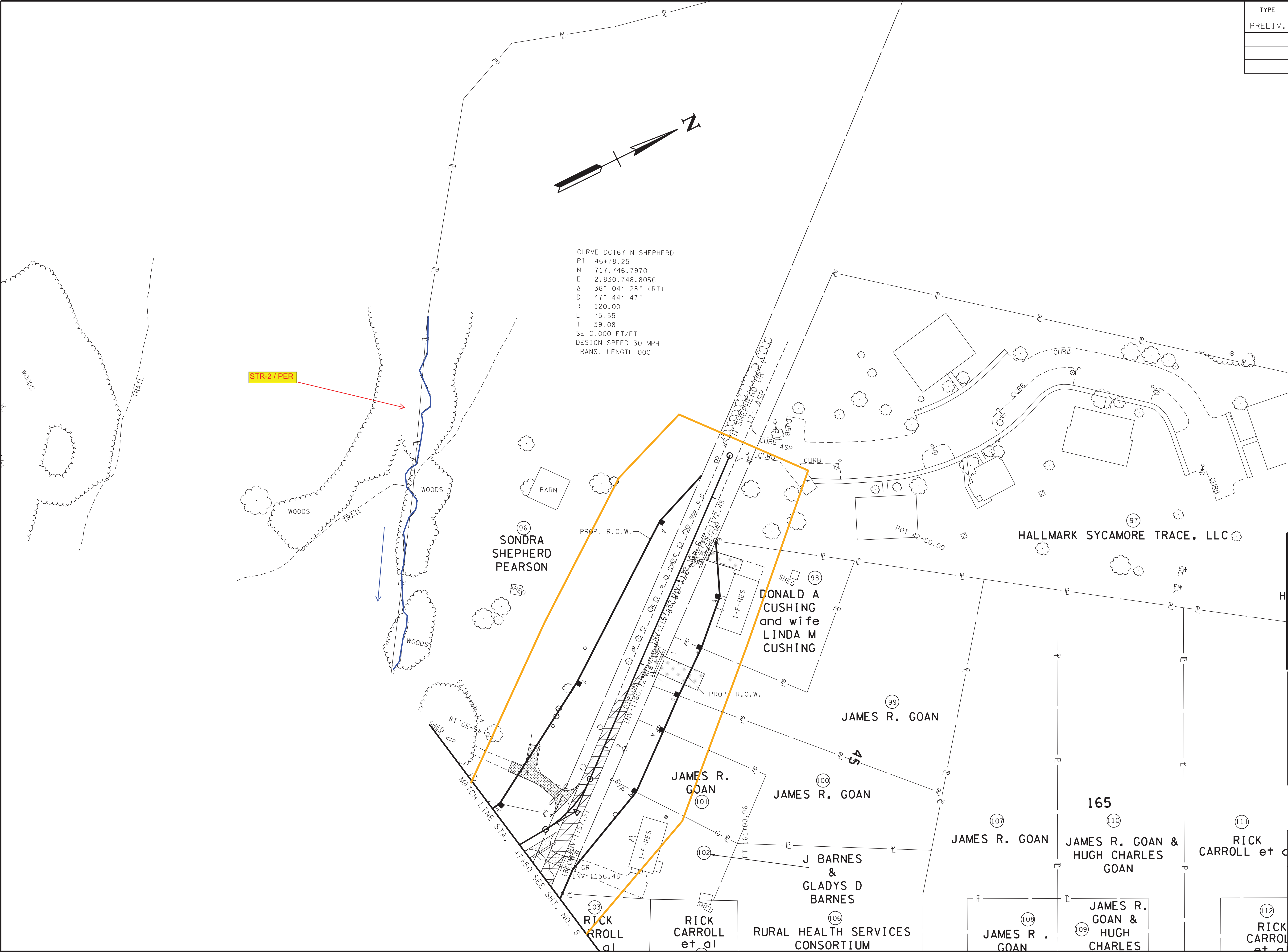
SCALE: 1"= 50'

CURVE DC166 HARMON  
PI 52+82.38  
N 716,609.8900  
E 2,830,574.8362  
Δ 1° 55' 24" (RT)  
D 1° 00' 00"  
R 5,730.00  
L 192.34  
T 96.18  
SE 0.000 FT/FT  
DESIGN SPEED 30 MPH  
TRANS. LENGTH 000

CURVE DC168 N SHEPHERD  
PI 48+72.81  
N 717,550.2160  
E 2,830,763.8836  
Δ 54° 21' 19" (LT)  
D 47° 44' 47"  
R 120.00  
L 113.84  
T 61.61  
SE 0.000 FT/FT  
DESIGN SPEED 30 MPH  
TRANS. LENGTH 000

CURVE DC169 S SHEPHERD  
PI 52+49.62  
N 717,349.8154  
E 2,831,094.0218  
Δ 16° 10' 22" (LT)  
D 7° 09' 43"  
R 800.00  
L 225.81  
T 113.66  
SE 0.000 FT/FT  
DESIGN SPEED 30 MPH  
TRANS. LENGTH 000

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	8D



CURVE DC167 N SHEPHERD  
PI 46+78.25  
N 717,746.7970  
E 2,830,748.8056  
Δ 36° 04' 28" (RT)  
D 47° 44' 47"  
R 120.00  
L 75.55  
T 39.08  
SE 0.000 FT/FT  
DESIGN SPEED 30 MPH  
TRANS. LENGTH 000

STR-2/PER

**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY

COORDINATES ARE NAD/83(1995),  
ARE DATUM ADJUSTED BY THE  
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THE TGRN. ALL ELEVATIONS ARE  
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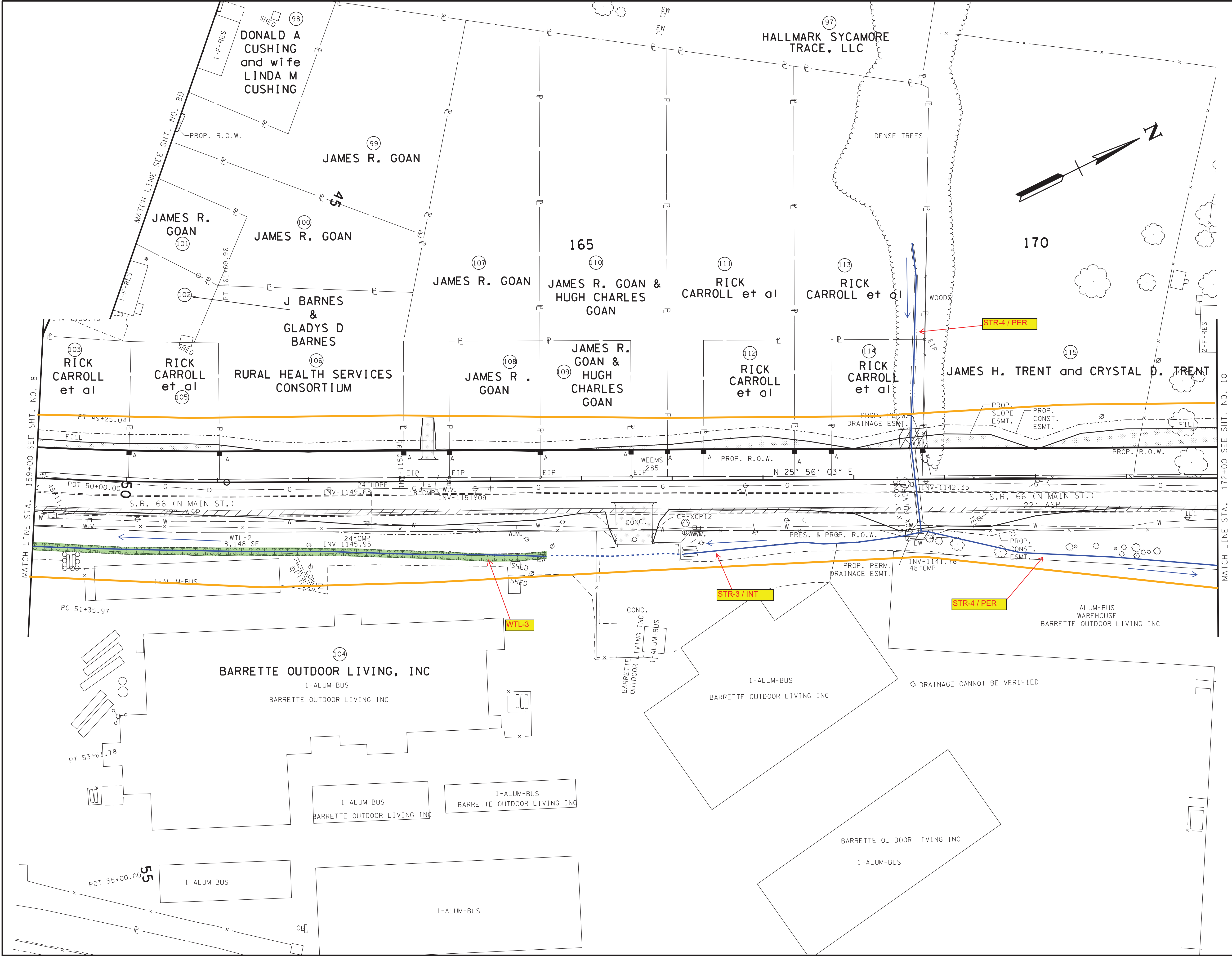
STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**

STA. 42+50 TO STA. 47+50

SCALE: 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	9



# PRELIMINARY FIELD REVIEW

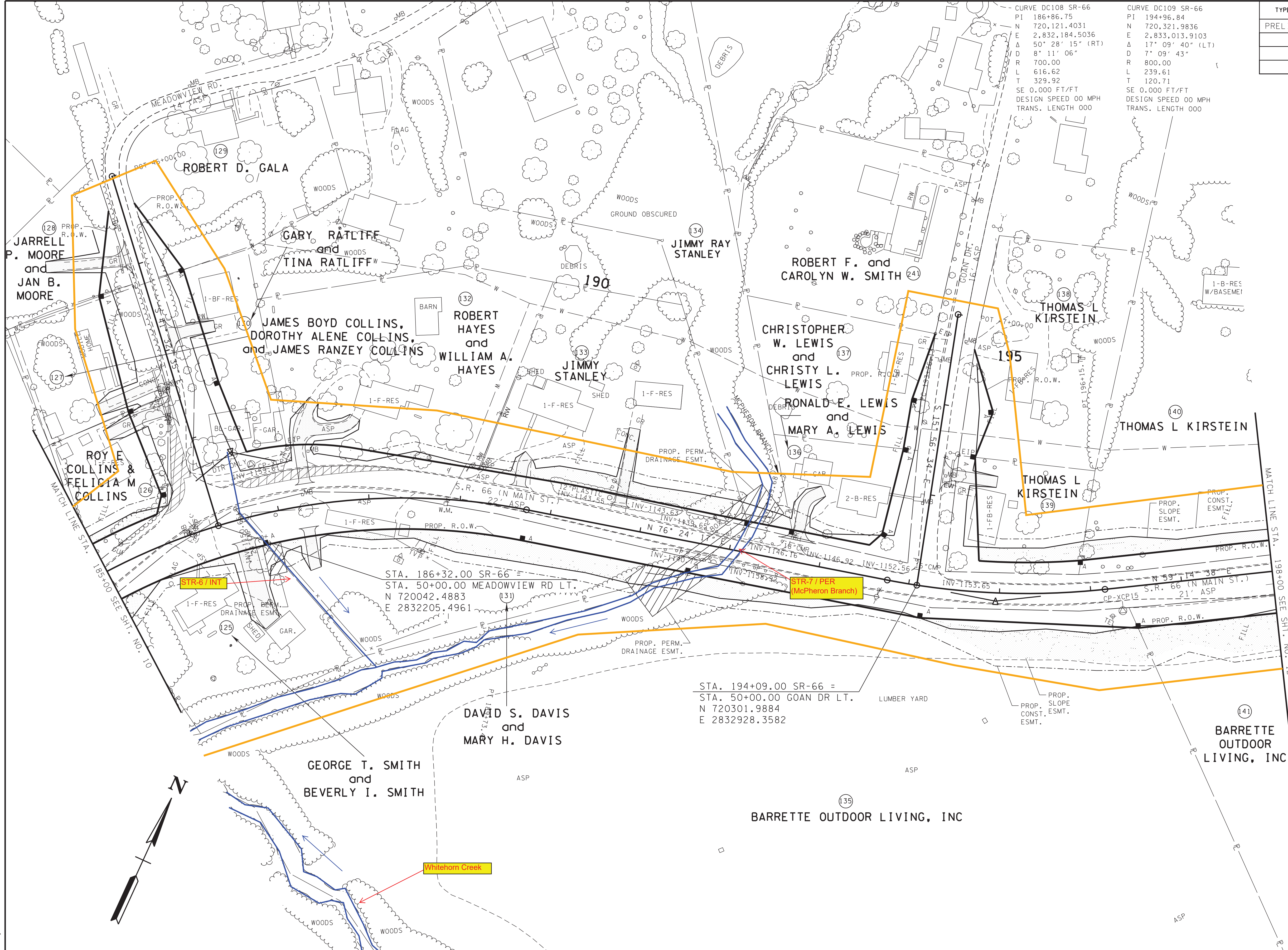
SEALED BY

COORDINATES ARE NAD/83(1995),  
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**  
STA. 159+00 TO STA. 172+00  
SCALE: 1"= 50'





TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	11

CURVE DC108 SR-66  
PI 186+86.75  
N 720.121.4031  
E 2,832.184.5036  
Δ 50° 28' 15" (RT)  
D 8° 11' 06"  
R 700.00  
L 616.62  
T 329.92  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000

CURVE DC109 SR-66  
PI 194+96.84  
N 720.321.9836  
E 2,833.013.9103  
Δ 17° 09' 40" (LT)  
D 7° 09' 43"  
R 800.00  
L 239.61  
T 120.71  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000

# PRELIMINARY FIELD REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995),  
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REFERENCED TO THE NAVD 1988.

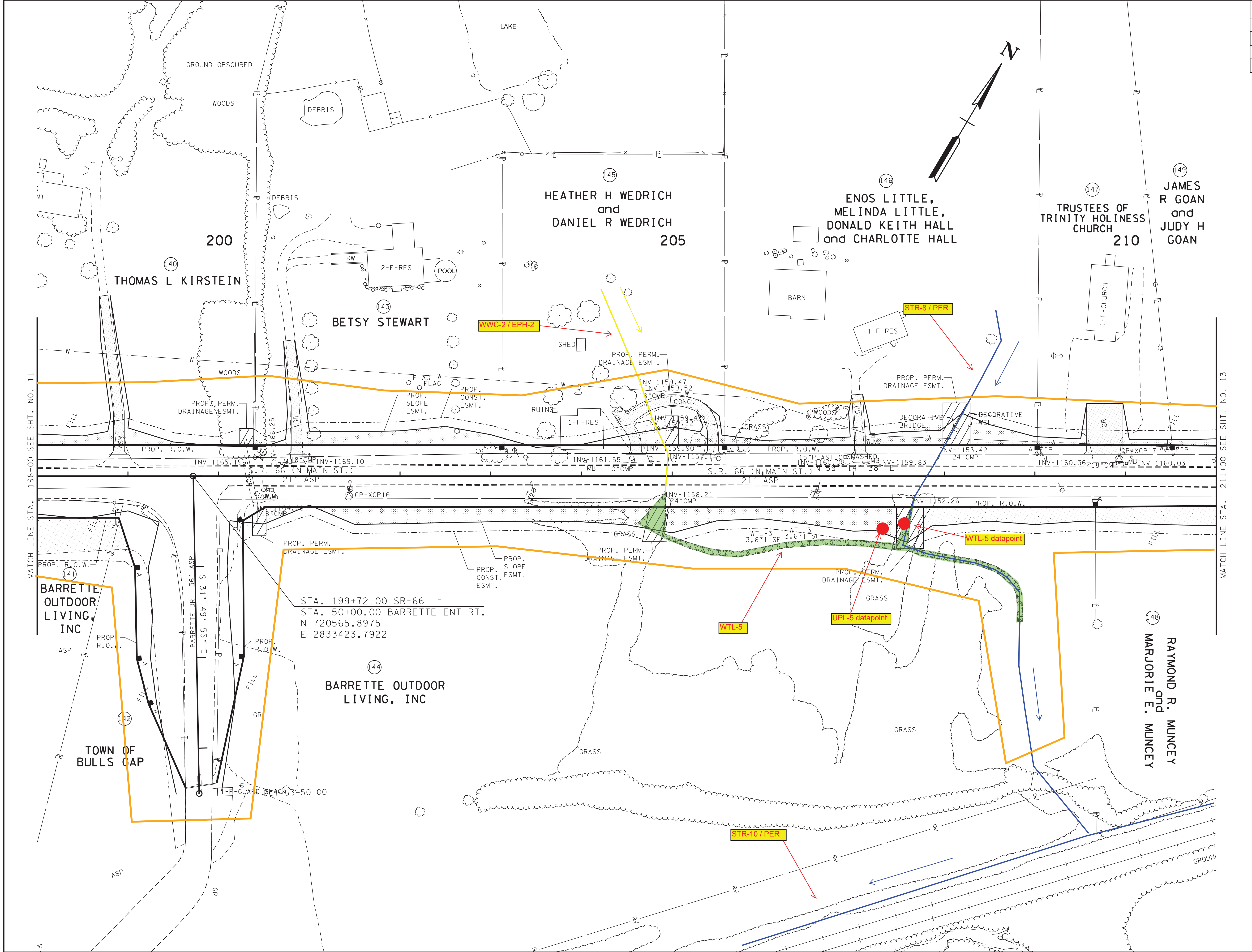
STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

## PRESENT LAYOUT

STA. 185+00 TO STA. 198+00

SCALE: 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	12



**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY

COORDINATES ARE NAD/83(1995),  
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

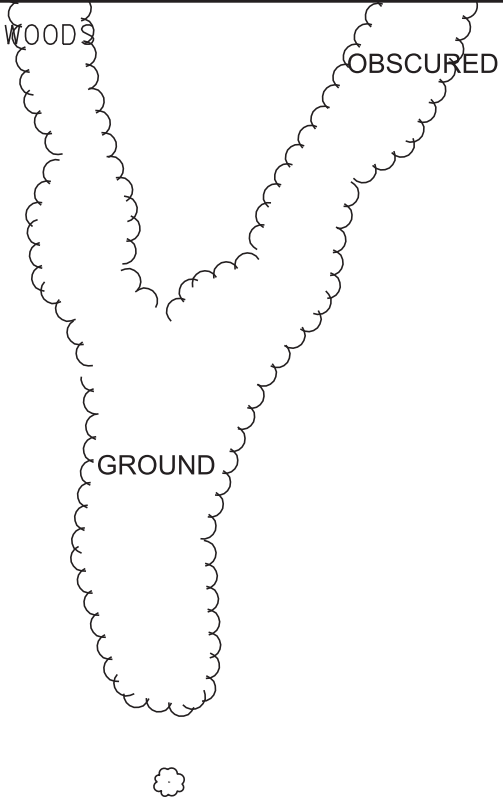
**PRESENT  
LAYOUT**

STA. 198+00 TO STA. 211+00

SCALE: 1"= 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	13

CURVE DC110 SR-66  
PI 219+38.45  
N 721,571.5092  
E 2,835,113.6592  
Δ 13° 22' 44" (LT)  
D 4° 24' 27"  
R 1,300.00  
L 303.56  
T 152.47  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000



(149)  
JAMES R GOAN  
and  
JUDY H GOAN

215

(150)  
ERIC C. GOAN  
and  
KARI GOAN

STR-9/PER

220

PRELIMINARY  
FIELD  
REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995),  
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

PRESENT  
LAYOUT

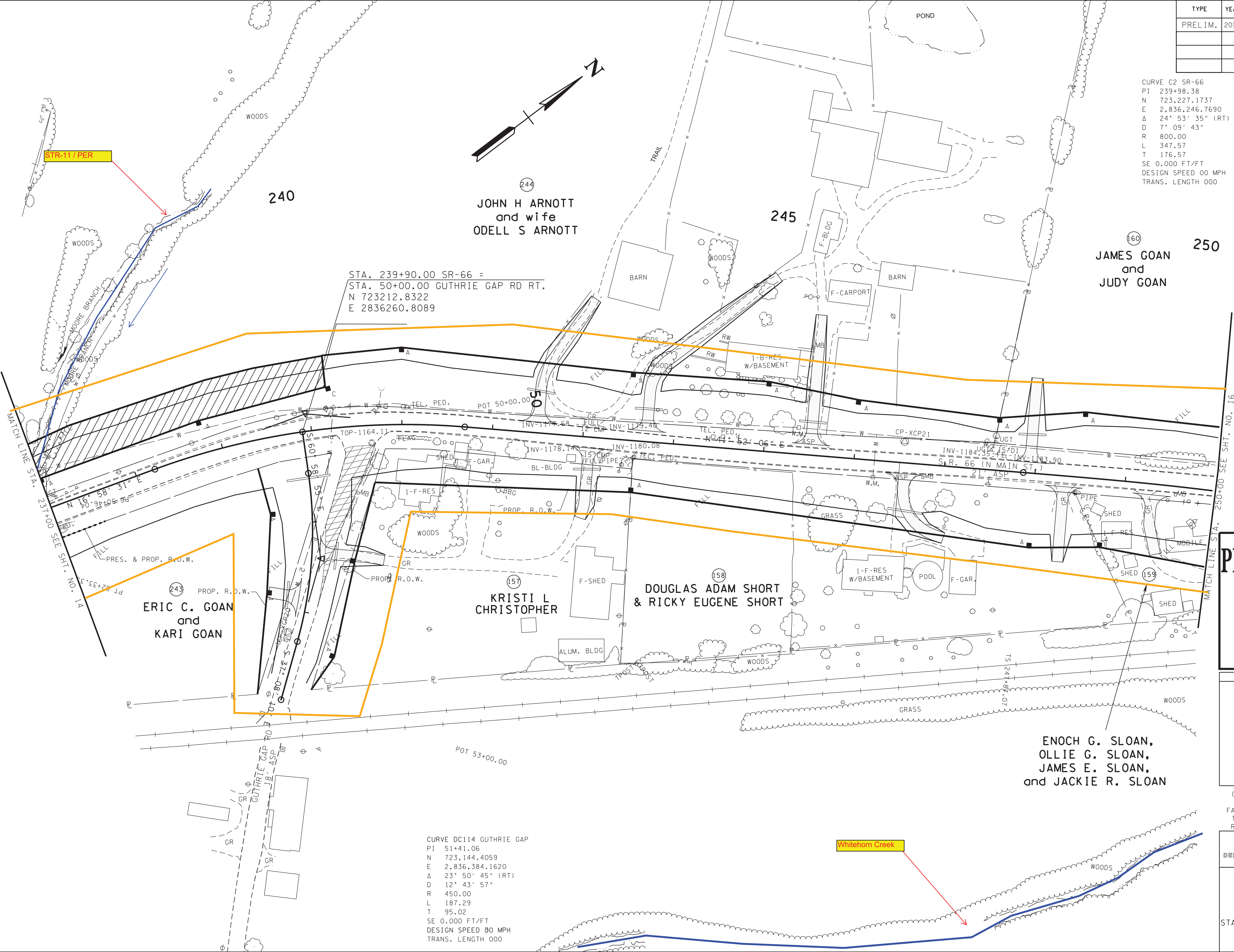
STA. 211+00 TO STA. 224+00

SCALE: 1"= 50'



TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	15

CURVE C2 SR-66  
PI 239+98.38  
N 723,227.1737  
E 2,836,246.7690  
Δ 24° 53' 35" (RT)  
D 7' 09' 43"  
R 800.00  
L 347.57  
T 176.57  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000



STA. 239+90.00 SR-66 =  
STA. 50+00.00 GUTHRIE GAP RD RT.  
N 723212.8322  
E 2836260.8089

CURVE DC114 GUTHRIE GAP  
PI 51+41.06  
N 723,144.4059  
E 2,836,384.1620  
Δ 23° 50' 45" (RT)  
D 12° 43' 57"  
R 450.00  
L 187.29  
T 95.02  
SE 0.000 FT/FT  
DESIGN SPEED 80 MPH  
TRANS. LENGTH 000

**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY

ENOCH G. SLOAN,  
OLLIE G. SLOAN,  
JAMES E. SLOAN,  
and JACKIE R. SLOAN

COORDINATES ARE NAD/83(1995),  
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

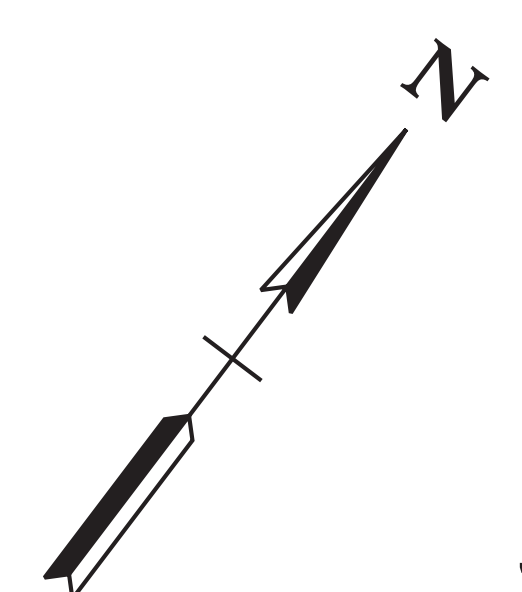
**PRESENT  
LAYOUT**

STA. 237+00 TO STA. 250+00

SCALE: 1"= 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	16

CURVE C31 SR-66  
PI 255+40.01  
N 724,379.3454  
E 2,837,279.4047  
Δs 31' 19" 41" (RT)  
Θs 2° 44' 59"  
Δc 25° 49' 42" (RT)  
Dc 2° 29' 59"  
Rc 2,292.00  
Lc 1,033.21  
Ts 752.94  
Ls 220.00  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000



160  
JAMES GOAN  
and  
JUDY GOAN

255

IMOGENE PATTERSON

260

MATCH LINE STA. 250+00 SEE SHT. NO. 15

GLENN L. RUSSELL

ENOCH G. SLOAN,  
OLLIE G. SLOAN,  
JAMES E. SLOAN,  
and JACKIE R. SLOAN

ALONZO J. BIRD JR  
and  
LORI A. BIRD

J C PATTERSON  
and wife  
IMOGENE PATTERSON

Whitehorn Creek

PRELIMINARY  
FIELD  
REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995),  
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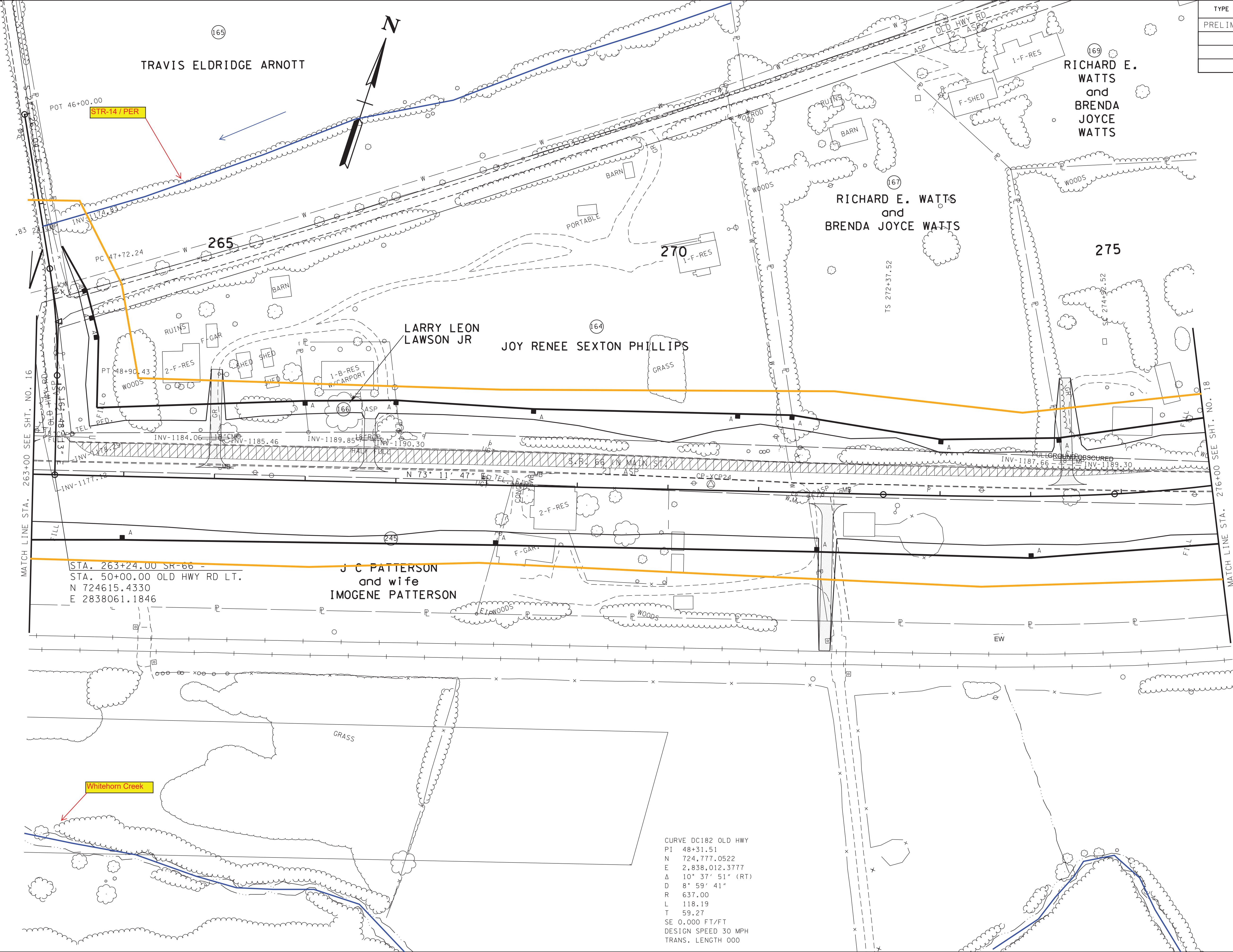
STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

PRESENT  
LAYOUT

STA. 250+00 TO STA. 263+00

SCALE: 1"= 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	17



# PRELIMINARY FIELD REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000070 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

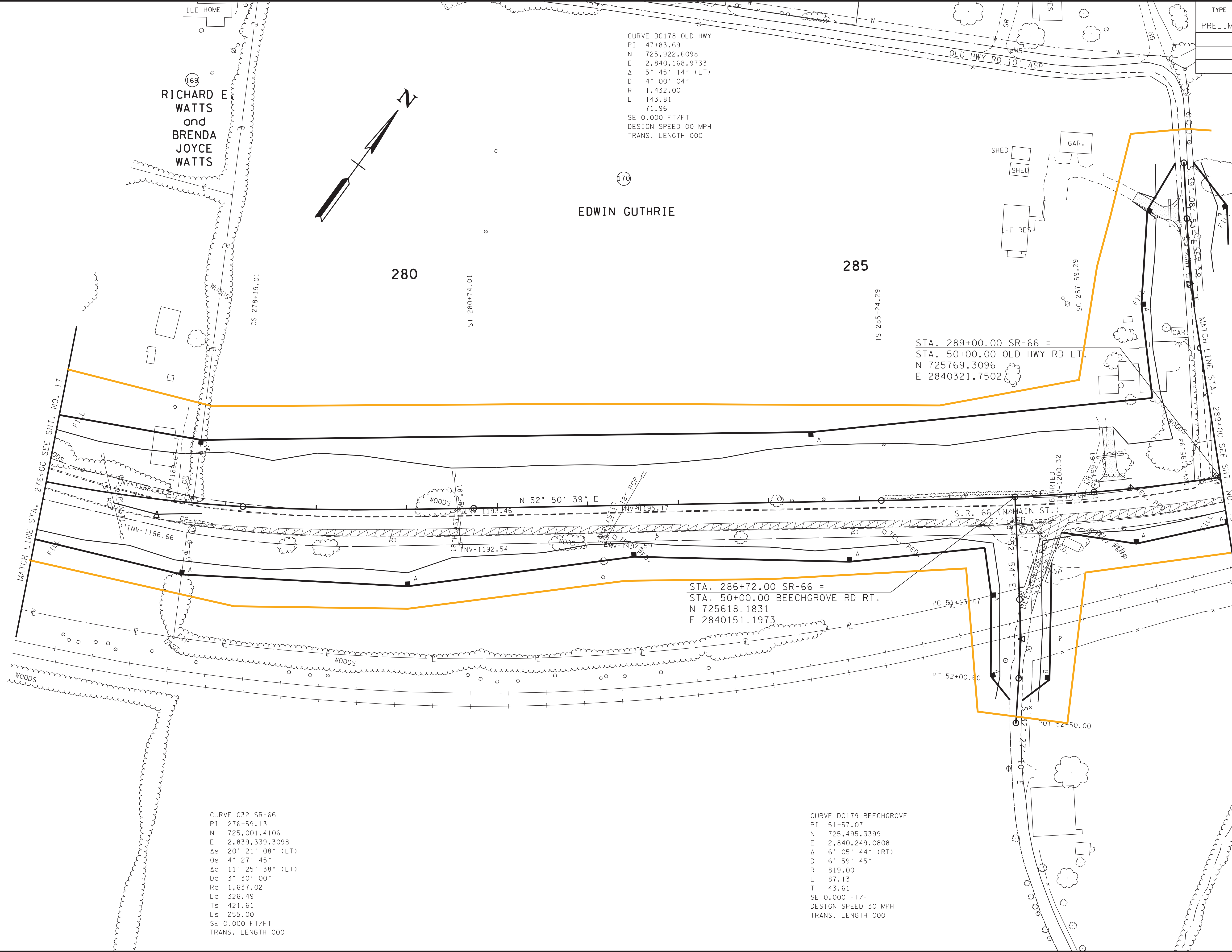
STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

## PRESENT LAYOUT

STA. 263+00 TO STA. 276+00

SCALE: 1"= 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	18



CURVE DC178 OLD HWY  
PI 47+83.69  
N 725,922.6098  
E 2,840,168.9733  
Δ 5° 45' 14" (LT)  
D 4° 00' 04"  
R 1,432.00  
L 143.81  
T 71.96  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000

STA. 289+00.00 SR-66 =  
STA. 50+00.00 OLD HWY RD LT.  
N 725769.3096  
E 2840321.7502

STA. 286+72.00 SR-66 =  
STA. 50+00.00 BEECHGROVE RD RT.  
N 725618.1831  
E 2840151.1973

CURVE C32 SR-66  
PI 276+59.13  
N 725,001.4106  
E 2,839,339.3098  
Δs 20° 21' 08" (LT)  
Θs 4° 27' 45"  
Δc 11° 25' 38" (LT)  
Dc 3° 30' 00"  
Rc 1,637.02  
Lc 326.49  
Ts 421.61  
Ls 255.00  
SE 0.000 FT/FT  
TRANS. LENGTH 000

CURVE DC179 BEECHGROVE  
PI 51+57.07  
N 725,495.3399  
E 2,840,249.0808  
Δ 6° 05' 44" (RT)  
D 6° 59' 45"  
R 819.00  
L 87.13  
T 43.61  
SE 0.000 FT/FT  
DESIGN SPEED 30 MPH  
TRANS. LENGTH 000

PRELIMINARY  
FIELD  
REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995),  
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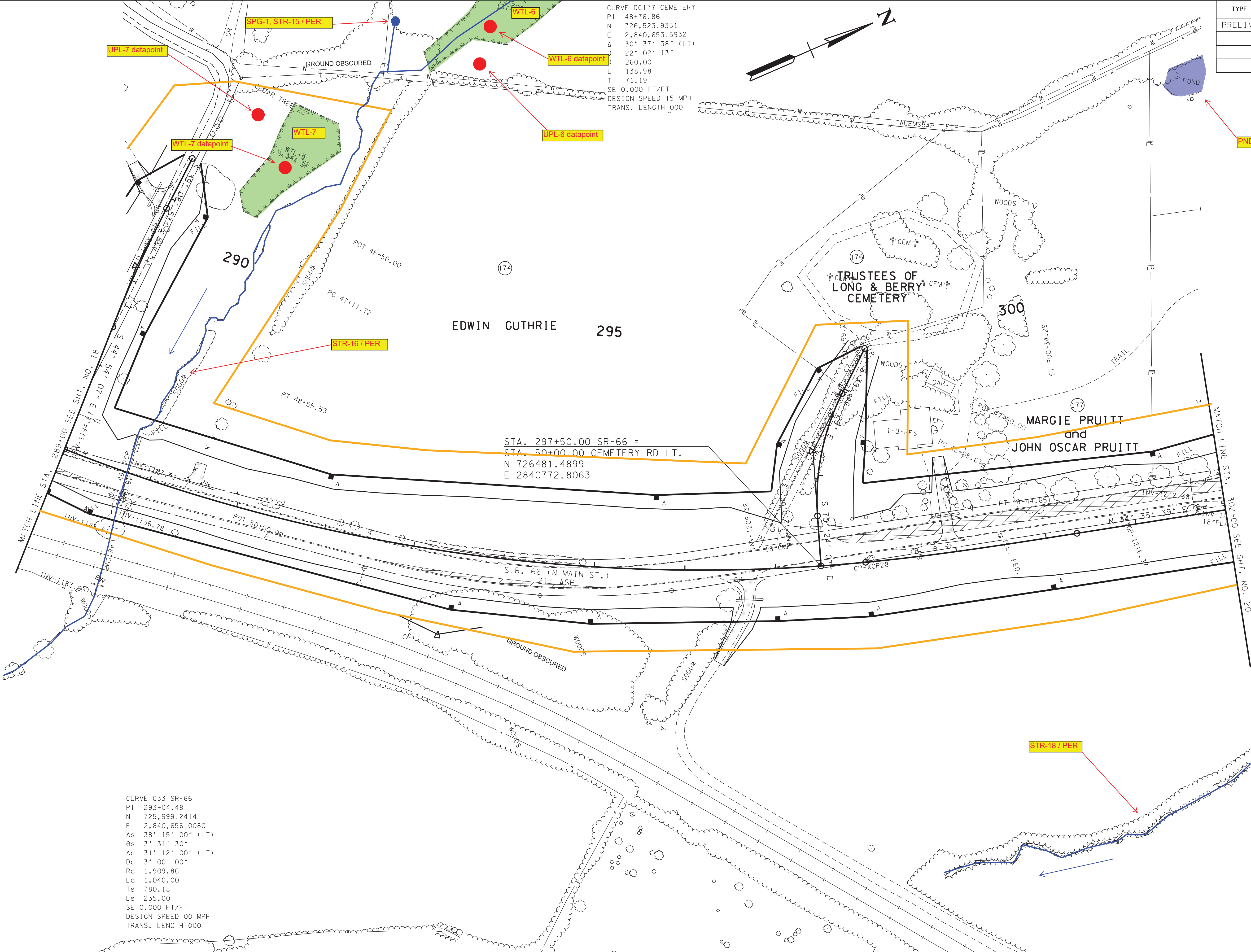
STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

PRESENT  
LAYOUT

STA. 276+00 TO STA. 289+00

SCALE: 1"= 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	19



CURVE DC177 CEMETERY  
PI 48+76.86  
N 726,523.9351  
E 2,840,653.5932  
Δ 30° 37' 38" (LT)  
22° 02' 13"  
260.00  
L 138.98  
T 71.19  
SE 0.000 FT/FT  
DESIGN SPEED 15 MPH  
TRANS. LENGTH 000

CURVE C33 SR-66  
PI 293+04.48  
N 725,999.2414  
E 2,840,656.0080  
Δs 38° 15' 00" (LT)  
θs 3° 31' 30"  
Ac 31° 12' 00" (LT)  
Dc 3° 00' 00"  
Rc 1,909.86  
Lc 1,040.00  
Ts 780.18  
Ls 235.00  
SE 0.000 FT/FT  
DESIGN SPEED 00 MPH  
TRANS. LENGTH 000

**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY

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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

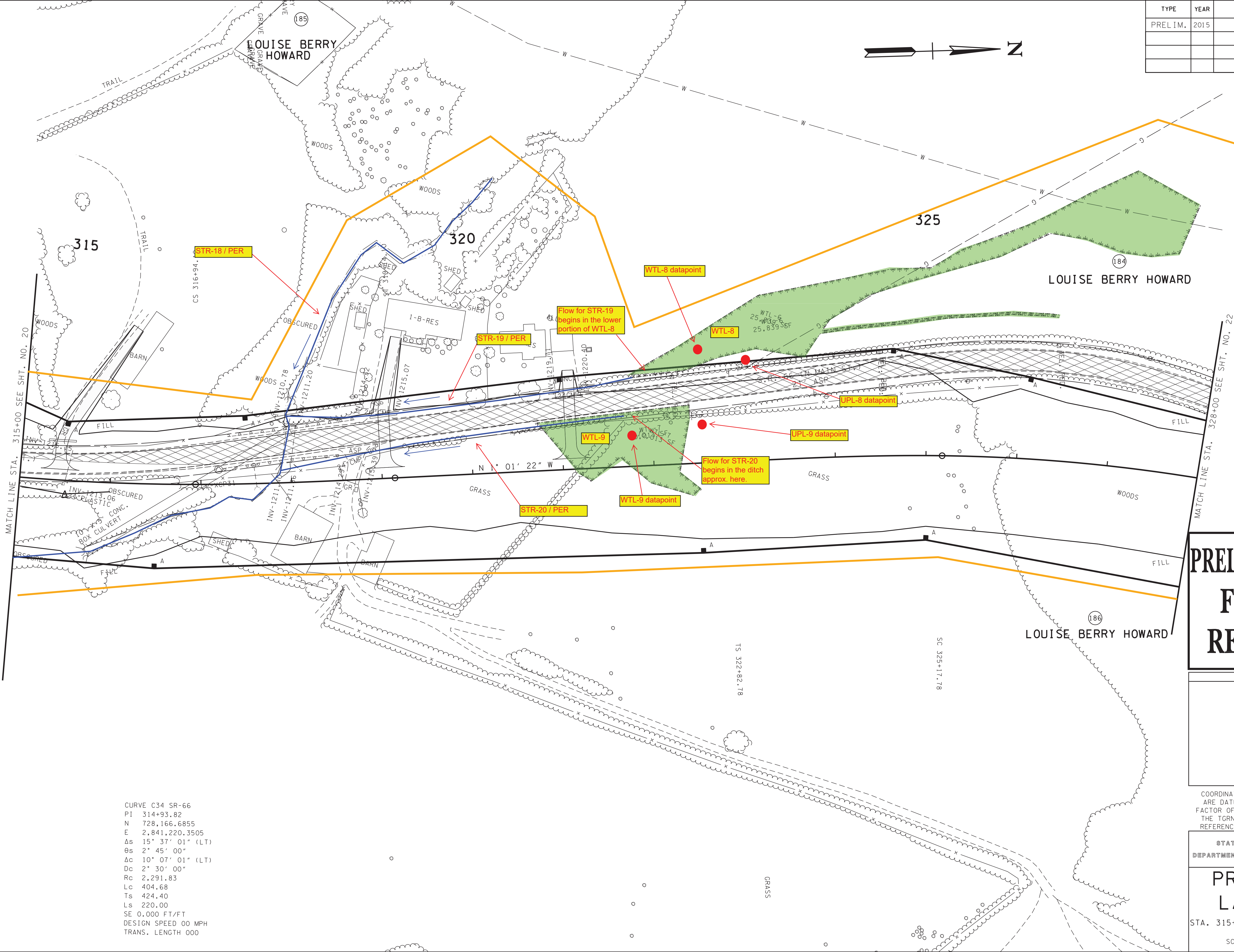
**PRESENT  
LAYOUT**

STA. 289+00 TO STA. 302+00

SCALE: 1"= 50'



TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	21



**PRELIMINARY  
FIELD  
REVIEW**

SEALED BY

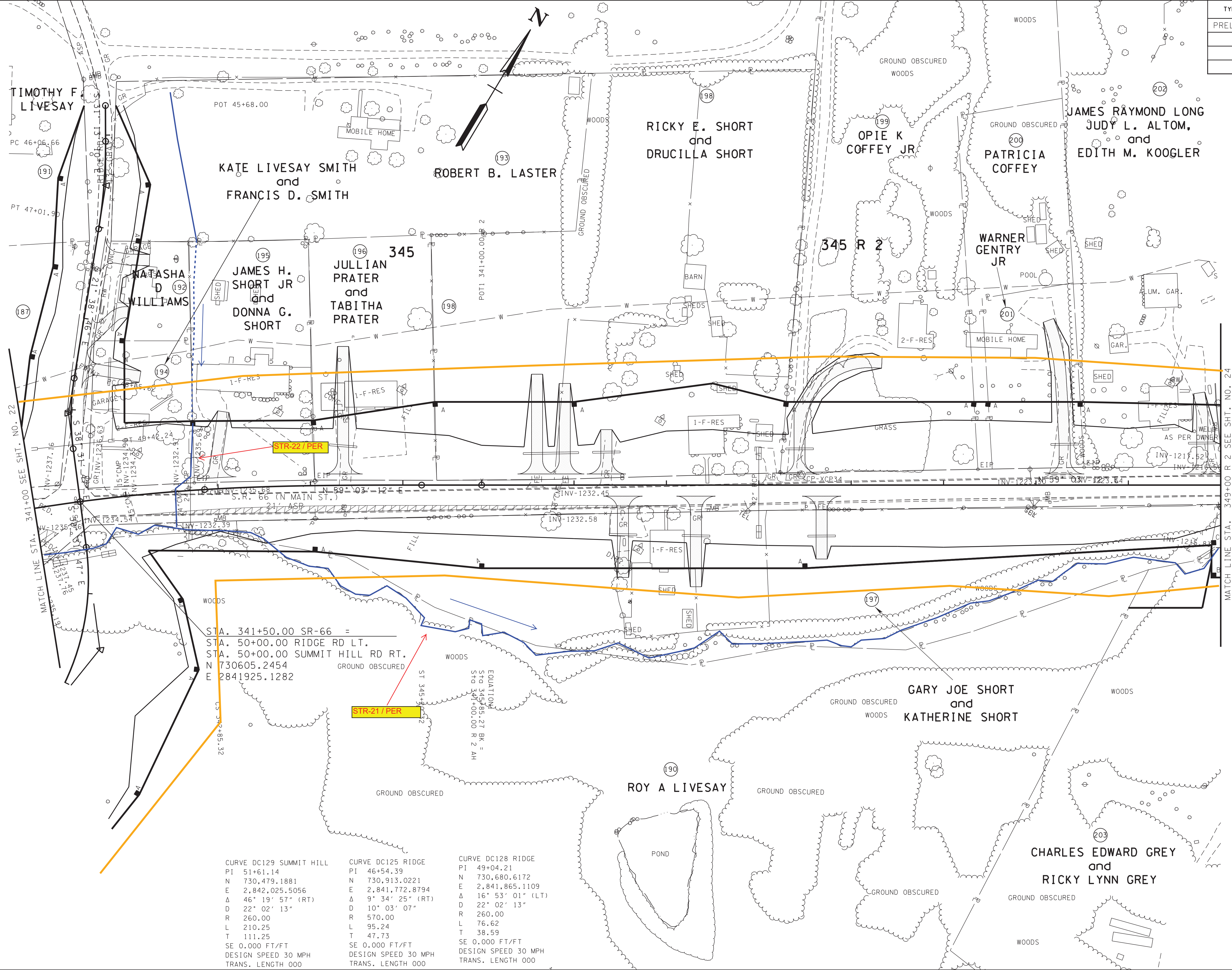
COORDINATES ARE NAD/83(1995),  
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**  
STA. 315+00 TO STA. 328+00  
SCALE: 1"= 50'



TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	23



# PRELIMINARY FIELD REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000070 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

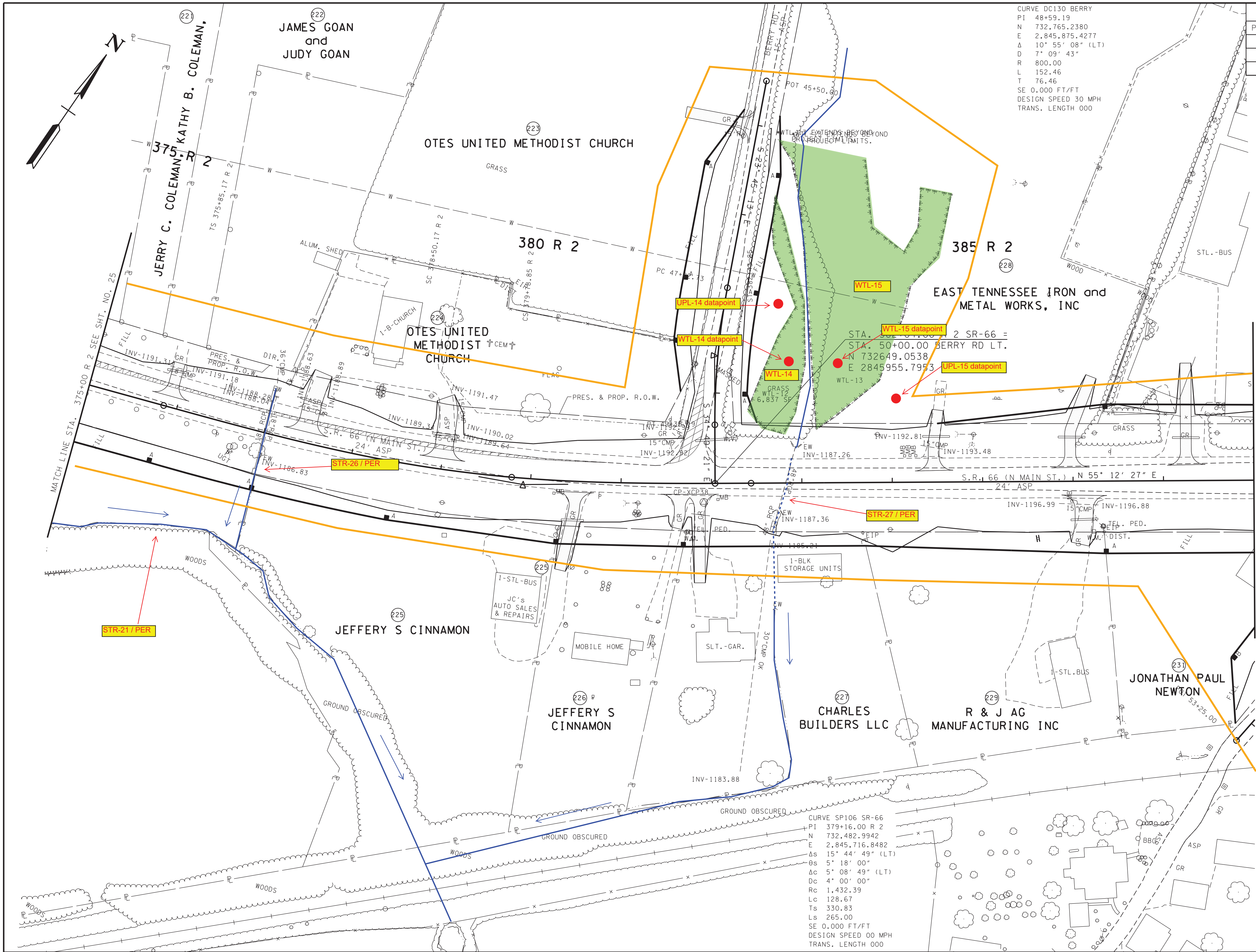
STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**  
STA. 341+00 TO  
STA. 345+85.27  
STA. 341+00 R 2 TO  
STA. 349+00 R 2  
SCALE: 1" = 50'





I/5/2018 1:49:26 PM  
V:\Projects\ANY\K4\28376\CADD\MTN\Sheets\026.sht



TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	26

# PRELIMINARY FIELD REVIEW

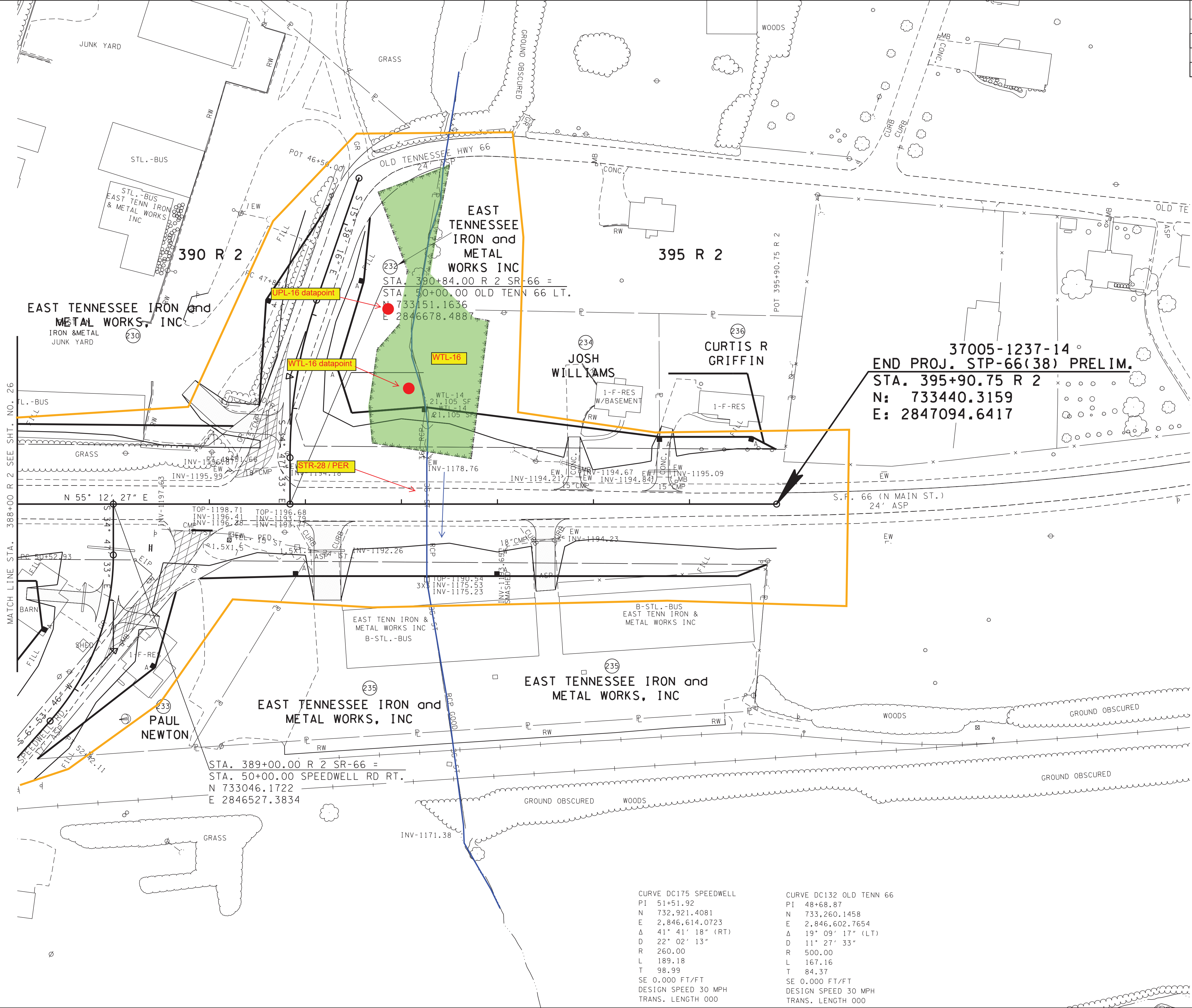
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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

**PRESENT  
LAYOUT**  
STA. 375+00 R 2 TO  
STA. 388+00 R 2  
SCALE: 1" = 50'

TYPE	YEAR	PROJECT NO.	SHEET NO.
PRELIM.	2015	STP-66(38)	27



# PRELIMINARY FIELD REVIEW

SEALED BY

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STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

## PRESENT LAYOUT

STA. 388+00 R 2 TO  
STA. 395+90.75 R 2

SCALE: 1"= 50'

CURVE DC175 SPEEDWELL	CURVE DC132 OLD TENN 66
PI 51+51.92	PI 48+68.87
N 732,921.4081	N 733,260.1458
E 2,846,614.0723	E 2,846,602.7654
Δ 41° 41' 18" (RT)	Δ 19° 09' 17" (LT)
D 22° 02' 13"	D 11° 27' 33"
R 260.00	R 500.00
L 189.18	L 167.16
T 98.99	T 84.37
SE 0.000 FT/FT	SE 0.000 FT/FT
DESIGN SPEED 30 MPH	DESIGN SPEED 30 MPH
TRANS. LENGTH 000	TRANS. LENGTH 000

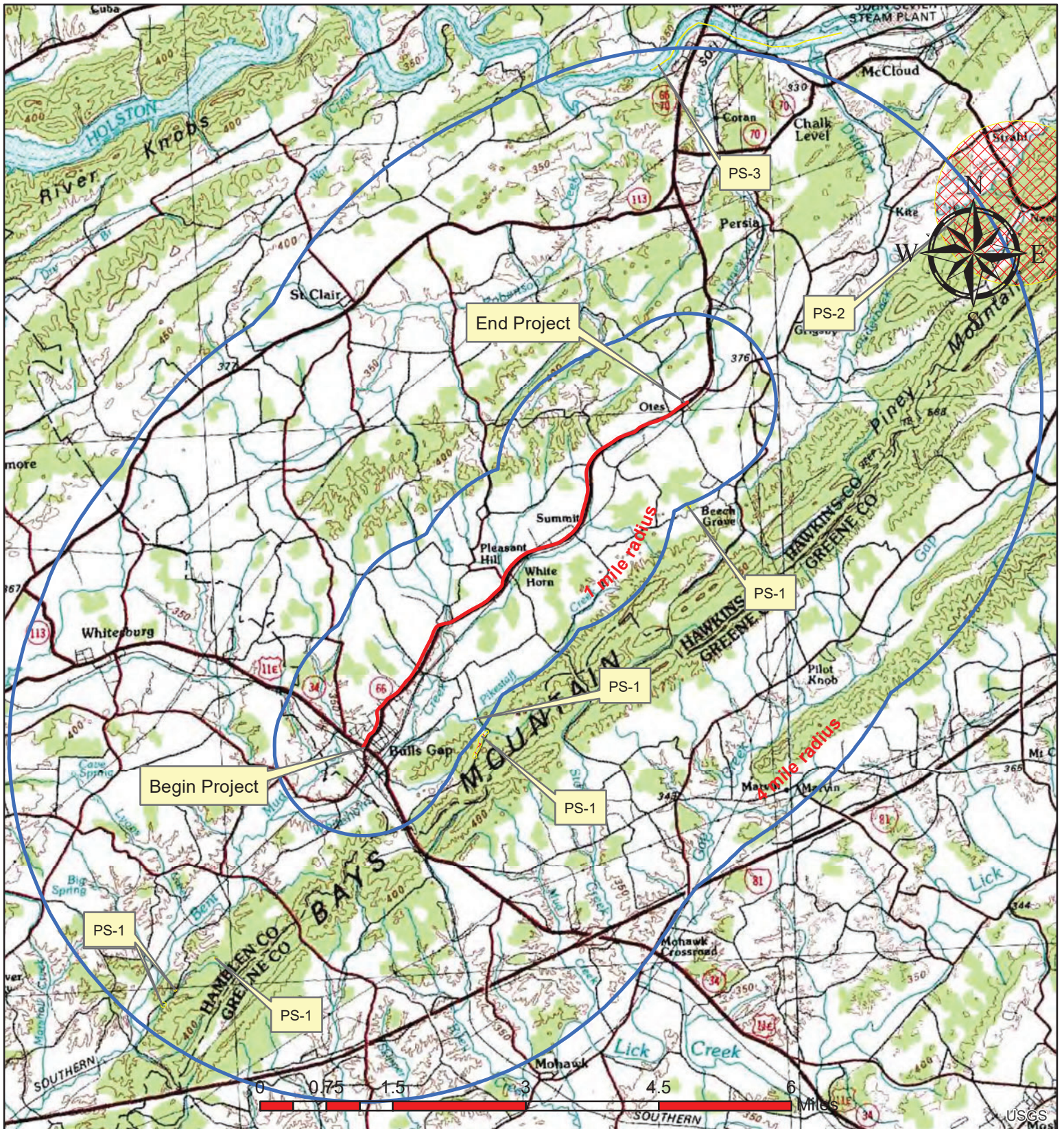
**SR-66 from SR-34 in Bulls Gap to south of Speedweel Rd./Old Hwy 66, Hawkins Co.  
PIN 107579.00. NEPA Impact table**

Labels	Type	Function	Quality	*Estimated Impacts		
				Permanent	Temporary	Total
Wetlands						
WTL-1	Emergent	Stormwater Storage	Undetermined at this time	0.0 ac.	0.0 ac	0.0 ac.
WTL-2	Emergent	Stormwater Storage	Undetermined at this time	0.002 ac.	0.0 ac.	0.002 ac.
WTL-3	Scrub/Shrub	Stormwater Storage	Undetermined at this time	0.06 ac.	0.0 ac.	0.06 ac.
WTL-4	Scrub/Shrub	Stormwater Storage	Undetermined at this time	0.0 ac.	0.0 ac.	0.0 ac.
WTL-5	Scrub/Shrub	Stormwater Storage	Undetermined at this time	0.03 ac.	0.0 ac.	0.03 ac.
WTL-6	Emergent	Stormwater Storage	Undetermined at this time	0.0 ac.	0.0 ac.	0.0 ac.
WTL-7	Scrub/Shrub	Stormwater Storage	Undetermined at this time	0.0 ac.	0.0 ac.	0.0 ac.
WTL-8	Emergent	Stormwater Storage	Undetermined at this time	0.01 ac.	0.0 ac.	0.01 ac.
WTL-9	Scrub/Shrub	Stormwater Storage	Undetermined at this time	0.23 ac.	0.0 ac.	0.23 ac.
WTL-10	Emergent	Stormwater Storage	Undetermined at this time	0.03 ac.	0.0 ac.	0.03 ac.
WTL-11	Emergent	Stormwater Storage	Undetermined at this time	0.03 ac.	0.0 ac.	0.03 ac
WTL-12	Emergent	Stormwater Storage	Undetermined at this time	0.07 ac.	0.0 ac.	0.07 ac.
WTL-13	Emergent	Stormwater Storage	Undetermined at this time	0.0 ac.	0.0 ac.	0.0 ac.
WTL-14	Scrub/Shrub	Stormwater Storage	Undetermined at this time	0.007 ac.	0.0 ac.	0.007 ac.
WTL-15	Emergent	Stormwater Storage	Undetermined at this time	0.0 ac.	0.0 ac.	0.0 ac.
WTL-16	Emergent	Stormwater Storage	Undetermined at this time	0.07 ac.	0.0 ac.	0.07 ac.
Streams						
WWC-1	Ephemeral		Undetermined at this time	0 ft.	0 ft.	0 ft.
STR-1	Perennial		Undetermined at this time	90 ft.	0 ft.	90 ft.
STR-2	Perennial		Undetermined at this time	80 ft.	0 ft.	80 ft.
STR-3	Intermittent		Undetermined at this time	0 ft.	250 ft.	250 ft.
STR-4	Perennial		Undetermined at this time	90 ft.	0 ft.	90 ft.

STR-5	Intermittent		Undetermined at this time	120 ft.	0 ft.	120 ft.
STR-6	Intermittent		Undetermined at this time	125 ft.	0 ft.	125 ft.
STR-7	Perennial		Undetermined at this time	110 ft.	0 ft.	110 ft.
WWC-2	Ephemeral		Undetermined at this time	60 ft.	0 ft.	60 ft.
STR-8	Perennial		Undetermined at this time	130 ft.	0 ft.	130 ft.
STR-9	Perennial		Undetermined at this time	65 ft.	0 ft.	65 ft.
STR-10	Perennial		Undetermined at this time	70 ft.	0 ft.	70 ft.
STR-11	Perennial		Undetermined at this time	110 ft.	0 ft.	110 ft.
STR-12	Perennial		Undetermined at this time	160 ft.	0 ft.	160 ft.
STR-13	Perennial		Undetermined at this time	110 ft.	0 ft.	110 ft.
STR-14	Perennial		Undetermined at this time	0 ft.	0 ft.	0 ft.
SPG-1 / STR-15	Perennial		Undetermined at this time	0 ft.	0 ft.	0 ft.
STR-16	Perennial		Undetermined at this time	90 ft.	0 ft.	90 ft.
WWC-3	Ephemeral		Undetermined at this time	0 ft.	0 ft.	0 ft.
STR-17	Perennial		Undetermined at this time	120 ft.	0 ft.	120 ft.
STR-18	Perennial		Undetermined at this time	270 ft.	0 ft.	270 ft.
STR-19	Intermittent		Undetermined at this time	0 ft.	325 ft.	325 ft.
STR-20	Intermittent		Undetermined at this time	0 ft.	325 ft.	325 ft.
STR-21	Perennial		Undetermined at this time	350 ft.	0 ft.	350 ft.
STR-22	Perennial		Undetermined at this time	100 ft.	0 ft.	100 ft.
STR-23	Intermittent		Undetermined at this time	90 ft.	0 ft.	90 ft.
WWC-4	Ephemeral		Undetermined at this time	125 ft.	0 ft.	125 ft.
STR-24	Perennial		Undetermined at this time	110 ft.	0 ft.	110 ft.
STR-25	Perennial		Undetermined at this time	80 ft.	0 ft.	80 ft.

STR-26	Perennial		Undetermined at this time	75 ft.	0 ft.	75 ft.
STR-27	Perennial		Undetermined at this time	90 ft.	0 ft.	90 ft.
STR-28	Perennial		Undetermined at this time	40 ft.	0 ft.	40 ft.
<b>Other Features</b>						
PND-1			N/A	None	None	None
PND-2			N/A	None	None	None
PND-3			N/A	None	None	None
PND-4			N/A	None	None	None
PND-5			N/A	Entire pond	None	Entire pond
PND-6			N/A	None	None	None
PND-7			N/A	None	None	None
PND-8			N/A	None	None	None
PND-9			N/A	None	None	None

\* Estimated impacts are based on preliminary R.O.W. plans dated 3/12/19 and are considered PRELIMINARY! These are ESTIMATES ONLY and will not be considered completely accurate until the time of Permit Application.



**Species Review Map**  
**SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy 66**  
**Hawkins County**

**Bulls Gap 171-SE**

**12-11-19**

**PIN 107579.00 P.E. No. 37005-1237-14**



# SR-66 from SR-34 to Speedwell Rd. / Old Hwy 66, Hawkins Co. PIN 107579.00 Species List 12-11-19

Map_ID	EO_ID	COMMON_NAME	SCIENTIFIC_NAME	FED_PROTECTION	ST_PROTECTION	LAST_OBS_DATE
PS-2	864	American Barberry	Berberis canadensis	--	S	1955-06-01
PS-3	12593	Cumberland Monkeyface	Quadrula intermedia	LE, XN	E	1973-PRE
PS-1	18808	Tennessee trillium	Trillium tennesseense	--	E	2018-04-16
PS-1, 1 mi.	18809	Tennessee trillium	Trillium tennesseense	--	E	2012-05-05
PS-1, 1 mi.	19225	Tennessee trillium	Trillium tennesseense	--	E	2014-04-24

Project: SR-66 from SR-66 in Bulls Gap to Speedwell Rd. / Old Hwy 66, Hawkins Co.

PE No. 37005-1237-14

PIN: 107579.00

Date of field study: 10-9-18, 10-19-19, 10-30-19

Date TDEC database checked: 10-12-16, 12-11-19

Completed by: Keven Brown

**Species reported within 1 mile radius of project:**

Species  Scientific and common names, followed by (A) for animal or (P) for plant	Status		Species is potentially present in R-O-W because: (A) it is listed by TDEC within ROW (B) habitat is present (C) observed during site visit (D) critical habitat present within ROW	Species is considered likely NOT present in R-O-W because: (A) Present habitat unsuitable (B) Not observed during site visit (C) Original record questionable (D) Considered extinct/extirpated	Accommodations to minimize impacts: (A) BMPs are sufficient to protect species (B) Special Notes are included on project plans (C) Individuals will be impacted. (D) Accommodations not practical due to broad habitat description or mobility of species	Habitat (include blooming, breeding or other information; where found according to TDEC database; year last observed; reference)	Notes
	Fed	TN					
PS-1, Tennessee trillium <i>Trillium tennesseeense</i> (P)	--	E		A		Wooded floodplains (TDEC/DNH 2016). Last obs. 2014.	

**Species reported within 1-mile to 4-mile radius of project:**

Species  Scientific and common names, followed by (A) for animal or (P) for plant	Status		Species is potentially present in R-O-W because: (A) it is listed by TDEC within ROW (B) habitat is present (C) observed during site visit (D) critical habitat present within ROW	Species is considered likely NOT present in R-O-W because: (A) Present habitat unsuitable (B) Not observed during site visit (C) Original record questionable (D) Considered extinct/extirpated	Accommodations to minimize impacts: (A) BMPs are sufficient to protect species (B) Special Notes are included on project plans (C) Individuals will be impacted. (D) Accommodations not practical due to broad habitat description or mobility of species	Habitat (include blooming, breeding or other information; where found according to TDEC database; year last observed; reference)	Notes
	Fed	TN					
PS-1, Tennessee trillium <i>Trillium tennesseeense</i> (P)	--	E		A		Wooded floodplains (TDEC/DNH 2016). Last obs. 2014.	

Project: SR-66 from SR-66 in Bulls Gap to Speedwell Rd. / Old Hwy 66, Hawkins Co.

PE No. 37005-1237-14

PIN: 107579.00

Species Scientific and common names, followed by (A) for animal or (P) for plant	Status		Species is potentially present in R-O-W because: (A) it is listed by TDEC within ROW (B) habitat is present (C) observed during site visit (D) critical habitat present within ROW	Species is considered likely NOT present in R-O-W because: (A) Present habitat unsuitable (B) Not observed during site visit (C) Original record questionable (D) Considered extinct/extirpated	Accommodations to minimize impacts: (A) BMPs are sufficient to protect species (B) Special Notes are included on project plans (C) Individuals will be impacted. (D) Accommodations not practical due to broad habitat description or mobility of species	Habitat (include blooming, breeding or other information; where found according to TDEC database; year last observed; reference)	Notes
PS-2, American barberry <i>Berberis canadensis</i> (P)	--	S	B		D	Open woods, on bluffs and cliffs and along river banks in the eastern and central United States (Gleason and Cronquist 1991, Cook et al. 1987, Fernald 1970, Small 1933). Last obs. 1955.	
PS-3, Cumberland monkeyface <i>Quadrula intermedia</i> (A)	LE, XN	E		A		Shallow riffle and shoal areas of headwater streams and bigger rivers. It prefers clean, fast-flowing water in shoal conditions, and has never been found in the ponded stretches of rivers, nor is it known from small streams (USFWS, 1984). It has been found living in a sand and gravel substrate in 6 inches to 2 feet of water (Bogan and Parmalee, 1983). Last obs. 1973-PRE.	No effect.

**Migratory Birds**List **significant concentrations** of migratory birds encountered within the project area (rookeries, aggregations, nesting areas, etc.).

Species (Scientific and Common Name)	Approximate No. of Nests (or Individuals)	Location of Nests (or Individuals) (Include Latitude & Longitude)	Nesting Dates and Reference	Photograph #
NONE				

Project: SR-66 from SR-66 in Bulls Gap to Speedwell Rd. / Old Hwy 66, Hawkins Co.

PE No. 37005-1237-14

PIN: 107579.00

USFWS letter: Yes **X** (attached) No    (TDOT/USFWS/FHWA Grouped Programmatic, June 2017)Biological Assessment: Yes    (response letter attached; see below) No **X**

Species (scientific and common names)	USFWS conclusion <sup>1</sup>

<sup>1</sup> Choose from "no effect"; "not likely to adversely affect;" or "likely to adversely affect;". If "likely to adversely affect" is chosen, indicate "no jeopardy to species and no adverse modification to habitat" or "jeopardy to species, or adverse modification to habitat" based on FWS concurrence letter

**List Natural Areas, management areas, refuges, or similar sites within or adjacent to project (attach 7.5 minute topographic map with pertinent boundaries of area marked)**

Area Name	Type of Area	Pertinent Notes
NONE		

**List locations that contain potential Indiana bat habitat (Provide an aerial that indicates areas checked)**

Location (description; lat/long or station number)	Tree Species	Photograph #



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**ENVIRONMENTAL DIVISION**  
SUITE 900, JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-1402  
(615) 741-3655

**CLAY BRIGHT**  
COMMISSIONER

**BILL LEE**  
GOVERNOR

December 11, 2019

Mr. John Griffith  
US Dept. of Interior  
Fish and Wildlife Service  
446 Neal St.  
Cookeville, TN 38501

Subject: **Species Coordination Update**  
SR-66 from SR-34 in Bulls Gap to south of Speedwell Rd. / Old Hwy 66,  
Hawkins County, TN  
PIN: **107579.00** P.E. No. **37005-1237-14**

Dear Mr. Griffith:

The subject project was coordinated with your office on March 20, 2012. No species were given for consideration at that time as per the attached response dated April 9, 2012. This project was re-coordinated on November 1, 2016. The response from your office dated November 21, 2016 (attached) indicated that potential project impacts to the federally endangered Indiana bat (*Myotis sodalis*) and federally threatened Northern long-eared bat (*Myotis septentrionalis*) should be addressed. The alignment of the project has changed since that time and is being re-coordinated to address any potential species issues your office may have concerning the subject project.

The scope for this 5.6 mile project has not changed since the initial coordination was completed and involves construction of 2 @ 12 traffic lanes with 10 ft. shoulders. However, the one mile section that was previously designed to be on new alignment has been changed so that the entire project will now be constructed along the existing SR-66 roadway alignment. I have attached location maps and plans for your use. It is requested that you provide us with a list of threatened or endangered species that may be present in the vicinity of the proposed project.

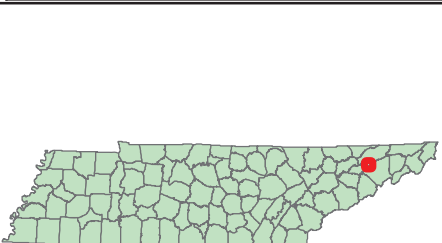
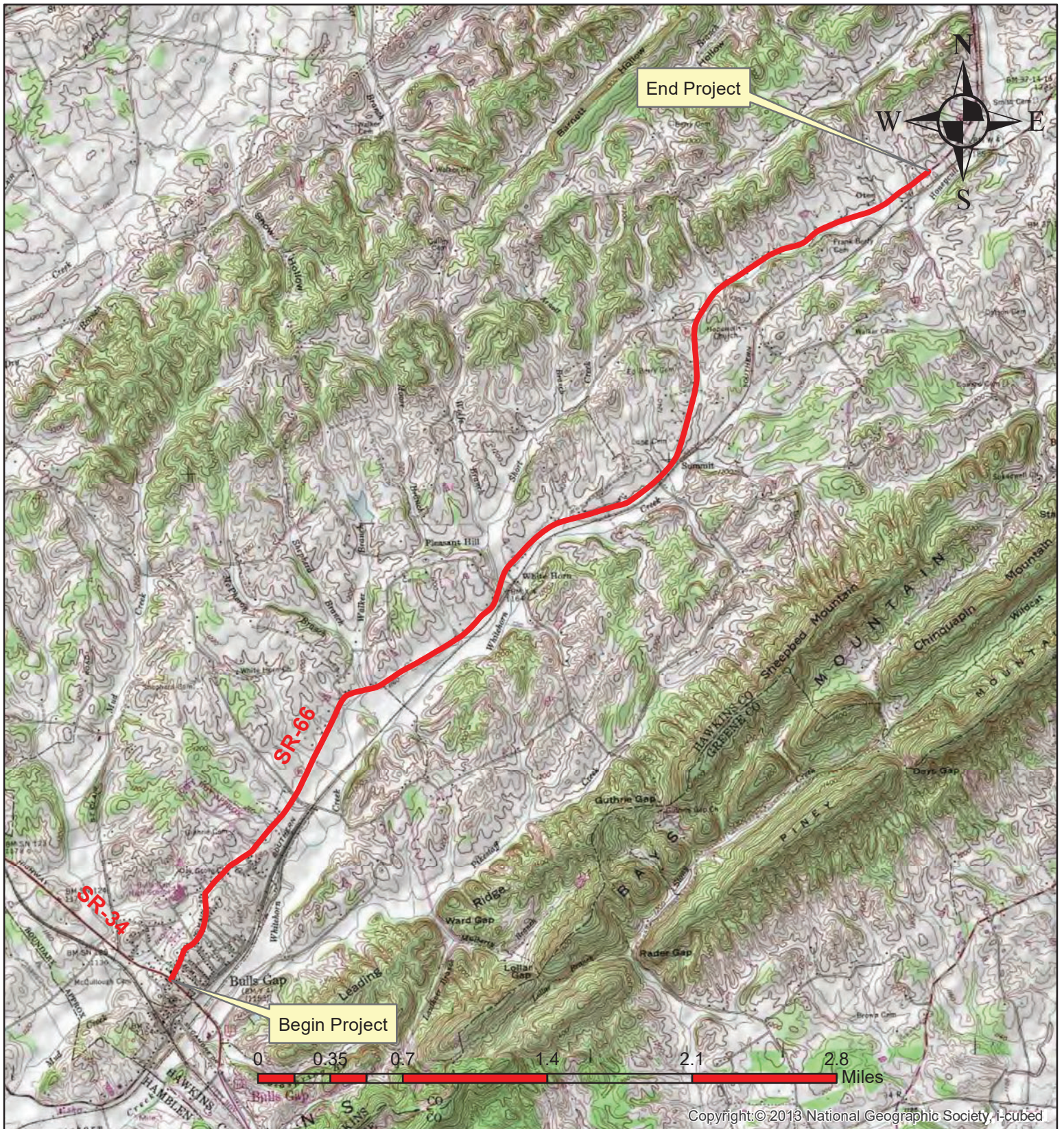
The above coordination and request for endangered species information is in compliance with the U.S. Fish and Wildlife Coordination Act of 1958, and the Endangered Species Act of 1973, as amended. Thank you for your assistance with this project. If you have any questions or need additional information, please do not hesitate to contact me at [Keven.Brown@tn.gov](mailto:Keven.Brown@tn.gov) or (865) 594-2437.

Sincerely,

Keven Brown  
Biologist, TDOT Region 1  
Ecology Section

*Attachments: April 9, 2012 and November 21, 2016 response letters, project location maps, project plans*

Copies:     *Region 1 Project Development* – John Barrett, Michael Palmer  
              *TDOT HQ* – Matt Richards, Dennis Crumby  
              *TWRA* – Rob Todd, Vince Pontello  
              *NEPA Documentation Office* – [TDOT.Env.NEPA@tn.gov](mailto:TDOT.Env.NEPA@tn.gov)  
              *FileNet*



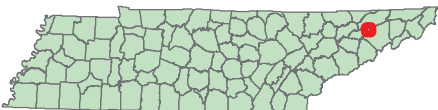
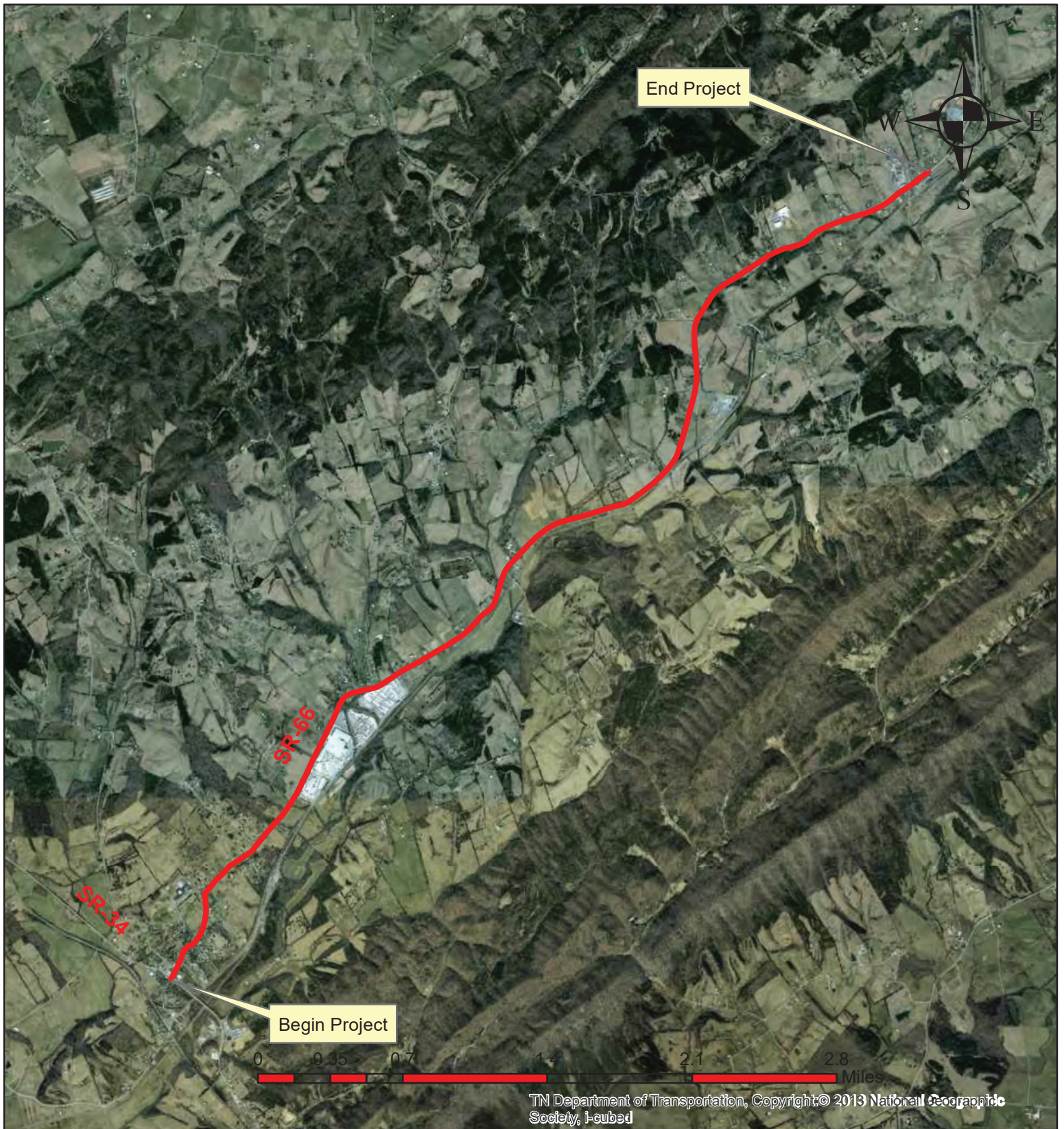
**Location Map - topo**  
**SR-66 from SR-34 in Bulls Gap to south of Speedwell Road**  
**Hawkins County, TN**

**Bulls Gap 171-SE**

**9-20-18**

**PIN 107579.00 P.E. #37005-1237-14**





Location Map - aerial  
SR-66 from SR-34 in Bulls Gap to south of Speedwell Road  
Hawkins County, TN

Bulls Gap 171-SE

9-20-18

PIN 107579.00 P.E. #37005-1237-14





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

446 Neal Street  
Cookeville, TN 38501

April 9, 2012

Mr. Keven Brown  
Tennessee Department of Transportation  
Environmental Planning and Permits  
James K. Polk Building, Suite 900  
505 Deaderick Street  
Nashville, Tennessee 37243-0349

Subject: FWS# 12-CPA-0382. State Route 66 construction from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66; P.E. 37005-1237-14, PIN# 107579.00, Hawkins County, Tennessee.

Dear Mr. Brown:

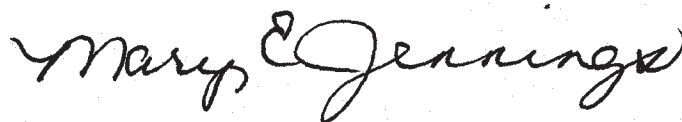
Thank you for your correspondence dated March 20, 2012, regarding the proposal to construct State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. The Tennessee Department of Transportation has requested a list of threatened or endangered species that may be present within the project area. Personnel of the U.S. Fish and Wildlife Service have reviewed the subject proposal and offer the following comments.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact area of the project. We note, however, that collection records available to the Service may not be all-inclusive. Our data base is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitat and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality. However, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Information available to the Service does not indicate that wetlands exist in the vicinity of the proposed project. However, our wetland determination has been made in the absence of a field inspection and does not constitute a wetland delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted if other evidence, particularly that obtained during an on-site inspection, indicates the potential presence of wetlands.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at [john\\_griffith@fws.gov](mailto:john_griffith@fws.gov).

Sincerely,

A handwritten signature in cursive script that reads "Mary E. Jennings". The signature is written in dark ink and is positioned above the printed name and title.

Mary E. Jennings  
Field Supervisor



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Tennessee ES Office  
446 Neal Street  
Cookeville, Tennessee 38501



November 21, 2016

Mr. Keven Brown  
T.E.S.S. Supervisor  
Region 1 Project Development  
Environmental Technical Office  
7345 Region Lane, Knoxville, Tennessee 37914

Subject: FWS# 17-CPA-0142. State Route 66 construction from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66; P.E. 37005-1237-14, PIN# 107579.00, Hawkins County, Tennessee.

Dear Mr. Brown:

Thank you for your correspondence dated November 1, 2016, regarding the proposal to construct State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. The Tennessee Department of Transportation (TDOT) has requested a list of threatened or endangered species that may be affected by the project. Personnel of the U.S. Fish and Wildlife Service (Service) have reviewed the subject proposal and offer the following comments.

A review of the information provided indicates that some potentially suitable roosting habitat for the federally endangered Indiana bat (*Myotis sodalis*) and threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*) may be removed for the project, particularly where stream crossings occur. A Range-wide Programmatic Consultation between the Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration, and the Service identifies transportation-related activities that are not anticipated to result in adverse effects to the Indiana bat or NLEB. These activities include all wintertime forested clearing within 100 feet of roadway surface or railroad ballast that do not remove known roosts or documented foraging/travel corridors and is no closer than one-half mile from the entrance of a documented hibernaculum. If TDOT can implement necessary protective measures, the project would be eligible for placement under the consultation herein referenced with determinations of "not likely to adversely affect" for the Indiana bat and NLEB. In order to identify any project placed under this consultation, TDOT should complete the Project Submittal Form located under Appendix B of the User's Guide and submit it to our office. If we do not notify your agency within fourteen (14) days, TDOT can assume that no further coordination with our office is required for these species.

Information available to the Service does not indicate that wetlands exist in the vicinity of the proposed project. However, our wetland determination has been made in the absence of a field inspection and does not constitute a wetland delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted if other evidence, particularly that obtained during an on-site inspection, indicates the potential presence of wetlands.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at [john\\_griffith@fws.gov](mailto:john_griffith@fws.gov).

Sincerely,

A handwritten signature in blue ink that reads "Mary E. Jennings". The signature is written in a cursive, flowing style.

Mary E. Jennings  
Field Supervisor



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Tennessee ES Office  
446 Neal Street  
Cookeville, Tennessee 38501



December 17, 2019

Mr. Keven Brown  
T.E.S.S. Supervisor  
Region 1 Project Development  
Environmental Technical Office  
7345 Region Lane, Knoxville, Tennessee 37914

Subject: FWS# 17-I-0088. State Route 66 construction from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66; P.E. 37005-1237-14, PIN# 107579.00, Hawkins County, Tennessee.

Dear Mr. Brown:

Thank you for your correspondence dated December 11, 2019, requesting an updated coordination for the proposal to construct State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. Since last coordinated with our office, the design has changed from construction along a partially new alignment to constructing entirely along the existing alignment. The Tennessee Department of Transportation (TDOT) has requested a list of threatened or endangered species that may be affected by the project. Personnel of the U.S. Fish and Wildlife Service (Service) have reviewed the subject proposal and offer the following comments.

Upon review of the information provided and our database, we would not anticipate impacts to any federally listed or proposed species as a result of the project. Therefore, based on the best information available at this time, we believe that the requirements of section 7 of the Endangered Species Act (Act) of 1973, as amended, are fulfilled for all species that currently receive protection under the Act. Obligations under the Act should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

If you have any questions regarding our comments, please contact John Griffith of my staff at 931/525-4995 or by email at [john\\_griffith@fws.gov](mailto:john_griffith@fws.gov).

Sincerely,

Virgil Lee Andrews, Jr.  
Field Supervisor

## Keven Brown

---

**From:** Griffith, John <john\_griffith@fws.gov>  
**Sent:** Wednesday, December 18, 2024 5:01 PM  
**To:** Keven Brown  
**Cc:** Dennis Crumby; Mark Doty; Giddens, David W; Martin, Santiago; Sikula, Nicole R  
**Subject:** Re: [EXTERNAL] SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy. 66, Hawkins Co. PIN 107579.00

### This Message Is From an External Sender

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Keven,

Thank you for the telephone conversation and correspondence requesting a project update for the proposed improvements to State Route 66 from State Route 34 in Bulls Gap to south of Speedwell Road/Old Highway 66 in Hawkins County, Tennessee. The scope of work has not changed significantly since last coordinated with our office in December of 2019. However, due to the time elapsed and new species listings, you are requesting any additional concerns and our updated project section 7 clearance.

A review of the information provided and our database does not indicate that any federally listed or proposed species or designated critical habitat would be impacted by the project. Therefore, based on the best information available at this time, we believe that the requirements of the Endangered Species Act (ESA) are fulfilled for all species that currently receive protection under the ESA. Obligations under section 7 of the ESA should be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Standard construction BMPs would be necessary to ensure that project-related pollutants are kept out of project area streams. Equipment staging and maintenance areas should be developed an adequate distance away from streams to prevent the introduction of petroleum-based pollutants into the water. Fresh concrete and cement dust must be kept out of the water as they alter chemical properties and can be toxic to aquatic species. Work at crossings should be scheduled during a lower flow period.

This email will serve as our official project response. Please let me know if we can offer further assistance. Thanks,

John Griffith  
Transportation Biologist  
U.S. Fish and Wildlife Service  
Tennessee Field Office  
931-444-1393 (office)  
931-261-3755 (cell)

---

**From:** Keven Brown <Keven.Brown@tn.gov>  
**Sent:** Wednesday, December 4, 2024 2:42 PM  
**To:** Griffith, John <john\_griffith@fws.gov>

**Cc:** Dennis Crumby <Dennis.Crumby@tn.gov>; Mark Doty <Mark.Doty@tn.gov>

**Subject:** [EXTERNAL] SR-66 from SR-34 to south of Speedwell Rd. / Old Hwy. 66, Hawkins Co. PIN 107579.00

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

John,

Due to the length of time that has passed since the last species review, I'm requesting an update of the previous species coordination (response attached) for the subject project. If you have any questions, or need any additional information, please let me know. Thanks!



**Keven Brown** | Team Lead  
Region 1 Environmental Section  
Admin. Building, 2<sup>nd</sup> Floor  
7345 Region Lane, Knoxville, TN 37914  
p. 865-594-2437 c. 865-469-7348  
[keven.brown@tn.gov](mailto:keven.brown@tn.gov)  
[tn.gov/tdot](http://tn.gov/tdot)

## Keven Brown

---

**From:** Vincent Pontello  
**Sent:** Friday, December 13, 2019 12:29 PM  
**To:** Keven Brown  
**Cc:** Rob Todd  
**Subject:** Re: SR-66 from SR-34 to south of Old Speedwell Rd. / Old Hwy 66, Hawkins Co. PIN 107579.00

Keven,

Thank you for the update. My original comments dated March 26, 2012 noted below still stand as the TWRA response. Please contact me if you need further assistance.

"My current data shows no occurrences of state listed species within four miles of project location. In addition to the implementation of TDOT BMPs, I ask that site visits are made by qualified TDOT personnel, to insure erosion control measures are being followed, wherever aquatic resource protection is warranted throughout project area. Please contact me if you have any further questions."

Vincent L. Pontello  
Wildlife Biologist  
Liaison to Federal Highway Admin. & TDOT  
Tennessee Wildlife Resources Agency  
Environmental Services Division

---

**From:** Keven Brown <Keven.Brown@tn.gov>  
**Sent:** Wednesday, December 11, 2019 2:15 PM  
**To:** Vincent Pontello <Vincent.Pontello@tn.gov>  
**Cc:** John Barrett <John.Barrett@tn.gov>; Michael W. Palmer <Michael.W.Palmer@tn.gov>; B M. Richards <B.M.Richards@tn.gov>; Dennis Crumby <Dennis.Crumby@tn.gov>; Rob Todd <Rob.Todd@tn.gov>; TDOT.Env NEPA <TDOT.Env.NEPA@tn.gov>  
**Subject:** SR-66 from SR-34 to south of Old Speedwell Rd. / Old Hwy 66, Hawkins Co. PIN 107579.00

Vince,

Please find attached a request for updated species information on the subject project. The previous alignment has been changed slightly so that the entire project is now proposed to be constructed along the existing alignment. I've included the previous responses from your office for your use. If you have any questions, please let me know.



**Keven Brown** | TESS Sup.  
Region 1 Project Development  
Environmental Technical Office  
Admin. Building, 2<sup>nd</sup> Floor  
7345 Region Lane, Knoxville, TN 37914

p. 865-594-2437 c. 865-469-7348

[keven.brown@tn.gov](mailto:keven.brown@tn.gov)

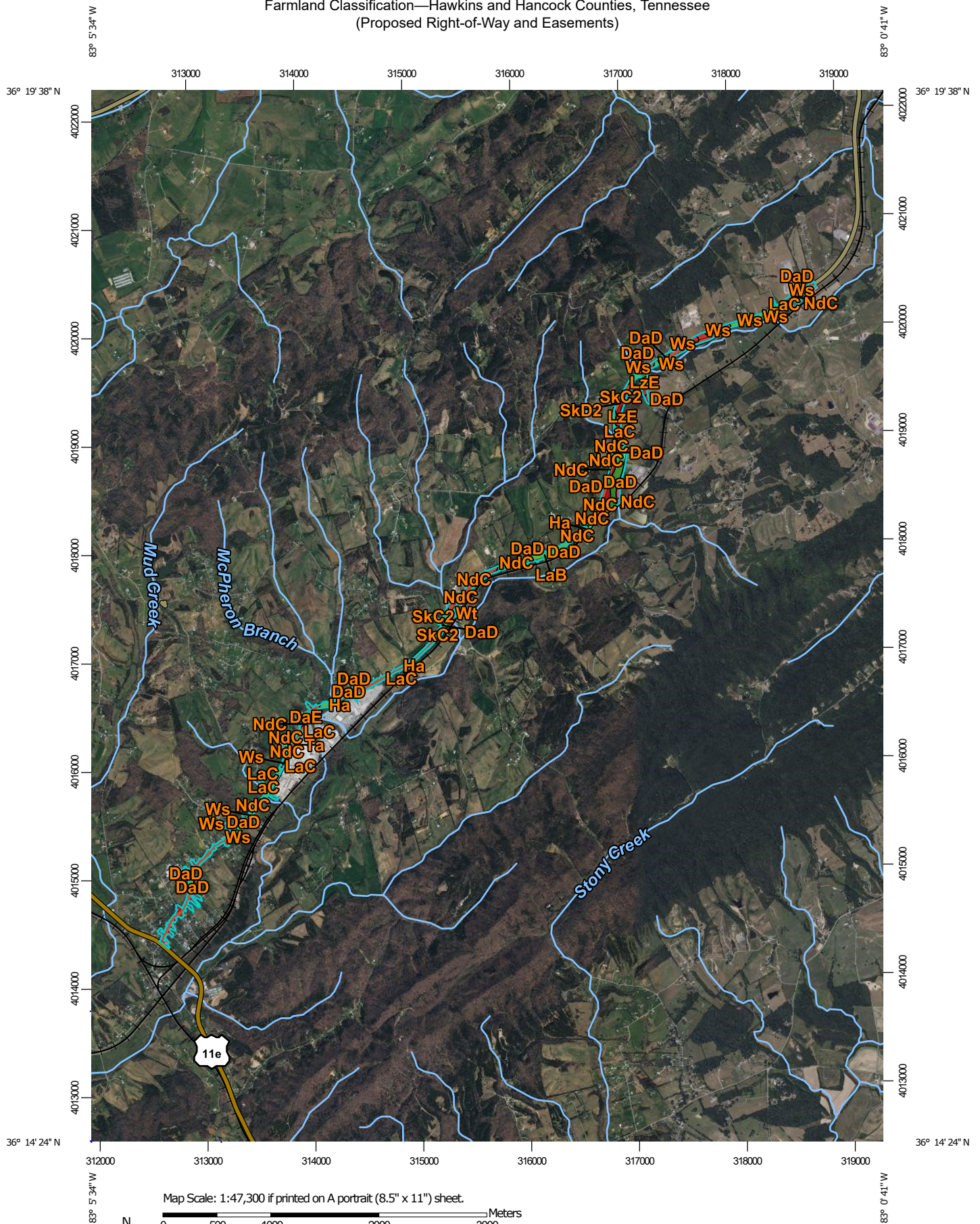
[tn.gov/tdot](http://tn.gov/tdot)



# **Appendix B**

U.S. Department of Agriculture Web  
Soil Survey (Dated October 8, 2024)


Farmland Classification—Hawkins and Hancock Counties, Tennessee  
(Proposed Right-of-Way and Easements)



Farmland Classification—Hawkins and Hancock Counties, Tennessee  
(Proposed Right-of-Way and Easements)









## MAP LEGEND








### Area of Interest (AOI)






 Area of Interest (AOI)








### Soils



#### Soil Rating Polygons

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season









-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of statewide importance, if drained
-  Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated

-  Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated and drained
-  Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
-  Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60





































-  Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough
-  Farmland of statewide importance, if thawed
-  Farmland of local importance
-  Farmland of local importance, if irrigated

-  Farmland of unique importance
-  Not rated or not available

### Soil Rating Lines

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Farmland Classification—Hawkins and Hancock Counties, Tennessee  
(Proposed Right-of-Way and Easements)

	Prime farmland if subsoiled, completely removing the root inhibiting soil layer		Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium		Farmland of unique importance		Prime farmland if subsoiled, completely removing the root inhibiting soil layer
	Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if irrigated and drained		Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season		Not rated or not available		Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
	Prime farmland if irrigated and reclaimed of excess salts and sodium		Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season		<b>Soil Rating Points</b>		Prime farmland if irrigated and reclaimed of excess salts and sodium
	Farmland of statewide importance						Not prime farmland		Farmland of statewide importance
	Farmland of statewide importance, if drained		Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer				Prime farmland if drained		Prime farmland if irrigated
	Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if warm enough		Prime farmland if irrigated		Farmland of statewide importance, if drained
	Farmland of statewide importance, if irrigated				Farmland of statewide importance, if thawed		Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season		Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
					Farmland of local importance		Prime farmland if irrigated and drained		Farmland of statewide importance, if irrigated
					Farmland of local importance, if irrigated		Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season		

Farmland Classification—Hawkins and Hancock Counties, Tennessee  
(Proposed Right-of-Way and Easements)

<p> Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if irrigated and drained</p> <p> Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer</p> <p> Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60</p>	<p> Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium</p> <p> Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if warm enough</p> <p> Farmland of statewide importance, if thawed</p> <p> Farmland of local importance</p> <p> Farmland of local importance, if irrigated</p>	<p> Farmland of unique importance</p> <p> Not rated or not available</p> <p><b>Water Features</b></p> <p> Streams and Canals</p> <p><b>Transportation</b></p> <p> Rails</p> <p> Interstate Highways</p> <p> US Routes</p> <p> Major Roads</p> <p> Local Roads</p> <p><b>Background</b></p> <p> Aerial Photography</p>	<p>The soil surveys that comprise your AOI were mapped at 1:15,800.</p> <p>Please rely on the bar scale on each map sheet for map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)</p> <p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Hawkins and Hancock Counties, Tennessee Survey Area Data: Version 19, Sep 12, 2024</p> <p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p> <p>Date(s) aerial images were photographed: Mar 21, 2021—Jun 19, 2022</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>
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## Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DaD	Dandridge shaly silty clay loam, 5 to 20 percent slopes	Not prime farmland	27.7	20.1%
DaE	Dandridge shaly silty clay loam, 20 to 35 percent slopes	Not prime farmland	0.9	0.7%
DaF	Dandridge shaly silty clay loam, 35 to 60 percent slopes	Not prime farmland	0.5	0.3%
Ha	Hamblen silt loam, deep, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	4.7	3.4%
LaB	Leadvale silt loam, 2 to 5 percent slopes	All areas are prime farmland	15.9	11.5%
LaC	Leadvale silt loam, 5 to 12 percent slopes	Not prime farmland	44.9	32.5%
LzE	Litz shaly silt loam, 20 to 35 percent slopes (sil)	Not prime farmland	1.2	0.9%
NdC	Needmore silt loam, 5 to 12 percent slopes	Not prime farmland	13.2	9.6%
SkC2	Sequoia silt loam, 3 to 12 percent slopes, eroded	Not prime farmland	0.8	0.6%
SkD2	Sequoia silt loam, 12 to 20 percent slopes, eroded	Not prime farmland	6.1	4.4%
Ta	Taft silt loam	All areas are prime farmland	0.4	0.3%
Ws	Whitesburg silt loam	All areas are prime farmland	21.3	15.4%
Wt	Whitwell loam, 0 to 2 percent slopes, occasionally flooded	All areas are prime farmland	0.4	0.3%
<b>Totals for Area of Interest</b>			<b>138.1</b>	<b>100.0%</b>

## Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

## Rating Options

*Aggregation Method:* No Aggregation Necessary

*Tie-break Rule:* Lower

The background of the page features a large, light gray watermark of the Federal Emergency Management Agency (FEMA) logo. It consists of a circle containing three five-pointed stars arranged in a triangular pattern.

# **Appendix C**

Federal Emergency Management Agency  
Flood Insurance Rate Maps

## NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 17. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/>, or contact the National Geodetic Survey at the following address:

Spatial Reference System Division  
National Geodetic Survey, NOAA  
Silver Spring Metro Center  
1315 East-West Highway  
Silver Spring, Maryland 20910  
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

**Base map** information shown on this FIRM was provided in digital format by the State of Tennessee.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the *Flood Insurance Study report* (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

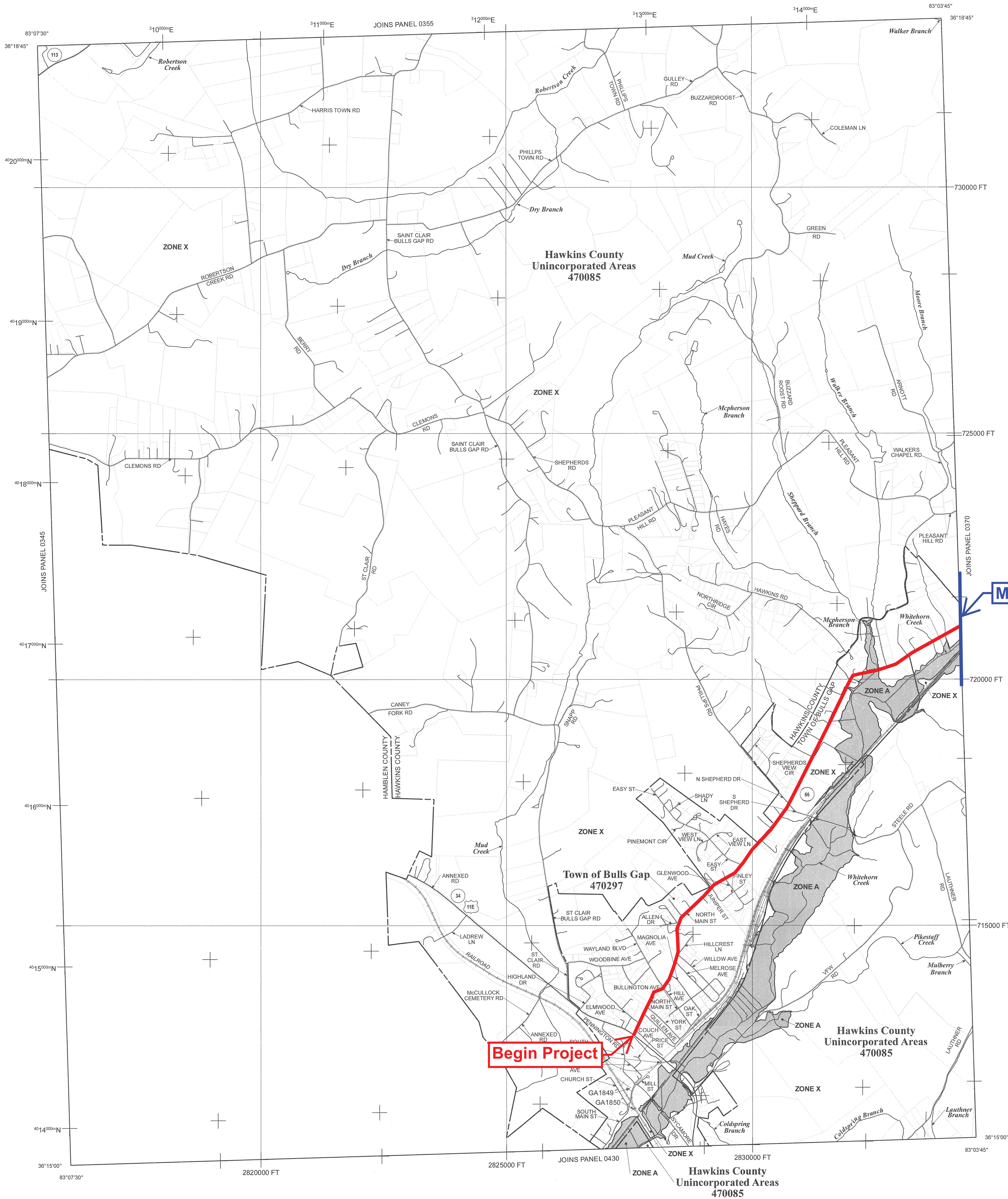
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Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a *Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions** about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2827) or visit the FEMA website at <http://www.fema.gov/>.

**State Route 66**  
**From State Route 34 in Bulls**  
**Gap to North of Speedwell**  
**Road/Old Highway 66**  
**Hawkins County, Tennessee**  
**PIN 107579.00**



## LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevation determined.  
**ZONE AE** Base Flood Elevations determined.  
**ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.  
**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

**ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance of greater flood event.

**ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

**ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.  
**ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary  
 Floodway boundary  
 Zone D boundary  
 CBRS and OPA boundary  
 Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 (EL 987)  
Base Flood Elevation line and value; elevation in feet\*  
Base Flood Elevation value where uniform within zone; elevation in feet\*

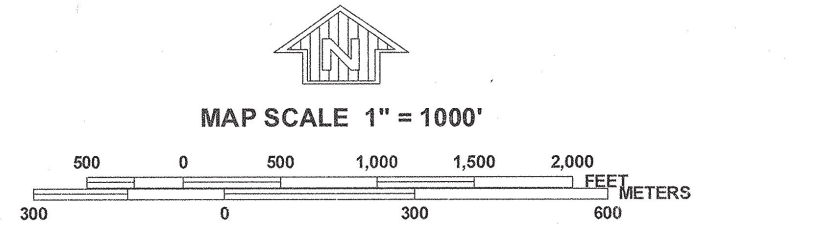
\* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Cross section line  
 Transect line  
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)  
47°50'00"N  
60°00'00"W  
1000-meter Universal Transverse Mercator grid ticks, zone 17  
5000-foot grid values: Tennessee State Plane coordinate system (FIPSZONE = 4100), Lambert projection  
Bench mark (see explanation in Notes to Users section of this FIRM panel)  
DX5510  
● M1.5  
River Mile

**MAP REPOSITORY**  
Refer to listing of Map Repositories on Map Index  
**EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**  
JULY 3, 2006  
**EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



**NATIONAL FLOOD INSURANCE PROGRAM**  
**PANEL 0365D**  
**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**HAWKINS COUNTY**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 365 OF 435**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**  

COMMUNITY	NUMBER	PANEL	SUFFIX
BULLS GAP, TOWN OF	470297	0365	D
HAWKINS COUNTY	470085	0365	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**47073C0365D**  
**EFFECTIVE DATE**  
**JULY 3, 2006**

Federal Emergency Management Agency

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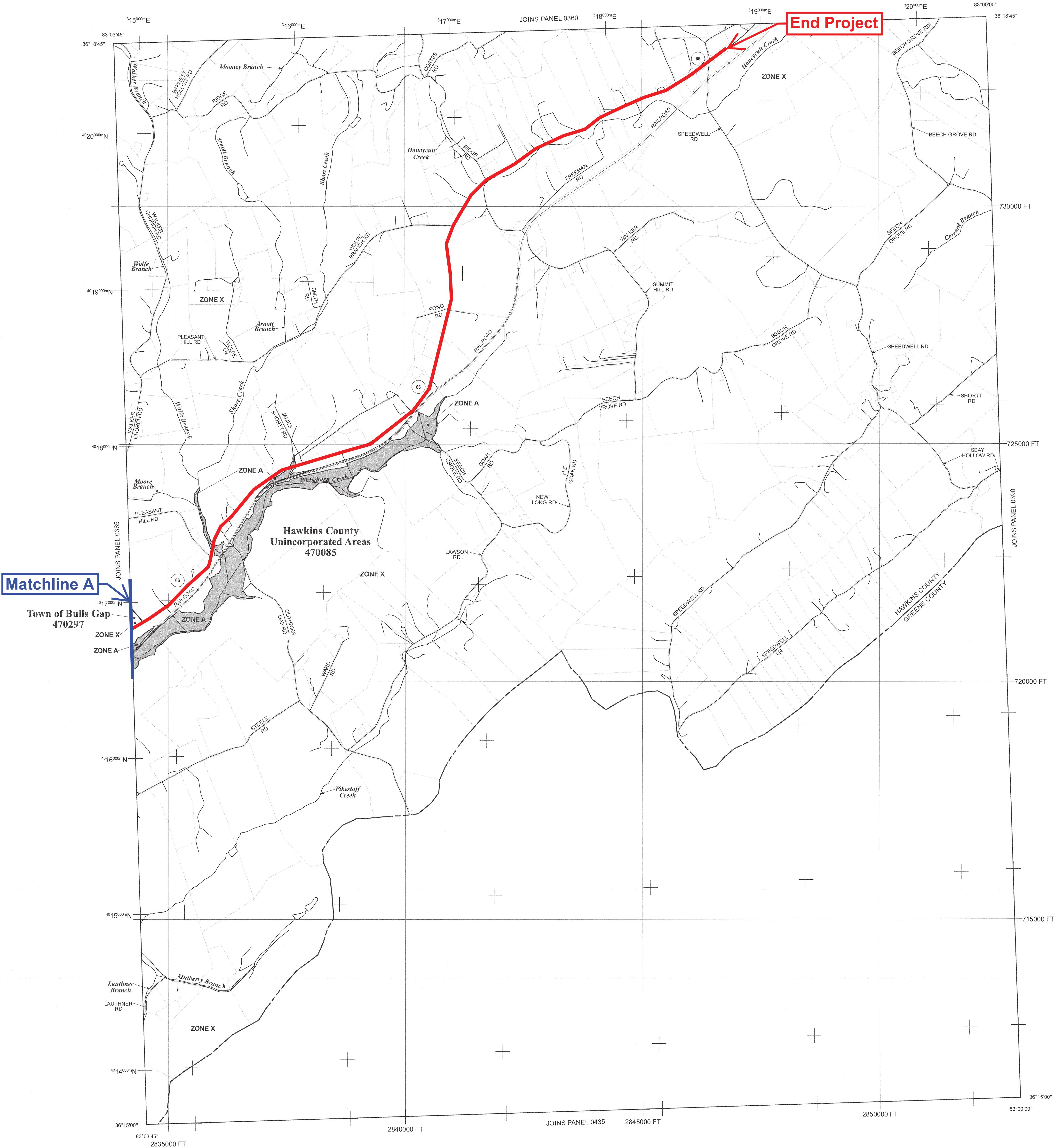
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**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

**ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance of greater flood event.

**ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

**ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE D** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

**Floodplain boundary**  
**Floodway boundary**  
**Zone D boundary**  
**CBRS and OPA boundary**  
**Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.**

**513**  
(EL 987)  
Base Flood Elevation line and value; elevation in feet\*  
Base Flood Elevation value where uniform within zone; elevation in feet\*

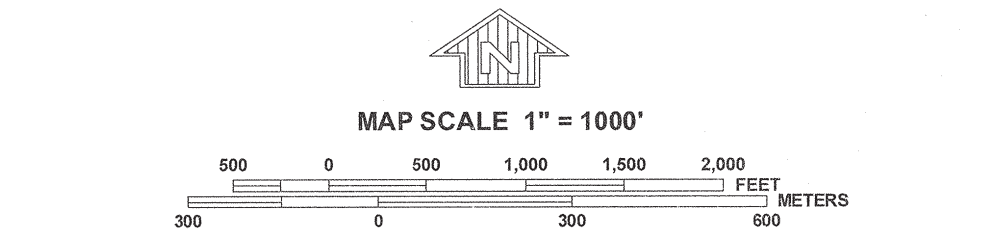
\* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

**A** **A**  
Cross section line  
**23** **23**  
Transect line  
97°07'30", 32°22'30"  
4750000E  
6000000 FT  
DX5510  
● M1.5  
River Mile

**MAP REPOSITORY**  
Refer to listing of Map Repositories on Map Index  
**EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**  
JULY 3, 2006  
**EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 0370D**

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**HAWKINS COUNTY**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 370 OF 435**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
BULLS GAP TOWN OF	470297	0370	D
HAWKINS COUNTY	470085	0370	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**47073C0370D**  
**EFFECTIVE DATE**  
**JULY 3, 2006**

**Federal Emergency Management Agency**



**TDOT**  
Department of  
Transportation

