



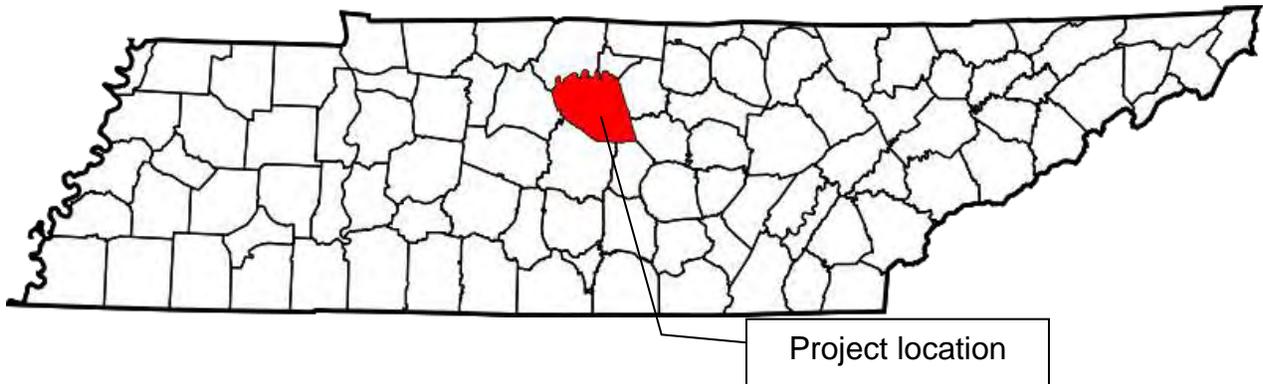
Wilson County, Tennessee

PROJECT: Interstate 40 Lane Additions,  
From Central Pike to East of SR-109  
P.E.: 99108-7087-04  
PIN: 114169.00

Prepared for:  
TDOT Environmental Division  
900 James K. Polk Building  
505 Deaderick Street  
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## ECOLOGY REPORT



Prepared By: Jose Garcia & Casey Hertwig, CEC, Inc.  
May 26, 2011

## **INTRODUCTION**

Studies to determine the impacts of the proposed alternative alignments on the local ecology were conducted by biologists Jose Garcia, Casey Hertwig, and Matthew Skelton from Civil and Environmental Consultants, Inc on the 6<sup>th</sup>, 8<sup>th</sup>, 14<sup>th</sup>, 20<sup>th</sup>, and 25<sup>th</sup> of April, and the 5<sup>th</sup> of May in 2011. Studies included literature and database surveys as well as on-foot reconnaissance. Particular attention was given to locating streams, wetlands, and specialized habitats such as springs, caves, and sinkholes which could harbor protected species or influence water quality (see attached Study Boundary Map [Figure 1, 1:24,000, and Figure 2, 1:12,000]).

## **PROJECT DESCRIPTION**

At the time of these studies, the project is proposed to extend from Central Pike to East of SR-109 along I-40. The proposed I-40 improvements will provide four (4) twelve (12) foot wide travel lanes (including one [1] HOV lane) in each direction, with a median barrier from Central Pike to SR-109. Generally, ten (10) foot paved outside shoulders and twelve (12) foot wide paved inside shoulders will be provided.

From Central Pike to 1.5 miles east of the SR-171 overpass, the I-40 improvements will consist of milling and overlaying the existing three lanes and adding a twelve (12) foot wide travel lane and ten (10) foot wide paved outside shoulder in each direction. The eastbound auxiliary lanes and a concrete barrier wall to SR-171 will require reconstruction. No improvements are anticipated to the inside shoulders or existing median barrier.

The remaining 5.5 miles consist of adding a twelve (12) foot HOV lane, twelve (12) foot wide inside shoulder and median barrier between the east and west bound lanes. Additionally, ten (10) to twelve (12) feet of roadway widening and ten (10) feet of shoulder paving are required adjacent to the existing outside travel lanes. All remaining pavement will be milled and overlaid within this section.

Near LM 7.43, I-40 crosses Wilson Creek on parallel bridge spans. The proposed improvements will require widening the 150-foot-long spans approximately fifty (50) feet to the inside and five (5) to ten (10) feet along the outside. A combined total of seven (7) box bridges and culverts are located within the project area. It is anticipated that at some locations box/culvert extension and/or barrier protection will be required, and should be evaluated during design.

These improvements will result in four lanes each direction separated by a median barrier per TDOT standard drawing RD01-TS-5B. Typical roadway sections are provided in the functional plans. New pavement markings will be installed for the entire length of the project. No significant interchange reconfigurations are anticipated during this project.

An automatic traffic recorder (ATR #34) is located near LM 5.95. The proposed median barrier will require the installation of two separate ATR units. TDOT Maintenance is proposing a new salt storage building in the westbound truck parking area. The salt storage facility is scheduled to be constructed in the spring of 2011 and should not impact the design or construction of this project.

Guide signage along this section of I-40 has been addressed. Several signs will require relocation based on the proposed widening and have been noted. All signs identified during design that do not meet the 2009 Manual on Uniform Traffic Control Devices (MUTCD) retro-reflectivity requirements shall be replaced. The functional plans note any proposed and/or modification to existing guide signs.

## **PROJECT SETTING**

The proposed project is located in west Wilson County, Tennessee. It is shown on the USGS 7.5 minute topographic quadrangle(s) Hermitage (311 NE) and Martha (314 NW). This portion of the county is within the outer Nashville basin (71h) and the inner Nashville basin (71i). The outer Nashville basin (71h) is a more heterogeneous region than the Inner Nashville Basin (71i), with more rolling and hilly topography and slightly higher elevations. The region encompasses most all of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian age formations, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The inner Nashville basin (71i) is less hilly and lower than the Outer Nashville Basin (71h), outcrops of the Ordovician-age limestone are common, and the generally shallow soils are redder and lower in phosphorus than those of the outer basin. The most characteristic hardwoods within the inner basin are a maple-oak-hickory-ash association. The limestone cedar glades of Tennessee, a unique mixed grassland/forest cedar glades vegetation type with many endemic species, are located primarily on the limestone of the Inner Nashville Basin (EPA).

Soils in the area are primarily of the Talbott-Gladeville-Bradyville association which consists of undulating to hilly slopes that range from 2 to 15 percent but can be as steep as 20 percent. Soils range from very shallow to deep over limestone rock with a predominant loamy surface layer and a clayey subsoil. Permeability is usually moderately slow (USDA General Soil Map for Wilson County 1996). The project is mainly located in the Stones River watershed with a small portion at the end of the project falling into the Old Hickory Lake watershed. Most of the county is underlain by Mississippian-age limestone. Because the underlying limestone is relatively soluble and climate conditions favor rapid weathering of the rock, sinkholes and depressions are numerous. The county is drained by creeks, intermittent drainageways, and underground caverns. Land use in the project area consists of farming and industry which are two of the major sources of income in the county. The project area is dominated by a rural landscape; however the western part of the county is rapidly becoming a bedroom community for Nashville (USDA General Soil Map for Wilson County 1996). It is estimated that the majority of the project area consists of rural and

agricultural landscape with a rapidly increasing minority of residential and commercial land use.

### **TERRESTRIAL ECOLOGY**

All of the land in the project corridor has been disturbed at one time or another. Some of the land is forested or in shrub/scrub thickets. There are also many habitats in earlier stages of succession; industrial, commercial, and residential lands which have limited habitat values, and small amounts of cedar forests and cedar glades.

Plant communities found in the area are characteristic of communities formed over limestone. Different communities may develop on different limestone strata; elevation differences also have an influence. The upland forested communities are dominated by eastern red cedar, accompanied most often by a hickory-oak association. Other prominent associates are ash and maple. Ash and maple trees are widespread in old-field and floodplain habitats in the area. Fescue, privet, and honeysuckle dominate the ground cover in most of the forested areas. Both upland and floodplain forested habitats provide food cover, and nesting opportunities for numerous small mammals, including rabbits, squirrels, and other rodents, as well as numerous reptiles, native birds, spiders and other arachnids, and insects.

Old-field habitats in various stages of succession are also useful to many types of wildlife. These areas are most often dominated by grasses and legumes, blackberries, young cedars, privet, and honeysuckle. The industrial, commercial, and residential lands generally have limited wildlife value, as they are usually paved or mowed, except for undisturbed vegetation along fencerows or boundaries.

### **TERRESTRIAL IMPACTS**

Direct and indirect impacts - The loss of approximately 100-acres of old-field habitat and edge line trees is a direct but minor impact for this project. There are always direct long-term adverse impacts when productive forests and old-field areas are converted to roadway, but since this project is primarily all existing roadway, there should be little to no adverse impacts. Direct impacts that are possible during this project include minor loss or disruption of habitat, and minor loss of protective cover and foraging areas. However, most of the productive habitat within the footprint of the proposed project has already been altered and no longer supports wildlife species. Mortality of individual wildlife may occur both during construction and highway operation. Although roadway mortality is generally not believed to significantly affect animal populations under normal conditions, if the population is experiencing other sources of stress, such as disease or habitat degradation, then traffic-related mortality can contribute to the demise of the population. Highway noise can affect the utilization of habitats by wildlife. Since this is an interstate project located in an urban area, and less than ten miles from a major airport, noise is already a factor within the already existing habitats.

### **AQUATIC ECOLOGY**

The project has been located, and the chosen alternative will be designed, to avoid major impacts to waters of the state to the extent practicable. Efforts to further minimize impacts will continue throughout the design, permitting, and construction processes. Unavoidable impacts will be mitigated as required by applicable laws and regulations. Mitigation is discussed further in the sections applying to streams and wetlands. In an effort to minimize sedimentation impacts, erosion and sediment control plans will be included in the project construction plans. TDOT will also implement its Standard Specifications for Road and Bridge Construction, which includes erosion and sediment control standards for use during construction. The State of Tennessee sets water quality criteria for waters of the state; these standards must be met during the construction of the highway (bridge) improvement.

Streams, Springs, and Seeps and other Waterbodies. Streams, springs, seeps, impoundments and other watercourses and waterbodies which are known at this time to be potentially affected by the project alternatives are listed in Table 1 of this report, along with the potential direct impacts. The determinations as to which are waters of the State and/or of the U.S. have not been confirmed by TDEC and the Corps. All aquatic impacts identified as project development continues will be avoided, minimized, or mitigated to the extent possible, and incorporated into the permitting.

Direct Impacts. The functional plans that were provided for the field review did not depict cut/fill lines. It is unknown based on the information available whether or not direct stream impacts will occur or if mitigation will be necessary. The project will, or could potentially affect 41 stream/spring sites, 19 wet weather conveyances, 2 ponds, 5 sink holes, and 26 wetlands. It is difficult to determine the exact impact type at these sites with present information; therefore, the information in Table 1 represents the anticipated worst-case impact, with the assumption that these impacts will be reduced, where possible, during further project design. It appears that most of the stream channels will be crossed, but previous mitigation and potential culvert extensions are not known at this time. Any project related impacts to aquatic resources within the project limits will be mitigated as required by the appropriate permitting agency/ies.

WETLANDS. Twenty-six (26) wetlands were identified during the field reconnaissance within or near the anticipated project limits. These are listed in Table 1. These potential wetlands were identified using the criteria established in the U.S. Army Corps of Engineers. 2010. *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Wetland Delineation Manual*. Location and size of the areas were estimated and boundaries were only carried to the existing TDOT right-of-way (ROW) fence; therefore a survey to determine the exact size and location within the current project ROW is needed. A few other small areas of wetland vegetation and wetland hydrology were also observed in the vicinity of culverts and roadside ditches and were the result of improper grading and drainage. These potential wetland areas either lacked hydric soil characteristics or sufficient vegetation characteristics to be identified as a wetland.

Direct Impacts. The functional plans that were provided for the field review did not depict cut/fill lines. It is unknown based on the information available whether or not direct wetland impacts will occur. Efforts will be made during further project design to avoid or minimize impacts to as many of these sites as possible. Any project related impacts to aquatic resources within the project limits will be mitigated as required by the appropriate permitting agency/ies.

Indirect impacts. The drainage patterns of the remaining (unfilled) wetlands areas may be affected and this could result in localized changes in water levels and vegetation patterns. Efforts should be made in further project design to minimize these effects.

#### Cumulative Impacts

This project may impact approximately 1.52-acres of the 2.0-acres of wetlands currently known to exist within and adjacent to the ROW of the project corridor, and may have additional indirect impacts to the remaining 0.48-acres. A review of the Mt. Juliet Land and Transportation plan map dated December 1, 2008 indicates that much of the area along I-40 is zoned for business development or interstate commercial. Wetlands identified during the site survey were predominately located within the ROW of the project. As such, cumulative impacts to wetlands near the project corridor would be limited to indirect impacts such as run off.

Avoidance and minimization of wetland Impacts. Since the proposed project is a lane addition to an existing roadway wetland impacts should be minimal to none. Moving the current proposed alignment is not an option. The proper BMP's should be installed to minimize or reduce adverse drainage patterns and change in water level. Slopes will be steepened where possible to reduce footprint of roadway, etc. As such, requirements of Executive Order 11990 have been satisfied.

Mitigation. Mitigation is required for all wetland impacts which do not meet requirements for general Aquatic Resource Alteration Permits (State of Tennessee) or for certain Nationwide Section 404 permits (U.S. Army Corps of Engineers). The minimum replacement ratio for wetlands is 2:1 and may be higher depending on hydrogeomorphic analyses or whether optimum mitigation sites are unavailable. The first option for any substantial replacement mitigation is on-site (near the project or within the watershed). The mitigation option most favored by regulatory agencies is that of restoration of a former wetland. Enhancement of an existing but degraded wetland may also be an option, but higher replacement ratios are generally required. Both the site selection and the mitigation, when proposed, will be subject to the approval of regulatory agencies. In the event that no acceptable mitigation site can be obtained locally, the regulatory agencies may allow mitigation further away or allow use of credits in a mitigation bank.

#### **100 YEAR FLOODPLAIN:**

Ecological values associated with the floodplains of the surveyed streams are the bottomland hardwoods that provide shading, bank stabilization, filtration of sediments, and food and cover for wildlife and fishes. Impacts to these have been avoided with

appropriately sized bridges and culverts. A copy of sections of the Flood Insurance Rate Map (FIRM) for Wilson County is located in the Appendix C.

**Table 1. Ecological Features within impact area**

Map Label/ Feature Name	Lat/Long	Feature Designation	Potential Impact	Estimated impact quantity	ETW or ONR W (Y/N)	303d Listed (Y/N) Reason for listing
STR-1	N36.137958 W86.529257	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-2	N36.169379 W86.523532	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-3	N36.169122 W86.521142	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
SPG-1/ STR-5	N36.171486 W86.515158	Intermittent stream	Fill/runoff	Unknown	N	N
STR-4	N36.171356 W86.515751	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
STR-6	N36.17037 W86.51474	Intermittent stream	Fill/runoff	Unknown	N	N
STR-7	N36.170432 W86.51184	Intermittent stream	Runoff	Unknown	N	N
STR-8	N36.172609 W86.505925	Intermittent stream	Fill/runoff	Unknown	N	N
STR-9	N36.17259 W86.504229	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-10	N36.171683 W86.50049	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-12	N36.173124 W86.494223	Perennial stream	Fill/runoff	Unknown	N	N
STR-13 Stoners Creek	N36.173294 W86.493307	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	Y Loss of biological integrity due to siltation and E. coli

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STR-11	N36.173389 W86.499115	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-14	N36.173355 W86.492437	Intermittent stream	Fill/runoff	Unknown	N	N
STR-18	N36.174949 W86.47916	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-15	N36.174005 W86.492402	Intermittent stream	Fill/runoff	Unknown	N	N
SPG-2/ STR-16	N36.175511 W86.480937	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
STR-17	N36.175508 W86.480443	Intermittent stream	Fill/runoff	Unknown	N	N
SPG-3/ STR-19	N36.175914 W86.471924	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
STR-20	N36.176216 W86.469845	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-22 Rutland Creek	N36.17704 W86.4636	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-23	N36.177128 W86.46299	Intermittent stream	Fill/runoff	Unknown	N	N
STR-21	N36.177331 W86.466681	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-24	N36.179474 W86.457238	Perennial stream	Runoff	Unknown	N	N
STR-25	N36.176052 W86.455764	Intermittent stream	Fill/runoff	Unknown	N	N
STR-26	N36.17652 W86.454697	Perennial stream	Fill/runoff	Unknown	N	N
STR-27	N36.177222 W86.455243	Intermittent stream	Runoff	Unknown	N	N

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STR-28 Sullivan Branch	N36.178165 W86.453291	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-29	N36.179232 W86.447477	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-30	N36.180692 W86.437025	Intermittent stream	Fill/runoff	Unknown	N	N
STR-31 Wilson Creek	N36.180844 W86.436163	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-32	N36.182636 W86.428128	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-33	N36.182657 W86.427533	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-34	N36.182671 W86.427324	Intermittent stream	Fill/runoff	Unknown	N	N
STR-35	N36.182974 W86.41904	Intermittent stream	Fill/runoff	Unknown	N	N
STR-36	N36.183114 W86.418632	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-37 South Fork	N36.183554 W86.410927	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-38 Middle Fork	N36.186482 W86.408571	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	Y loss of biological integrity due to siltation and for other anthropogenic habitat alterations
STR-41 Middle Fork	N36.183998 W86.384206	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	Y loss of biological integrity due to siltation and for other anthropogenic habitat alterations

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STR-39	N36.185244 W86.397585	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-40	N36.185137 W86.395507	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
PND-1	N36.168103 W86.529318	Farm pond	Fill/runoff	Unknown	N/A	N
PND-2	N36.171454 W86.500595	Farm pond	Runoff	Unknown	N/A	N
PND-3	N W	Detention pond	Runoff	Unknown	N/A	N
WWC-1	N36.167612 W86.530836	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-2	N36.168787 W86.525649	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-4	N36.168474 W86.523567	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-3	N36.168425 W86.524475	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-5	N36.173843 W86.493804	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-6	N36.174833 W86.485461	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-7	N36.174753 W86.480773	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-8	N36.175122 W86.478497	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-9	N36.175971 W86.471569	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-10	N36.176023 W86.471404	Wet weather conveyance	Fill/runoff	Unknown	N/A	N

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WWC-11	N36.176262 W86.470056	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-12	N36.176353 W86.469611	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-13	N36.177073 W86.468988	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-14	N36.177599 W86.464607	Wet weather conveyance	Crossing/ encapsulation /fill/runoff	Unknown	N/A	N
WWC-14.1	N36.177919 W86.464012	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-14.2	N36.177816 W86.463607	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-15	N36.180068 W86.441039	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-18	N36.18082 W86.435788	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-16	N36.181304 W86.437298	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-17	N36.181542 W86.435413	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-19	N36.184623 W86.412754	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
SNK-1	N36.167627 W86.531162	Sinkhole	Fill	Unknown	N/A	N
SNK-2	N36.174891 W86.485598	Open- throated sinkhole	Fill	Unknown	N/A	N
SNK-3	N36.179188 W86.448468	Open- throated sinkhole	Fill	Unknown	N/A	N
SNK-4	N36.18032 W86.439934	Open- throated sinkhole	Fill	Unknown	N/A	N

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SNK-5	N36.181634 W86.433961	Open- throated sinkhole	Fill	Unknown	N/A	N
WTL-1	N36.167895 W86.529503	Wetland	Fill/runoff	0.016 acres	N/A	N
WTL-2	N36.167956 W86.528792	Wetland	Fill/runoff	0.010 acres	N/A	N
WTL-3	N36.170274 W86.516284	Wetland	Fill/runoff	0.042 acres	N/A	N
WTL-4	N36.171519 W86.515002	Wetland	Fill/runoff	0.073 acres	N/A	N
WTL-5	N36.170388 W86.514974	Wetland	Fill/runoff	0.042 acres	N/A	N
WTL-6	N36.172419 W86.507945	Wetland	Fill/runoff	0.053 acres	N/A	N
WTL-7	N36.171909 W86.505716	Wetland	Fill/runoff	0.229 acres	N/A	N
WTL-8	N36.172503 W86.499299	Wetland	Fill/runoff	0.002 acres	N/A	N
WTL-9	N36.173172 W86.492057	Wetland	Fill/runoff	0.13 acres	N/A	N
WTL-10	N36.175554 W86.481037	Wetland	Fill/runoff	0.01 acres	N/A	N
WTL-11	N36.17583 W86.472564	Wetland	Fill/runoff	0.04 acres	N/A	N
WTL-12	N36.176855 W86.470864	Wetland	Fill/runoff	0.05 acres	N/A	N
WTL-13	N36.177196 W86.462315	Wetland	Fill/runoff	0.02 acres	N/A	N
WTL-14	N36.177451 W86.455243	Wetland	Fill/runoff	N/A	N/A	N
WTL-15	N36.179128 W86.454273	Wetland	Fill/runoff	N/A	N/A	N

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WTL-16	N36.179886 W86.447959	Wetland	Fill/runoff	0.01 acres	N/A	N
WTL-17	N36.180608 W86.437207	Wetland	Fill/runoff	0.12 acres	N/A	N
WTL-18	N36.181747 W86.428304	Wetland	Fill/runoff	0.03 acres	N/A	N
WTL-19	N36.182701 W86.427598	Wetland	Fill/runoff	0.05 acres	N/A	N
WTL-20	N36.181963 W86.426977	Wetland	Fill/runoff	0.04 acres	N/A	N
WTL-21	N36.182744 W86.42128	Wetland	Fill/runoff	0.13 acres	N/A	N
WTL-22	N36.182975 W86.419659	Wetland	Fill/runoff	0.12 acres	N/A	N
WTL-23	N36.185155 W86.410393	Wetland	Fill/runoff	0.03 acres	N/A	N
WTL-24	N36.18575 W86.408692	Wetland	Fill/runoff	0.04 acres	N/A	N
WTL-25	N36.186186 W86.408368	Wetland	Fill/runoff	0.05 acres	N/A	N
WTL-26	N36.184593 W86.395001	Wetland	Fill/runoff	0.11 acres	N/A	N

### **ENDANGERED AND THREATENED SPECIES**

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 the Tennessee Department of Environment and Conservation on April 18, 2011 and consultation with the US Fish and Wildlife Service on May 25, 2010, and the Tennessee Wildlife Resources Agency on April 19, 2011.

**Table 2. Species listed by TDEC and FWS for consideration.**

Species	Status		Species Likely Present (Y/N)	BA required (Y/N)	BA Conclusion
	Fed.	State			
Glade cress ( <i>Leavenworthia exigua</i> var. <i>exigua</i> )		S	N	N	
Limestone blue star ( <i>Amsonia tabernaemontana</i> var. <i>gattingeri</i> )		S	N	N	
Glade onion ( <i>Allium stellatum</i> )		E	N	N	
Western hairy rockcress ( <i>Arabis hirsuta</i> )		T	N	N	
Pope's sand parsley ( <i>Ammoselinum popei</i> )		T	N	N	
Tennessee milk-vetch ( <i>Astragalus tennesseensis</i> )		S	N	N	
Spring Creek bladderpod ( <i>Lesquerella perforata</i> )	LE	E	N	N	
Glade cleft phlox ( <i>Phlox bifida</i> )		T	N	N	
Indiana bat ( <i>Myotis sodalis</i> )	LE	E	N	N	
Yellow sunnybell ( <i>Schoenolirion croceum</i> )		T	N	N	
Limestone fame flower ( <i>Talinum calcaricum</i> )		S	N	N	
Barn owl ( <i>Tyto alba</i> )		D	N	N	

~~Spring Creek bladderpod~~ - The federally listed Spring Creek bladderpod is confined to a small area within Tennessee's Central Basin in the United States. Typically found on creek floodplains (of Spring Creek, Barton's Creek and Cedar Creek), but also in agricultural fields, flooded pastures and glades (open spaces with few or no trees). This rare species appears to require some degree of annual disturbance to survive, ideally occurring after fertilization and before germination. The plant germinates between September and October and flowers usually between March and April. Suitable habitat does not exist within the project ROW. In addition, this plant species was not seen during the field survey and it is considered not likely present based on the field study.

~~Indiana bat~~ – The federally listed Indiana bat typically spends its winter months in caves or mines. Bottomland and floodplain forests were once thought to be the most important habitats during the summer, but subsequent studies has shown that upland forest habitats may be equally important. The clusters of upland shagbark hickory and white oak trees that were found along the project are also suitable habitats for the Indiana bat. A habitat survey was performed and identified five potential locations which are included in the Form N package. Direct impact is not anticipated; however, with only functional plans provided, the extent of direct impact to forested areas cannot be determined. Consultation between TDOT and the Fish and Wildlife Service is in progress and information regarding coordination will be provided when complete.

Glade cress - This plant species can be found in glades. It blooms from March to April. Habitat for this plant species does not exist project ROW.

Limestone blue star – A perennial herb, with a spreading multi-stemmed habit, usually 2-3 feet tall. This plant has small pale lilac to pale blue star-shaped flowers. Its phenology may vary, with flowering beginning in early to late April until early August. Fruiting occurs immediately after. It can be found in wet woods, stream banks, and gravel bars, usually on limestone. In Tennessee and Kentucky, it may occur along the beds of rocky streams, in cracks in limestone, or in gravel bars of rivers ([www.natureserve.org](http://www.natureserve.org)). This plant species was not observed during the field study within the current project ROW.

Glade onion – This plant species is typically found near rocky slopes, prairies, and shores. Blooms in summer, early fall. It prefers full sun to partial shade, and it can tolerate poor soils but prefers them to be well drained. Rocky slopes do exist within the project area, but this plant species was not seen during the field survey and it is considered not likely to be present based on the site conditions.

Western hairy rockcress - The habitat for this plant consists of coastal beaches, bluffs, and gravel bars ([www.mountainnature.com](http://www.mountainnature.com)). There are some bluff habitats located within the project area but this plant species is considered not likely present based on the site conditions and the field survey.

Pope's sand parsley - This plant species is a flowering vascular plant in the carrot family ([natureserve.org](http://natureserve.org)). This species is normally found in glade habitat. Typical glade habitat was not observed along the alignment. As such, the species is likely not present.

Tennessee milk-vetch - This plant can be found in the ecotone, a transition area, between red-cedar glades and open rocky glades, in calcareous soil, in shade, and also in prairies. Blooms first appear in mid spring and continue into late spring. Its flowers are whitish and sometimes yellow green and fruits form a yellow brown pod. There are small areas of suitable habitat for this plant species located throughout the project, but based on the field survey and the site conditions it is considered not likely present.

Glade cleft phlox - Habitat for this plant consists of well drained open areas often consisting of rocky glades and ledges. Flowers can be lavender or pink sometimes even light blue or white. Blooms first appear in mid spring ([www.2bthewild.com](http://www.2bthewild.com)). This plant is considered not likely present because it was not seen during the site visit and suitable habitat does not exist along the project.

Yellow sunnybell - Habitat consists of open areas, moist at least in the spring or wet pine lands, and near swamps. Flowers are yellow and blooms first appear in mid spring and continue into late spring ([www.2bthewild.com](http://www.2bthewild.com)). This plant species was not seen during the field survey, and its' habitat does not exist within the current project area.

Limestone fame flower - Habitat for this plant species consists of rocky areas of cedar glades. Flowers are an unusual shade of purple and blooms first appear in late spring and continue into early fall. Flowers only open in the afternoon ([www.2bnthewild.com](http://www.2bnthewild.com)). The project area consists of small isolated cedar forests; however, this plant species is considered not likely to present based on the observed site conditions during the field reconnaissance.

Barn owl - The Barn Owl is found in virtually all habitats but much more abundantly in open woodland, heaths and moors than forested country. They usually roost by day in tree hollows but have also been found in caves, wells, out-buildings or thick foliage. This animal has been known to breed throughout the year but peak egg laying occurs during mid-April ([www.natureserve.org](http://www.natureserve.org)). Suitable habitat was not observed during the field survey, therefore this animal is considered not likely to be found within the project area.

Direct Impacts. None of the plant species identified within the TDEC database are likely to occur within the proposed project footprint due to the highly urbanized and developed (paved over) state of the area.

The federally listed endangered Indiana bat (*Myotis sodalis*) is of some concern due to the potential habitat for this species located along the project. See attached aerial photograph included with the Form N documents that notes the location of potential bat habitat. Clusters of shagbark hickory trees have been found in certain forested areas. These areas could potentially be roosting or foraging habitats for the Indiana bat. However, strict adherence to standard BMP's would greatly reduce or eliminate impacts to the species of concern. Clearing and grubbing during the winter when Indiana bats (*M. sodalis*) is hibernating in caves would eliminate the possibility of direct mortality to this species of concern.

Information received from the Tennessee Department of Environment and Conservation is periodically reviewed and updated. If any protected species or their habitats are identified as project development continues, they will be addressed in accordance with applicable laws and regulations.

### Conclusions.

Although roosting habitat is marginally present for the Indiana bat (*M. sodalis*), they are not currently known to occur within five miles of the project. Strict adherence to the seasonal restrictions on tree cutting and minimizing the amount of cleared forests would eliminate the possibility of mortality, therefore, the project as proposed “**is not likely to adversely affect**” this species.

### **REQUIRED PERMITS**

Stream and miscellaneous water quality permits: Alterations to streams or other aquatic sites designated as waters of the State or waters of the United States require either individual or general Aquatic Resource Alteration Permits (ARAP) from the State of

Tennessee, individual or Nationwide 404 U. S. Army Corps of Engineers permits and, where applicable, a TVA 26a permit or letter of no objection. Construction projects disturbing one or more acres of land require storm water control permits issued by the State of Tennessee pursuant to the National Pollutant Discharge Elimination System. For any project that affects water flowing into an open sinkhole or cave, or for any impact that may affect the ground water via a sinkhole, a Class V Injection Well permit may be required. This process involves obtaining a permit before the project is let if open sinkholes are known to exist. If other sinkholes are encountered after construction has begun, the appropriate TDOT offices will be notified and the appropriate steps taken to comply with laws, regulations, and permits. These or any other permit requirements identified in the project development process will be complied with (TVA permit, coast guard permit).

Wetland Permits: All wetland impacts require confirmation by, and coordination with, permitting agencies. All require either general or individual Aquatic Resources Alteration (ARAP) permits from the State of Tennessee. Almost all require either Nationwide or Individual permits from the U. S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act. Other agencies such as the U. S. Fish and Wildlife Service and the Environmental Protection Agency may be involved in the permitting process.

Wetland impacts which are subject to either State or Federal jurisdiction, and which do not meet criteria for either general, or nationwide permits require individual permits. These impacts typically require compensatory mitigation. In general, wetlands with less than 0.10 acre impacts may come under the guidelines of a general permit issued by the State of Tennessee and no mitigation is required. General permits may be used if the total of a series of small impacts is less than 0.25 acres. Some wetland impacts of less than 0.5 acres qualify for Corps of Engineers nationwide permits.

TDOT will carry out further coordination with the regulatory agencies before preparing mitigation plans and submitting permit applications. Permit requirements and mitigation plans will be based on these discussions.

## **SUMMARY OF FINDINGS**

The proposed project is located primarily along existing Interstate 40 alignment. Since final ROW plans have not been developed, an area extending a minimum of 100' to either side of the existing roadway was surveyed. Approximately 80% of the area is either covered by pavement, buildings, pasture fields, or mown lawns. The remaining 20% is of forested and/or scrub/shrub habitat which provides suitable habitat for some species of wildlife. In addition, sufficient amount of similar habitat will remain in adjacent areas to accommodate displaced species. Competition for available resources will be increased temporarily. There may be long-term impacts in the form of direct mortality to individuals of many species due to road-kill and the fact that the constructed roadway will serve as a barrier to the movement of many less mobile wildlife species in the area.

A total of forty-one streams were identified within the limits of the proposed project. Sedimentation from stormwater runoff could also impact all of the project streams to varying degrees. However, implementation and maintenance of effective erosion and sediment control measures throughout the construction process should keep the overall impacts to these aquatic resources to a minimum.

About 2.0 acres of wetland was identified within the project corridor of which only 1.52 acres of wetland located within proposed ROW will be directly impacted (See Table 1). These wetlands are located on each side of the existing roadway and may be directly impacted by the project. TDOT will evaluate the potential for avoiding the wetland area or minimize the overall impact where complete avoidance is not possible.

There are records for twelve state or federally listed species within a four mile radius of the proposed alignment (see Table 2). Potential habitat is present within the proposed alignment corridor for the federally listed Indiana bat (*Myotis sodalis*). The potential habitat is due to the exfoliating bark species observed. Although the areas identified receive direct sunlight for more than half a day and were located along fence lines, with semi-open understory, overall the areas provide only marginal roost and foraging habitat due small acreages of forested area. In addition, given the highly altered (developed-urban) state of the proposed project corridor, none of the other state listed species are expected to be potentially impacted. Strict adherence to standard BMP's will be necessary to reduce or eliminate impacts to the species of concern. Finally, direct impact is not anticipated; however, with only functional plans provided, the extent of direct impact to forested areas cannot be determined.

Construction of the alignment will undoubtedly result in some short-term and long-term impacts to both terrestrial and aquatic habitats within the project limits. Disturbance of only the area within ROW needed for construction of the proposed project and implementation, along with maintenance of effective erosion and sediment control measures throughout the duration of the project, will serve to minimize at least some of these impacts. The remaining impacts may be mitigated somewhat over time once project construction is complete.

**Summary table 1. Ecological Features within impact area**

Map Label/ Feature Name	Lat/Long	Feature Designation	Potential Impact	Estimated impact quantity	ETW or ONR W (Y/N)	303d Listed (Y/N) Reason for listing
STR-1	N36.137958 W86.529257	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-2	N36.169379 W86.523532	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N

Map Label/ Feature Name	Lat/Long	Feature Designation	Potential Impact	Estimated impact quantity	ETW or ONR W (Y/N)	303d Listed (Y/N) Reason for listing
STR-3	N36.169122 W86.521142	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
SPG-1/ STR-5	N36.171486 W86.515158	Intermittent stream	Fill/runoff	Unknown	N	N
STR-4	N36.171356 W86.515751	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
STR-6	N36.17037 W86.51474	Intermittent stream	Fill/runoff	Unknown	N	N
STR-7	N36.170432 W86.51184	Intermittent stream	Runoff	Unknown	N	N
STR-8	N36.172609 W86.505925	Intermittent stream	Fill/runoff	Unknown	N	N
STR-9	N36.17259 W86.504229	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-10	N36.171683 W86.50049	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-12	N36.173124 W86.494223	Perennial stream	Fill/runoff	Unknown	N	N
STR-13 Stoners Creek	N36.173294 W86.493307	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	Y Loss of biological integrity due to siltation and E. coli
STR-11	N36.173389 W86.499115	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-14	N36.173355 W86.492437	Intermittent stream	Fill/runoff	Unknown	N	N
STR-18	N36.174949 W86.47916	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-15	N36.174005 W86.492402	Intermittent stream	Fill/runoff	Unknown	N	N

<b>Map Label/ Feature Name</b>	<b>Lat/Long</b>	<b>Feature Designation</b>	<b>Potential Impact</b>	<b>Estimated impact quantity</b>	<b>ETW or ONR W (Y/N)</b>	<b>303d Listed (Y/N) Reason for listing</b>
SPG-2/ STR-16	N36.175511 W86.480937	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
STR-17	N36.175508 W86.480443	Intermittent stream	Fill/runoff	Unknown	N	N
SPG-3/ STR-19	N36.175914 W86.471924	Intermittent stream	Crossing/ encapsulation /runoff/fill	Unknown	N	N
STR-20	N36.176216 W86.469845	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-22 Rutland Creek	N36.17704 W86.4636	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-23	N36.177128 W86.46299	Intermittent stream	Fill/runoff	Unknown	N	N
STR-21	N36.177331 W86.466681	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-24	N36.179474 W86.457238	Perennial stream	Runoff	Unknown	N	N
STR-25	N36.176052 W86.455764	Intermittent stream	Fill/runoff	Unknown	N	N
STR-26	N36.17652 W86.454697	Perennial stream	Fill/runoff	Unknown	N	N
STR-27	N36.177222 W86.455243	Intermittent stream	Runoff	Unknown	N	N
STR-28 Sullivan Branch	N36.178165 W86.453291	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-29	N36.179232 W86.447477	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-30	N36.180692 W86.437025	Intermittent stream	Fill/runoff	Unknown	N	N
STR-31 Wilson Creek	N36.180844 W86.436163	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N

<b>Map Label/ Feature Name</b>	<b>Lat/Long</b>	<b>Feature Designation</b>	<b>Potential Impact</b>	<b>Estimated impact quantity</b>	<b>ETW or ONR W (Y/N)</b>	<b>303d Listed (Y/N) Reason for listing</b>
STR-32	N36.182636 W86.428128	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-33	N36.182657 W86.427533	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-34	N36.182671 W86.427324	Intermittent stream	Fill/runoff	Unknown	N	N
STR-35	N36.182974 W86.41904	Intermittent stream	Fill/runoff	Unknown	N	N
STR-36	N36.183114 W86.418632	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-37 South Fork	N36.183554 W86.410927	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-38 Middle Fork	N36.186482 W86.408571	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	Y loss of biological integrity due to siltation and for other anthropogenic habitat alterations
STR-41 Middle Fork	N36.183998 W86.384206	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	Y loss of biological integrity due to siltation and for other anthropogenic habitat alterations
STR-39	N36.185244 W86.397585	Perennial stream	Crossing/ encapsulation /runoff	Unknown	N	N
STR-40	N36.185137 W86.395507	Intermittent stream	Crossing/ encapsulation /runoff	Unknown	N	N
PND-1	N36.168103 W86.529318	Farm pond	Fill/runoff	Unknown	N/A	N
PND-2	N36.171454 W86.500595	Farm pond	Runoff	Unknown	N/A	N

<b>Map Label/ Feature Name</b>	<b>Lat/Long</b>	<b>Feature Designation</b>	<b>Potential Impact</b>	<b>Estimated impact quantity</b>	<b>ETW or ONR W (Y/N)</b>	<b>303d Listed (Y/N) Reason for listing</b>
PND-3	N W	Detention pond	Runoff	Unknown	N/A	N
WWC-1	N36.167612 W86.530836	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-2	N36.168787 W86.525649	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-4	N36.168474 W86.523567	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-3	N36.168425 W86.524475	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-5	N36.173843 W86.493804	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-6	N36.174833 W86.485461	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-7	N36.174753 W86.480773	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-8	N36.175122 W86.478497	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-9	N36.175971 W86.471569	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-10	N36.176023 W86.471404	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-11	N36.176262 W86.470056	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-12	N36.176353 W86.469611	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-13	N36.177073 W86.468988	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-14	N36.177599 W86.464607	Wet weather conveyance	Crossing/ encapsulation /fill/runoff	Unknown	N/A	N

<b>Map Label/ Feature Name</b>	<b>Lat/Long</b>	<b>Feature Designation</b>	<b>Potential Impact</b>	<b>Estimated impact quantity</b>	<b>ETW or ONR W (Y/N)</b>	<b>303d Listed (Y/N) Reason for listing</b>
WWC-14.1	N36.177919 W86.464012	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-14.2	N36.177816 W86.463607	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-15	N36.180068 W86.441039	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-18	N36.18082 W86.435788	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-16	N36.181304 W86.437298	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-17	N36.181542 W86.435413	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
WWC-19	N36.184623 W86.412754	Wet weather conveyance	Fill/runoff	Unknown	N/A	N
SNK-1	N36.167627 W86.531162	Sinkhole	Fill	Unknown	N/A	N
SNK-2	N36.174891 W86.485598	Open- throated sinkhole	Fill	Unknown	N/A	N
SNK-3	N36.179188 W86.448468	Open- throated sinkhole	Fill	Unknown	N/A	N
SNK-4	N36.18032 W86.439934	Open- throated sinkhole	Fill	Unknown	N/A	N
SNK-5	N36.181634 W86.433961	Open- throated sinkhole	Fill	Unknown	N/A	N
WTL-1	N36.167895 W86.529503	Wetland	Fill/runoff	0.016 acres	N/A	N
WTL-2	N36.167956 W86.528792	Wetland	Fill/runoff	0.010 acres	N/A	N
WTL-3	N36.170274 W86.516284	Wetland	Fill/runoff	0.042 acres	N/A	N

<b>Map Label/ Feature Name</b>	<b>Lat/Long</b>	<b>Feature Designation</b>	<b>Potential Impact</b>	<b>Estimated impact quantity</b>	<b>ETW or ONR W (Y/N)</b>	<b>303d Listed (Y/N) Reason for listing</b>
WTL-4	N36.171519 W86.515002	Wetland	Fill/runoff	0.073 acres	N/A	N
WTL-5	N36.170388 W86.514974	Wetland	Fill/runoff	0.042 acres	N/A	N
WTL-6	N36.172419 W86.507945	Wetland	Fill/runoff	0.053 acres	N/A	N
WTL-7	N36.171909 W86.505716	Wetland	Fill/runoff	0.229 acres	N/A	N
WTL-8	N36.172503 W86.499299	Wetland	Fill/runoff	0.002 acres	N/A	N
WTL-9	N36.173172 W86.492057	Wetland	Fill/runoff	0.13 acres	N/A	N
WTL-10	N36.175554 W86.481037	Wetland	Fill/runoff	0.01 acres	N/A	N
WTL-11	N36.17583 W86.472564	Wetland	Fill/runoff	0.04 acres	N/A	N
WTL-12	N36.176855 W86.470864	Wetland	Fill/runoff	0.05 acres	N/A	N
WTL-13	N36.177196 W86.462315	Wetland	Fill/runoff	0.02 acres	N/A	N
WTL-14	N36.177451 W86.455243	Wetland	Fill/runoff	N/A	N/A	N
WTL-15	N36.179128 W86.454273	Wetland	Fill/runoff	N/A	N/A	N
WTL-16	N36.179886 W86.447959	Wetland	Fill/runoff	0.01 acres	N/A	N
WTL-17	N36.180608 W86.437207	Wetland	Fill/runoff	0.12 acres	N/A	N
WTL-18	N36.181747 W86.428304	Wetland	Fill/runoff	0.03 acres	N/A	N
WTL-19	N36.182701 W86.427598	Wetland	Fill/runoff	0.05 acres	N/A	N

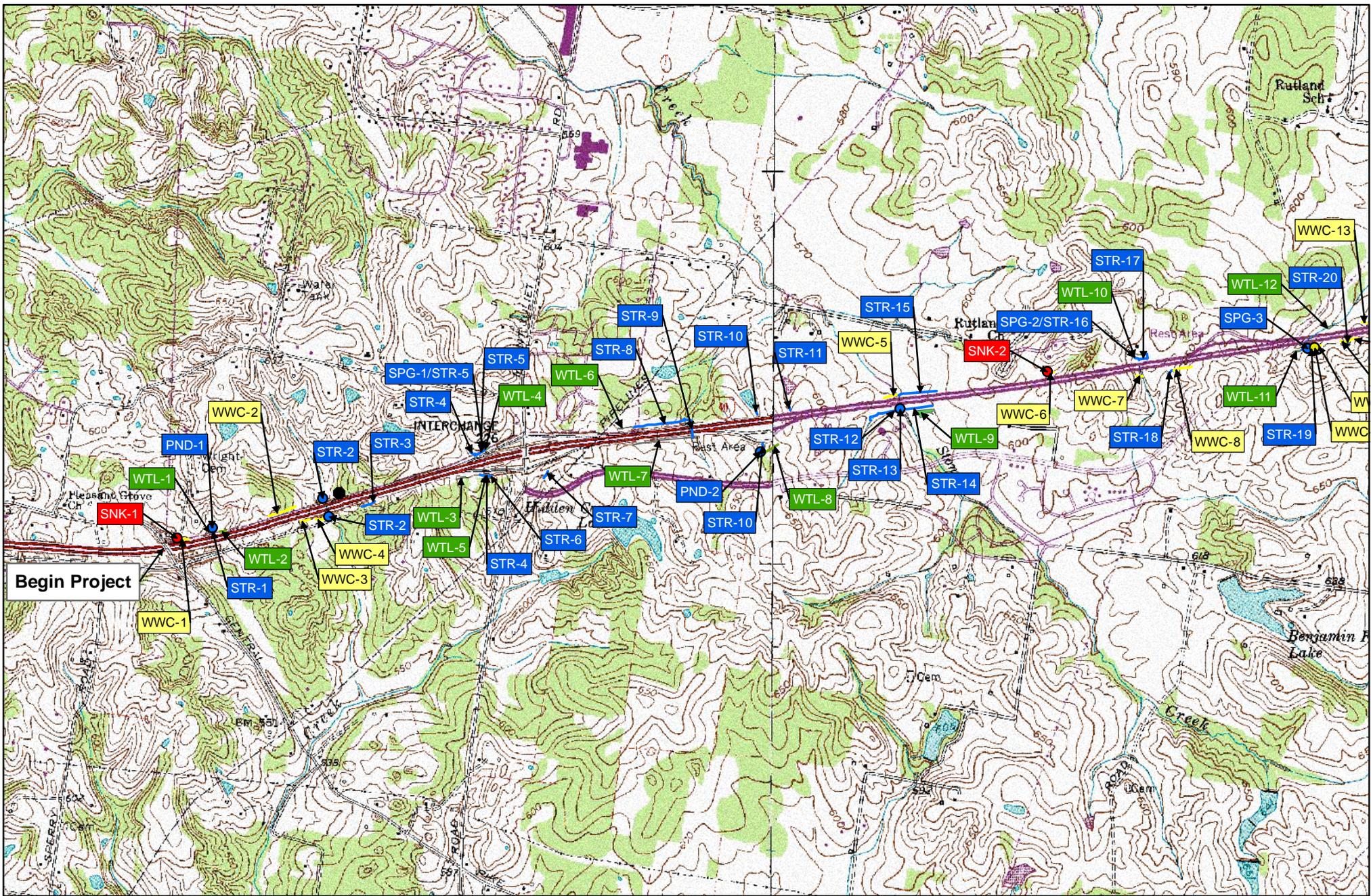
I-40, Central Pike to East of SR-109  
Wilson County, TN  
PIN: 114169.00

Map Label/ Feature Name	Lat/Long	Feature Designation	Potential Impact	Estimated impact quantity	ETW or ONR W (Y/N)	303d Listed (Y/N) Reason for listing
WTL-20	N36.181963 W86.426977	Wetland	Fill/runoff	0.04 acres	N/A	N
WTL-21	N36.182744 W86.42128	Wetland	Fill/runoff	0.13 acres	N/A	N
WTL-22	N36.182975 W86.419659	Wetland	Fill/runoff	0.12 acres	N/A	N
WTL-23	N36.185155 W86.410393	Wetland	Fill/runoff	0.03 acres	N/A	N
WTL-24	N36.18575 W86.408692	Wetland	Fill/runoff	0.04 acres	N/A	N
WTL-25	N36.186186 W86.408368	Wetland	Fill/runoff	0.05 acres	N/A	N
WTL-26	N36.184593 W86.395001	Wetland	Fill/runoff	0.11 acres	N/A	N

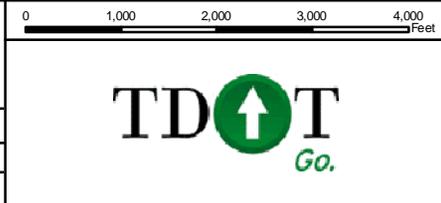
**Summary table 2. Species listed by TDEC and FWS for consideration.**

Species	Status		Species Likely Present (Y/N)	BA required (Y/N)	BA Conclusion
	Fed.	State			
Glade cress ( <i>Leavenworthia exigua</i> var. <i>exigua</i> )		S	N	N	
Limestone blue star ( <i>Amsonia tabernaemontana</i> var. <i>gattingeri</i> )		S	N	N	
Glade onion ( <i>Allium stellatum</i> )		E	N	N	
Western hairy rockcress ( <i>Arabis hirsuta</i> )		T	N	N	
Pope's sand parsley ( <i>Ammoselinum popei</i> )		T	N	N	
Tennessee milk-vetch ( <i>Astragalus tennesseensis</i> )		S	N	N	
Spring Creek bladderpod ( <i>Lesquerella perforata</i> )	LE	E	N	N	
Glade cleft phlox ( <i>Phlox bifida</i> )		T	N	N	
Indiana bat ( <i>Myotis sodalis</i> )	LE	E	N	N	
Yellow sunnybell ( <i>Schoenolirion croceum</i> )		T	N	N	
Limestone fame flower ( <i>Talinum calcaricum</i> )		S	N	N	
Barn owl ( <i>Tyto alba</i> )		D	N	N	

INSERT STUDY BOUNDARIES MAP HERE

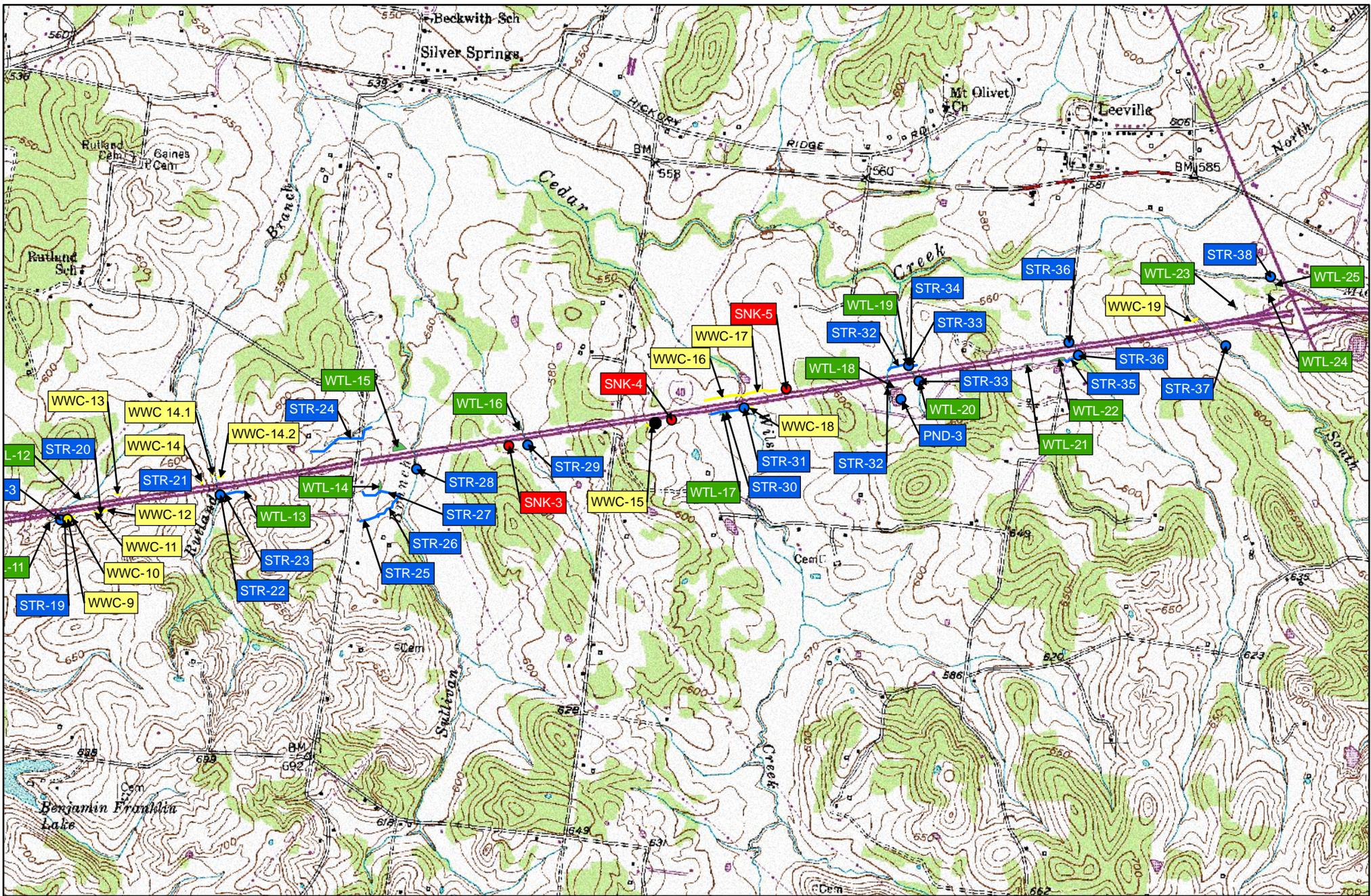


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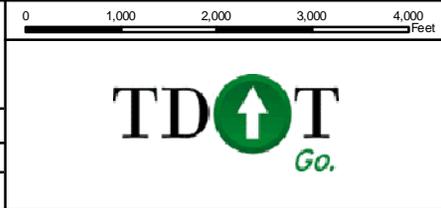


ISSUED FOR: Jennifer Thompson, TDOT  
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Form G Map  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 1 of 3  
 PROJECT NO.: 110-496  
 FIGURE: 1

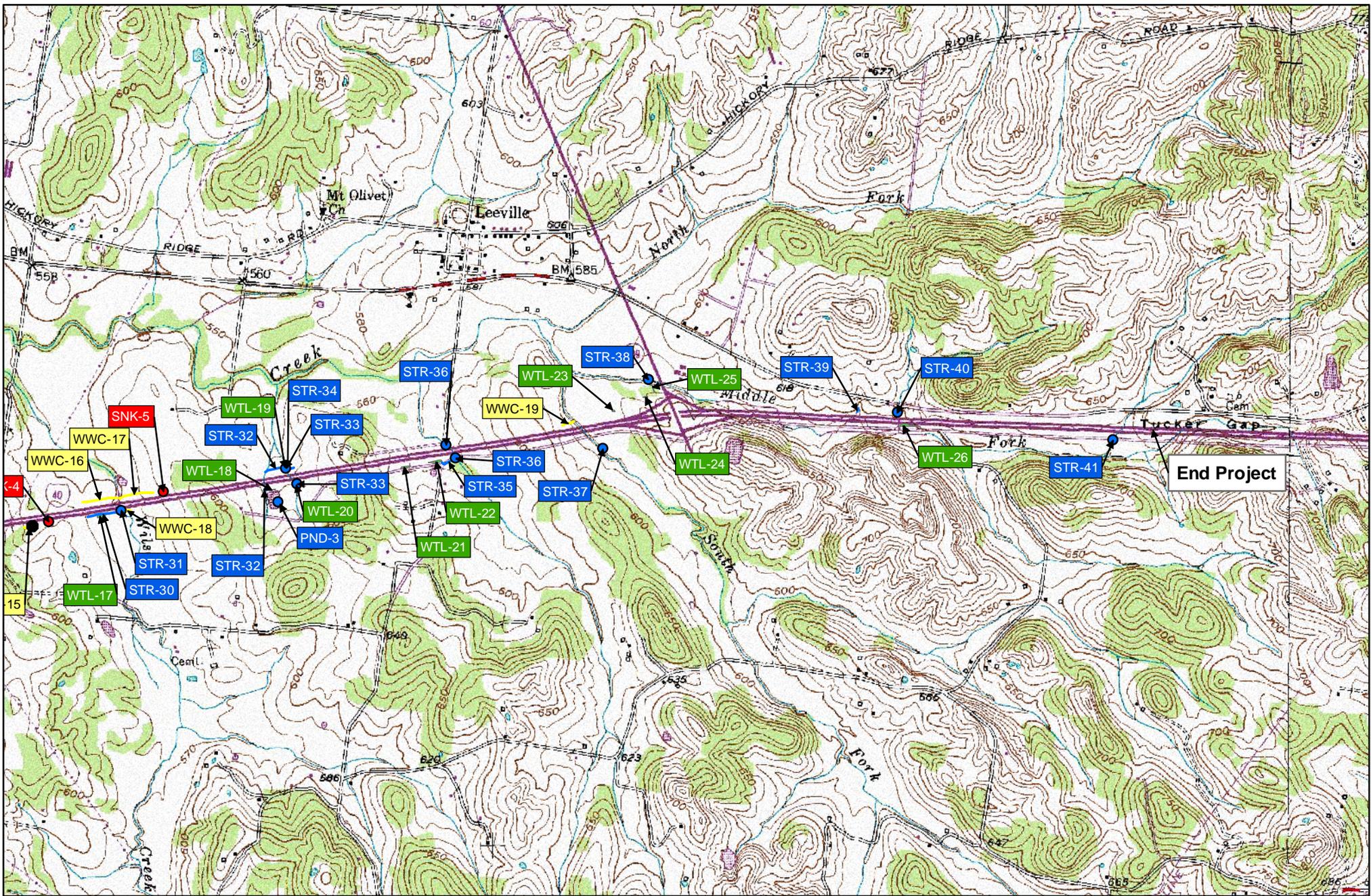


N  
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 CHK BY: [initials]  
 SCALE: 1:24,000  
 DATE: 05/18/2011



ISSUED FOR: Jennifer Thompson, TDOT  
 ISSUED BY:  
 CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
 405 Duke Drive, Suite 270  
 Franklin, Tennessee 37067  
 615-333-7797  
 Columbus, OH \* Cincinnati, OH \* Indianapolis, IN \* Chicago, IL \* St. Louis, MO \* Export, PA \* Detroit, MI \* Pittsburgh, PA

Form G Map  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 2 of 3  
 PROJECT NO.: 110-496      FIGURE: 1



End Project

  
 DWN BY: ooc  
 CHK BY: j  
 SCALE: 1:24,000  
 DATE: 05/18/2011

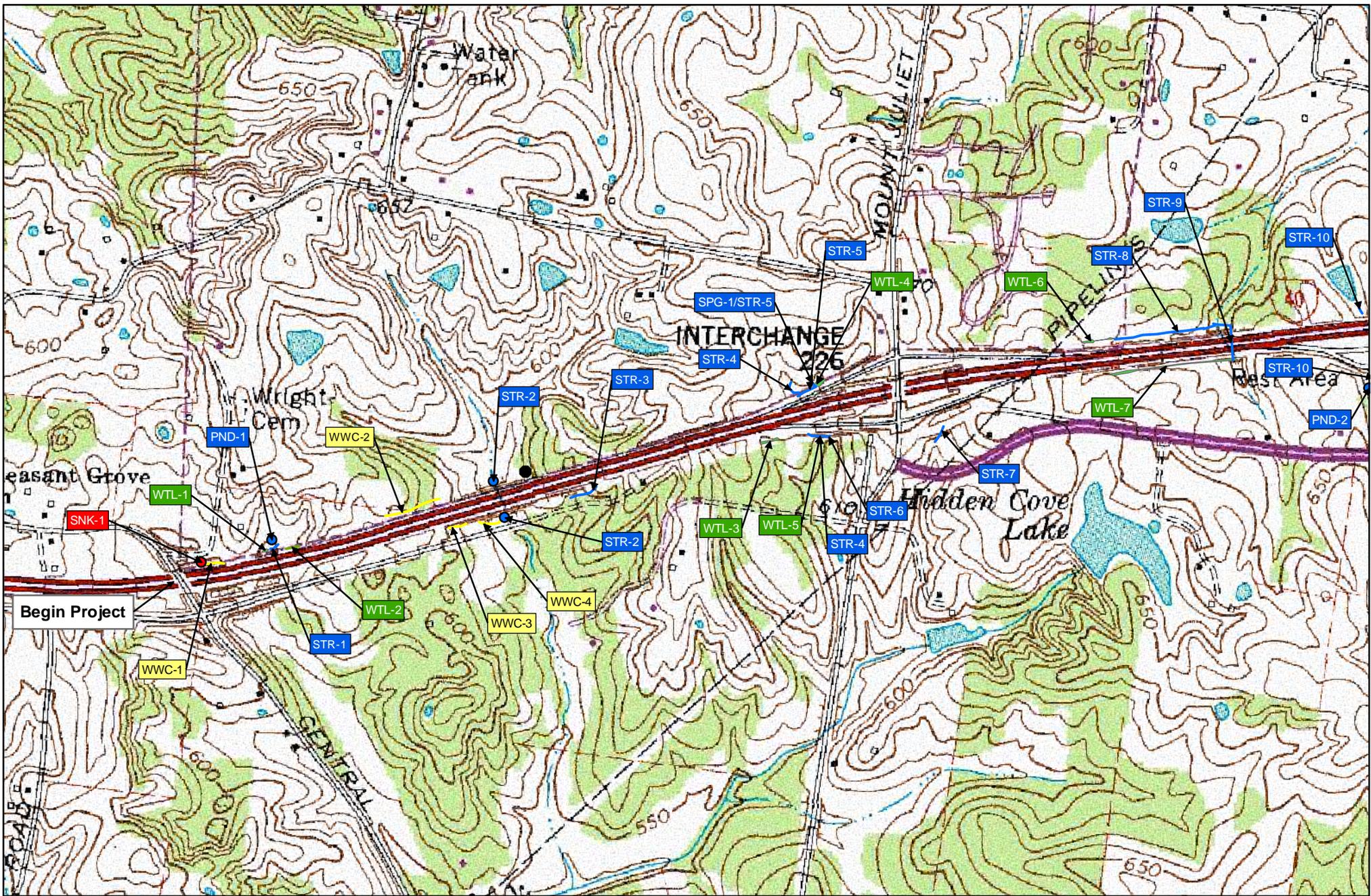
0 1,000 2,000 3,000 4,000 Feet



Go.

ISSUED FOR: Jennifer Thompson, TDOT  
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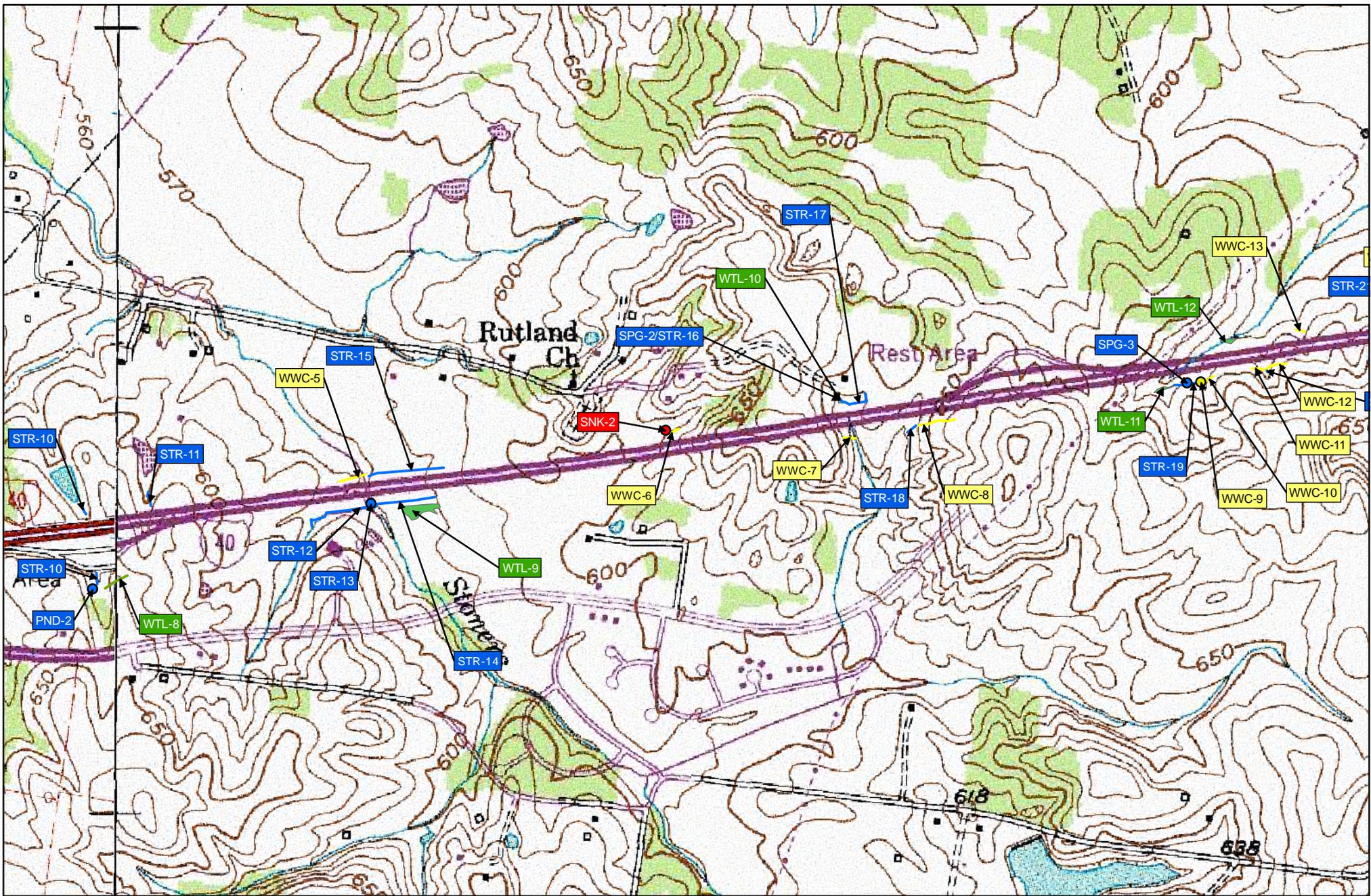
Form G Map  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 3 of 3  
 PROJECT NO.: 110-496      FIGURE: 1



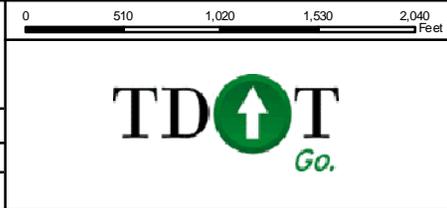
N  
 0 510 1,020 1,530 2,040 Feet  
**TDOT**  
 Go.  
 DWN BY: oec    CHK BY: jf  
 SCALE: 1:12,000  
 DATE: 05/18/2011

ISSUED FOR: Jennifer Thompson, TDOT  
 ISSUED BY:  
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Form G Map (1:12000)  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 1 of 5  
 PROJECT NO.: 110-496    FIGURE: 2

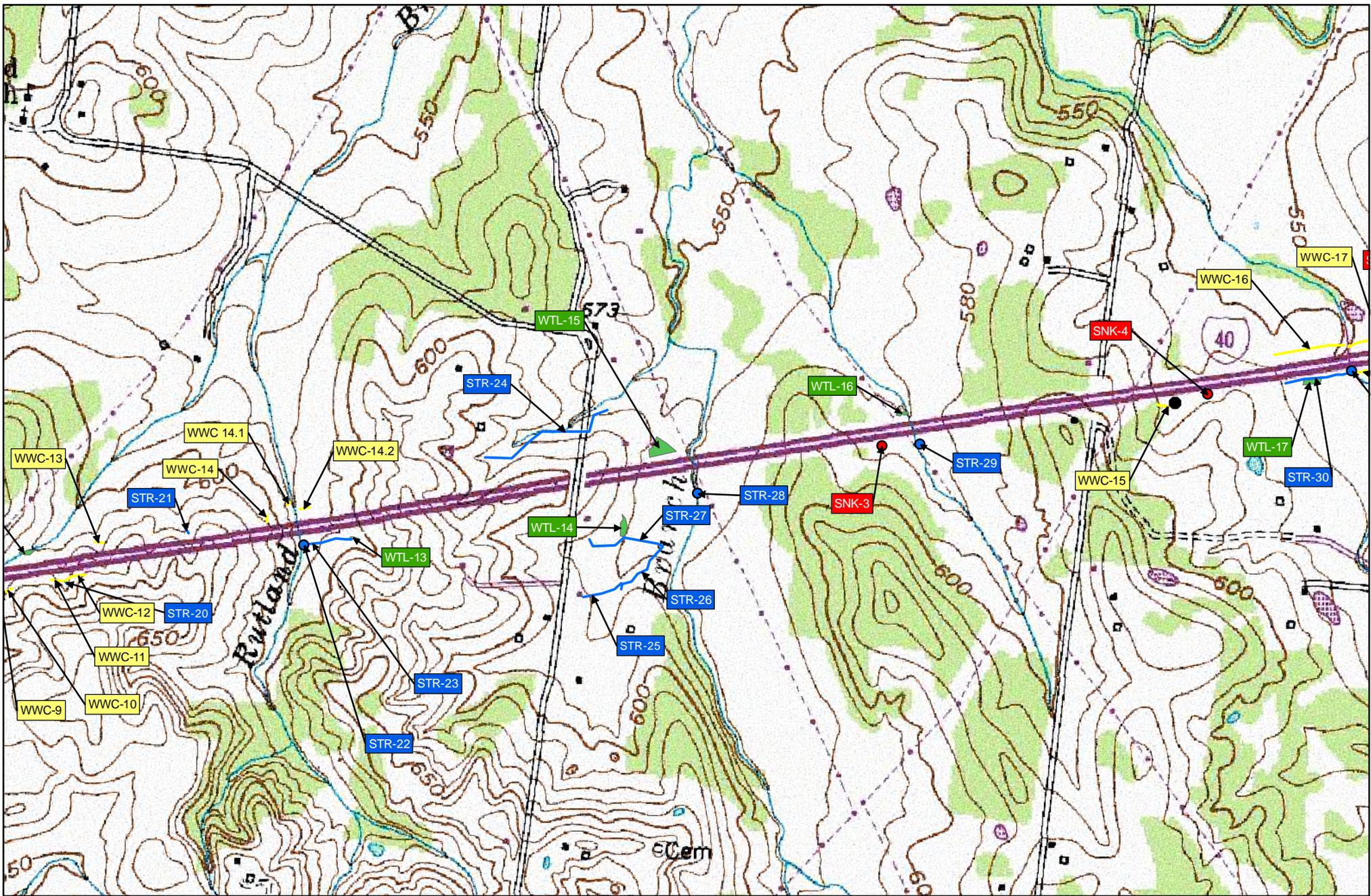


N  
 DWN. BY: ooc  
 CHK. BY: j  
 SCALE: 1:12,000  
 DATE: 05/18/2011



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Form G Map (1:12000)  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 2 of 5  
 PROJECT NO.: 110-496      FIGURE: 2

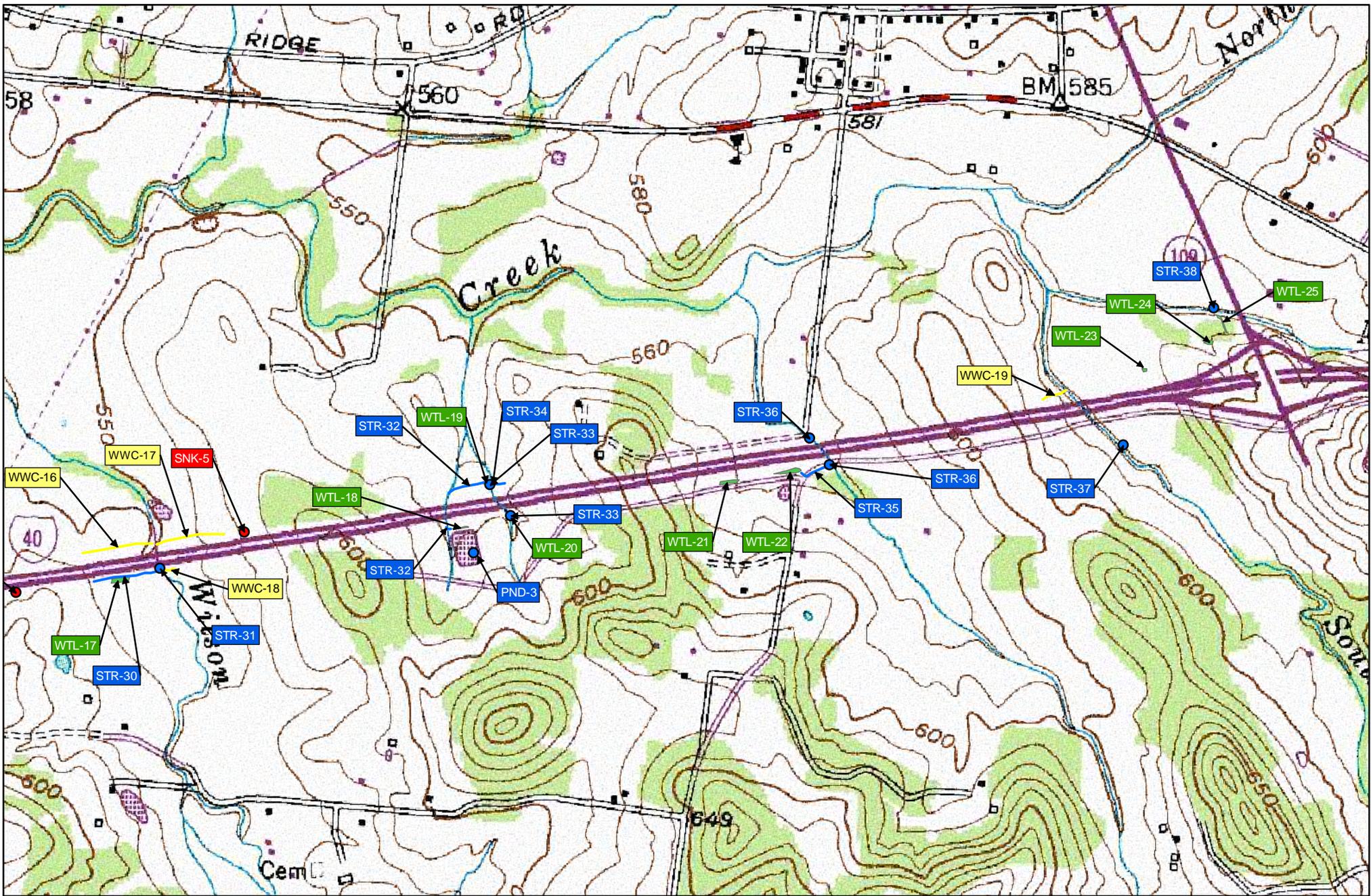


N  
 DWN BY: [initials]  
 CHK BY: [initials]  
 SCALE: 1:12,000  
 DATE: 05/18/2011

0 510 1,020 1,530 2,040 Feet

ISSUED FOR: Jennifer Thompson, TDOT  
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Form G Map (1:12000)  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 3 of 5  
 PROJECT NO.: 110-496      FIGURE: 2

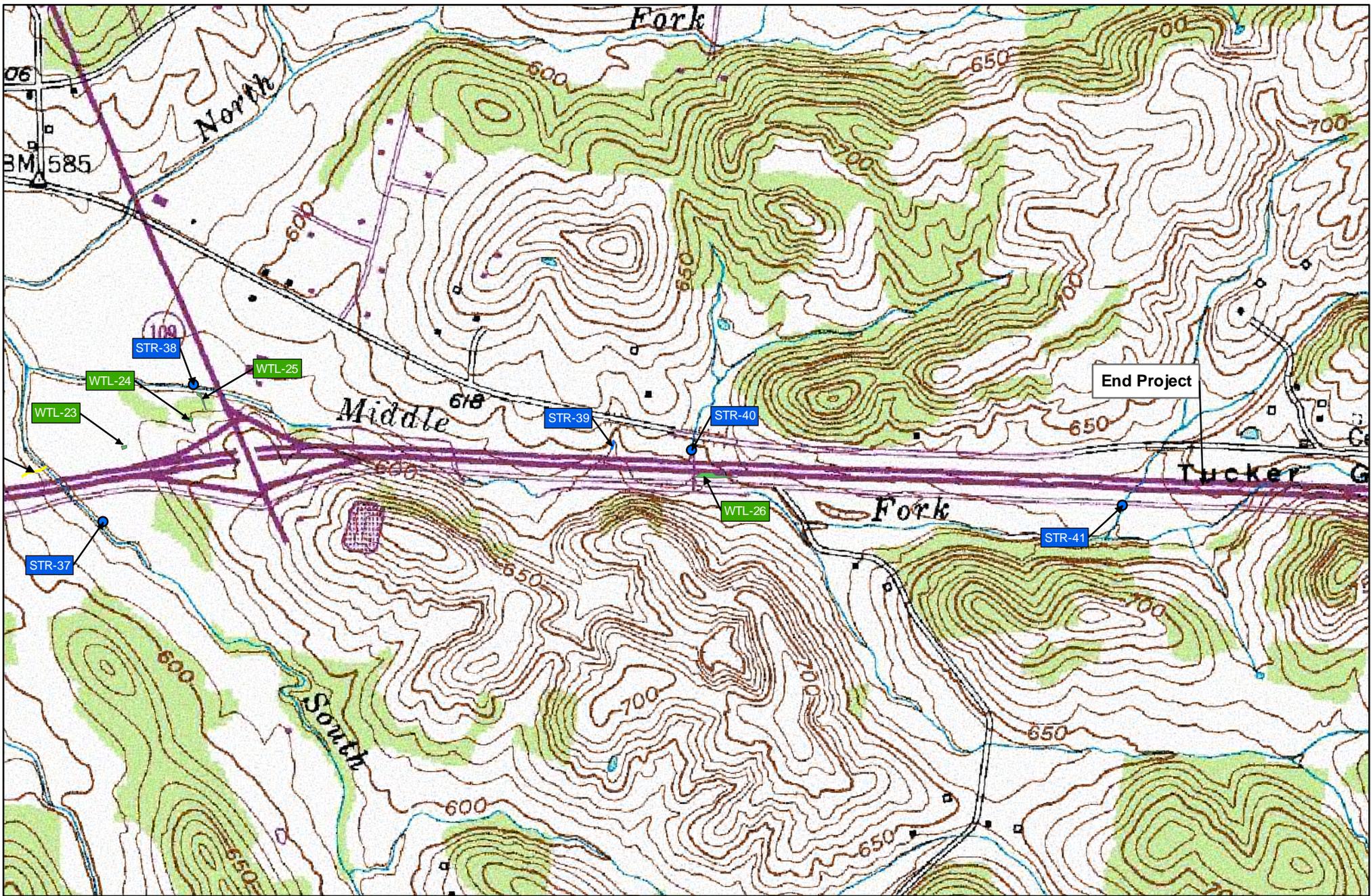


N  
 0 510 1,020 1,530 2,040 Feet  
 DWN BY: ooc    CHK BY: j  
 SCALE: 1:12,000  
 DATE: 05/18/2011



ISSUED FOR: Jennifer Thompson, TDOT  
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Form G Map (1:12000)  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 4 of 5  
 PROJECT NO.: 110-496    FIGURE: 2



  
 DWN BY:   
 cbc  
 CHK BY:   
 B  
 SCALE: 1:12,000  
 DATE: 05/18/2011

  
**TDOT**  
 Go.

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Form G Map (1:12000)  
 I-40 from W. of SR-171 to E. of SR-109  
 Wilson County  
 P.E.95100-0105-44; TX00098301; PIN 114169.00  
 Sheet 5 of 5  
 PROJECT NO.: 110-496      FIGURE: 2

## Appendix A

Field Data Sheets  
(Form G, Form N, Photo Summary)



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-1
<b>3-Latitude/Longitude</b>	N36.167612, W86.530936
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y - poorly
straight or meandering	Straight
channel bottom width	1'
top of bank width	1.5'
bank height and slope ratio	6", 3:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel
riffle/run/pool	N/A
width of buffer zone	LB: 30'      RB: 10'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	None
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: fescue, green ash, cottonwood, winged elm
overhead canopy (%)	5%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	2 u/g, 3 d/g
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-1  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/06/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030305, Percy priest lake  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): < 1%  
 Subregion (LRR or MLRA): LLR Lat: N36.167895 Long: W86.529503 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 5 to 12 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>4 west, 5 soil</u> Buffer (ft.): <u>50'</u> Approximate Size (ac.): <u>0.016</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Map Label: WTL-1

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	<u>15%</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Red maple (Acer rubrum)</u>	<u>25%</u>	<u>Yes</u>	<u>FAC</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
				_____ = Total Cover
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
				_____ = Total Cover
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Cattails (Carex typhina)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Soft rush (Juncus effusus)</u>	<u>5%</u>	<u>Yes</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				_____ = Total Cover
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. <u>Japanese honeysuckle (Lonicera japonica)</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
				_____ = Total Cover

**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 \_\_\_\_\_ 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 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

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

**SOIL**

Map Label: WTL-1

**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>	Loc <sup>2</sup>		
0 - 6"	10YR 5/2	90%	7.5YR 5/6	10%			Silty clay	Fe concretions abundant
6" - 10"	10YR 5/3	100%					Silty clay	concretions

<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) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
---	--

Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	PND-1
<b>3-Latitude/Longitude</b>	N36.168103, W86.529319
<b>4-Potential impact</b>	Runoff
<b>5-Feature description:</b>	
what is it	Farm pond
blue-line on topo? (y/n)	N
defined channel (y/n)	N
straight or meandering	N/A
channel bottom width	N/A
top of bank width	N/A
bank height and slope ratio	N/A
avg. gradient of stream (%)	N/A
substratum	N/A
riffle/run/pool	N/A
width of buffer zone	LB: 0      RB: 40'
water flow	N/A
water depth	2'
water width	60' x 30'
general water quality	Fair
OHWM indicators	None
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: black willow, cattails, cottonwood, sugarberry
overhead canopy (%)	20%
benthos	None seen
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	6
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	60' x 30' farm pond located just outside the current TDOT ROW fence.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-1 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.167958, W86.529257
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1' - 2'
top of bank width	2.5'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel
riffle/run/pool	20/60/20
width of buffer zone	LB: 20'      RB: 20'
water flow	Yes
water depth	2"
water width	2'
general water quality	Good
OHWB indicators	Wrack lines
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, black willow, sugarberry, <i>Carex sp.</i>
overhead canopy (%)	80%
benthos	Isopoda (+10 sp.)
fish	No
algae or other aquatic life	No
habitat assessment score	132 (suboptimal)
photo number (s)	7 u/s, 8 d/s, 9 at culvert inlet
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-2  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/06/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030305, Percy priest lake  
 Landform (hillslope, terrace, etc.): Lowland ditch Local relief (concave, convex, none): None Slope (%): < 1%  
 Subregion (LRR or MLRA): LLR Lat: N36.167959 Long: W86.528792 Datum: WGS 84  
 Soil Map Unit Name: Inman flaggy silt clay loam, 12 to 20 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>10west, 11 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): _____ Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)                      ___ True Aquatic Plants (B14) ___ High Water Table (A2)                      ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)                                      ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)                                      ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2)                      ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3)                                      ___ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4)                                      ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ 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) ___ Crayfish Burrows (C8) ___ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
**Wetland is present likely due to poorly constructed drainage channel.**

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

Map Label: WTL-2

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
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. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = 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 = _____
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Fescue (Lolium arundinaceum)</u>	<u>80%</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
2. <u>spike rush (Eleocharis sp.)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				<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 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.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-2
<b>3-Latitude/Longitude</b>	N36.168787, W86.525649
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	2.5'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	2%
substratum	Soil
riffle/run/pool	N/A
width of buffer zone	LB: 100'      RB: 30'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	Leaf litter washed away
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, ironwood, hackberry, eastern red cedar
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	12 u/g, 13 d/g
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-2 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.169379, W86.523532
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	5' – 6'
top of bank width	7'
bank height and slope ratio	1' – 2', 1:1
avg. gradient of stream (%)	2%
substratum	Boulder, cobble, gravel
riffle/run/pool	10/30/60
width of buffer zone	LB: 0    RB: 0
water flow	Yes
water depth	3" – 6"
water width	5'
general water quality	Good
OHWM indicators	Clear line impressed on bank
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, red maple, fescue, shumard oak
overhead canopy (%)	50%
benthos	Ephemeroptera (+5), plecoptera (4), trichoptera (3)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	149 (suboptimal)
photo number (s)	14 u/s, 15 d/s, 16 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-4
<b>3-Latitude/Longitude</b>	N36.168474, W86.523567
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1' – 2'
top of bank width	2'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	2%
substratum	Soil, cobble
riffle/run/pool	N/A
width of buffer zone	LB: 30'      RB: 20'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Presence of litter and debris
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, hackberry, honey locust
overhead canopy (%)	75%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	17 d/g, 18 u/g
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-3
<b>3-Latitude/Longitude</b>	N36.168425, W86.524475
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	2'
bank height and slope ratio	6" – 2', 3:1
avg. gradient of stream (%)	2%
substratum	Soil, vegetation
riffle/run/pool	N/A
width of buffer zone	LB: 30'      RB: 30'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	None
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: winged elm, eastern red cedar
overhead canopy (%)	80%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	19 d/g, 20 u/g
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-3 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.169122, W86.521142
<b>4-Potential impact</b>	Crossing/encapsulation/runoff/fill
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1' – 2'
top of bank width	2'
bank height and slope ratio	6"; 2:1
avg. gradient of stream (%)	2%
substratum	Soil, rock, gravel
riffle/run/pool	20/60/20
width of buffer zone	LB: 20'      RB: 20'
water flow	Yes
water depth	1"
water width	2'
general water quality	Poor
OHWM indicators	Presence of litter and debris
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, eastern red cedar
overhead canopy (%)	90%
benthos	Isopoda (+5 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	98 (poor)
photo number (s)	21 u/s, 22 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-3  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/06/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030305, Percy priest lake  
 Landform (hillslope, terrace, etc.): Drainage ditch Local relief (concave, convex, none): None Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.170274 Long: W86.516284 Datum: WGS 84  
 Soil Map Unit Name: Arents, 2 to 15 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: Photos: <u>23</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.05</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	<b>Secondary Indicators (minimum of two required)</b>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	___ Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Surface Water (A1)	___ Sparsely Vegetated Concave Surface (B8)
___ High Water Table (A2)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	___ Moss Trim Lines (B16)
<input checked="" type="checkbox"/> Water Marks (B1)	___ Dry-Season Water Table (C2)
___ Sediment Deposits (B2)	___ Crayfish Burrows (C8)
___ Drift Deposits (B3)	___ Saturation Visible on Aerial Imagery (C9)
___ Algal Mat or Crust (B4)	___ Stunted or Stressed Plants (D1)
___ Iron Deposits (B5)	___ Geomorphic Position (D2)
___ Inundation Visible on Aerial Imagery (B7)	___ Shallow Aquitard (D3)
___ Water-Stained Leaves (B9)	___ Microtopographic Relief (D4)
___ Aquatic Fauna (B13)	___ FAC-Neutral Test (D5)
<b>Field Observations:</b>	
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	

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

Remarks:  
 Wetland consists of two main areas separated by a small channel located along the current TDOT ROW fence.

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

Map Label: WTL-3

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Black willow (Salix nigra)</u>	<u>20%</u>	<u>Yes</u>	<u>OBL</u>	<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. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = 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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>Herb Stratum</b> (Plot size: _____ )					
1. <u>Cattails (Carex tyhpina)</u>	<u>60%</u>	<u>Yes</u>	<u>OBL</u>		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <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 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.
2. <u>Soft rush (Juncus effusus)</u>	<u>5%</u>	<u>Yes</u>	<u>FACW</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					

**SOIL**

Map Label: **WTL-3**

**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>	Loc <sup>2</sup>		
0 - 8"	10YR 5/2	70%	7.5YR 5/6	30%			Silty	

<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> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	Hydric Soil Present?    Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	SPG-1/STR-5 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.171486, W86.515158
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Spring and intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	1.5'
bank height and slope ratio	8", 4:1 – 2:1
avg. gradient of stream (%)	2%
substratum	Soil, vegetation
riffle/run/pool	0/100/0
width of buffer zone	LB: 50' RB: 10'
water flow	Yes – minimal
water depth	0.5"
water width	1'
general water quality	Poor
OHWI indicators	Water staining
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: eastern red cedar, privet, redbud, hackberry
overhead canopy (%)	80%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	80 (poor)
photo number (s)	24 u/s, 25 SPG-1, 26 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Spring is 2' x 2' with heavy iron precipitate (see photos 25 and 26).

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-4  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/06/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030305, Percy priest lake  
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): None Slope (%): \_\_\_\_\_  
 Subregion (LRR or MLRA): LLR Lat: N36.171519 Long: W85.515002 Datum: WGS 84  
 Soil Map Unit Name: Arents, 2 to 15 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>27 east, 28 soil</u> Buffer (ft.): L: <u>100</u> R: <u>0</u> Approximate Size (ac.): <u>0.073</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-4

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Sugarberry (Celtis laevigata)</u>	40%	Yes	FACW	<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. <u>Cottonwood (Populus deltoides)</u>	20%	Yes	FAC	
3. <u>Sycamore (Platanus occidentalis)</u>	30%	Yes	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
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 = _____
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Spike rush (Eleocharis sp.)</u>	5%	Yes	OBL	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				<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 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.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				
				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: (Include photo numbers here or on a separate sheet.)				



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-4 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.171356, W86.515751
<b>4-Potential impact</b>	Crossing/encapsulation/runoff/fill
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1'
top of bank width	3'
bank height and slope ratio	2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, rock, gravel
riffle/run/pool	40/10/50
width of buffer zone	LB: 100'      RB: 100'
water flow	Yes
water depth	2" - 3"
water width	1'
general water quality	Poor
OHWM indicators	Scouring, presence of litter and debris
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: eastern red cedar, hackberry, shagbark hickory, post oak
overhead canopy (%)	90%
benthos	None seen
fish	No
algae or other aquatic life	No
habitat assessment score	118 (marginal)
photo number (s)	29 u/s, 30 d/s, 31 u/s, 32 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-5  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/06/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030305, Percy priest lake  
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): None Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.1170388 Long: W86.514974 Datum: WGS 84  
 Soil Map Unit Name: Arents, 2 to 15 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>31 west</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.042</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1" - 5"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
 Wetland is located in a roadside ditch area that is also lined with some rip rap. Check dams are still in place down gradient of the ditch line causing the water to back up creating this wetland. STR-5 runs through wetland.

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

Map Label: WTL-5

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Black willow (Salix nigra)</u>	<u>80%</u>	<u>Yes</u>	<u>OBL</u>	<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. _____					
8. _____					
_____ = 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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>Herb Stratum</b> (Plot size: _____ )					
1. <u>Privet</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <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 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.
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-6 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.17037, W86.51474
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1.5'
top of bank width	2'
bank height and slope ratio	8"; 2:1
avg. gradient of stream (%)	2%
substratum	Soil, rock
riffle/run/pool	10/80/10
width of buffer zone	LB: 30'      RB: 30'
water flow	Yes
water depth	1"
water width	1.5'
general water quality	Poor
OHWI indicators	Presence of litter and debris
groundwater connection	Yes – emerges from side of bank
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: black willow, privet, boxelder
overhead canopy (%)	90%
benthos	Isopoda (+5 sp)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	95 (poor)
photo number (s)	33 u/s, 34 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	There is only 15' of the channel exposed. It begins as seepage from rocks and runs for ~ 15' then enters a culvert on the south side of I-40.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-7 (Unnamed tributary to North Creek)
<b>3-Latitude/Longitude</b>	N36.170432, W86.51184
<b>4-Potential impact</b>	Runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2'
top of bank width	3'
bank height and slope ratio	1'; 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, rock
riffle/run/pool	20/20/60
width of buffer zone	LB: 20'      RB: 20'
water flow	Yes
water depth	2"
water width	1.5'
general water quality	Poor
OHWI indicators	Water staining
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, black willow, fescue, eastern red cedar, red maple, Japanese honeysuckle
overhead canopy (%)	90%
benthos	Isopoda (6 sp.), amphipoda (3 sp)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	96 (poor)
photo number (s)	35 u/s, 36 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030305, Percy Priest Lake
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Heavy iron precipitate.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-6  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/06/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030307, Stoner Creek

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): < 2%

Subregion (LRR or MLRA): LLR Lat: N36.172419 Long: W86.507945 Datum: WGS 84

Soil Map Unit Name: Arents, 2 to 15 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: Photos: <u>37 soil, 38 north</u> Buffer (ft.): L: <u>50'</u> R: <u>0</u> Approximate Size (ac.): <u>0.053</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)      ___ True Aquatic Plants (B14) ___ High Water Table (A2)      ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)      ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)      ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2)      ___ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3)      ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4)      ___ Other (Explain in Remarks) <input checked="" type="checkbox"/> Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) ___ 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 _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u>	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
**Wetland is located behind trailer park just west of the Mt. Juliet exit.**

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

Map Label: WTL-6

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Winged elm (Ulmus alata)</u>	<u>10%</u>	<u>Yes</u>	<u>FACU</u>	<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. <u>Green ash (Fraxinus pennsylvanica)</u>	<u>50%</u>	<u>Yes</u>	<u>FACW</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____	_____	_____	_____		
_____ = 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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. <u>Privet (Ligustrum sinense)</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>Herb Stratum</b> (Plot size: _____ )					
1. <u>Fescue (Lolium arundinaceum)</u>	<u>5%</u>	<u>Yes</u>	<u>FAC</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
_____ = 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 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.	
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. <u>Japanese honeysuckle (Lonicera japonica)</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
Remarks: (Include photo numbers here or on a separate sheet.)					

**SOIL**

Map Label: **WTL-6**

**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>	Loc <sup>2</sup>		
0 - 10"	10YR 5/2	70%	10YR 5/6	30%			Silty	

<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> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-8 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.172609, W86.505925
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2' upstream, 3' – 4' downstream
top of bank width	3' upstream, 8' – 10' downstream
bank height and slope ratio	6" – 1' upstream, 5' downstream, 2:1
avg. gradient of stream (%)	2%
substratum	Soil, gravel
riffle/run/pool	20/20/60
width of buffer zone	LB: 30'      RB: 30'
water flow	Yes – minimal
water depth	0.5"
water width	1'
general water quality	Poor
OHWI indicators	Wrack lines, deposition
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, hackberry, green ash, Japanese honeysuckle
overhead canopy (%)	90%
benthos	Isopoda (~20 sp), amphipoda (~20 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	104 (marginal)
photo number (s)	39 u/s, 40 d/s, 41 u/s, 42 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 6, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-9 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.17259, W86.504229
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	2' – 3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel, concrete
riffle/run/pool	10/30/60
width of buffer zone	LB: 20'      RB: 20'
water flow	Yes
water depth	3" – 6"
water width	1' – 2'
general water quality	Poor
OHWI indicators	Leaf litter washed away
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: rubus, black willow, green ash, soft rush
overhead canopy (%)	75%
benthos	Not sampled, concrete lined ditch.
fish	None
algae or other aquatic life	Filamentous green algae
habitat assessment score	106 (marginal)
photo number (s)	43 d/s, 44 u/s, 45 u/s, 46 d/s
rainfall information	2.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	The channel becomes a concrete lined ditch downstream.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-7  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/08/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030307, Stoner Creek

Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): concave Slope (%): < 2%

Subregion (LRR or MLRA): LLR Lat: N36.171909 Long: W86.505716 Datum: WGS 84

Soil Map Unit Name: Arents, 2 to 15 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>47 east, 48 south, 49 west, 50 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.229</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Wetland is located along I-40 and within two detention areas. Wetland is also present to the west along the rsd because of permanent erosion control measures. These measures are currently causing back up of some of the natural drainage along the rsd creating the extended wetland.

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

Map Label: WTL-7

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	10%	Yes	OBL	<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. <u>Green ash (Fraxinus pennsylvanica)</u>	10%	Yes	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW	<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 = _____
2. <u>Spike rush (Eleocharis sp.)</u>	3%	Yes	OBL	
3. <u>Seedbox (Ludwigia alternifolia)</u>	10%	Yes	OBL	
4. <u>Cattail (Cares typhina)</u>	20%	Yes	OBL	
5. <u>Carex sp.</u>	15%	Yes		
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. <u>Japanese honeysuckle (Lonicera japonica)</u>	15%	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				
<b>Remarks:</b> (Include photo numbers here or on a separate sheet.)				
				<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 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.
				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	PND-2
<b>3-Latitude/Longitude</b>	N36.171454, W86.500595
<b>4-Potential impact</b>	Runoff
<b>5-Feature description:</b>	
what is it	Farm pond
blue-line on topo? (y/n)	N
defined channel (y/n)	N
straight or meandering	N/A
channel bottom width	N/A
top of bank width	N/A
bank height and slope ratio	N/A
avg. gradient of stream (%)	N/A
substratum	Unknown
riffle/run/pool	N/A
width of buffer zone	LB: 100'      RB: 100'
water flow	No
water depth	Unknown
water width	40' x 100'
general water quality	Poor
OHWI indicators	None
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: black willow, fescue, Carex sp.
overhead canopy (%)	20%
benthos	Not sampled
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	51
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-10 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.171683, W86.50049
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Shot rock, gravel, cobble
riffle/run/pool	40/40/20
width of buffer zone	LB: 0    RB: 0
water flow	Yes
water depth	1"
water width	1'
general water quality	Poor
OHWI indicators	None
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: American elm, hackberry, privet, red maple
overhead canopy (%)	90%
benthos	Isopoda (+10 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	91 (poor)
photo number (s)	52 u/s, 53 d/s, 64 u/s, 65 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Originates at PND -2

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-8  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/08/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030307, Stoner Creek  
 Landform (hillslope, terrace, etc.): Roadside ditch Local relief (concave, convex, none): Concave Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.172503 Long: W86.499299 Datum: WGS 84  
 Soil Map Unit Name: Hampshire silt loam, 5 to 12 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>54 northeast</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.002</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>4"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
Wetland is located in a roadside ditch with poor drainage.

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

Map Label: WTL-8

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
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. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. <u>Sweetgum (Liquidambar styraciflua)</u>	5%	Yes	FAC	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Fescue (Lolium arundinaceum)</u>	10%	Yes	FAC	
2. <u>Cattail (Carex typhina)</u>	10%	Yes	OBL	
3. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW	
4. <u>Seedbox (Ludwigia alternifolia)</u>	5%	Yes	OBL	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				
				<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 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.
Remarks: (Include photo numbers here or on a separate sheet.)				



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-12 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.173124, W86.494223
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	5' – 6'
top of bank width	6' – 7'
bank height and slope ratio	2' – 3', 2:1
avg. gradient of stream (%)	< 2%
substratum	Boulder, rock, gravel
riffle/run/pool	30/40/30
width of buffer zone	LB: 30'      RB: 30'
water flow	Yes
water depth	6" – 1'
water width	5' – 6'
general water quality	Poor
OHWB indicators	Scouring, clear line impressed on bank
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: red maple, green ash, sycamore, privet
overhead canopy (%)	95%
benthos	Isopoda (8 sp.), amphipoda (+10 sp.), trichoptera (2)
fish	Yes
algae or other aquatic life	Filamentous green algae, snapping turtle
habitat assessment score	132 (suboptimal)
photo number (s)	55 u/s, 56 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-13 (Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.173294, W86.493307
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	20'
top of bank width	25'
bank height and slope ratio	2' - 3'; 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, cobble, gravel
riffle/run/pool	30/60/10
width of buffer zone	LB: 20'      RB: 10'
water flow	Yes
water depth	6" - 10"
water width	20'
general water quality	Poor
OHWI indicators	Deposition, wrack lines
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: boxelder, red maple, privet, sweetgum, eastern red cedar
overhead canopy (%)	80%
benthos	Isopoda (+10 sp.), trichoptera (1), ephemeroptera (3)
fish	Yes
algae or other aquatic life	Filamentous green algae
habitat assessment score	146 (suboptimal)
photo number (s)	57 u/s, 58 d/s, 59 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Stoners Creek is listed on the 303d list in Davidson County for loss of biological integrity due to siltation and Escherichia coli (1.9 mile section). This stream is a category 4a. Impaired, but EPA has approved a siltation/ habitat alteration and pathogen TMDL that addresses the known pollutants in this stream.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-5
<b>3-Latitude/Longitude</b>	N36.173843, W86.493804
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, rock
riffle/run/pool	N/A
width of buffer zone	LB: 60'      RB: 10'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	None
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: Eastern red cedar, privet, Japanese honeysuckle, sycamore
overhead canopy (%)	40%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	60 u/g, 61 d/g
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Conveyance drains to Stoner Creek.

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P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-11 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.173389, W86.499115
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1.5'
top of bank width	3'
bank height and slope ratio	2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Cobble, gravel
riffle/run/pool	40/50/10
width of buffer zone	LB: 30'      RB: 30'
water flow	Yes
water depth	1"
water width	1'
general water quality	Poor
OHWI indicators	Presence of litter and debris
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, hackberry
overhead canopy (%)	30%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	84 (poor)
photo number (s)	62 u/s, 63 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-14 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.173355, W86.492437
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y – concrete lined up gradient
straight or meandering	Straight
channel bottom width	1' – 1.5'
top of bank width	2'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Concrete, soil, rock, gravel
riffle/run/pool	30/60/10
width of buffer zone	LB: 50'      RB: 20'
water flow	Yes – minimal
water depth	0.5" – 2"
water width	6" – 1'
general water quality	Poor
OHWI indicators	Leaf litter washed away
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, eastern red cedar, hackberry
overhead canopy (%)	95%
benthos	Isopoda (3)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	101 (marginal)
photo number (s)	66 u/s, 67 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Channel begins as a concrete lined ditch then a natural channel forms down gradient. Stream flows to Stoner Creek.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-9  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/08/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302030307, Stoner Creek  
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): None Slope (%): 1%  
 Subregion (LRR or MLRA): LLR Lat: N36.173172 Long: W86.492057 Datum: WGS 84  
 Soil Map Unit Name: Lindell silt loam, Occasionally flooded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>68 southeast</u> Buffer (ft.): <u>30'</u> Approximate Size (ac.): <u>0.447</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
Wetland continues further south beyond ROW.

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

Map Label: WTL-9

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Sugarberry (Celtis laevigata)</u>	40%	Yes	FACW	<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. <u>Green ash (Fraxinus pennsylvanica)</u>	20%	Yes	FACW	
3. <u>American elm (Ulmus americana)</u>	15%	Yes	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = 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 = _____
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. <u>Sugarberry (Celtis laevigata)</u>	10%	Yes	FACW	
2. <u>Green ash (Fraxinus pennsylvanica)</u>	5%	Yes	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW	
2. <u>Carex sp.</u>	3%	Yes		
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = 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 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.
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

**SOIL**

Map Label: **WTL-9**

**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>	Loc <sup>2</sup>		
0-10"	10YR 5/1	70%	7.5YR 5/6	30%			Silty 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.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-7
<b>3-Latitude/Longitude</b>	N36.174753, W86.480773
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	2' – 3'
bank height and slope ratio	6" – 2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel, vegetation
riffle/run/pool	N/A
width of buffer zone	LB: 20'      RB: 30'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	None
groundwater connection	No
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, hackberry, American elm, Japanese honeysuckle
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	69 u/g, 70 d/g
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-18 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.174949, W86.47916
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1'
top of bank width	3'
bank height and slope ratio	1'; 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel
riffle/run/pool	40/60/0
width of buffer zone	LB: 20' RB:20'
water flow	Yes – minimal
water depth	1"
water width	1'
general water quality	Fair
OHWI indicators	Leaf litter washed away
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, green ash, cottonwood, sycamore
overhead canopy (%)	90%
benthos	Isopoda (+5)
fish	No
algae or other aquatic life	Filamentous green algae on rocks
habitat assessment score	123 (suboptimal)
photo number (s)	71 u/s, 72 u/s, 73 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-8
<b>3-Latitude/Longitude</b>	N36.175122, W86.478497
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	6" – 1'
top of bank width	2'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation
riffle/run/pool	N/A
width of buffer zone	LB: 80'      RB: 20'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Leaf litter washed away
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, green ash, cottonwood, sycamore
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	74 d/g, 75 u/g
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	A hydrologic determination form was filled out for this channel and it scored a 9.5.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-15 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.174005, W86.492402
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	3' – 4'
bank height and slope ratio	2', 2:1
avg. gradient of stream (%)	2%
substratum	Soil, gravel, vegetation
riffle/run/pool	5/50/45
width of buffer zone	LB: 10'      RB: 10'
water flow	Yes – minimal
water depth	0.5"
water width	6"
general water quality	Poor
OHWM indicators	Vegetation matted down, presence of debris
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately unstable
dominant species: LB, RB	Both: willow oak, boxelder, eastern red cedar
overhead canopy (%)	75%
benthos	Isopoda (3 sp.)
fish	No
algae or other aquatic life	No
habitat assessment score	98 (poor)
photo number (s)	76 u/s, 77 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Channel flows into Stoner Creek from the east. This feature is located on the side north of I-40.



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-6
<b>3-Latitude/Longitude</b>	N36.174833, W86.485461
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	2'
top of bank width	5'
bank height and slope ratio	3', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, rock
riffle/run/pool	N/A
width of buffer zone	LB: 10'      RB: 10'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	Scouring
groundwater connection	No
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, American elm, hackberry, Japanese honeysuckle, cottonwood
overhead canopy (%)	80%
benthos	No
fish	No
algae or other aquatic life	No observed
habitat assessment score	N/A
photo number (s)	80 u/g, 81 d/g
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	SPG-2/STR-16 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.175511, W86.480937
<b>4-Potential impact</b>	Crossing/encapsulation/fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	Y – South of I-40
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil
riffle/run/pool	40/40/20
width of buffer zone	LB: 100'      RB:10'
water flow	Yes
water depth	1" – 2"
water width	1'
general water quality	Poor
OHWI indicators	Destruction of terrestrial vegetation
groundwater connection	Yes – SPG-2
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: Sycamore, sugarberry, Japanese honeysuckle
overhead canopy (%)	85%
benthos	Isopoda (5 sp.), amphipoda (2 sp.), trichoptera (2 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	92 (marginal)
photo number (s)	82 u/s, 83 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	SPG-2 is surrounded by a spring box. Outflow of spring creates WTL-10. STR-16 is a blue line channel on the south side of I-40 but is not depicted as one on the north side.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-10  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/08/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): None Slope (%): 1%  
 Subregion (LRR or MLRA): LLR Lat: N36.173172 Long: W86.492057 Datum: WGS 84  
 Soil Map Unit Name: Lindell silt loam, Occasionally flooded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>82 northwest, 84 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.037</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
 SPG-2 provides hydrology to this wetland.

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

Map Label: WTL-10

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Sycamore (Platanus occidentalis)</u>	20%	Yes	FACW	<p><b>Dominance Test worksheet:</b></p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)</p> <p>Total Number of Dominant Species Across All Strata: _____ (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)</p> <hr/> <p><b>Prevalence Index worksheet:</b></p> <p>Total % Cover of: _____ Multiply by: _____</p> <p>OBL species _____ x 1 = _____</p> <p>FACW species _____ x 2 = _____</p> <p>FAC species _____ x 3 = _____</p> <p>FACU species _____ x 4 = _____</p> <p>UPL species _____ x 5 = _____</p> <p>Column Totals: _____ (A) _____ (B)</p> <p>Prevalence Index = B/A = _____</p> <hr/> <p><b>Hydrophytic Vegetation Indicators:</b></p> <p><input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> 2 - Dominance Test is &gt;50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p><input type="checkbox"/> 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small></p> <hr/> <p><b>Definitions of Four Vegetation Strata:</b></p> <p><b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</p> <p><b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.</p> <p><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</p> <p><b>Woody vine</b> – All woody vines greater than 3.28 ft in height.</p> <hr/> <p><b>Hydrophytic Vegetation Present?</b>      Yes <input checked="" type="checkbox"/>      No _____</p>
2. <u>Green ash (Fraxinus pennsylvanica)</u>	15%	Yes	FACW	
3. <u>Sugarberry (Celtis laevigata)</u>	20%	Yes	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW	
2. <u>Sedge sp.</u>	5%	Yes		
3. <u>Cut grass (Leersia sp.)</u>	5%	Yes	OBL	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

**SOIL**

Map Label: **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>	Loc <sup>2</sup>		
0-10"	10YR 4/1	40%	7.5YR 4/6	60%			Silty 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.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 8, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-17 (Unnamed tributary to Stoners Creek)
<b>3-Latitude/Longitude</b>	N36.175508, W86.480443
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y – poorly
straight or meandering	Straight
channel bottom width	1'
top of bank width	1.5'
bank height and slope ratio	6", 4:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel
riffle/run/pool	10/10/80
width of buffer zone	LB: 0      RB: 30'
water flow	Yes – minimal
water depth	1"
water width	1'
general water quality	Poor
OHWI indicators	Vegetation matted down
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: Fescue, privet, Japanese honeysuckle
overhead canopy (%)	20%
benthos	Isopoda (3 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	65 (poor)
photo number (s)	85 u/s, 86 d/s
rainfall information	1.23" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302030307, Stoner Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-11  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/14/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): None Slope (%): 1%

Subregion (LRR or MLRA): LLR Lat: N36.17583 Long: W86.472564 Datum: WGS 84

Soil Map Unit Name: Talbott silt loam, 5 to 20 percent slopes, Eroded, Rocky NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>87 west, 88 soil</u> Buffer (ft.): <u>100'</u> Approximate Size (ac.): <u>0.056</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2)      _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)      _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) _____ Sediment Deposits (B2)      _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) <input checked="" type="checkbox"/> Thin Muck Surface (C7) _____ Algal Mat or Crust (B4)      _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-11

	Absolute % Cover	Dominant Species?	Indicator Status				
<b>Tree Stratum</b> (Plot size: _____ )							
1. <u>Sweetgum (Liquidambar styraciflua)</u>	10%	Yes	FAC	<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. <u>Black willow (Salix nigra)</u>	30%	Yes	OBL				
3. <u>Green ash (Fraxinus pennsylvanica)</u>	30%	Yes	FACW				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
_____ = Total Cover	_____	_____	_____				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )							
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 = _____			
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
_____ = Total Cover	_____	_____	_____				
<b>Herb Stratum</b> (Plot size: _____ )							
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)			
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
11. _____	_____	_____	_____				
12. _____	_____	_____	_____				
_____ = Total Cover	_____	_____	_____				
<b>Woody Vine Stratum</b> (Plot size: _____ )							
1. _____	_____	_____	_____	<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 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.			
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
_____ = Total Cover	_____	_____	_____				
<table style="width:100%; border: none;"> <tr> <td style="width:60%;"><b>Hydrophytic Vegetation Present?</b></td> <td style="width:20%; text-align: center;">Yes <input checked="" type="checkbox"/></td> <td style="width:20%; text-align: center;">No <input type="checkbox"/></td> </tr> </table>					<b>Hydrophytic Vegetation Present?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Hydrophytic Vegetation Present?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>					
Remarks: (Include photo numbers here or on a separate sheet.)							



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	SPG-3/STR-19 (Unnamed tributary to Rutland Branch)
<b>3-Latitude/Longitude</b>	N36.175914, W86.471924
<b>4-Potential impact</b>	Crossing/encapsulation/fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	Y – downstream
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1.5'
top of bank width	2'
bank height and slope ratio	8", 2:1
avg. gradient of stream (%)	< 2%
substratum	Cobble, gravel, rock
riffle/run/pool	20/20/60
width of buffer zone	LB: 30'      RB: 100'
water flow	Yes – minimal
water depth	1"
water width	6"
general water quality	Poor
OHWI indicators	Presence of debris
groundwater connection	Yes – SPG-3
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, pin oak, post oak, redbud
overhead canopy (%)	80%
benthos	Isopoda (+10 sp.), amphipoda (3)
fish	None seen
algae or other aquatic life	Filamentous green algae, crayfish burrows
habitat assessment score	113 (suboptimal)
photo number (s)	89 u/s, 90 d/s, 91 SPG-3, north side of I-40 106 u/s, and 107 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	SPG-3 is located in the middle of the channel in STR-19 on the south side of I-40. STR-19 is a blue line channel on the north side of I-40.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-9
<b>3-Latitude/Longitude</b>	N36.175971, W86.471569
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1.5'
top of bank width	3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil
riffle/run/pool	N/A
width of buffer zone	LB: 100'      RB: 100'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Leaf litter washed away
groundwater connection	No
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, eastern red cedar, post oak
overhead canopy (%)	95%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	92 u/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Conveyance extends south beyond ROW.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-10
<b>3-Latitude/Longitude</b>	N36.176023, W86.471404
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	4" – 10"
top of bank width	1'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil
riffle/run/pool	N/A
width of buffer zone	LB: 50'      RB: 50'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Water staining
groundwater connection	No
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: eastern red cedar, privet, post oak
overhead canopy (%)	95%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	93 d/g, 94 u/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-12  
**PE No. 99108-7087-04 PIN No. 114169.00** Date: 4/14/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Lowland/floodplain Local relief (concave, convex, none): None Slope (%): \_\_\_\_\_  
 Subregion (LRR or MLRA): LLR Lat: N36.176855 Long: W86.470864 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 5 to 20 percent slopes, Eroded, Rocky NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>108 NW, 109 Soil</u> Buffer (ft.): <u>40'</u> Approximate Size (ac.): <u>0.065</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): _____ Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)      ___ True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2)      ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)      ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)      ___ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2)      ___ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3)      ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4)      ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-12

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Sugarberry (Celtis laevigata)</u>	<u>30%</u>	<u>Yes</u>	<u>FACW</u>	<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. <u>Eastern red cedar (Juniperus virginiana)</u>	<u>20%</u>	<u>Yes</u>	<u>FACU</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. <u>Spicebush (Lindera sp.)</u>	<u>10%</u>	<u>Yes</u>	<u>FACW</u>	<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 = _____
2. <u>Sugarberry (Celtis laevigata)</u>	<u>10%</u>	<u>Yes</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Carex sp.</u>	<u>5%</u>	<u>Yes</u>		<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				<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 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.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				
Hydrophytic Vegetation Present?      Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-11
<b>3-Latitude/Longitude</b>	N36.176262, W86.470056
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel
riffle/run/pool	N/A
width of buffer zone	LB: 30'      RB: 100'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Destruction of terrestrial vegetation
groundwater connection	No
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: eastern red cedar, privet, post oak
overhead canopy (%)	95%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	95 u/g, 96 d/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-20 (Unnamed tributary to Rutland Branch)
<b>3-Latitude/Longitude</b>	N36.176216, W86.469845
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	2'
top of bank width	3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation, gravel
riffle/run/pool	50/50/0
width of buffer zone	LB: 30'      RB: 100'
water flow	Yes
water depth	2"
water width	1'
general water quality	Good
OHWI indicators	Destruction of terrestrial vegetation
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: sycamore, privet, red maple
overhead canopy (%)	90%
benthos	Isopoda (3 sp.)
fish	No
algae or other aquatic life	No
habitat assessment score	119 (suboptimal)
photo number (s)	97 u/s, 98 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-12
<b>3-Latitude/Longitude</b>	N36.176353, W86.469611
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	1'
top of bank width	3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, leaf litter, some gravel
riffle/run/pool	N/A
width of buffer zone	LB: 50'      RB: 50'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Leaf litter and trash in channel
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: green ash, dogwood, smartweed
overhead canopy (%)	70%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	99 u/g, 100 d/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-22 (Rutland Branch)
<b>3-Latitude/Longitude</b>	N36.17704, W86.4636
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	10' – 12'
top of bank width	13'
bank height and slope ratio	3', 2:1
avg. gradient of stream (%)	< 2%
substratum	Limestone bedrock, cobble
riffle/run/pool	40/30/30
width of buffer zone	LB: 100'      RB: 100'
water flow	Yes
water depth	2" – 3"
water width	4' – 8'
general water quality	Good
OHWI indicators	Sediment sorting, shelving
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, green ash, sycamore
overhead canopy (%)	90%
benthos	Isopoda, trichoptera, ephemeroptera, plecoptera, decapoda
fish	None seen
algae or other aquatic life	Filamentous green algae on rocks
habitat assessment score	156 (optimal)
photo number (s)	101 u/s, 102 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-23 (Unnamed tributary to Rutland Branch)
<b>3-Latitude/Longitude</b>	N36.177128, W86.46299
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2' – 3'
top of bank width	4'
bank height and slope ratio	1' – 2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Cobble, gravel, rock, soil
riffle/run/pool	40/10/50
width of buffer zone	LB: 30'      RB: 30'
water flow	Yes
water depth	2" – 3"
water width	2'
general water quality	Good
OHWI indicators	Presence of debris
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: privet, eastern red cedar
overhead canopy (%)	90%
benthos	Isopoda (+10 sp.), trichoptera (4 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	119 (suboptimal)
photo number (s)	103 u/s, 104 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-13  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/14/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): \_\_\_\_\_  
 Subregion (LRR or MLRA): LLR Lat: N36.177196 Long: W86.462315 Datum: WGS 84  
 Soil Map Unit Name: Hampshire silt loam, 12 to 20 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>105 west</u> Buffer (ft.): <u>20'</u> Approximate Size (ac.): <u>0.015</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)      ___ True Aquatic Plants (B14) ___ High Water Table (A2)      ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)      ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)      ___ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2)      ___ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3)      ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4)      ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) ___ 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 _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>4"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
Wetland located along ROW north of concrete batch plant. Braided channel parallels the wetland.

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

Map Label: WTL-13

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Sugarberry (Celtis laevigata)</u>	<u>40%</u>	<u>Yes</u>	<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = 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 = _____
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. <u>Privet (Ligustrum sp.)</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = Total Cover					
<b>Herb Stratum</b> (Plot size: _____ )					
1. <u>Witchazel</u>	<u>10%</u>	<u>Yes</u>	<u>FACU</u>	<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)	
2. <u>Cut grass (Lindera sp.)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
_____ = Total Cover					
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. _____	_____	_____	_____	<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 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.	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
_____ = Total Cover					
1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.					
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
Remarks: (Include photo numbers here or on a separate sheet.)					



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-13
<b>3-Latitude/Longitude</b>	N36.177073, W86.468988
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' - 2'
top of bank width	3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation
riffle/run/pool	N/A
width of buffer zone	LB: 40'      RB: 100'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Presence of debris
groundwater connection	No
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: hackberry, privet, eastern red cedar, red oak
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	110 u/g, 111 d/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-21 (Unnamed tributary to Rutland Branch)
<b>3-Latitude/Longitude</b>	N36.177331, W86.466681
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2' – 3'
top of bank width	3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, cobble, gravel
riffle/run/pool	40/30/30
width of buffer zone	LB: 100'      RB: 100'
water flow	Yes
water depth	1"
water width	2'
general water quality	Fair
OHWI indicators	Sediment sorting, water staining
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: hackberry, spicebush, privet, Japanese honeysuckle
overhead canopy (%)	85%
benthos	Isopoda (+10 sp.)
fish	No
algae or other aquatic life	Frogs, salamanders
habitat assessment score	131 (suboptimal)
photo number (s)	112 u/s, 113 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-14
<b>3-Latitude/Longitude</b>	N36.177599, W86.464607
<b>4-Potential impact</b>	Crossing/encapsulation/fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation, gravel
riffle/run/pool	N/A
width of buffer zone	LB: 100'      RB: 100'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	Scouring
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, fescue, eastern red cedar, briar
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	114 u/g, 115 d/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Conveyance consisted of pooled water only.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** May 5, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-14.1
<b>3-Latitude/Longitude</b>	N36.177919, W86.464012
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2' – 3'
top of bank width	4' – 6'
bank height and slope ratio	2' – 4', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel, cobble, leaf litter
riffle/run/pool	N/A
width of buffer zone	LB: 50'      RB: 50'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	Scouring
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, American elm, eastern red cedar, hackberry
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	116 d/s, 117 u/s
rainfall information	2.43" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Conveyance does have some small areas of pooled water but no flow.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** May 5, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-14.2
<b>3-Latitude/Longitude</b>	N36.177816, W86.463607
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	6", 3:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation, muck
riffle/run/pool	0/0/100
width of buffer zone	LB: 40'      RB: 60'
water flow	No
water depth	1"
water width	1'
general water quality	Poor
OHWI indicators	
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: smartweed, green ash, eastern red cedar, dogwood
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	118 d/s, 119 u/s
rainfall information	2.43" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Conveyance consisted of pooled water only.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-24 (Unnamed tributary to Sullivan Branch)
<b>3-Latitude/Longitude</b>	N36.179474, W86.457238
<b>4-Potential impact</b>	Runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	3'
top of bank width	15'
bank height and slope ratio	3', 3:1
avg. gradient of stream (%)	< 2%
substratum	Rock
riffle/run/pool	10/90/0
width of buffer zone	LB: 0      RB: 0
water flow	Yes
water depth	1"
water width	2'
general water quality	Poor
OHWM indicators	Water staining
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: fescue
overhead canopy (%)	0
benthos	Isopoda (5 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	120 u/s, 121 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	The portion of this channel that is located within the current TDOT ROW is completely lined with rip rap. A habitat assessment form was filled out.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-14  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/14/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.177451 Long: W86.455243 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 5 to 20 percent slopes, Eroded, Rocky NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>129 north, 130 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.14</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): _____ Notes:

**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) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
**Wetland is located in a man-made roadside drainage and is created by permanent erosion control measures.**

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

Map Label: WTL-14

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
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. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	<u>10%</u>	<u>Yes</u>	<u>OBL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Cattails (Carex typhina)</u>	<u>75%</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Fescue (Lolium arundinaceum)</u>	<u>5%</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
<p><b>Hydrophytic Vegetation Indicators:</b></p> <p><input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> 2 - Dominance Test is &gt;50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p><input type="checkbox"/> 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p><b>Definitions of Four Vegetation Strata:</b></p> <p><b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</p> <p><b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.</p> <p><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</p> <p><b>Woody vine</b> – All woody vines greater than 3.28 ft in height.</p>				
<p><b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>				
Remarks: (Include photo numbers here or on a separate sheet.)				



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-15  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/14/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406  
 Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.179128 Long: W86.454273 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 5 to 20 percent slopes, Eroded, Rocky NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>122 northeast, 123, 124 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.40</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) <input checked="" 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)	<b>Secondary Indicators (minimum of two required)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" 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)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-15

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
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. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. <u>Buttonbush (Cephalanthus occidentalis)</u>	5%	Yes	OBL	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Fescue (Lolium arundinaceum)</u>	20%	Yes	FAC	
2. <u>Cattails (Carex typhina)</u>	15%	Yes	OBL	
3. <u>Carex sp.</u>	10%	Yes	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>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 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.				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-25 (Unnamed tributary to Sullivan Branch)
<b>3-Latitude/Longitude</b>	N36.176052, W86.455764
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation, rock
riffle/run/pool	30/40/30
width of buffer zone	LB: 10'      RB: 10'
water flow	Yes
water depth	1" – 2"
water width	1'
general water quality	Good
OHWI indicators	Vegetation matted down
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: soft rush, black willow, fescue, briar, Japanese honeysuckle
overhead canopy (%)	5%
benthos	Isopoda, trichoptera
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	105 (marginal)
photo number (s)	125 u/s, 126 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-26 (Unnamed tributary to Sullivan Branch)
<b>3-Latitude/Longitude</b>	N36.17652, W86.454697
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	5' – 8'
top of bank width	10'
bank height and slope ratio	3' – 6', 2:1
avg. gradient of stream (%)	< 2%
substratum	Limestone bedrock, cobble, gravel
riffle/run/pool	40/50/10
width of buffer zone	LB: 100'      RB: 100'
water flow	Yes
water depth	1" – 3"
water width	4'
general water quality	Good
OHWI indicators	Sediment sorting
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: soft rush, black willow, fescue, briar, Japanese honeysuckle
overhead canopy (%)	60%
benthos	Isopoda (+10 sp.), trichoptera (2 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	125 (suboptimal)
photo number (s)	127 u/s, 128 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-27 (Unnamed tributary to Sullivan Branch)
<b>3-Latitude/Longitude</b>	N36.177222, W86.455243
<b>4-Potential impact</b>	Runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	6'
top of bank width	15'
bank height and slope ratio	3', 2:1
avg. gradient of stream (%)	< 2%
substratum	Rock
riffle/run/pool	0/100/0
width of buffer zone	LB: 0      RB: 0
water flow	Yes
water depth	Unknown
water width	3'
general water quality	Good
OHWI indicators	Water staining
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: fescue, sweetgum, bluestem
overhead canopy (%)	5%
benthos	None seen
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	130 u/s, 131 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	The portion of this channel that is located within the current TDOT ROW is completely lined with rip rap. A habitat assessment form was not filled out.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-28 (Sullivan Branch)
<b>3-Latitude/Longitude</b>	N36.178165, W86.453291
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	20'
top of bank width	30'
bank height and slope ratio	2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Vegetation, soil, cobble
riffle/run/pool	30/40/30
width of buffer zone	LB: 20'      RB: 20'
water flow	Yes
water depth	2" – 8"
water width	20'
general water quality	Fair
OHWM indicators	Destruction of terrestrial vegetation
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: eastern red cedar, black willow, hackberry
overhead canopy (%)	80%
benthos	Trichoptera (1 sp.), ephemeroptera (2 sp.), plecoptera (1 sp.), isopoda (+5 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	138 (suboptimal)
photo number (s)	133 u/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-16  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/20/2011

Investigator(s): J. Garcia/M. Skelton HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): None Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.179886 Long: W86.447959 Datum: WGS 84  
 Soil Map Unit Name: Agee silty clay loam, Rarely flooded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>148 northwest, 149 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.04</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-16

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Green ash (Fraxinus pennsylvanica)</u>	<u>20%</u>	<u>Yes</u>	<u>FACW</u>	<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>86%</u> (A/B)	
2. <u>Sugarberry (Celtis laevigata)</u>	<u>20%</u>	<u>Yes</u>	<u>FACW</u>		
3. <u>Sweetgum (Liquidambar styraciflua)</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>		
4. <u>Winged elm (Ulmus alata)</u>	<u>10%</u>	<u>Yes</u>	<u>FACU</u>		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = 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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. <u>Privet (Ligustrum sp.)</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = Total Cover				<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)	
<b>Herb Stratum</b> (Plot size: _____ )					
1. <u>Bottle brush sedge (Carex hystericina)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>		
2. <u>Fescue (Lolium arundinaceum)</u>	<u>10%</u>	<u>Yes</u>	<u>FAC</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = 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 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.   <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-29 (Unnamed tributary to Sullivan Branch)
<b>3-Latitude/Longitude</b>	N36.179232, W86.447477
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	3' – 6'
top of bank width	4' – 8'
bank height and slope ratio	2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, cobble, boulder
riffle/run/pool	30/50/20
width of buffer zone	LB: 0      RB: 0
water flow	Yes
water depth	2"
water width	4'
general water quality	Poor
OHWI indicators	Scouring, clear line impressed on bank
groundwater connection	Yes
bank stability: LB, RB	Both: moderately unstable
dominant species: LB, RB	Both: fescue, eastern red cedar, privet, Japanese honeysuckle
overhead canopy (%)	0
benthos	Isopoda (+10 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	97 (marginal)
photo number (s)	135 u/s, 136 d/s, 150 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-15
<b>3-Latitude/Longitude</b>	N36.180068, W86.441039
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	3' – 4'
top of bank width	6' – 8'
bank height and slope ratio	1', 3:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, soil, cobble
riffle/run/pool	N/A
width of buffer zone	LB: 30'      RB: > 100'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWI indicators	Sediment sorting
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, hackberry, shagbark hickory, green ash
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	137 u/g, 138 d/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-30 (Unnamed tributary to Wilson Creek)
<b>3-Latitude/Longitude</b>	N36.180692, W86.437025
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2' – 5'
top of bank width	4' – 6'
bank height and slope ratio	6", 4:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation
riffle/run/pool	20/70/10
width of buffer zone	LB: 30'      RB: 50'
water flow	Yes
water depth	2"
water width	2' – 3'
general water quality	Poor
OHWM indicators	Presence of litter and debris, water staining
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: hackberry, privet, eastern red cedar
overhead canopy (%)	90%
benthos	Isopoda (5 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	84 (poor)
photo number (s)	140 u/s, 141 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-17  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/14/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): None Slope (%): 1%  
 Subregion (LRR or MLRA): LLR Lat: N36.180608 Long: W86.437207 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 2 to 5 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>142 west, 143 soil</u> Buffer (ft.): <u>100'</u> Approximate Size (ac.): <u>0.116</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-17

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Sugarberry (Celtis laevigata)</u>	<u>30%</u>	<u>Yes</u>	<u>FACW</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</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>71%</u> (A/B)	
2. <u>Green ash (Fraxinus pennsylvanica)</u>	<u>25%</u>	<u>Yes</u>	<u>FACW</u>		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
_____ = 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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. <u>Witchhazel (Hamamelis sp.)</u>	<u>3%</u>	<u>Yes</u>	<u>FACU</u>		
2. <u>Privet (Ligustrum sp.)</u>	<u>5%</u>	<u>Yes</u>	<u>FAC</u>		
3. <u>Sugarberry (Celtis laevigata)</u>	<u>5%</u>	<u>Yes</u>	<u>FACW</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
_____ = Total Cover				<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)	
<b>Herb Stratum</b> (Plot size: _____ )					
1. <u>Carex sp.</u>	<u>3%</u>	<u>Yes</u>			
2. <u>Fescue (Lolium arundenaceum)</u>	<u>3%</u>	<u>Yes</u>	<u>FAC</u>		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
_____ = 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 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.	
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
_____ = Total Cover					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
Remarks: (Include photo numbers here or on a separate sheet.)					



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-31 (Wilson Creek)
<b>3-Latitude/Longitude</b>	N36.180844, W86.436163
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	25'
top of bank width	30'
bank height and slope ratio	2' – 6', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, cobble, boulder
riffle/run/pool	30/40/30
width of buffer zone	LB: 20'      RB: 20'
water flow	Yes
water depth	2" – 2'
water width	25'
general water quality	Poor
OHWI indicators	Deposition, wrack lines
groundwater connection	Yes
bank stability: LB, RB	Both: moderately unstable
dominant species: LB, RB	Both: witchhazel, hackberry, sycamore, black willow, bamboo
overhead canopy (%)	70%
benthos	Ephemeroptera (3 sp.), plecoptera (2 sp.), trichoptera (3 sp.)
fish	Yes
algae or other aquatic life	Filamentous green algae
habitat assessment score	153 (optimal)
photo number (s)	140 u/s, 141 d/s, 149 d/s
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 14, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-18
<b>3-Latitude/Longitude</b>	N36.18082, W86.435788
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2'
top of bank width	5'
bank height and slope ratio	2', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation, gravel
riffle/run/pool	N/A
width of buffer zone	LB:      RB:
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Destruction of terrestrial vegetation
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both:
overhead canopy (%)	75%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	146 u/g, 147 d/g
rainfall information	1.44" rainfall previous 7 days, 0" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/ M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-16
<b>3-Latitude/Longitude</b>	N36.181304, W86.437298
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 6'
top of bank width	2' – 8'
bank height and slope ratio	6", 4:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation
riffle/run/pool	0/0/100
width of buffer zone	LB: 50'      RB: 30'
water flow	No – pooled only
water depth	2" – 6"
water width	2' – 8'
general water quality	Poor
OHWI indicators	Water staining, clear line impressed on bank
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: hackberry, privet, red maple, green ash
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	151 u/g, 152 d/g
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/ M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-17
<b>3-Latitude/Longitude</b>	N36.181542, W86.435413
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	2'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation
riffle/run/pool	0/0/100
width of buffer zone	LB: 30'      RB: 50'
water flow	No – pooled only
water depth	2"
water width	1'
general water quality	Poor
OHWI indicators	Leaf litter washed away
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: eastern red cedar
overhead canopy (%)	90%
benthos	No
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	154 d/g, 155 u/g
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-18  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/20/2011

Investigator(s): J. Garcia/M. Skelton HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Lowland ditch Local relief (concave, convex, none): None Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.181747 Long: W86.428304 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 2 to 5 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>169 west, 170 east</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.021</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
**Wetland is located adjacent and north of a large detention pond. It appears that much of the hydrology comes from seepage. In addition, an area that was formally a ditch line has been severely impacted by logging activities.**

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

Map Label: WTL-18

	Absolute % Cover	Dominant Species?	Indicator Status				
<b>Tree Stratum</b> (Plot size: _____ )							
1. <u>Sycamore (Platanus occidentalis)</u>	15%	Yes	FAC	<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. <u>Green ash (Fraxinus pennylvanica)</u>	10%	Yes	FACW				
3. <u>Black willow (Salix nigra)</u>	30%	Yes	OBL				
4. <u>Red maple (Acer rubrum)</u>	10%	Yes	FAC				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
_____ = Total Cover							
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )							
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 = _____			
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
_____ = Total Cover							
<b>Herb Stratum</b> (Plot size: _____ )							
1. <u>Cattails (Carex typhina)</u>	5%	Yes	OBL	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)			
2. <u>Seedbox (Ludwigia alternifolia)</u>	3%	Yes	OBL				
3. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
7. _____	_____	_____	_____				
8. _____	_____	_____	_____				
9. _____	_____	_____	_____				
10. _____	_____	_____	_____				
11. _____	_____	_____	_____				
12. _____	_____	_____	_____				
_____ = Total Cover							
<b>Woody Vine Stratum</b> (Plot size: _____ )							
1. <u>Japanese honeysuckle (Lonicera japonica)</u>	15%	Yes	FAC	<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 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.			
2. _____	_____	_____	_____				
3. _____	_____	_____	_____				
4. _____	_____	_____	_____				
5. _____	_____	_____	_____				
6. _____	_____	_____	_____				
6. _____	_____	_____	_____				
_____ = Total Cover							
<table style="width:100%; border: none;"> <tr> <td style="width:70%;"><b>Hydrophytic Vegetation Present?</b></td> <td style="width:10%; text-align: center;">Yes <input checked="" type="checkbox"/></td> <td style="width:20%; text-align: center;">No <input type="checkbox"/></td> </tr> </table>					<b>Hydrophytic Vegetation Present?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Hydrophytic Vegetation Present?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>					
Remarks: (Include photo numbers here or on a separate sheet.)							



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-19  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/20/2011

Investigator(s): J. Garcia/M. Skelton HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Lowland Local relief (concave, convex, none): None Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.182701 Long: W86.427598 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 2 to 5 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>159 soil, 160 north</u> Buffer (ft.): <u>50'</u> Approximate Size (ac.): <u>0.036</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:

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

Map Label: WTL-19

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	30%	Yes	OBL	<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. <u>Sycamore (Liquidambar styraciflua)</u>	15%	Yes	FAC	
3. <u>Eastern cottonwood (Populus deltoides)</u>	10%	Yes	FAC	
4. <u>Green ash (Fraxinus pennsylvanica)</u>	10%	Yes	FACW	
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. <u>Privet (Ligustrum sp.)</u>	5%	Yes	FAC	<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 = _____
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Cattails (Carex typhina)</u>	10%	Yes	OBL	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
2. <u>Smartweed (Polygonum sp.)</u>	10%	Yes	OBL	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				<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 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.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
6. _____				
_____ = Total Cover				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

**SOIL**

Map Label: **WTL-19**

**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>	Loc <sup>2</sup>		
0-10"	10YR 5/2	60%	7.5YR 5/6	40%			Silty 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.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/ M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-32 (Unnamed tributary to Cedar Creek)
<b>3-Latitude/Longitude</b>	N36.182636, W86.428128
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 6'
top of bank width	2' – 10'
bank height and slope ratio	6", 3:1
avg. gradient of stream (%)	< 2%
substratum	Soil, vegetation, cobble, gravel
riffle/run/pool	20/20/60
width of buffer zone	LB: 30'      RB: 50'
water flow	Yes
water depth	6" – 1'
water width	1' – 6'
general water quality	Poor
OHWI indicators	Wrack lines, shelving, water staining
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: black locust, sycamore, red maple, privet, green ash, black willow
overhead canopy (%)	90%
benthos	Isopoda (+10 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	88 (poor)
photo number (s)	157 u/s, 158 d/s, 168 u/s
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	PND-3
<b>3-Latitude/Longitude</b>	N36.181747, W86.428304
<b>4-Potential impact</b>	Runoff
<b>5-Feature description:</b>	
what is it	Farm pond
blue-line on topo? (y/n)	N
defined channel (y/n)	N
straight or meandering	N/A
channel bottom width	N/A
top of bank width	N/A
bank height and slope ratio	N/A
avg. gradient of stream (%)	N/A
substratum	N/A
riffle/run/pool	N/A
width of buffer zone	LB: 0      RB: 0
water flow	N/A
water depth	Unknown
water width	100' x 200'
general water quality	Fair
OHWI indicators	None
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: black willow, cottonwood, sycamore
overhead canopy (%)	20%
benthos	None seen
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	N/A
photo number (s)	166, 167
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	100' x 200' detention pond located just outside the current TDOT ROW fence.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/ M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-33 (Unnamed tributary to Cedar Creek)
<b>3-Latitude/Longitude</b>	N36.182657, W86.427533
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	2'
top of bank width	3'
bank height and slope ratio	1', 4:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel, vegetation
riffle/run/pool	40/30/30
width of buffer zone	LB: 30'      RB: 20'
water flow	Yes
water depth	2" – 4"
water width	1.5'
general water quality	Good
OHWI indicators	Presence of debris, clear line impressed on bank
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: black willow, eastern red cedar
overhead canopy (%)	80%
benthos	Isopoda (3 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	96 (marginal)
photo number (s)	161 u/s, 162 d/s, 165 u/s, 171 u/s
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/ M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-34 (Unnamed tributary to Cedar Creek)
<b>3-Latitude/Longitude</b>	N36.182671, W86.427324
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	2'
top of bank width	3'
bank height and slope ratio	6", 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel, concrete, vegetation
riffle/run/pool	40/40/20
width of buffer zone	LB: 30'      RB: 50'
water flow	Yes
water depth	2"
water width	2'
general water quality	Good
OHWI indicators	Presence of debris, water staining
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, black locust, eastern red cedar, black willow
overhead canopy (%)	90%
benthos	Isopoda (4 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	95 (marginal)
photo number (s)	163 d/s, 164 u/s
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	This channel is a concrete lined ditch upstream.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-20  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/20/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): \_\_\_\_\_  
 Subregion (LRR or MLRA): LLR Lat: N36.181963 Long: W86.426977 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 2 to 5 percent slopes, Eroded NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>165 west, 171 west, 172 east</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.025</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2)      _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)      _____ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)      _____ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2)      _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3)      _____ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4)      _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
Wetland is connected to STR-33.

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

Map Label: WTL-20

	Absolute % Cover	Dominant Species?	Indicator Status		
<b>Tree Stratum</b> (Plot size: _____ )					
1. <u>Sycamore (Liquidambar styraciflua)</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</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>80%</u> (A/B)	
2. <u>Black willow (Salix nigra)</u>	<u>25%</u>	<u>Yes</u>	<u>OBL</u>		
3. <u>Hackberry (Celtis occidentalis)</u>	<u>5%</u>	<u>Yes</u>	<u>FACU</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = 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 = _____	
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = Total Cover				<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)	
<b>Herb Stratum</b> (Plot size: _____ )					
1. <u>Privet (Ligustrum sp.)</u>	<u>5%</u>	<u>Yes</u>	<u>FAC</u>		
2. <u>Soft rush (Juncus effusus)</u>	<u>5%</u>	<u>Yes</u>	<u>FACW</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
_____ = 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 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.	
<b>Woody Vine Stratum</b> (Plot size: _____ )					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
_____ = Total Cover					<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
Remarks: (Include photo numbers here or on a separate sheet.)					



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-21  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/20/2011

Investigator(s): J. Garcia/M. Skelton HUC 12 (code and name): 051302010406, Cedar Creek

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): 2%

Subregion (LRR or MLRA): LLR Lat: N36.182744 Long: W86.42128 Datum: WGS 84

Soil Map Unit Name: Capshaw silt loam, 2 to 6 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>173 west, 174 east</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.076</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)      ___ True Aquatic Plants (B14) ___ High Water Table (A2)      ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3)      ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)      ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2)      ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3)      ___ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4)      ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Map Label: WTL-21

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Sugarberry (Celtis laevigata)</u>	<u>30%</u>	<u>Yes</u>	<u>FACW</u>	<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. <u>Red maple (Acer rubrum)</u>	<u>20%</u>	<u>Yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Spike rush (Eleocharis sp.)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	<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 = _____
2. <u>Soft rush (Juncus effusus)</u>	<u>3%</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>bottlebrush sedge (Carex hystericina)</u>	<u>3%</u>	<u>Yes</u>	<u>OBL</u>	
4. <u>Smartweed (Polygonum sp.)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	
5. <u>Carex sp.</u>	<u>5%</u>	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>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 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.				
Remarks: (Include photo numbers here or on a separate sheet.)				



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-22  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/20/2011

Investigator(s): J. Garcia/M. Skelton HUC 12 (code and name): 051302010406, Cedar Creek

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): < 2%

Subregion (LRR or MLRA): LLR Lat: N36.182975 Long: W86.419659 Datum: WGS 84

Soil Map Unit Name: Capshaw silt loam, 2 to 6 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>175 west, 176 east</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.108</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)	<b>Secondary Indicators (minimum of two required)</b> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> Saturation Present? Yes _____ No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____

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

Remarks:  
Wetland is located in a roadside ditch and is completely covered by recently cleared brush.

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

Map Label: WTL-22

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
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. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Soft rush (Juncus effusus)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	
2. <u>Spike rush (Eleocharis sp.)</u>	<u>3%</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Bottlebrush sedge (Carex hystericina)</u>	<u>5%</u>	<u>Yes</u>	<u>OBL</u>	
4. <u>Smartweed (Polygonum sp.)</u>	<u>20%</u>	<u>Yes</u>	<u>OBL</u>	
5. <u>Carex sp.</u>	<u>3%</u>	<u>Yes</u>	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
_____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
_____ = Total Cover				
<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>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 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.				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/ M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-35 (Unnamed tributary to Cedar Creek)
<b>3-Latitude/Longitude</b>	N36.182974, W86.41904
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, gravel, vegetation
riffle/run/pool	40/40/20
width of buffer zone	LB: 10'      RB: 40'
water flow	Yes
water depth	2"
water width	1'
general water quality	Good
OHWI indicators	Vegetation bent
groundwater connection	Unknown
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: cattails, privet, black locust
overhead canopy (%)	5%
benthos	Isopoda (2 sp.), decapoda
fish	None seen
algae or other aquatic life	No
habitat assessment score	109 (marginal)
photo number (s)	177 u/s, 178 d/s
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 20, 2011**Biologist:** J. Garcia/M. Skelton**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-36 (Unnamed tributary to Cedar Creek)
<b>3-Latitude/Longitude</b>	N36.183114, W86.418632
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	15'
top of bank width	16'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, cobble, gravel
riffle/run/pool	40/40/20
width of buffer zone	LB: 100'      RB: 100'
water flow	Yes
water depth	2" – 8"
water width	15'
general water quality	Good
OHWI indicators	Presence of debris, wrack lines
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: black willow, eastern red cedar, black locust, privet, cattails
overhead canopy (%)	70%
benthos	Trichoptera (1 sp.), plecoptera (1 sp.), decapoda
fish	Yes
algae or other aquatic life	Filamentous green algae on rocks
habitat assessment score	145 (suboptimal)
photo number (s)	179 u/s, 180 d/s, 181 d/s
rainfall information	1.23" rainfall previous 7 days, 0.27" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 25, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-37 (South Fork)
<b>3-Latitude/Longitude</b>	N36.183554, W86.410927
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	15'
top of bank width	20'
bank height and slope ratio	3', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, cobble, gravel
riffle/run/pool	50/40/10
width of buffer zone	LB: 100'      RB: 100'
water flow	Yes
water depth	2"
water width	15'
general water quality	Good
OHWI indicators	Shelving, deposition
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: boxelder, sycamore, green ash, cottonwood, red maple, shagbark hickory
overhead canopy (%)	90%
benthos	Ephemeroptera (2 sp.), plecoptera (1 sp.), isopoda (+10 sp.)
fish	Yes
algae or other aquatic life	Filamentous green algae
habitat assessment score	139 (suboptimal)
photo number (s)	182 u/s, 183 d/s, 184 d/s
rainfall information	0.46" rainfall previous 7 days, 0.19" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 25, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	WWC-19
<b>3-Latitude/Longitude</b>	N36.184623, W86.412754
<b>4-Potential impact</b>	Fill/runoff
<b>5-Feature description:</b>	
what is it	Wet weather conveyance
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1'
top of bank width	2'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Soil, cobble, gravel
riffle/run/pool	N/A
width of buffer zone	LB: 0'      RB: 100'
water flow	No
water depth	N/A
water width	N/A
general water quality	N/A
OHWM indicators	Presence of debris
groundwater connection	No
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: privet, black locust, eastern red cedar
overhead canopy (%)	80%
benthos	No
fish	No
algae or other aquatic life	No
habitat assessment score	N/A
photo number (s)	185 u/g, 186 d/s
rainfall information	0.46" rainfall previous 7 days, 0.19" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	No
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-23  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/25/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): 2%

Subregion (LRR or MLRA): LLR Lat: N36.185155 Long: W86.410393 Datum: WGS 84

Soil Map Unit Name: Byler silt loam, 2 to 5 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>187 east, 188 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.019</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)      ___ True Aquatic Plants (B14) ___ High Water Table (A2)      ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)      ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1)      ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2)      ___ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Drift Deposits (B3)      ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4)      ___ Other (Explain in Remarks) <input checked="" type="checkbox"/> Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ 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 _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Map Label: WTL-23

<u>Tree Stratum</u> (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>
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. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
_____ = 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 = _____
<u>Sapling/Shrub Stratum</u> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
<u>Herb Stratum</u> (Plot size: _____ )				
1. <u>Carex sp.</u>	5%	Yes		
2. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW	
3. <u>Fescue (Lolium arundinaceum)</u>	25%	Yes	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = 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 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.
<u>Woody Vine Stratum</u> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
Remarks: (Include photo numbers here or on a separate sheet.)				



**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-24  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/25/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): 2%

Subregion (LRR or MLRA): LLR Lat: N36.18575 Long: W86.408692 Datum: WGS 84

Soil Map Unit Name: Gladeville rock outcrops complex, 2 to 15 percent slopes NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>189 northeast</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.032</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**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 checked="" type="checkbox"/> Water Marks (B1) _____ Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" 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 checked="" 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 checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" 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)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Map Label: WTL-24

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	<u>30%</u>	<u>Yes</u>	<u>OBL</u>	<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. <u>Willow oak (Quercus phellos)</u>	<u>20%</u>	<u>Yes</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
_____ = Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
_____ = Total Cover				
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Fox sedge (Carex vulpinoidea)</u>	<u>10%</u>	<u>Yes</u>	<u>OBL</u>	<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 = _____
2. <u>Soft rush (Juncus effusus)</u>	<u>5%</u>	<u>Yes</u>	<u>FACW</u>	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
_____ = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
_____ = Total Cover				
<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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>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 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.				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

**SOIL**

Map Label: **WTL-24**

**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>	Loc <sup>2</sup>		
0-8"	10YR 5/1	100%					Silty 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.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-25  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/25/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek

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

Subregion (LRR or MLRA): LLR Lat: N36.186186 Long: W86.408368 Datum: WGS 84

Soil Map Unit Name: Talbott silt loam, 5 to 20 percent slopes, Eroded, Rocky NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>190 south, 191 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.04</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)                      ___ True Aquatic Plants (B14) ___ High Water Table (A2)                      ___ Hydrogen Sulfide Odor (C1) ___ Saturation (A3)                                  ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)                                  ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2)                      ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3)                              ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4)                        ___ Other (Explain in Remarks) <input checked="" type="checkbox"/> Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) ___ 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 <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5"</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Map Label: WTL-25

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	20%	Yes	OBL	
2. <u>Cottonwood (Populus deltoides)</u>	30%	Yes	FAC	
3. <u>Green ash (Fraxinus pennsylvanica)</u>	20%	Yes	FACW	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
				_____ = Total Cover
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
				_____ = Total Cover
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Bottlebrush sedge (Carex hystericina)</u>	5%	Yes	OBL	
2. <u>Soft rush (Juncus effusus)</u>	5%	Yes	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				_____ = Total Cover
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
				_____ = Total Cover

**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 \_\_\_\_\_ 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.

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**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 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.

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**Hydrophytic Vegetation Present?** Yes  No

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



**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 25, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-38 (Middle Fork)
<b>3-Latitude/Longitude</b>	N36.186482, W86.408571
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	20' – 25'
top of bank width	25' – 30'
bank height and slope ratio	3', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, boulder, cobble, gravel
riffle/run/pool	30/40/30
width of buffer zone	LB: 60'      RB: 60'
water flow	Yes
water depth	2" – 8"
water width	15'
general water quality	Good
OHWI indicators	Wrack lines, deposition
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: sycamore, green ash, red maple, eastern red cedar
overhead canopy (%)	80%
benthos	Ephemeroptera (3 sp.), trichoptera (1 sp.), decapoda
fish	Yes
algae or other aquatic life	Filamentous green algae
habitat assessment score	166 (optimal)
photo number (s)	192 u/s, 193 d/s
rainfall information	0.46" rainfall previous 7 days, 0.19" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Middle Fork is listed on the 303d list for loss of biological integrity due to siltation and for other anthropogenic habitat alterations (4.3 mile section in Wilson County). This stream is listed as category 5 (one or more uses impaired). Pollutant source is caused by highway construction and land development.

**WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont**

Project/Site: Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109 Map Label: WTL-26  
P.E. 99108-7087-04; PIN 114169.00 Date: 4/25/2011

Investigator(s): J. Garcia/C. Hertwig HUC 12 (code and name): 051302010406, Cedar Creek  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): < 2%  
 Subregion (LRR or MLRA): LLR Lat: N36.184593 Long: W86.395001 Datum: WGS 84  
 Soil Map Unit Name: Talbott silt loam, 5 to 20 percent slopes, Eroded, Rocky NWI classification: \_\_\_\_\_

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.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: Photos: <u>194 west, 195 soil</u> Buffer (ft.): <u>0</u> Approximate Size (ac.): <u>0.15</u> Portion Affected (permanent) (ac.): <u>unk.</u> Portion Affected (temporary) (ac.): <u>unk.</u>	Confirmation (by, date): <u>Not required</u> Mitigation (to be included in design): <u>Yes</u> Notes:

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1)                      ___ True Aquatic Plants (B14) ___ High Water Table (A2)                      ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3)                                      ___ Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Water Marks (B1)                                      ___ Presence of Reduced Iron (C4) <input checked="" type="checkbox"/> Sediment Deposits (B2)                              ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3)                                      ___ Thin Muck Surface (C7) <input checked="" type="checkbox"/> Algal Mat or Crust (B4)                                      ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0.5"</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
--	---

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

Remarks:

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

Map Label: WTL-26

	Absolute % Cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (Plot size: _____ )				
1. <u>Black willow (Salix nigra)</u>	5%	Yes	OBL	<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. _____				
8. _____				
				<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 = _____
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" 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)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Herb Stratum</b> (Plot size: _____ )				
1. <u>Soft rush (Juncus effusus)</u>	10%	Yes	FACW	<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 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.
2. <u>Carex sp.</u>	5%	Yes		
3. <u>Fescue (Lolium arundinaceum)</u>	20%	Yes	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

**SOIL**

Map Label: **WTL-26**

**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>	Loc <sup>2</sup>		
0-12"	10YR 5/2	60%	7.5 YR 5/4	40%			Silty clay	Fe concretions

<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> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<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"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)			

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 25, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-41 (Middle Fork)
<b>3-Latitude/Longitude</b>	N36.183998, W86.384206
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Meandering
channel bottom width	10'
top of bank width	15'
bank height and slope ratio	2' - 5', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, boulder, cobble
riffle/run/pool	40/40/20
width of buffer zone	LB: 50'      RB: 50'
water flow	Yes
water depth	2" - 3"
water width	9' - 10'
general water quality	Good
OHWI indicators	Scouring, presence of debris, deposition
groundwater connection	Yes
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: jewelweed, hackberry, sycamore, red maple, stinging nettle
overhead canopy (%)	90%
benthos	Isopoda (5 sp.), ephemeroptera (2 sp.)
fish	Yes
algae or other aquatic life	Filamentous green algae
habitat assessment score	126 (suboptimal)
photo number (s)	196 u/s, 197 d/s
rainfall information	0.46" rainfall previous 7 days, 0.19" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	Middle Fork is listed on the 303d list for loss of biological integrity due to siltation and for other anthropogenic habitat alterations (4.3 mile section in Wilson County). This stream is listed as category 5 (one or more uses impaired). Pollutant source is likely due to highway construction and land development.

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 25, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-40 (Unnamed tributary to Middle Fork)
<b>3-Latitude/Longitude</b>	N36.185137, W86.395507
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Perennial stream
blue-line on topo? (y/n)	Y
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	6'
top of bank width	8'
bank height and slope ratio	1', 1:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, vegetation, boulder
riffle/run/pool	45/45/0
width of buffer zone	LB: 0      RB: 20'
water flow	Yes
water depth	1" – 2"
water width	5' – 6'
general water quality	Fair
OHWI indicators	Vegetation bent
groundwater connection	Yes
bank stability: LB, RB	Both: stable
dominant species: LB, RB	Both: black willow, sycamore, Carex sp., Japanese honeysuckle, green ash
overhead canopy (%)	10%
benthos	Isopoda (8 sp.), ephemeroptera (3 sp.), trichoptera (1 sp.)
fish	None seen
algae or other aquatic life	Filamentous green algae
habitat assessment score	146 (suboptimal)
photo number (s)	198 u/s
rainfall information	0.46" rainfall previous 7 days, 0.19" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Project:** Wilson County; Interstate 40 lane additions, from Central Pike to east of SR-109

P.E.: 99108-7087-04; PIN: 114169.00

**Date of survey:** April 25, 2011**Biologist:** J. Garcia/C. Hertwig**Affiliation:** CEC, Inc.

<b>1-Station:</b> from plans	Not provided
<b>2-Map label and name</b>	STR-39 (Unnamed tributary to Middle Fork)
<b>3-Latitude/Longitude</b>	N36.185244, W86.397585
<b>4-Potential impact</b>	Crossing/encapsulation/runoff
<b>5-Feature description:</b>	
what is it	Intermittent stream
blue-line on topo? (y/n)	N
defined channel (y/n)	Y
straight or meandering	Straight
channel bottom width	1' – 2'
top of bank width	2' – 3'
bank height and slope ratio	1', 2:1
avg. gradient of stream (%)	< 2%
substratum	Bedrock, gravel, vegetation
riffle/run/pool	20/80/0
width of buffer zone	LB: 0      RB: 0
water flow	Yes
water depth	1"
water width	1'
general water quality	Poor
OHWM indicators	Vegetation matted down, sediment sorting
groundwater connection	Unknown
bank stability: LB, RB	Both: moderately stable
dominant species: LB, RB	Both: Carex sp., green ash, trumpet creeper, privet
overhead canopy (%)	25%
benthos	Isopoda (+10 sp.)
fish	No
algae or other aquatic life	Filamentous green algae
habitat assessment score	102 (marginal)
photo number (s)	199 u/s, 200 d/s
rainfall information	0.46" rainfall previous 7 days, 0.19" previous 24 hrs.
<b>6- HUC code &amp; name</b> (12-digit)	051302010406, Cedar Creek
<b>7-Confirmed by:</b>	Not required
<b>8-Mitigation:</b> yes/no (If yes, include on Form J)	Unknown
<b>9-Notes</b> Indicate if stream is ETW or ONRW or on 303(d) list  Estimate size (acres) of lake or pond if applicable	

**Species Review**

**Form N**

Project: Wilson County; Interstate 40 lane additions, from Central Pike to East of SR-109

P.E.: 99108-7087-04 PIN: 114169.00

Date of field study: April 6, 8, 14, 20, 25 and May 5, 2011

Date TDEC database checked: 4/18/2011

Completed by: J. Garcia

**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					
<i>Leavenworthia exigua</i> var. <i>exigua</i> , glade cress (P)		S		A, B	A	1993-361129N, 862833W This plant species can be found in glades. It blooms from March to April.	

**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					
<i>Leavenworthia exigua</i> var. <i>exigua</i> , glade cress (P)		S		A, B	A	1988-360700N, 862916W 1993- 361129N, 862833W This plant species can be found in glades. It blooms from March to April.	
<i>Amsonia tabernaemontana</i> var <i>gattingeri</i> , limestone blue star (P)		S		A, B	A	1990- 360713N, 863214W 1992- 361211N, 861926W A perennial herb, with a spreading multi-stemmed habit, usually 2-3 feet tall. Small pale lilac to pale blue star-shaped flowers. Phenology may vary, with flowering beginning in early to late April until early August. Fruiting occurs immediately after. Found in wet woods, stream banks, and gravel bars, usually on limestone. In Tennessee and Kentucky, it may occur along the beds of rocky streams, in cracks in limestone, or in gravel bars of rivers ( <a href="http://www.natureserve.org">www.natureserve.org</a> ).	
<i>Allium stellatum</i> , Glade onion (P)		E		B	A	1935 – Typically found near rocky slopes, prairies, shores. Blooms in summer, early fall	
<i>Arabis hirsute</i> , Western hairy Rockcress (P)		T		B	A	1968 – The habitat for this plant consists of coastal beaches, bluffs, and gravel bars ( <a href="http://www.mountainnature.com">www.mountainnature.com</a> ). Soil depth varies reaching 10" in some areas, and soils often have a high organic content and lack the surface clay found in glades and barrens.	
<i>Ammoselinum popei</i> , Pope's sand parsley (P)		T		B	A	2001- 360755N, 863257W This plant species is a flowering vascular plant in the carrot family ( <a href="http://natureserve.org">natureserve.org</a> ). Habitat and blooming for this plant could not be found.	

Species Review

Project: Wilson County; Interstate 40 lane additions, from Central Pike to East of SR-109

P.E.: 99108-7087-04 PIN: 114169.00

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
<i>Astragalus tennesseensis</i> , Tennessee milk-vetch (P)		S		B	A	1985- 360802N, 863303W 1998- 360743N, 863204W 1998- 360833N, 863219W 1999- 360757N, 863252W This plant can be found in ecotones, a transition area between red-cedar glades and open rocky glades, in calcareous soil, in shade, and also in prairies. Blooms first appear in mid spring and continue into late spring. Its flowers are whitish and sometimes yellow green and fruits form a yellow brown pod.	
<i>Lesquerella perforata</i> , Spring Creek bladderpod (P)	LE	E		B	A	1971- 361334N, 862117W 2006- 361112N, 861953W This plant species is confined to a small area within Tennessee's Central Basin in the United States. Typically found on creek floodplains (of Spring Creek, Barton's Creek and Cedar Creek), but also in agricultural fields, flooded pastures and glades (open spaces with few or no trees). This rare species appears to require some degree of annual disturbance to survive, ideally occurring after fertilization and before germination. The plant germinates between September and October and flowers usually between March and April ( <a href="http://www.arkive.org">www.arkive.org</a> )	
<i>Phlox bifida</i> , glade cleft phlox (P)		T		A, B	A	1990- 360714N, 863234W 1990- 360713N, 863214W Habitat for this plant consists of well drained open areas often consisting of rocky glades and ledges. Flowers can be lavender or pink sometimes even light blue or white. Blooms first appear in mid spring ( <a href="http://www.2bnthewild.com">www.2bnthewild.com</a> )	

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
<i>Schoenolirion croceum</i> , yellow sunnybell (P)	T		A, B	A	1990- 360757N, 863252W Habitat consists of open areas, moist at least in the spring or wet pine lands, and near swamps. Flowers are yellow and blooms first appear in mid spring and continue into late spring ( <a href="http://www.2bnthewild.com">www.2bnthewild.com</a> ).	
<i>Talinum calcaricum</i> , limestone fame flower (P)	S		B	A	1990- 360713N, 863214W 1998- 360743N, 863204W 1999- 360757N, 863252W Habitat for this plant species consists of rocky areas of cedar glades. Flowers are an unusual shade of purple and blooms first appear in late spring and continue into early fall. Flowers only open in the afternoon ( <a href="http://www.2bnthewild.com">www.2bnthewild.com</a> ).	
<i>Tyto alba</i> , barn owl (A)	D		A, B	A	1988- 360700N, 862916W The Barn Owl is found in virtually all habitats but much more abundantly in open woodland, heaths and moors than forested country. They usually roost by day in tree hollows but have also been found in caves, wells, out-buildings or thick foliage. This animal has been known to breed throughout the year but peak egg laying occurs during mid-April ( <a href="http://www.natureserve.org">www.natureserve.org</a> ).	

**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				

**Species Review**

**Form N**

Project: Wilson County; Interstate 40 lane additions, from Central Pike to East of SR-109

P.E.: 99108-7087-04 PIN: 114169.00

**USFWS letter:** Yes X (attached) No \_\_\_ (Requested 4/19/2011)

**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;" "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 includes areas checked)**

Location (description; lat/long or station number)	Tree Species	Photograph #
Plot 1 – See attached aerial	Shagbark hickory, Black walnut	1,2
Plot 2 – See attached aerial	American elm – not very forested	3
Plot 3 – See attached aerial	Northern red oak, white oak, eastern red cedar, American elm, black walnut	4, 5
Plot 4 – See attached aerial	Cottonwood, shagbark hickory, white oak, red maple, green ash, hackberry	6, 7, 8
Plot 5 – See attached aerial	Eastern red cedar, hackberry, shagbark hickory	9, 10

Photo summary attached.



Plot 3

Match Figure 1

Match Figure 3

N  
  
 DWN. BY: oec  
 CHK. BY: j  
 SCALE: 1:1,2000  
 DATE: 05/06/11

0 500 1,000 1,500 2,000 Feet  
  
**TDOT**  
 Go.

ISSUED FOR: TDOT  
 ISSUED BY:  
 CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
 405 Duke Drive, Suite 270  
 Franklin, Tennessee 37067  
 615-333-7797  
 Columbus, OH \* Cincinnati, OH \* Indianapolis, IN \* Chicago, IL \* St. Louis, MO \* Export, PA \* Detroit, MI \* Pittsburg, PA

Location of Indiana Bat Habitat Plots  
 Conducted during Ecological Boundary Studies  
 I-40 Widening  
 P.E. 99108-7087-04; Pin 114169.00  
 Wilson County, Tennessee  
 PROJECT NO.: 110-496  
 FIGURE: 2



Match Figure 2

Match Figure 4

Plot 2

Plot 1

N



0 510 1,020 1,530 2,040 Feet



DWN. BY: oec

CHK. BY: j

SCALE: 1:1,2000

DATE: 05/06/11

ISSUED FOR: TDOT

ISSUED BY:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

405 Duke Drive, Suite 270  
Franklin, Tennessee 37067  
615-333-7797

Columbus, OH \* Cincinnati, OH \* Indianapolis, IN \* Chicago, IL \* St. Louis, MO \* Export, PA \* Detroit, MI \* Pittsburgh, PA

Location of Indiana Bat Habitat Plots  
Conducted during Ecological Boundary Studies  
I-40 Widening  
P.E. 99108-7087-04; Pin 114169.00  
Wilson County, Tennessee

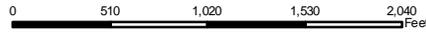
PROJECT NO.: 110-496

FIGURE: 3



Match Figure 3

Match Figure 5



ISSUED FOR: TDOT

DWN. BY:   
 oec

CHK. BY:   
 j

SCALE: 1:1,2000

DATE: 05/06/11



ISSUED BY:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

405 Duke Drive, Suite 270  
Franklin, Tennessee 37067  
615-333-7797

Columbus, OH \* Cincinnati, OH \* Indianapolis, IN \* Chicago, IL \* St. Louis, MO \* Export, PA \* Detroit, MI \* Pittsburg, PA

Location of Indiana Bat Habitat Plots  
Conducted during Ecological Boundary Studies  
I-40 Widening  
P.E. 99108-7087-04; Pin 114169.00  
Wilson County, Tennessee

PROJECT NO.: 110-496

FIGURE: 4



Match Figure 4

End Project

**N**  
  
 DWN. BY: oec  
 CHK. BY: j  
 SCALE: 1:1,2000  
 DATE: 05/06/11

0 510 1,020 1,530 2,040 Feet  


ISSUED FOR: TDOT  
 ISSUED BY:  
 CIVIL & ENVIRONMENTAL CONSULTANTS, INC.  
 405 Duke Drive, Suite 270  
 Franklin, Tennessee 37067  
 615-333-7797  
Columbus, OH \* Cincinnati, OH \* Indianapolis, IN \* Chicago, IL \* St. Louis, MO \* Export, PA \* Detroit, MI \* Pittsburg, PA

Location of Indiana Bat Habitat Plots  
 Conducted during Ecological Boundary Studies  
 I-40 Widening  
 P.E. 99108-7087-04; Pin 114169.00  
 Wilson County, Tennessee  
 PROJECT NO.: 110-496      FIGURE: 5



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION  
ENVIRONMENTAL DIVISION  
SUITE 900 - JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-0334**

April 19, 2011

Ms. Mary Jennings  
U.S. Department of Interior  
Fish and Wildlife Service  
446 Neal Street  
Cookeville, TN 38501

**SUBJECT:** I-40 from Central Pike to East of SR-109  
PIN: 114169.00 P.E. Number: 99108-7087-04  
Wilson County, Tennessee

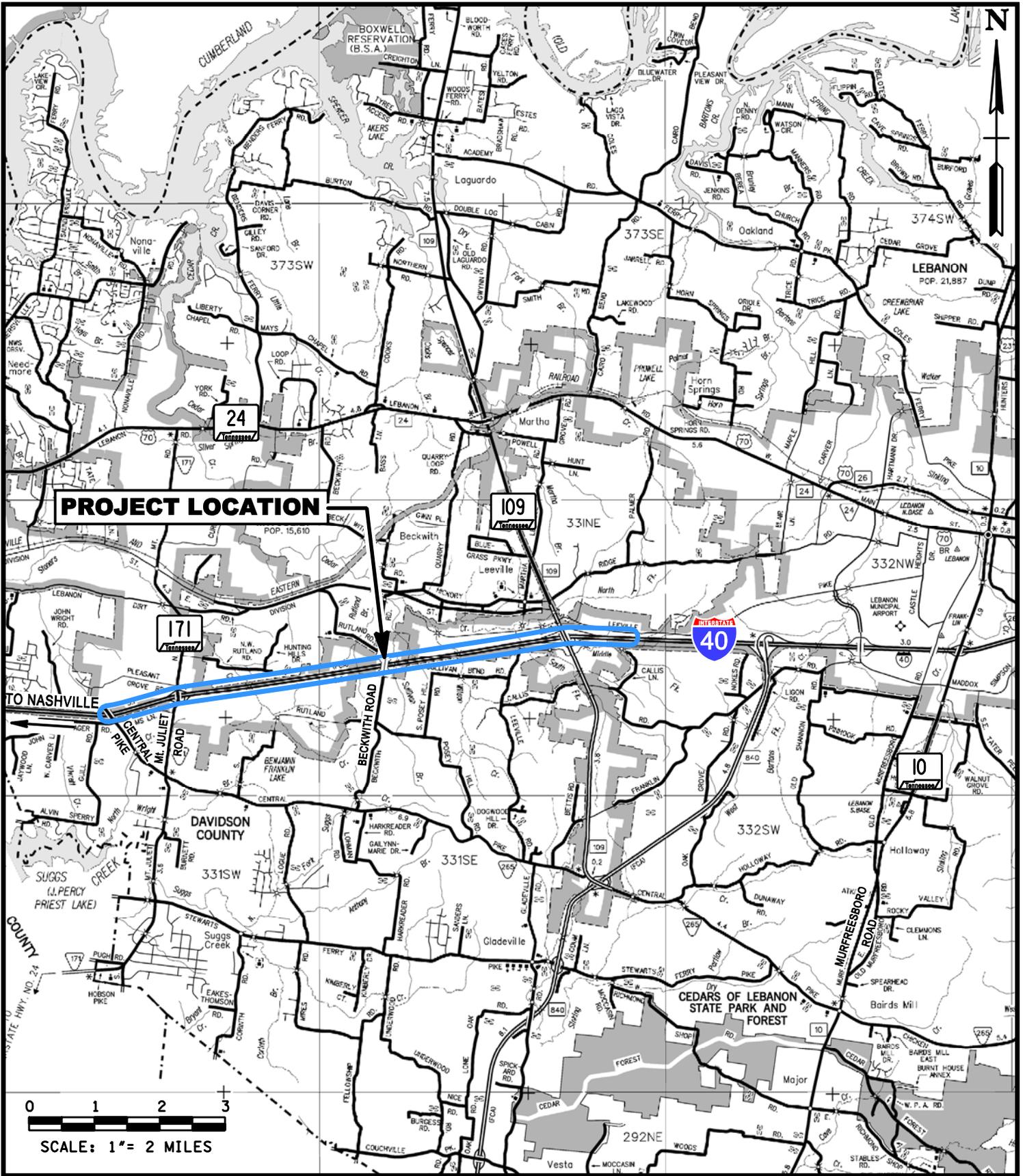
Dear Ms. Jennings:

The Tennessee Department of Transportation proposes widen and make improvements to I-40 at the location listed above. Project location maps are attached. Although the project is state funded, federal permits may be required; therefore, we are requesting a list of threatened or endangered species that may be present in the vicinity of the proposed construction.

Please include in your reply the entire project description as listed in the subject line of this request. Your assistance in the preparation of this project is greatly appreciated. If you need additional information, please contact me at 615-532-3878 or email me at [Jennifer.Thompson@tn.gov](mailto:Jennifer.Thompson@tn.gov).

Sincerely,

Jennifer Thompson,  
Environmental Division

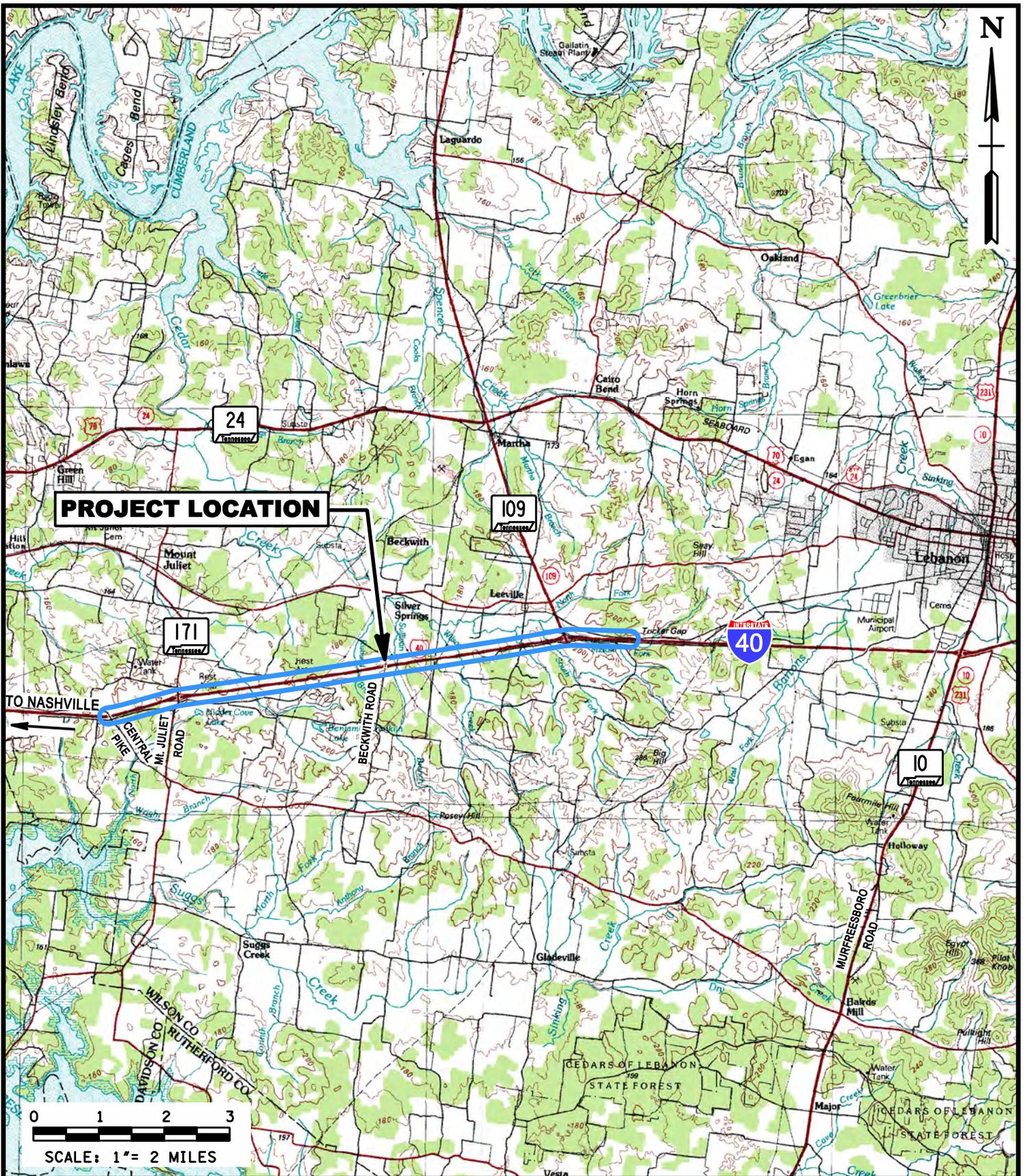


**PROJECT LOCATION**

**AREA MAP  
INTERSTATE 40 LANE ADDITIONS  
CENTRAL PIKE TO EAST OF SR-109  
(WILSON COUNTY, TN)**

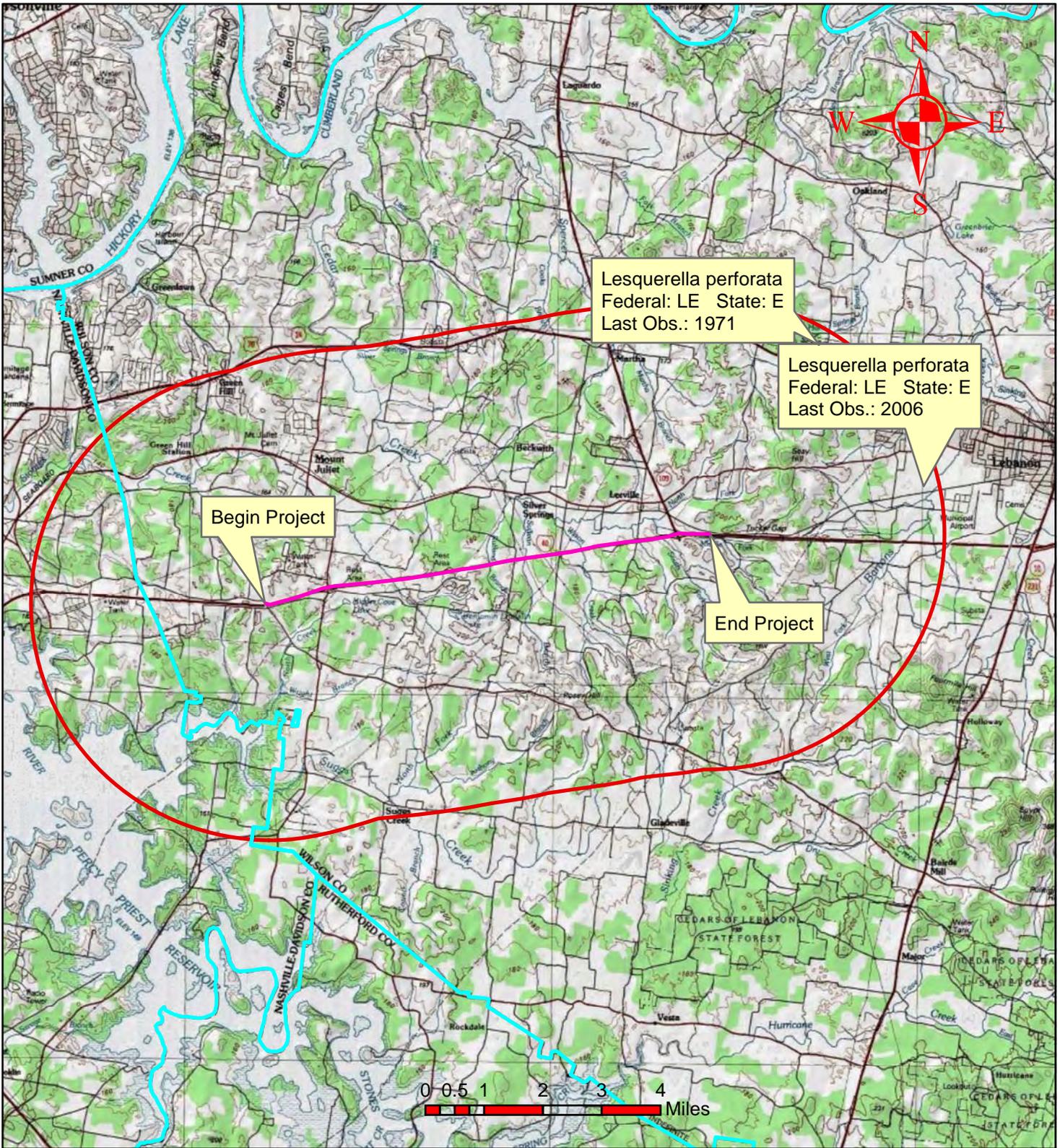
DRAWN BY: <b>TJC</b>		CHECKED BY: <b>HAM</b>	
P.I.N. <b>114169.00</b>			
PROJECT NO. <b>99108-7087-04</b>			
FIGURE <b>1</b>		DATE: <b>02-02-11</b>	





**LOCATION MAP**  
**INTERSTATE 40 LANE ADDITIONS**  
**CENTRAL PIKE TO EAST OF SR-109**  
**(WILSON COUNTY, TN)**

DRAWN BY: <b>TJC</b>		CHECKED BY: <b>HAM</b>	
P.I.N. <b>114169.00</b>			
PROJECT NO. <b>99108-7087-04</b>			
FIGURE <b>2</b>		DATE: <b>02-02-11</b>	



**Wilson Co., I-40 from E. of Central Pike to E. of SR-109**

**March 15, 2011**

**USGS Topos:**

**PIN: 114169.00 P.E. Number: 99108-7087-04**

**Species Search: Four Mile Radius**

**Federally-listed Species Only**



**From:** Ed Harsson  
**To:** Jennifer Thompson  
**CC:** Rob Todd  
**Date:** 4/19/2011 9:21 AM  
**Subject:** Re: Wilson Co., I-40 from Central Pike to E. of SR-109, PIN: 114169.00

Jennifer-

TWRA's concerns with water quality and species of concern in this project area can be addressed by implementing all applicable best management practices that prevent erosion/sediment transport during the construction process.

Ed

Ed Harsson  
Wildlife Biologist  
TN Wildlife Resources Agency  
200 Lowell Thomas Dr.  
Jackson, TN 38301  
Phone: 731-423-5725  
800-372-3928  
Cell: 731-293-9776  
Fax: 731-423-6483  
Email: Ed.Harsson@tn.gov

>>> Jennifer Thompson 04/18/11 11:30 AM >>>

Rob/Ed:

Please review the attached maps for rare species. From the species search I just did, it appears that there are only plant species within a four-mile radius.

Thanks,  
Jennifer

Photo Summary:

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

Form N Bat Survey

P.E.: 95100-0105-44; PIN: 114169.00



Photo 1: (1854)-Plot 1

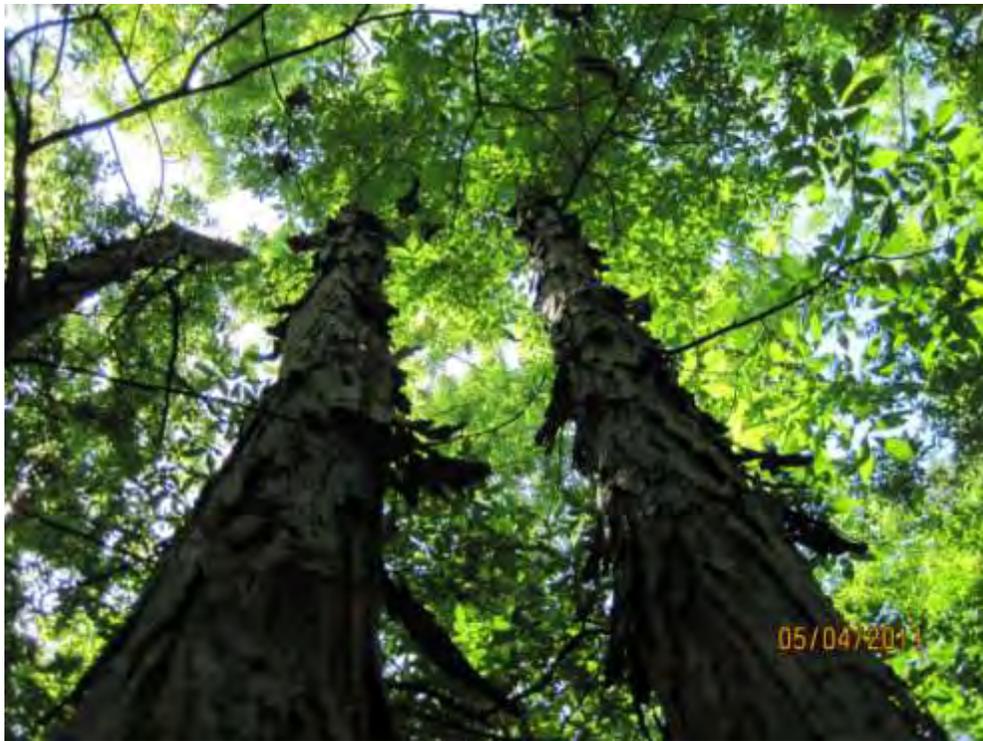


Photo 2: (1855)-Plot 1

Photo Summary:

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

Form N Bat Survey

P.E.: 95100-0105-44; PIN: 114169.00



Photo 3: (1856)-Plot 2



Photo 4: (1860)-Plot 3

Photo Summary:

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

Form N Bat Survey

P.E.: 95100-0105-44; PIN: 114169.00



Photo 5: (1861)-Plot 3



Photo 6: (1864)-Plot 4

Photo Summary:

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

Form N Bat Survey

P.E.: 95100-0105-44; PIN: 114169.00



Photo 7: (1865)-Plot 4



Photo 8: (1866)-Plot 4



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

446 Neal Street  
Cookeville, TN 38501

May 17, 2011

Ms. Jennifer Thompson  
Tennessee Department of Transportation  
Environmental Planning and Permits  
James K. Polk Building, Suite 900  
505 Deaderick Street  
Nashville, Tennessee 37243-0334

Subject: Proposal to construct a segment of Interstate 40 from Central Pike to east of State Route 109; PIN #114169.00, P.E. Number: 99108-7087-04, Wilson County, Tennessee. (Re: FWS# 11-CPA-0428).

Dear Ms. Thompson:

Thank you for your letter dated May 25, 2010, regarding the proposal to widen a segment of Interstate 40 from Central Pike to east of State Route 109 in Wilson County, Tennessee. Personnel of the U.S. Fish and Wildlife Service (Service) have reviewed the subject proposal and offer the following comments.

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.

Our database indicates that summer roost habitat for the Indiana bat (*Myotis sodalis*) may exist within the project corridor and would likely be altered by the proposed action. A qualified biologist should assess potential impacts and determine if the proposed project may affect this species. TDOT should submit a copy of the assessment and findings to this office for review and concurrence. A finding of "may affect" could require initiation of formal consultation by the lead Federal agency.

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 black 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  
446 Neal Street  
Cookeville, TN 38501

June 9, 2011

Ms. Jennifer Thompson  
Tennessee Department of Transportation  
Environmental Planning and Permits  
James K. Polk Building, Suite 900  
505 Deaderick Street  
Nashville, Tennessee 37243-0334

Subject: Proposal to construct a segment of Interstate 40 from Central Pike to east of State Route 109; PIN #114169.00, P.E. Number: 99108-7087-04, Wilson County, Tennessee. (Re: FWS# 11-CPA-0428).

Dear Ms. Thompson:

Thank you for your letter dated June 2, 2011, regarding potential Indiana bat (*Myotis sodalis*) impacts as a result of the proposed widening of a segment of Interstate 40 from Central Pike to east of State Route 109 in Wilson County, Tennessee. TDOT has determined that this project is "not likely to adversely affect" the Indiana bat because much of the work would be completed within the existing right-of-way, the affected trees are subject to continual interstate noise, and no significant bodies of water are present within the project limits. 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, we concur with TDOT's determination of "not likely to adversely affect" for the Indiana bat due to marginal roosting value of the trees to be removed and the presence of more suitable habitat nearby. Therefore, 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.

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 "Brad Bingham". The signature is written in a cursive style with a long horizontal flourish at the end.

*Acting for* Mary E. Jennings  
Field Supervisor

xc: Deedee Kathman, TDOT, Nashville, TN

Photo Summary:

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

Form N Bat Survey

P.E.: 95100-0105-44; PIN: 114169.00



Photo 9: (1869)-Plot 5

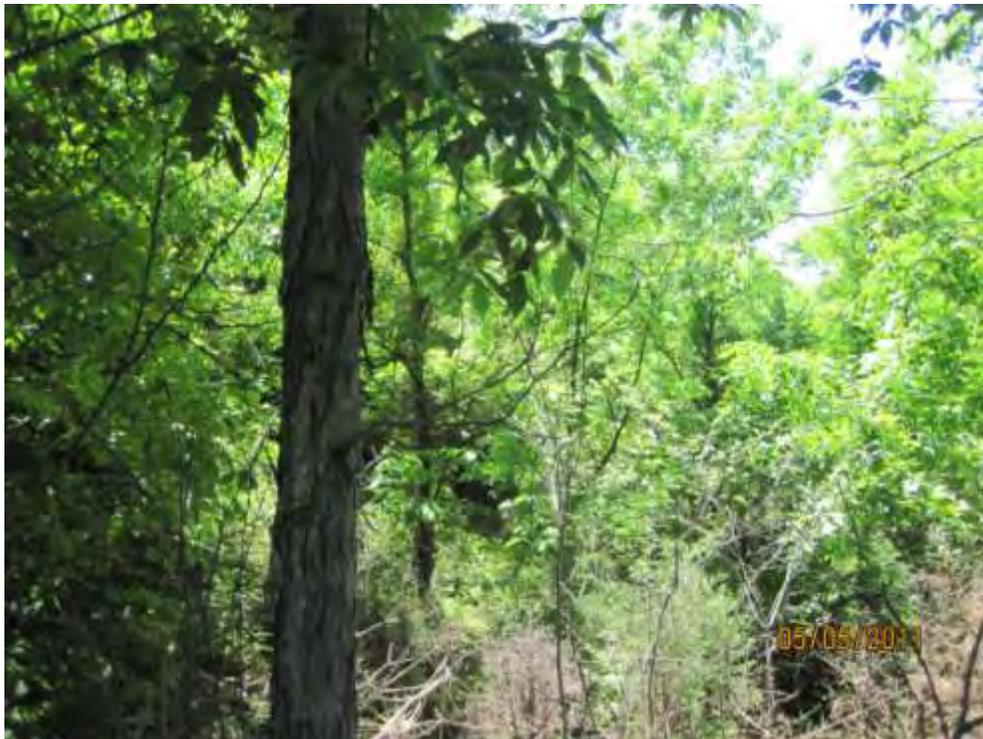
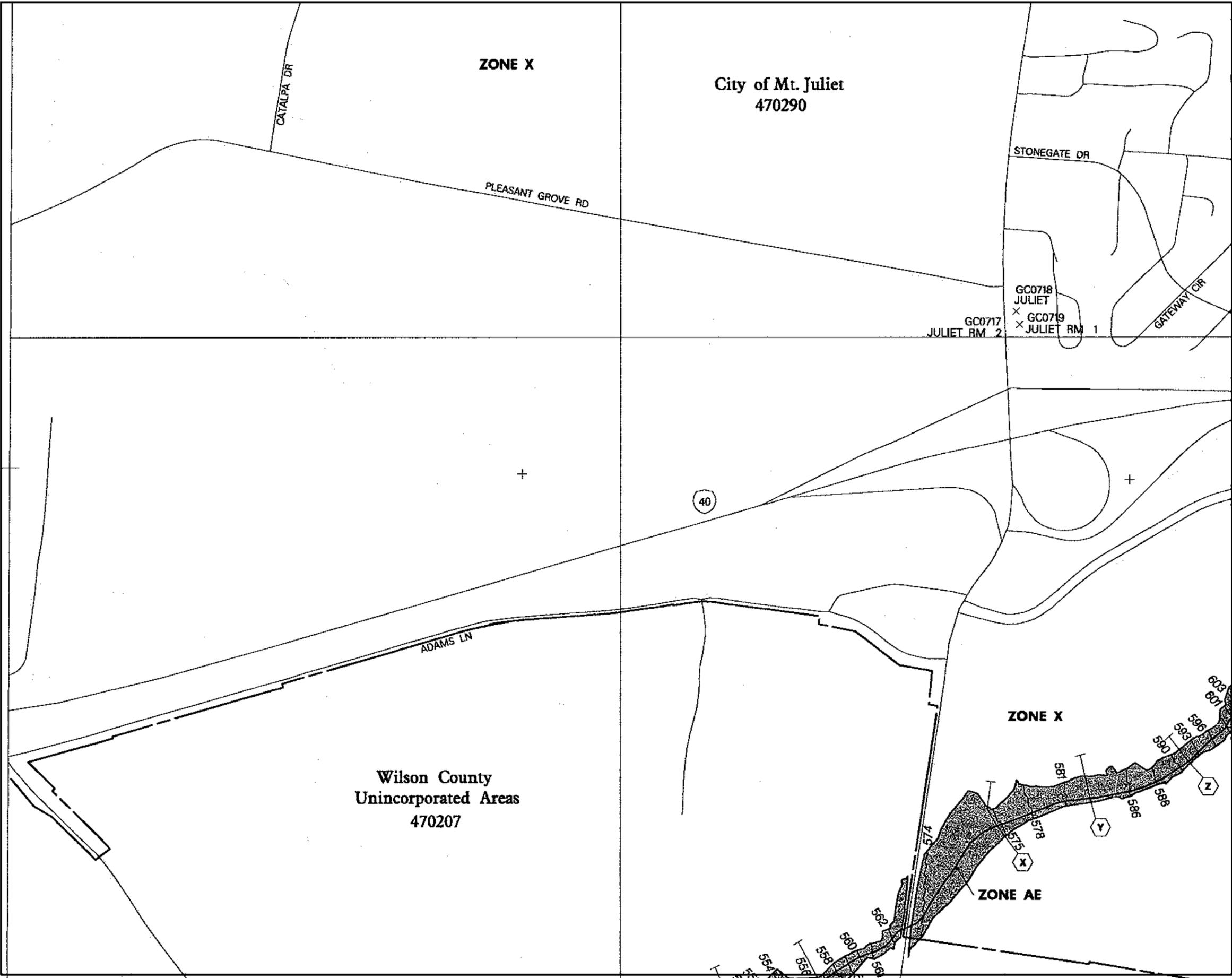
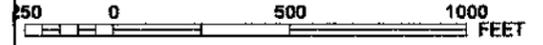


Photo 10: (1870)-Plot 5



MAP SCALE 1" = 500'



PANEL 0142D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 142 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

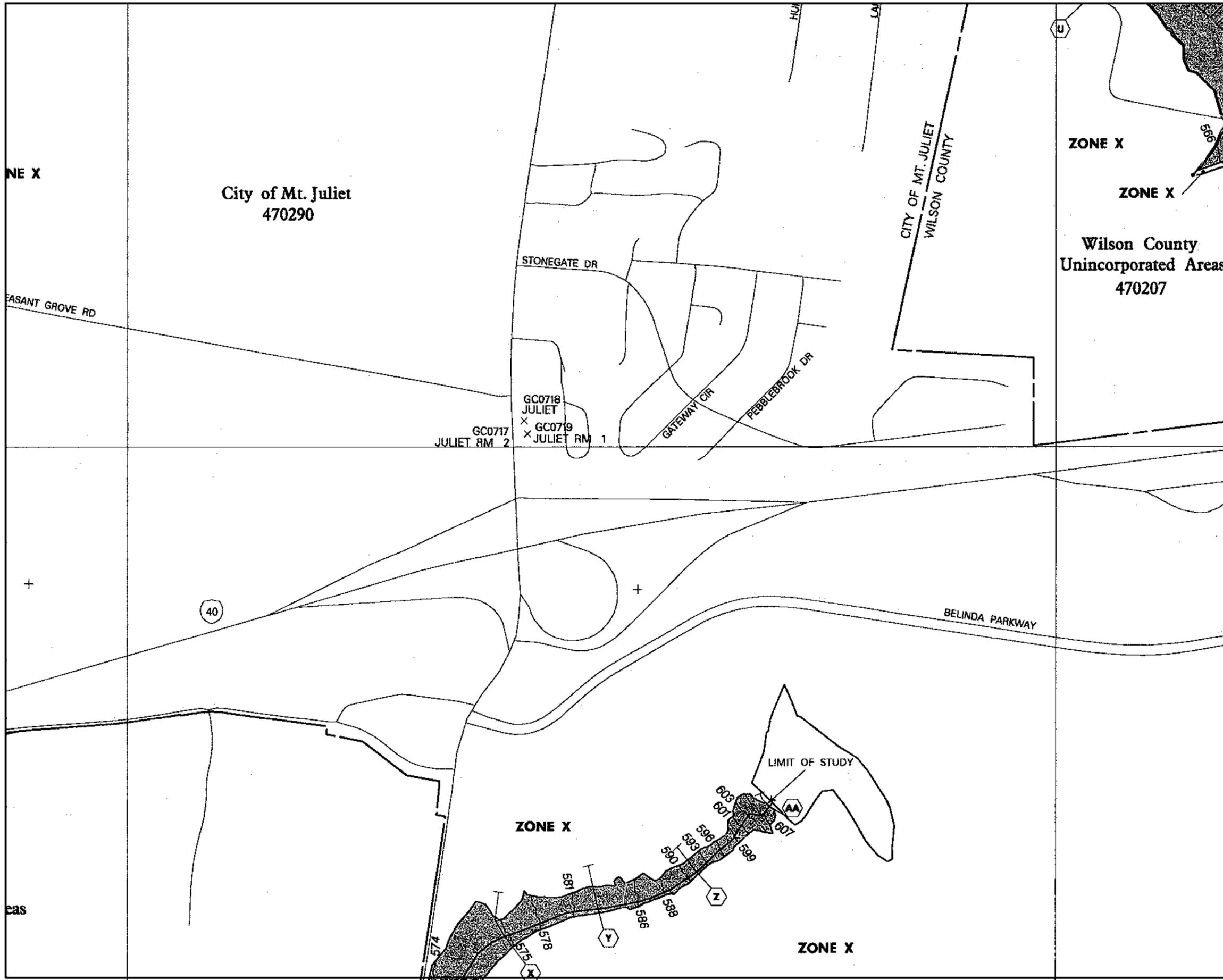
COMMUNITY	NUMBER	PANEL	SUFFIX
MT. JULIET, CITY OF	470290	0142	D
WILSON COUNTY	470207	0142	D

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.

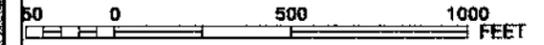


**MAP NUMBER**  
**47189C0142D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



MAP SCALE 1" = 500'



ZONE X

ZONE X

Wilson County  
Unincorporated Areas  
470207

City of Mt. Juliet  
470290

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 142 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MT. JULIET, CITY OF	470290	0142	D
WILSON COUNTY	470207	0142	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**  
**47189C0142D**

**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

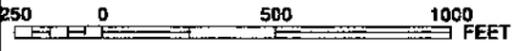
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

Wilson County  
Unincorporated Areas  
470207



MAP SCALE 1" = 500'



PANEL 0161D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

PANEL 161 OF 445

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

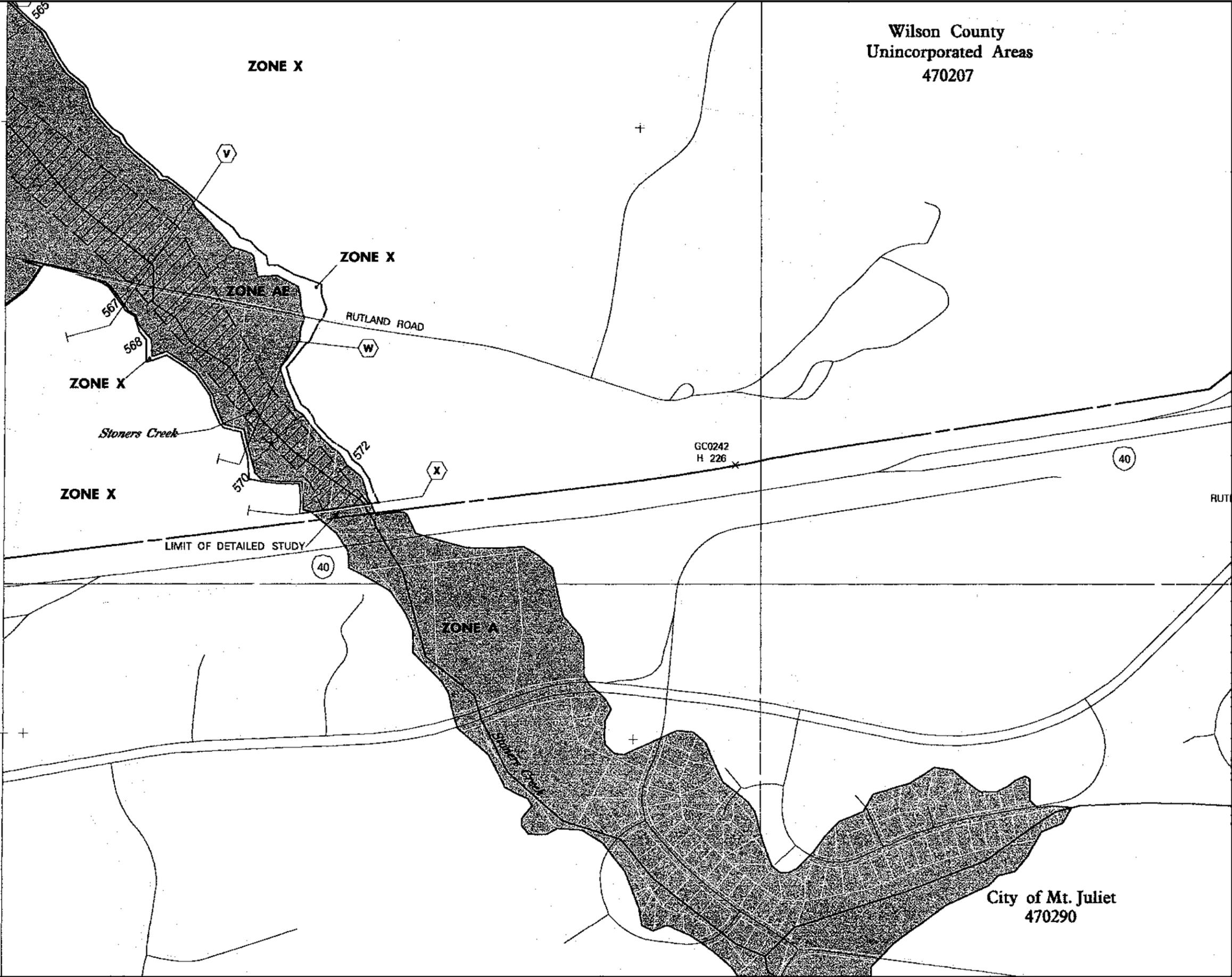
COMMUNITY	NUMBER	PANEL	SUFFIX
MT. JULIET, CITY OF	470290	0161	D
WILSON COUNTY	470207	0161	D

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**  
**47189C0161D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



City of Mt. Juliet  
470290

Wilson County  
Unincorporated Areas  
470207

WILSON COUNTY  
CITY OF MT. JULIET

GC0242  
H 226

40

GC0244  
RUTLAND  
X  
GC0243 X GC0245  
RUTLAND RM 1 RUTLAND RM 2

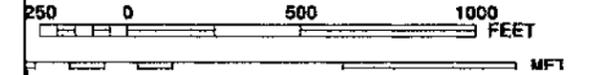
6700000 FT

JOINS PANEL 0162

City of Mt. Juliet  
470290



MAP SCALE 1" = 500'



PANEL 0161D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 161 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

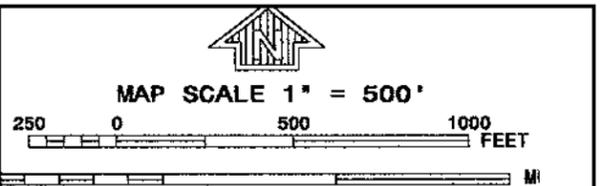
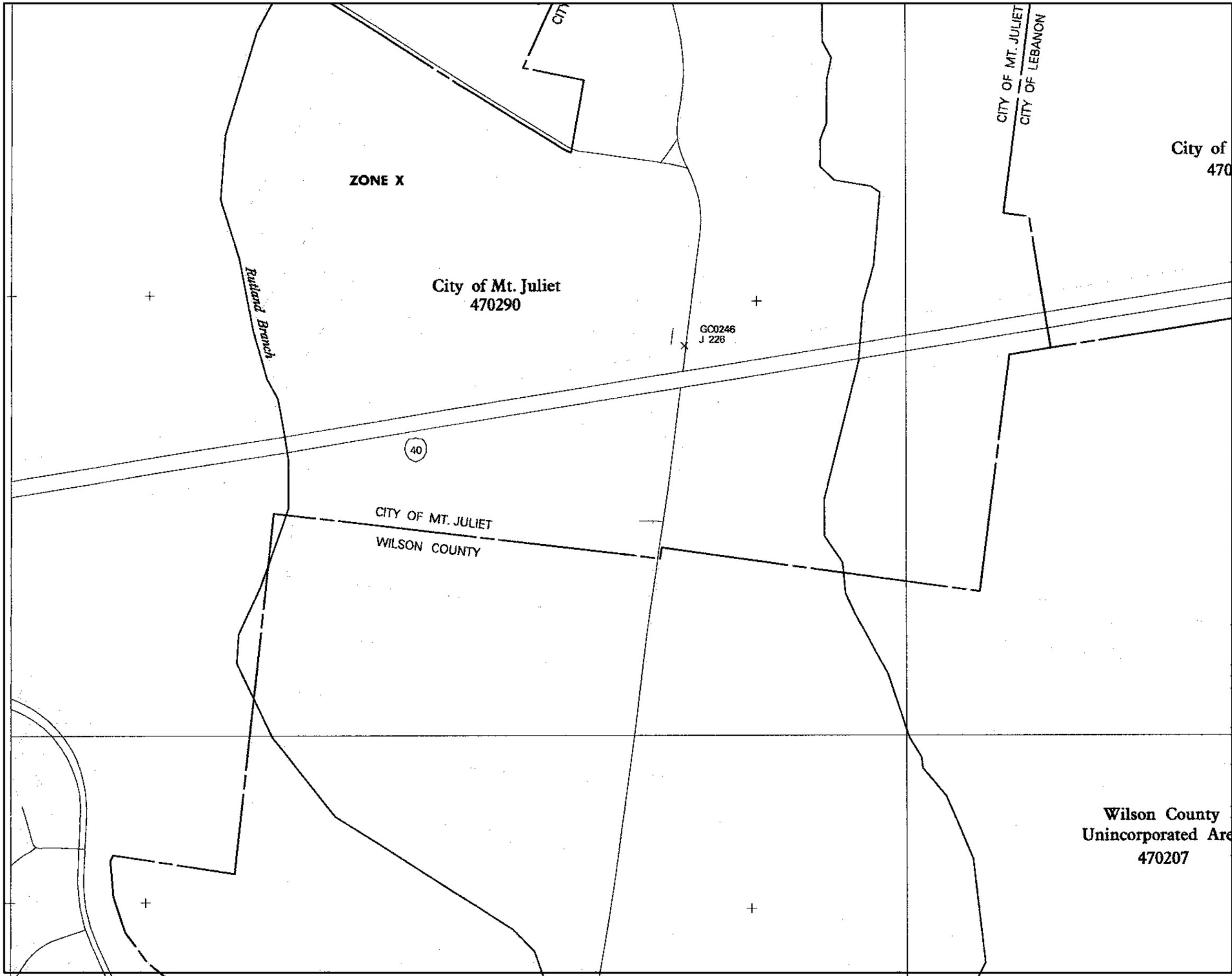
COMMUNITY	NUMBER	PANEL	SUFFIX
MT. JULIET, CITY OF	470290	0161	D
WILSON COUNTY	470207	0161	D

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**  
**47189C0161D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



PANEL 0162D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 162 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0162	D
MT. JULIET, CITY OF	470290	0162	D
WILSON COUNTY	470207	0162	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.

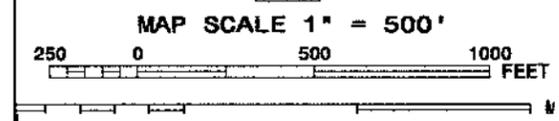
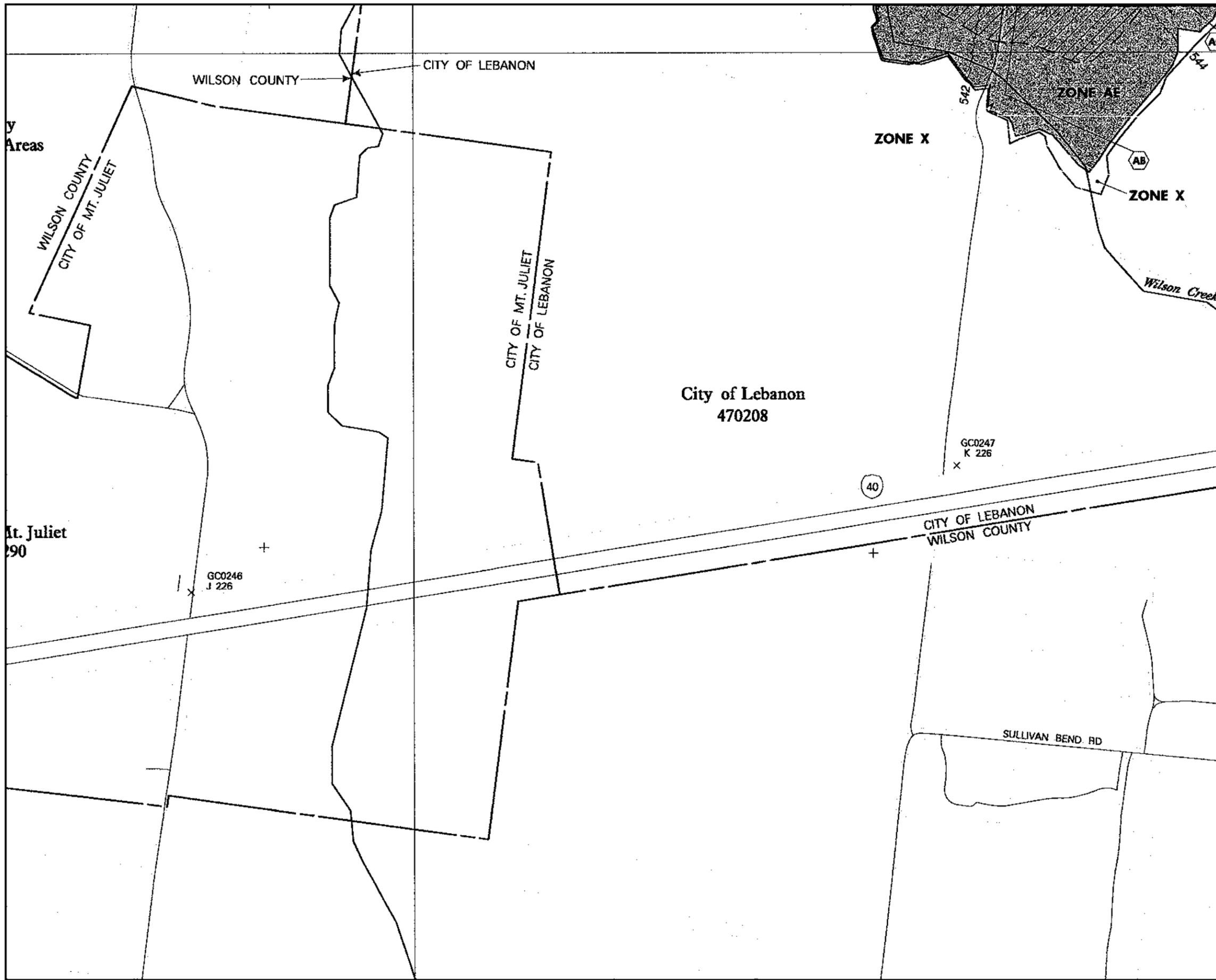


**MAP NUMBER**  
**47189C0162D**

**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Wilson County  
 Unincorporated Areas  
 470207

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



PANEL 0162D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 162 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

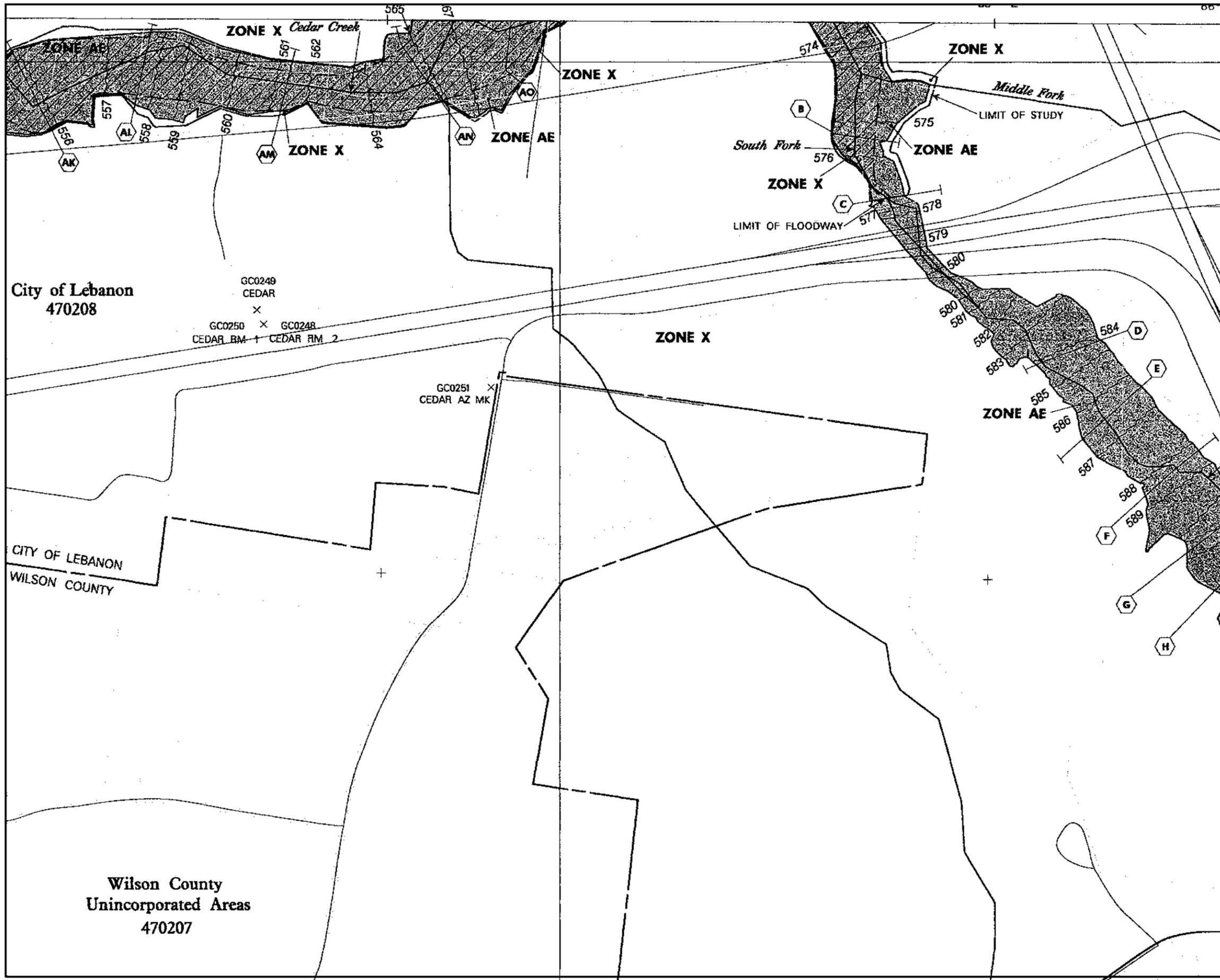
COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0182	D
MT. JULIET, CITY OF	470290	0182	D
WILSON COUNTY	470207	0182	D

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.

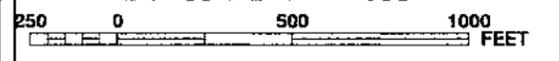


**MAP NUMBER**  
**47189C0162D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



MAP SCALE 1" = 500'



PANEL 0166D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 166 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0166	D
WILSON COUNTY	470207	0166	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.



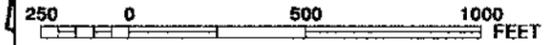
**MAP NUMBER**  
**47189C0166D**

**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



MAP SCALE 1" = 500'



PANEL 0167D

# FIRM FLOOD INSURANCE RATE MAP WILSON COUNTY, TENNESSEE AND INCORPORATED AREAS

PANEL 167 OF 445

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

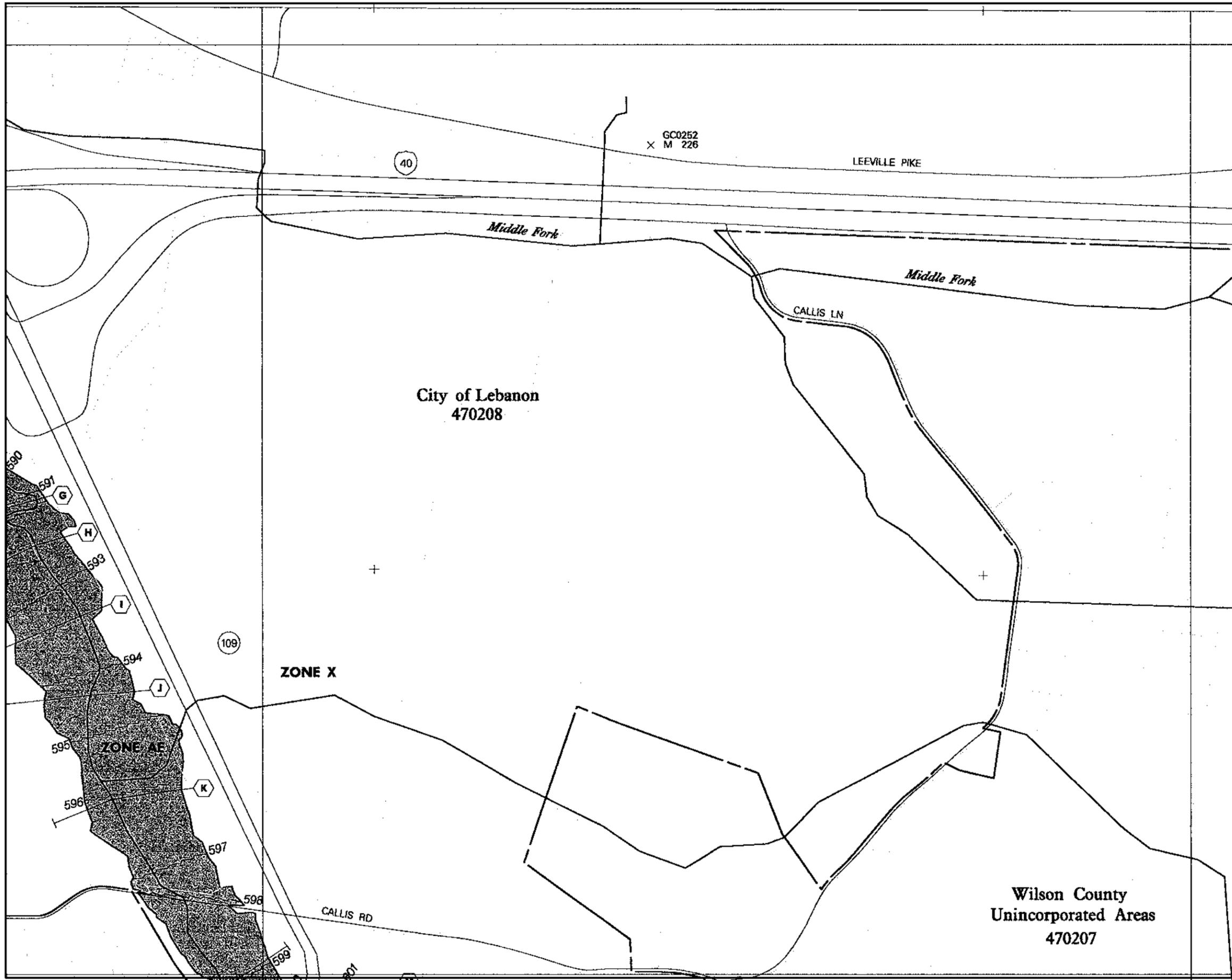
COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0167	D
WILSON COUNTY	470207	0167	D

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.

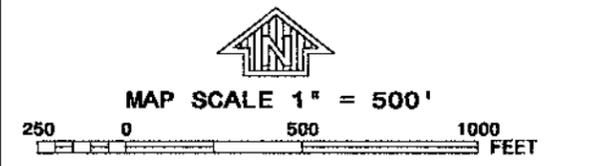
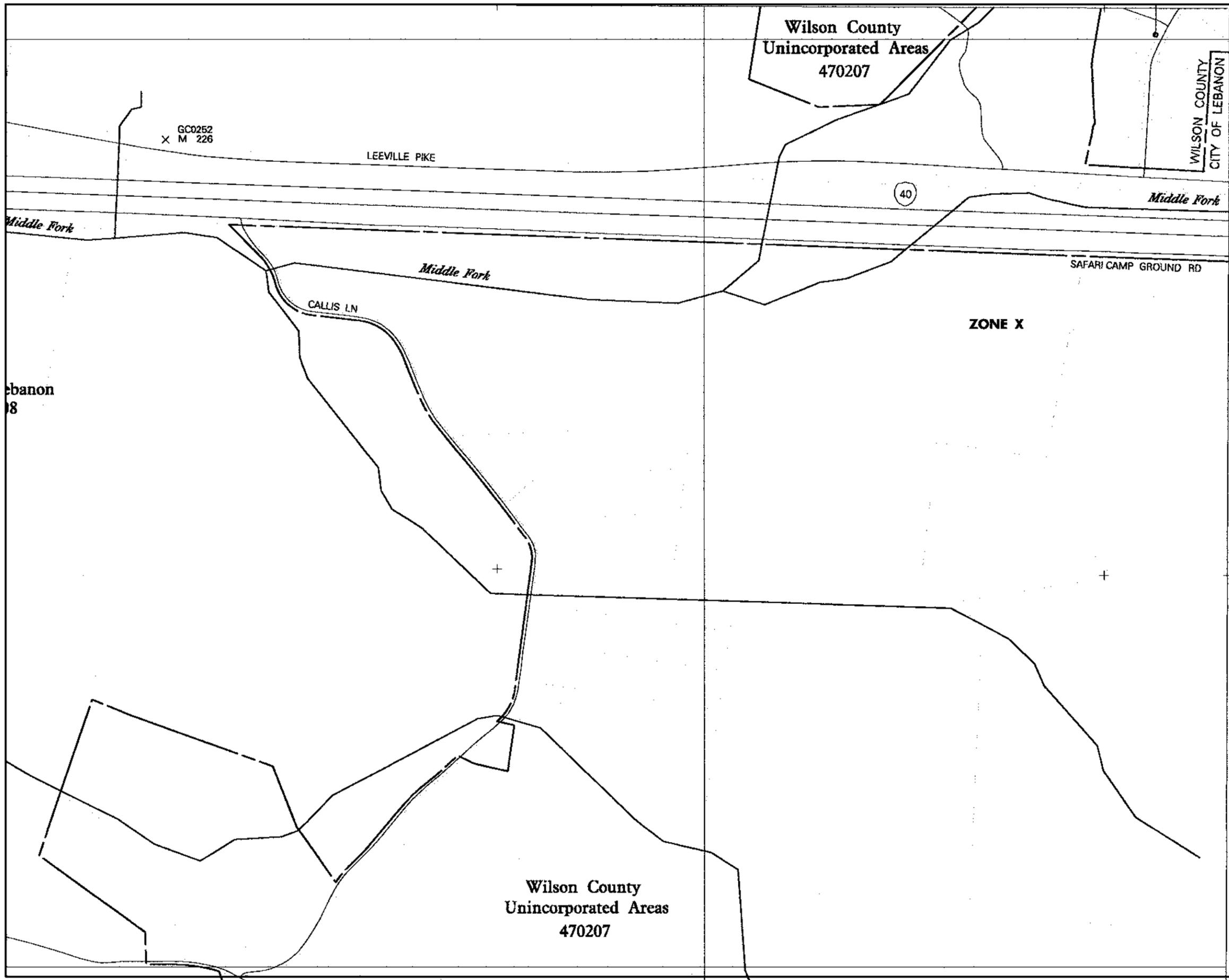


**MAP NUMBER  
47189C0167D**

**EFFECTIVE DATE  
FEBRUARY 20, 2008**



This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



**PANEL 0167D**

**FIRM  
FLOOD INSURANCE RATE MAP  
WILSON COUNTY,  
TENNESSEE  
AND INCORPORATED AREAS**

**PANEL 167 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

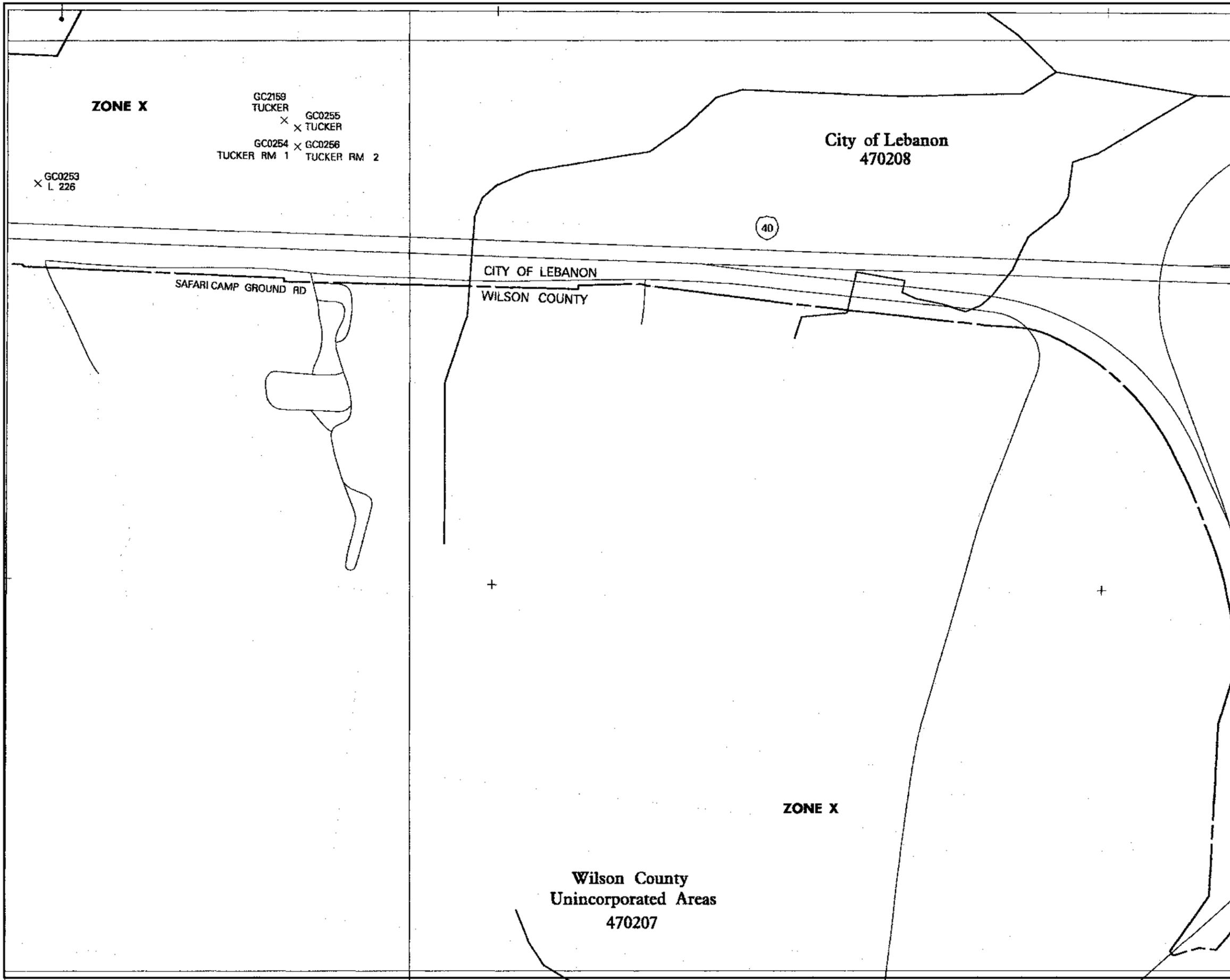
<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
LEBANON, CITY OF	470208	0167	D
WILSON COUNTY	470207	0167	D

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  
47189C0167D**  
**EFFECTIVE DATE  
FEBRUARY 20, 2008**

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MAP SCALE 1" = 500'



**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 186 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0186	D
WILSON COUNTY	470207	0186	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.

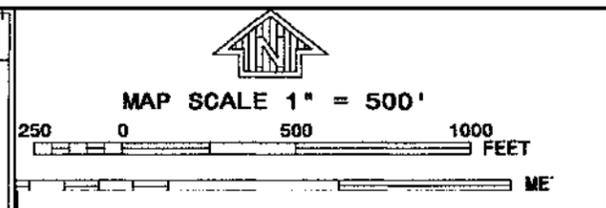
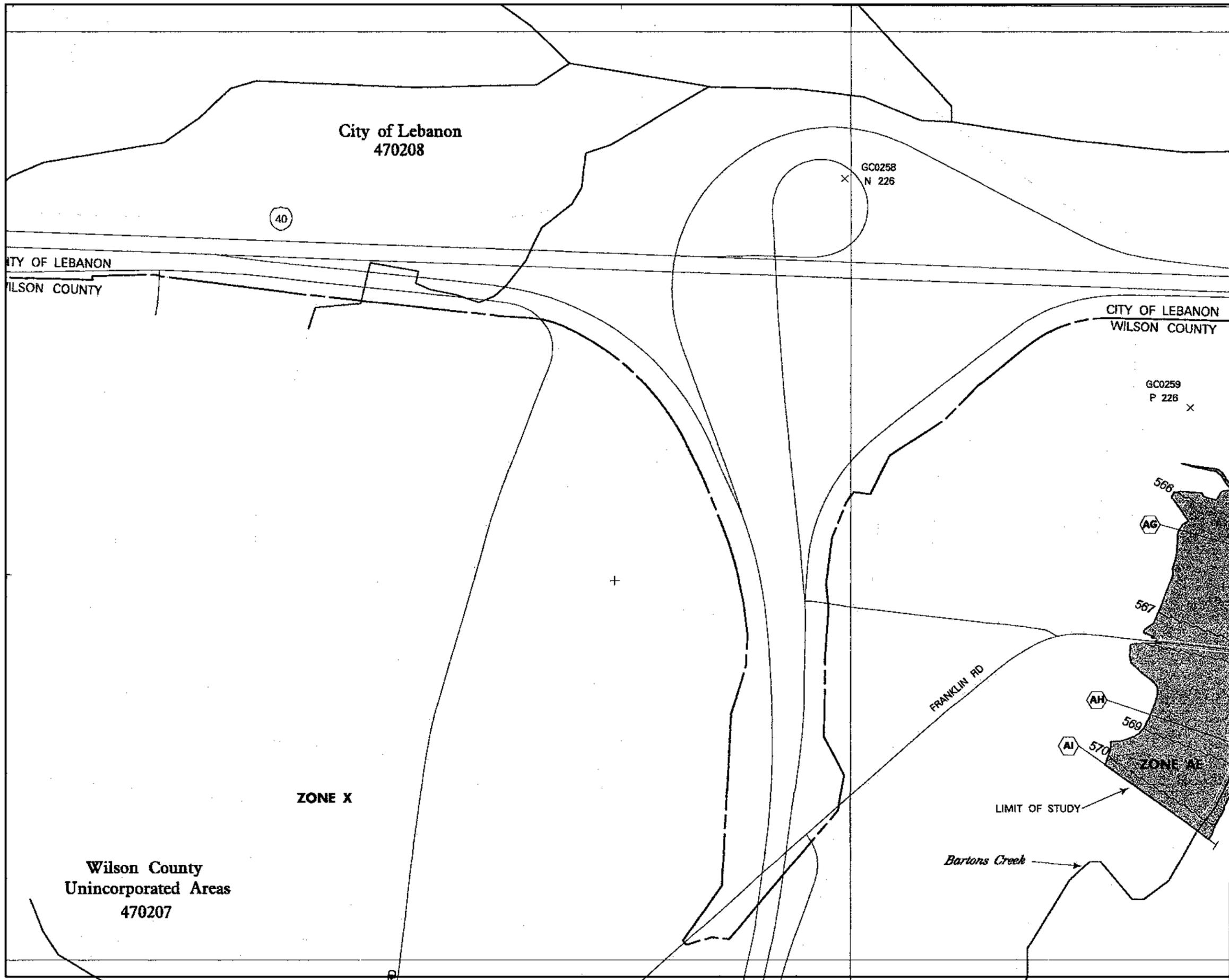


**MAP NUMBER**  
**47189C0186D**

**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

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**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 186 OF 445**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0186	D
WILSON COUNTY	470207	0186	D

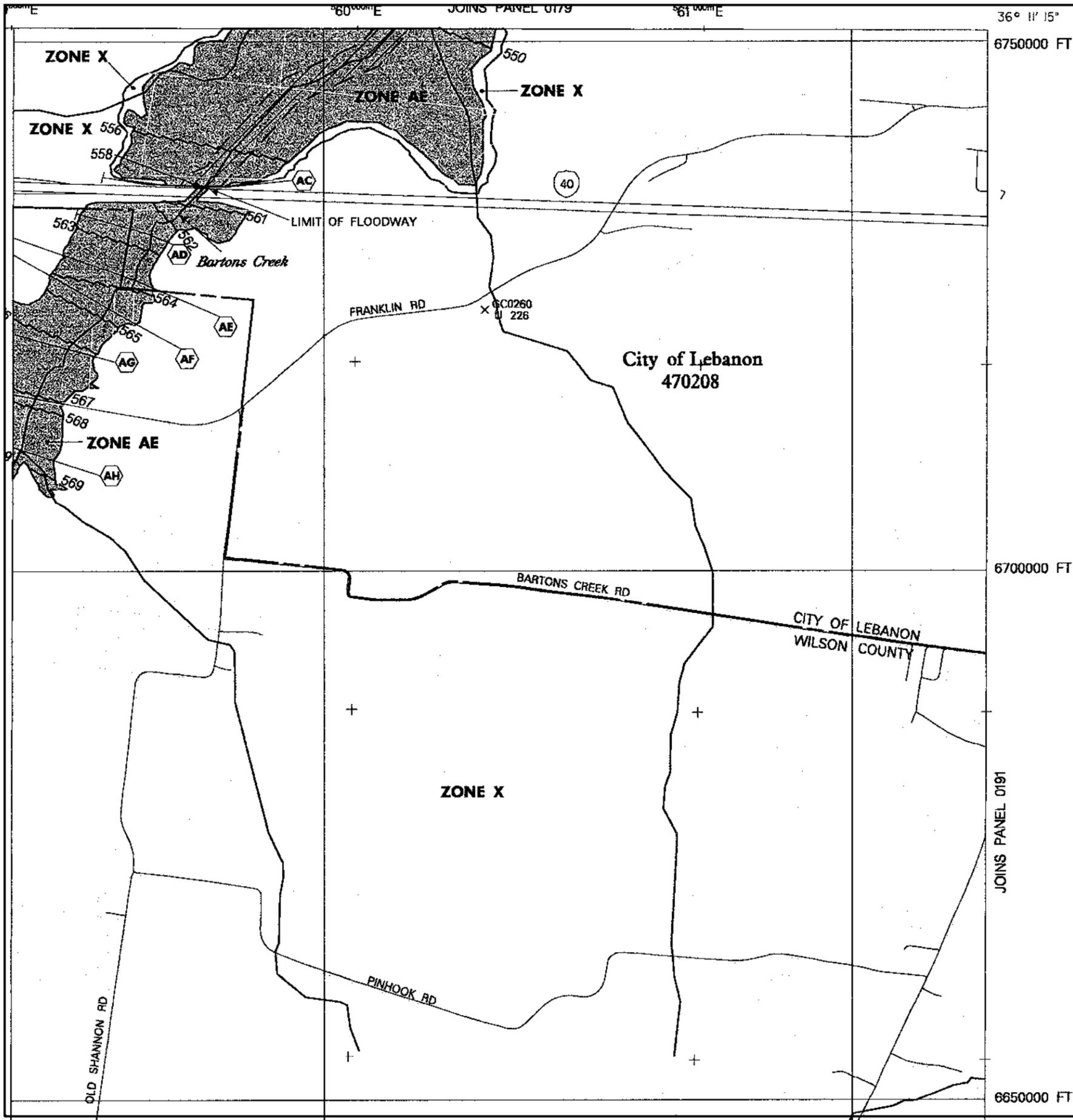
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
**47189C0186D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

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36° 11' 15"  
6750000 FT  
6700000 FT  
6650000 FT  
JOINS PANEL 0179  
JOINS PANEL 0191

- Flood Hazard Area of Special Flood Flood Elevation is t
- ZONE A No
  - ZONE AE Bas 500
  - ZONE AH Flo ele
  - ZONE AO Flo ave also
  - ZONE AR Are cha ded bei gre
  - ZONE A99 Are flo det
  - ZONE V Co ele
  - ZONE VE Coa det
- FLO
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- OTH
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- CBRS areas and OP
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(EL 987)
- \*Referenced to the
- A
  - 23
- 97°07'30", 32°22'

MAP SCALE 1" = 1000'

## FIRM

### FLOOD INSURANCE RATE MAP

### WILSON COUNTY, TENNESSEE

### AND INCORPORATED AREAS

**PANEL 190 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0190	D
WILSON COUNTY	470207	0190	D

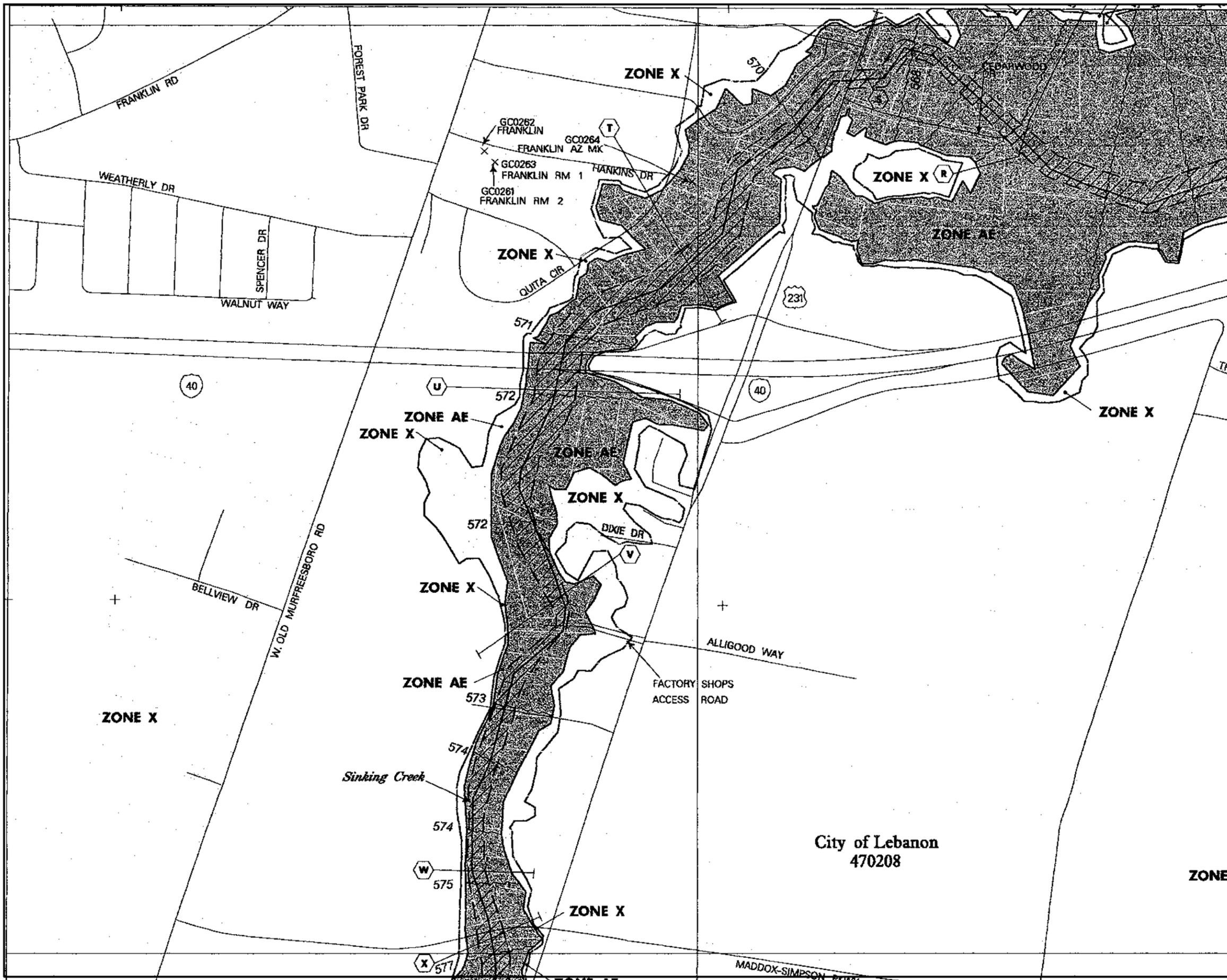
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**47189C0190D**

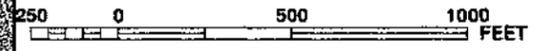
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



MAP SCALE 1" = 500'



**FIRM  
FLOOD INSURANCE RATE MAP  
WILSON COUNTY,  
TENNESSEE  
AND INCORPORATED AREAS**

**PANEL 191 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0191	D
WILSON COUNTY	470207	0191	D

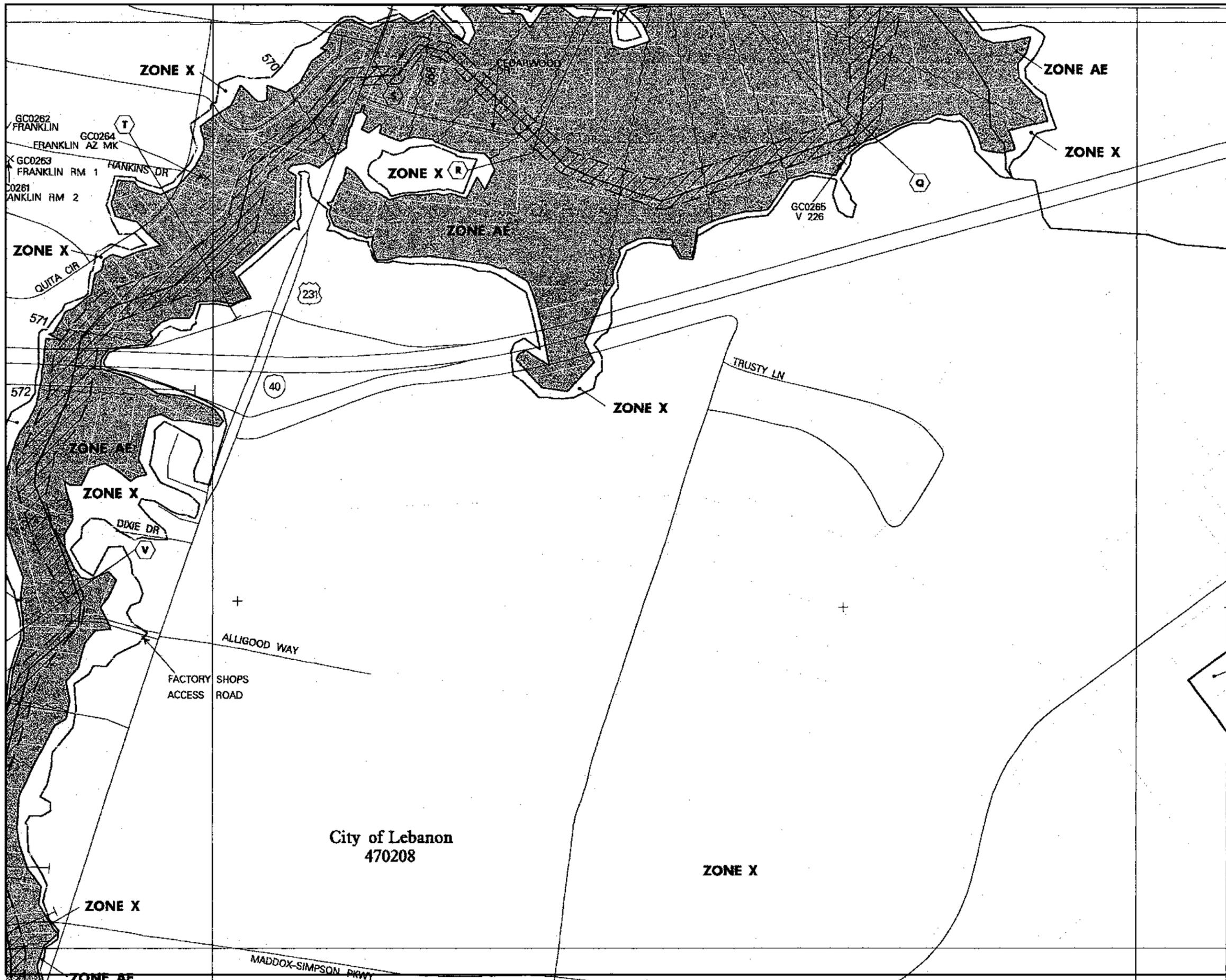
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



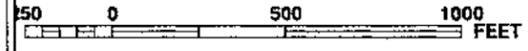
**MAP NUMBER  
47189C0191D  
EFFECTIVE DATE  
FEBRUARY 20, 2008**

Federal Emergency Management Agency

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MAP SCALE 1" = 500'



**FIRM  
FLOOD INSURANCE RATE MAP  
WILSON COUNTY,  
TENNESSEE  
AND INCORPORATED AREAS**

**PANEL 191 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
LEBANON, CITY OF	470208	0191	D
WILSON COUNTY	470207	0191	D

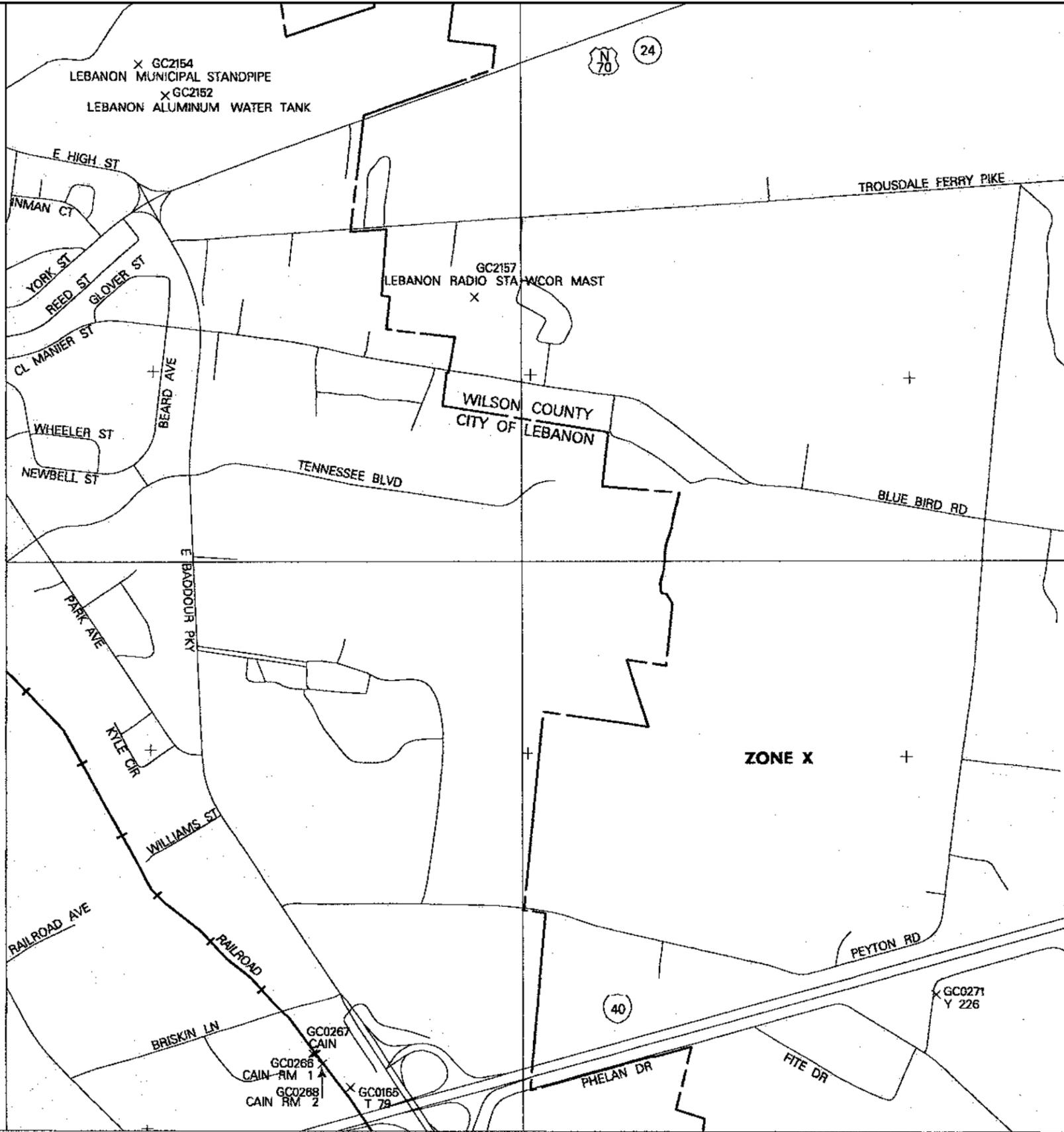
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



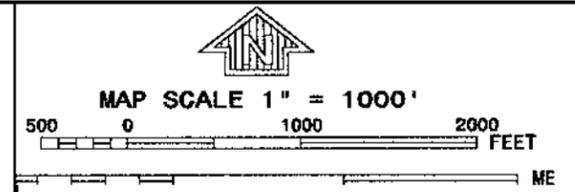
**MAP NUMBER  
47189C0191D**  
**EFFECTIVE DATE  
FEBRUARY 20, 2008**

Federal Emergency Management Agency

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= 500'



**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 185 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEBANON, CITY OF	470208	0185	D
WILSON COUNTY	470207	0185	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**  
**47189C0185D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

1885000 FT

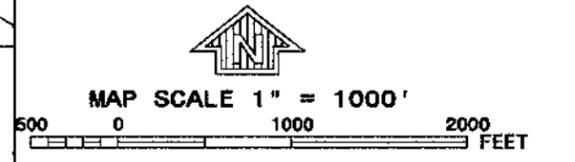
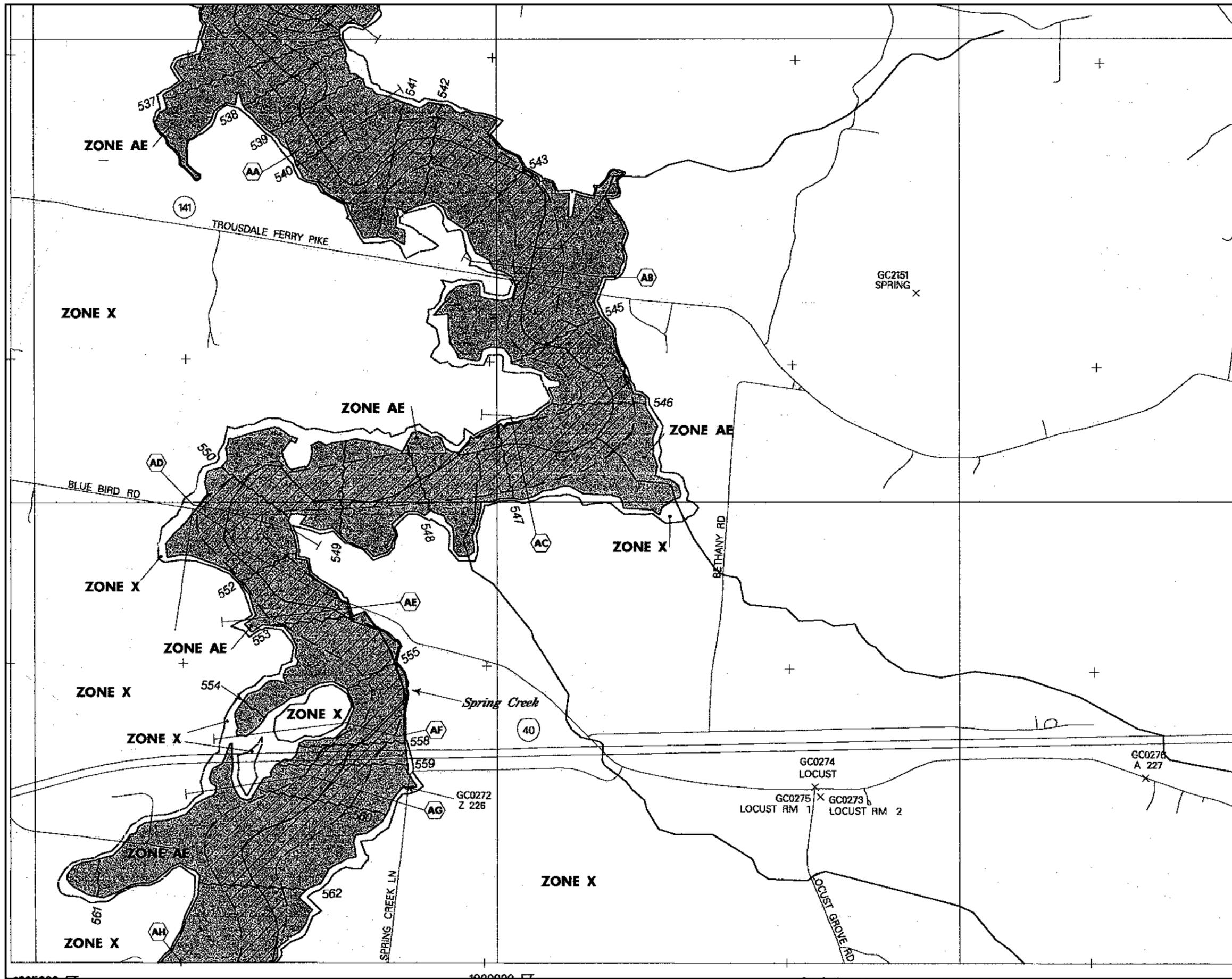
1890000 FT

36° 11' 15"

86° 14' 00"

JOINS PANEL 0192

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)



**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 205 OF 445**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
WILSON COUNTY	470207	0205	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.

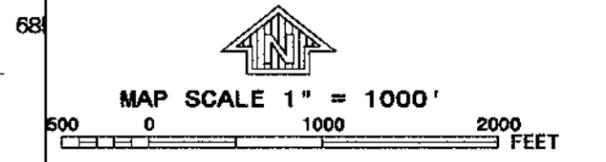


**MAP NUMBER**  
**47189C0205D**

**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

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**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 205 OF 445**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WILSON COUNTY	470207	0205	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.

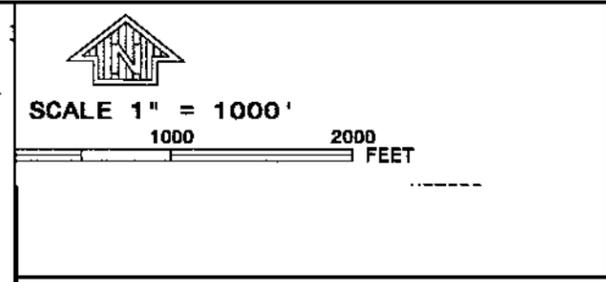
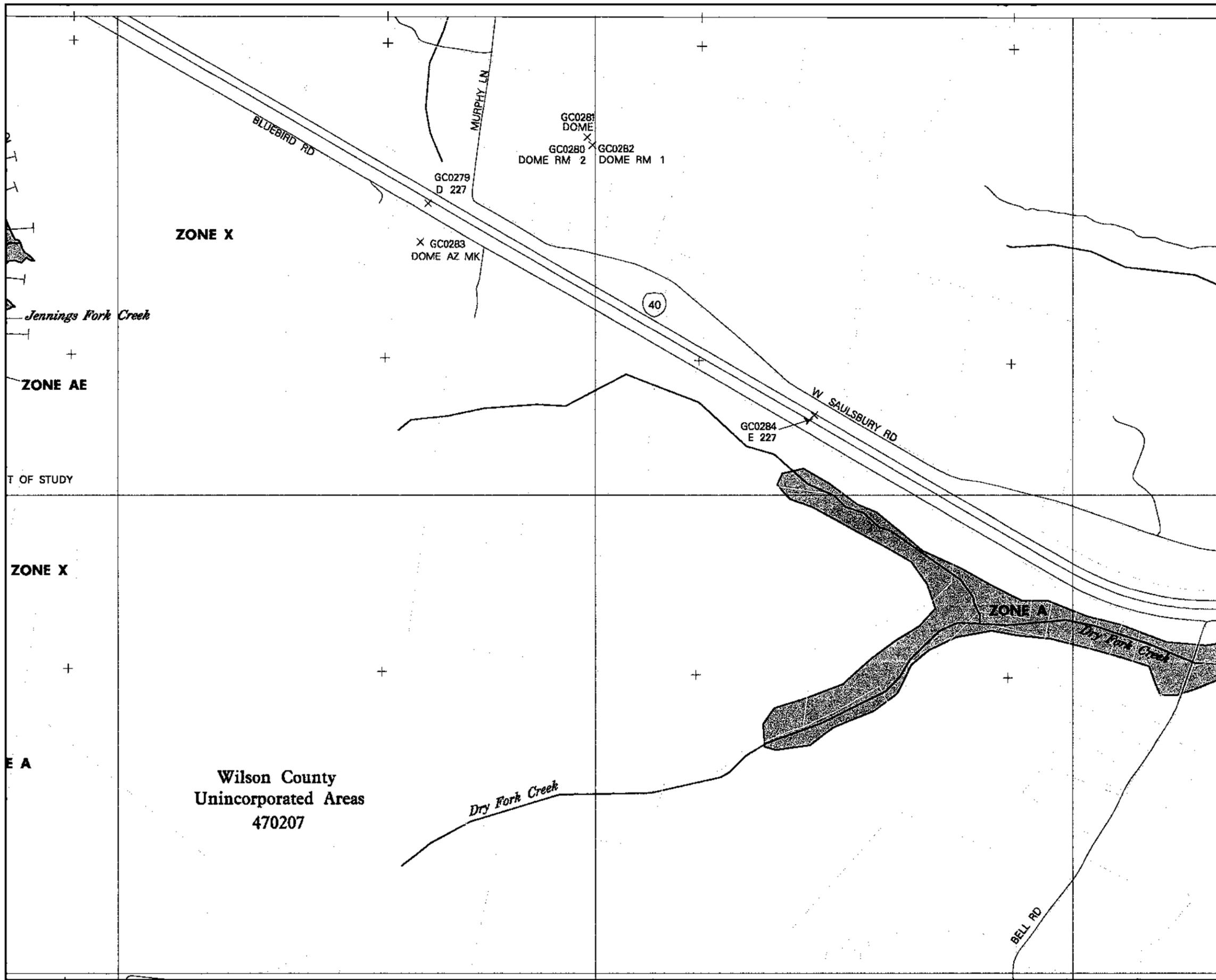


**MAP NUMBER**  
**47189C0205D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

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PANEL 0220D

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**WILSON COUNTY,**  
**TENNESSEE**  
**AND INCORPORATED AREAS**

**PANEL 220 OF 445**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)  
 CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WILSON COUNTY	470207	0220	D

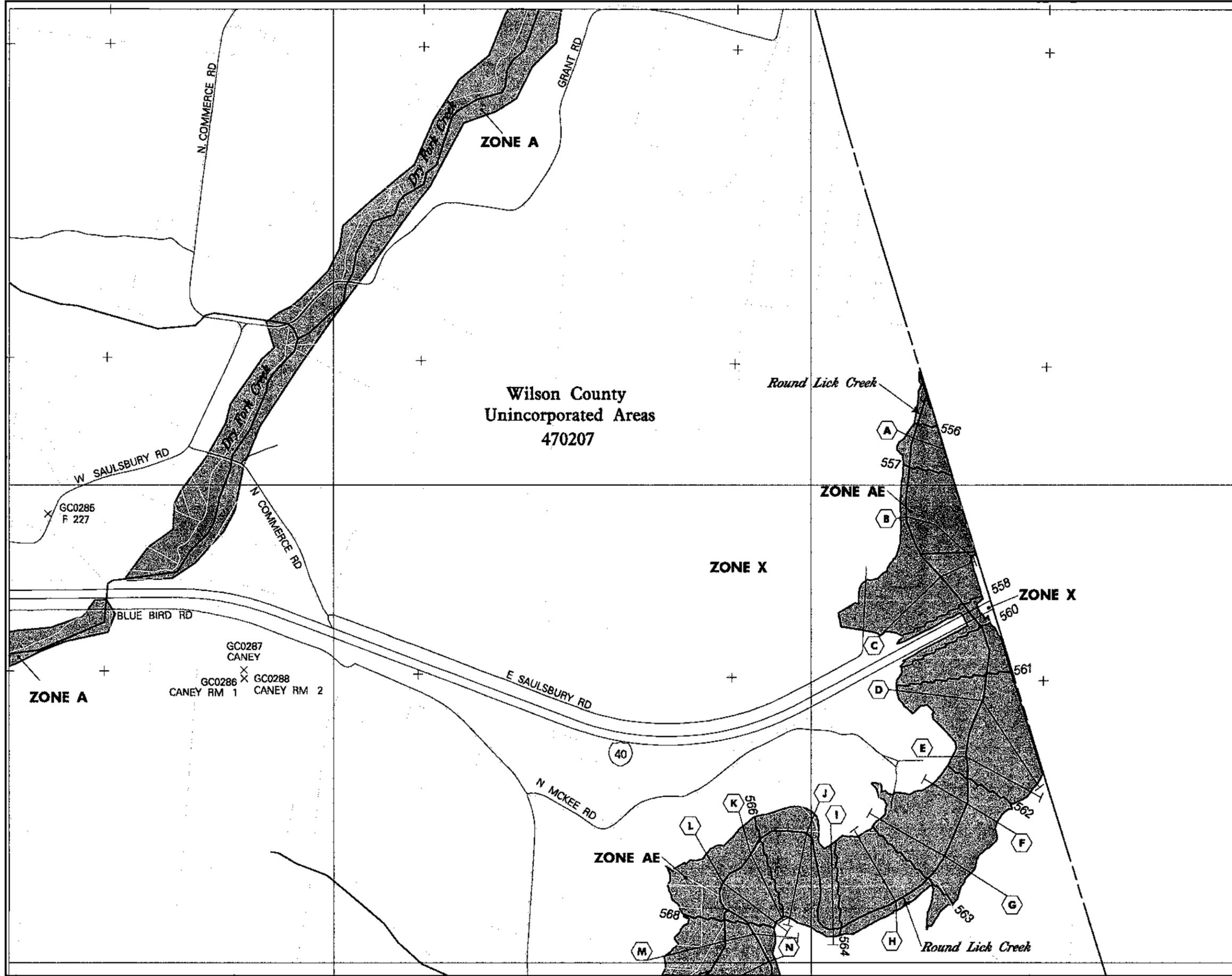
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
**47189C0220D**  
**EFFECTIVE DATE**  
**FEBRUARY 20, 2008**

Federal Emergency Management Agency

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**SCALE 1" = 1000'**  
 1000 2000 FEET  
 METERS

**FIRM  
FLOOD INSURANCE RATE MAP  
WILSON COUNTY,  
TENNESSEE  
AND INCORPORATED AREAS**

**PANEL 240 OF 445**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)  
**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
WILSON COUNTY	470207	0240	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  
47189C0240D**  
**EFFECTIVE DATE  
FEBRUARY 20, 2008**

Federal Emergency Management Agency

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Photo 1 (48) SNK-1  
View looking down at sink hole (north side of I-40)



Photo 2 (49) WWC-1  
View of conveyance looking up gradient (north side of I-40)



Photo 3 (50) WWC-1  
View of conveyance looking down gradient toward SNK-1 (north side of I-40)



Photo 4 (51) WTL-1  
View looking west at wetland area (north side of I-40)



Photo 5 (52) WTL-1

Soil profile: Matrix - 10YR 5/2, Mottles – 7.5YR 5/6, Fe concretions abundant



Photo 6 (53) PND-1

View looking north at farm pond just outside TDOT ROW fence (north side of I-40)



Photo 7 (54) STR-1  
View of channel looking upstream on the north side of I-40



Photo 8 (55) STR-1  
View of channel looking downstream on the north side of I-40



Photo 9(56) STR-1

View looking downstream at culvert inlet on the north side of I-40.



Photo 10 (57) WTL-2

View looking west at the roadside wetland area (north side of I-40)

Photo Summary: Summary 1 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

P.E.: 95100-0105-44; PIN: 114169.00



Photo 11 (58) WTL-2

Soil profile: Matrix – 10YR 5/2, Mottles – 7.5YR 4/2



Photo 12 (59) WWC-2

View of conveyance looking up gradient (north side of I-40)

Photo Summary: Summary 1 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

P.E.: 95100-0105-44; PIN: 114169.00



Photo 13 (60) WWC-2  
View of conveyance looking down gradient (north side of I-40)

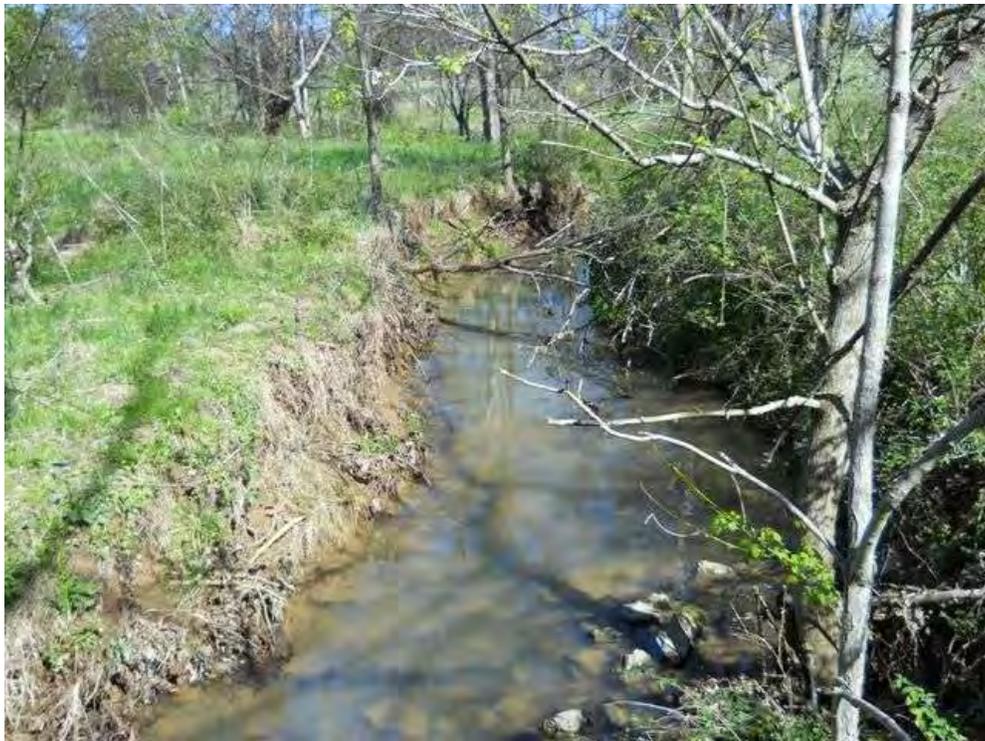


Photo 14 (61) STR-2  
View of channel looking upstream (north side of I-40)



Photo 15 (62) STR-2

View of channel looking downstream (north side of I-40)



Photo 16 (63) STR-2

Alternate view of channel looking downstream (south side of I-40)



Photo 17 (64) WWC-4  
View of conveyance looking down gradient (south side of I-40)



Photo 18 (65) WWC-4  
View of conveyance looking up gradient (south side of I-40)



Photo 19 (66) WWC-3  
View of conveyance looking down gradient (south side of I-40)



Photo 20 (67) WWC-3  
View of conveyance looking up gradient (south side of I-40)



Photo 21 (70) STR-3  
View of channel looking upstream (south side of I-40)



Photo 22 (71) STR-3  
View of channel looking downstream (south side of I-40)



Photo 23 (72) WTL-3  
View of wetland looking to the west (south side of I-40)



Photo 24 (73) STR-5  
View of channel looking upstream (north side of I-40)



Photo 25 (74) SPG-1/STR-5  
View looking down at SPG-1 and where STR-5 begins (north side of I-40)



Photo 26 (75) STR-5  
View of channel looking downstream (north side of I-40)



Photo 27 (76) WTL-4  
View looking east toward wetland area (north side of I-40)



Photo 28 (77) WTL-4  
Soil profile: Matrix – 10YR 5/1, Mottles – 7.5YR 6/6



Photo 29 (78) STR-4  
View of channel looking upstream (north side of I-40)



Photo 30 (79) STR-4  
View of channel looking downstream at culvert inlet (north side of I-40)



Photo 31 (80) WTL-5 & STR-4  
View looking west at wetland area. STR-4 runs through wetland (south side of I-40)



Photo 32 (81) STR-4  
View of channel looking downstream at culvert inlet (south side of I-40)



Photo 33 (82) STR-6  
View of channel looking upstream. Begins by seepage (south side of I-40 only)



Photo 34 (83) STR-6  
View of channel looking downstream at culvert inlet (south side of I-40 only)



Photo 35 (84) STR-7  
View of channel looking upstream (south side of I-40)



Photo 36 (85) STR-7  
View of channel looking downstream (south side of I-40)

Photo Summary: Summary 1 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

P.E.: 95100-0105-44; PIN: 114169.00



Photo 37 (86) WTL-6

Soil profile: Matrix - 10YR 5/2, Mottles – 10YR 5/6, concretions abundant



Photo 38 (87) WTL-6

View looking north at wetland area (north side of I-40)



Photo 39 (88) STR-8

View of channel looking upstream where the stream begins (north side of I-40)



Photo 40 (89) STR-8

View of channel looking downstream (north side of I-40)



Photo 41 (90) STR-8  
Alternate view of channel looking upstream (north side of I-40)



Photo 42 (91) STR-8 (north side of I-40)  
Alternate view of channel looking downstream where the channel ends

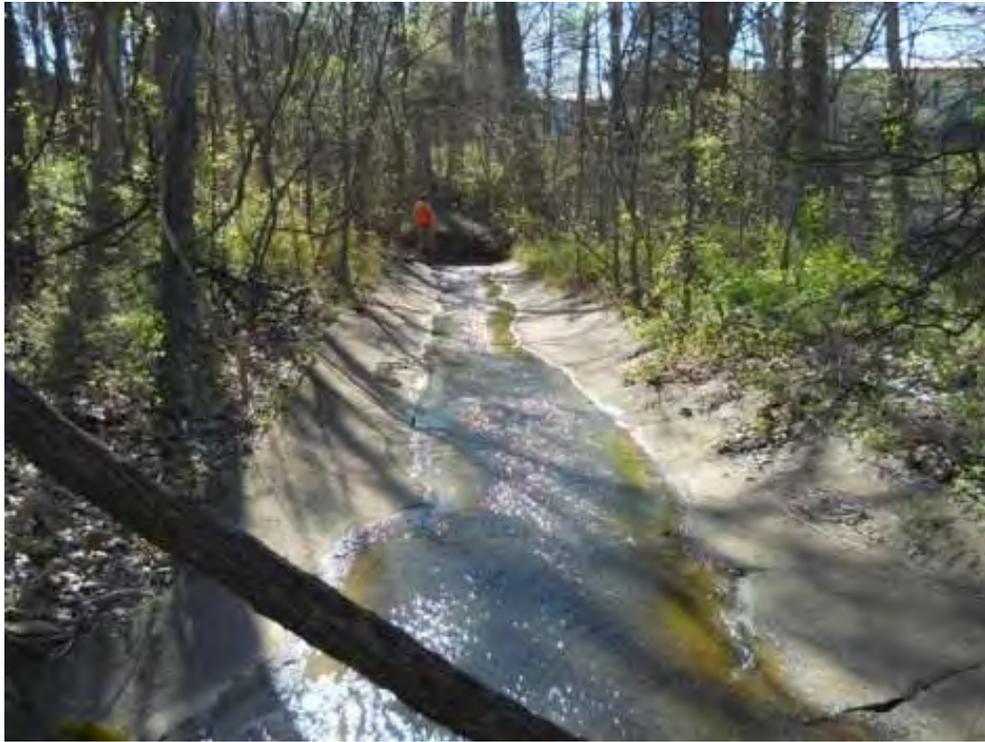


Photo 43 (92) STR-9  
View of channel looking downstream ( north side of I-40)



Photo 44 (93) STR-9  
View of channel looking upstream at culvert outlet (north side of I-40)



Photo 45 (94) STR-9  
Alternate view of channel looking upstream (south side of I-40)



Photo 46 (95) STR-9  
Alternate view of channel looking downstream at culvert inlet (south side of I-40)



Photo 47 (20) WTL-7

View of wetland looking to the east (south side of I-40)



Photo 48 (21) WTL-7

View of wetland looking to the south (south side of I-40)

Photo Summary: Summary 2 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

P.E.: 95100-0105-44; PIN: 114169.00



Photo 49 (22) WTL-7

View of wetland looking to the west (south side of I-40)



Photo 50 (23) WTL-7

Soil profile: Matrix - 10YR 6/2, Mottles - 10YR 7/6

Photo Summary: Summary 2 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

P.E.: 95100-0105-44; PIN: 114169.00



Photo 51 (24) PND-2

View of isolated farm pond looking east (south side of I-40)



Photo 52 (25) STR-10

View of channel looking upstream (south side of I-40)



Photo 53 (26) STR-10  
View of channel looking downstream (south side of I-40)



Photo 54 (27) WTL-8  
View of roadside wetland looking to the northeast (south side of I-40)



Photo 55 (28) STR-12  
View of channel looking upstream (south side of I-40)



Photo 56 (29) STR-12  
View of channel looking downstream ( south side of I-40)



Photo 57 (30) STR-13 Stoner Creek  
View of channel looking upstream (south side of I-40)



Photo 58 (31) STR-13 Stoner Creek  
View of channel looking downstream at box culvert inlet (south side of I-40)



Photo 59 (32) STR-13 Stoner Creek  
Alternate view of channel looking downstream ( north side of I-40)



Photo 60 (33) WWC-5  
View of conveyance looking up gradient (north side of I-40)



Photo 61 (34) WWC-5  
View of conveyance looking down gradient (north side of I-40)



Photo 62 (35) STR-11  
View of channel looking upstream at culvert outlet (north side of I-40)



Photo 63 (36) STR-11  
View of channel looking downstream (north side of I-40)



Photo 64 (37) STR-10  
Alternate view of channel looking upstream at culvert outlet (north side of I-40)



Photo 65 (38) STR-10  
Alternate view of channel looking downstream (north of I-40)



Photo 66 (39) STR-14  
View of concrete lined channel looking upstream (south side of I-40)



Photo 67 (40) STR-14  
View of channel looking downstream (north side of I-40)



Photo 68 (41) WTL-9  
View of wetland area looking to the southeast



Photo 69 (42) WWC-7  
View of conveyance looking up gradient (south side of I-40)



Photo 70 (43) WWC-7  
View of conveyance looking down gradient (south side of I-40)



Photo 71 (44) STR-18  
View of channel looking upstream (south side of I-40)



Photo 72 (45) STR-18  
Alternate view of channel looking upstream (south side of I-40)



Photo 73 (46) STR-18  
View of channel looking downstream (south side of I-40)



Photo 74 (47) WWC-8  
View of conveyance looking down gradient (south side of I-40)



Photo 75 (48) WWC-8  
View of conveyance looking up gradient (south side of I-40)



Photo 76 (49) STR-15  
View of channel looking upstream where stream begins (north side of I-40)



Photo 77 (50) STR-15  
View of channel looking down gradient (north side of I-40)



Photo 78 (51) No Feature (north side of I-40)  
View of roadside ditch looking down gradient to the west above STR-15



Photo 79 (52) SNK-2

View looking down at the open throated sink hole (north side of I-40)



Photo 80 (53) WWC-6

View of conveyance looking up gradient (north side of I-40)



Photo 81 (54) WWC-6  
View of conveyance looking down gradient (north side of I-40)



Photo 82 (55) SPG-2/STR-16/WTL-10 (north side of I-40)  
View of channel looking upstream and northwest toward spring box and wetland



Photo 83 (56) STR-16  
View of channel looking downstream (north side of I-40)



Photo 84 (57) WTL-10  
Soil profile: Matrix - 10YR 5/1, Mottles - 10YR 6/8



Photo 85 (58) STR-17  
View of channel looking upstream (north side of I-40)



Photo 86 (59) STR-17  
View of channel looking downstream (north side of I-40)



Photo 87 (60) WTL-11

View of wetland area looking to the west (south side of I-40)



Photo 88 (61) WTL-11

Soil profile: Matrix – 10YR 3/2, Mottles – 7.5YR 5/6



Photo 89 (62) STR-19  
View of channel looking upstream (south side of I-40)



Photo 90 (63) STR-19  
View of channel looking downstream (south side of I-40)



Photo 91 (64) SPG-3

Spring is located near the middle of the channel in STR-19 (south side of I-40)



Photo 92 (65) WWC-9

View of short conveyance looking up gradient at culvert outlet (south side of I-40)



Photo 93 (66) WWC-10  
View of conveyance looking down gradient (south side of I-40)



Photo 94 (67) WWC-10  
View of conveyance looking up gradient (south side of I-40)



Photo 95 (68) WWC-11  
View of conveyance looking up gradient (south side of I-40)



Photo 96 (69) WWC-11  
View of conveyance looking down gradient (south side of I-40)

Photo Summary: Summary 3 of 4

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Photo 97 (70) STR-20  
View of channel looking upstream (south side of I-40)



Photo 98 (71) STR-20  
View of channel looking downstream at the culvert inlet (south side of I-40)



Photo 99 (72) WWC-12  
View of conveyance looking up gradient (south side of I-40)



Photo 100 (73) WWC-12  
View of conveyance looking down gradient (south side of I-40)



Photo 101 (74) STR-22 Rutland Branch  
View of channel looking upstream (south side of I-40)



Photo 102 (75) STR-22 Rutland Branch  
View of channel looking downstream at the box culvert inlet (south side of I-40)



Photo 103 (76) STR-23  
View of channel looking upstream (south side of I-40)



Photo 104 (77) STR-23  
View of channel looking downstream (south side of I-40)

Photo Summary: Summary 3 of 4

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Photo 105 (78) WTL-13  
View of wetland area looking west (south side of I-40)



Photo 106 (80) STR-19 (north side of I-40)  
Alternate view of channel looking upstream at the culvert outlet

Photo Summary: Summary 3 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

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Photo 107 (81) STR-19  
Alternate view of channel looking downstream (north side of I-40)



Photo 108 (82) WTL-12  
View of wetland area looking northwest (north side of I-40)

Photo Summary: Summary 3 of 4

Project Description: Wilson County; Interstate 40 lane additions, from West of SR-171 to East of SR-109

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Photo 109 (83) WTL-12  
Soil profile: Matrix – 10YR 3/1



Photo 110 (84) WWC-13  
View of conveyance looking up gradient (north side of I-40)

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Photo 111 (85) WWC-13  
View of conveyance looking down gradient (north side of I-40)



Photo 112 (86) STR-21  
View of channel looking upstream (north side of I-40)



Photo 113 (87) STR-21  
View of channel looking downstream (north side of I-40)



Photo 114 (88) WWC-14  
View of conveyance looking up gradient (north side of I-40)



Photo 115 (89) WWC-14  
View of conveyance looking down gradient (north side of I-40)

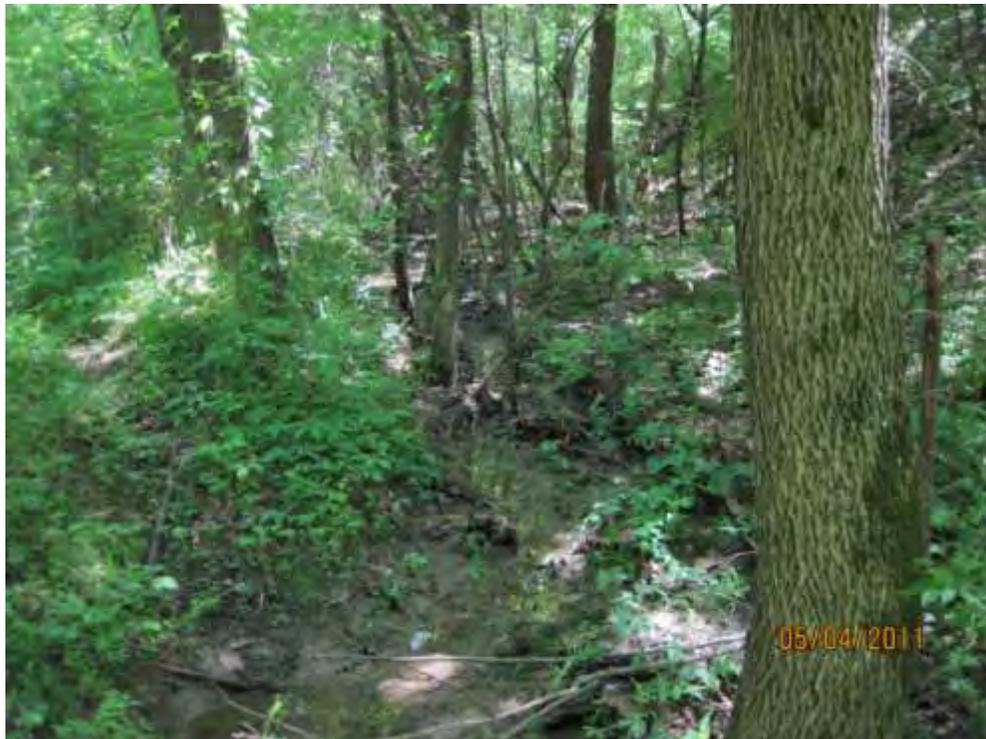


Photo 116 (89) WWC-14.1  
Down gradient view of conveyance.



Photo 117 (89) WWC-14.1  
Up gradient view of conveyance.



Photo 118 (89) WWC-14.2  
Down gradient view of conveyance.



Photo 119 (89) WWC-14.2  
Up gradient view of conveyance.



Photo 120 (90) STR-24  
View of rip rap lined channel looking upstream (north side of I-40)



Photo 121 (91) STR-24  
View of rip rap lined channel looking downstream (north side of I-40)



Photo 122 (92) WTL-15  
View of wetland area looking northeast (north side of I-40)



Photo 123 (93) WTL-15  
View of wetland area looking down at the hydrology



Photo 124 (94) WTL-15  
Soil profile: Matrix – 10YR 6/2, Mottles – 5YR 5/6

Photo Summary: Summary 3 of 4

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Photo 125 (95) STR-25  
View of channel looking upstream (south side of I-40)



Photo 126 (96) STR-25  
View of channel looking downstream ( south side of I-40)



Photo 127 (97) STR-26  
View of channel looking upstream (south side of I-40)



Photo 128 (98) STR-26  
View of channel looking downstream (south side of I-40)



Photo 129 (99) WTL-14

View of wetland area looking north (south side of I-40)



Photo 130 (100) WTL-14

Soil profile: Matrix - 10YR 4/2, Mottles - 7.5YR 4/6



Photo 131 (101) STR-27

View of rip rap lined channel looking upstream at culvert outlet (south side of I-40)



Photo 132 (102) STR-27

View of rip rap lined channel looking downstream (south side of I-40)



Photo 133 (103) STR-28 Sullivan Branch  
View of channel looking upstream (south side of I-40)



Photo 134 (104) SNK-3  
View looking down at sink hole (south side of I-40)



Photo 135 (105) STR-29  
View of channel looking upstream (south side of I-40)



Photo 136 (106) STR-29  
View of channel looking downstream at culvert inlet (south side of I-40)



Photo 137 (107) WWC-15  
View of conveyance looking up gradient (south side of I-40)



Photo 138 (108) WWC-15  
View of conveyance looking down gradient (south side of I-40)



Photo 139 (109) SNK-4  
View looking down at sink hole (south side of I-40)



Photo 140 (110) STR-30  
View of channel looking upstream (south side of I-40)



Photo 141 (111) STR-30  
View of channel looking downstream (south side of I-40)



Photo 142 (112) WTL-17  
View of wetland area looking west (south side of I-40)



Photo 143 (113) WTL-17

Soil profile: Matrix – 10YR 5/2, Mottles – 7.5YR 5/6



Photo 144 (114) STR-31 Wilson Creek

View of channel looking upstream (south side of I-40)

Photo Summary: Summary 3 of 4

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Photo 145 (115) STR-31 Wilson Creek  
View of channel looking downstream (south side of I-40)



Photo 146 (116) WWC-18  
View of conveyance looking up gradient (south side of I-40)



Photo 147 (117) WWC-18  
View of conveyance looking down gradient (south side of I-40)



Photo 148(118) WTL-16  
View of wetland area looking northwest (north side of I-40)



Photo 149 (119) WTL-16  
Soil profile: Matrix – 10YR 3/1



Photo 150 (120) STR-29  
Alternate view of channel looking downstream (north side of I-40)



Photo 151 (121) WWC-16  
View of conveyance looking up gradient (north side of I-40)



Photo 152 (122) WWC-16  
View of conveyance looking down gradient (north side of I-40)



Photo 153 (123) STR-31 Wilson Creek  
Alternate view of channel looking downstream (north side of I-40)



Photo 154 (124) WWC-17  
View of conveyance looking down gradient (north side of I-40)



Photo 155 (125) WWC-17  
View of conveyance looking up gradient (north side of I-40)



Photo 156 (126) SNK-5  
View looking down at open throated sink hole (north side of I-40)



Photo 157 (127) STR-32  
View of channel looking upstream (north side of I-40)



Photo 158 (128) STR-32  
View of channel looking downstream (north side of I-40)



Photo 159 (129) WTL-19

Soil profile: Matrix – 10YR 5/2, Mottles – 7.5YR 4/6



Photo 160 (130) WTL-19

View of wetland area looking north (north side of I-40)



Photo 161 (131) STR-33  
View of channel looking upstream at culvert outlet (north side of I-40)



Photo 162 (132) STR-33  
View of channel looking downstream (north side of I-40)



Photo 163 (133) STR-34  
View of channel looking downstream (north side of I-40)



Photo 164 (134) STR-34  
View of channel looking upstream (north side of I-40)



Photo 165 (135) STR-33/WTL-20 (south side of I-40)  
View of channel looking upstream and of wetland area looking west



Photo 166 (136) PND-3  
View of detention pond looking southeast (south side of I-40)

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Photo 167 (137) PND-3

Alternate view of detention pond looking south (south side of I-40)



Photo 168 (138) STR-32

View of channel looking upstream (south side of I-40)



Photo 169 (139) WTL-18  
View of wetland area looking west (south side of I-40)



Photo 170 (140) WTL-18  
Alternate view of wetland area looking east (south side of I-40)



Photo 171 (141) WTL-20/STR-33 (south side of I-40)  
Alternate view of channel looking upstream and west at wetland area



Photo 172 (142) WTL-20  
View of wetland area looking east (south side of I-40)



Photo 173 (143) WTL-21  
View of wetland area looking west (south side of I-40)



Photo 174 (144) WTL-21  
Alternate view of wetland area looking east (south side of I-40)



Photo 175 (145) WTL-22  
View of wetland area looking west (south side of I-40)



Photo 176 (146) WTL-22  
Alternate view of wetland area looking east (south side of I-40)

Photo Summary: Summary 4 of 4

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Photo 177 (147) STR-35  
View of channel looking upstream (south side of I-40)



Photo178 (148)STR-35  
View of channel looking downstream (south side of I-40)



Photo 179 (149) STR-36  
View of channel looking upstream (south side of I-40)



Photo 180 (150) STR-36  
View of channel looking downstream at culvert inlet (south side of I-40)

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Photo 181 (151) STR-36  
View of channel looking downstream (north side of I-40)

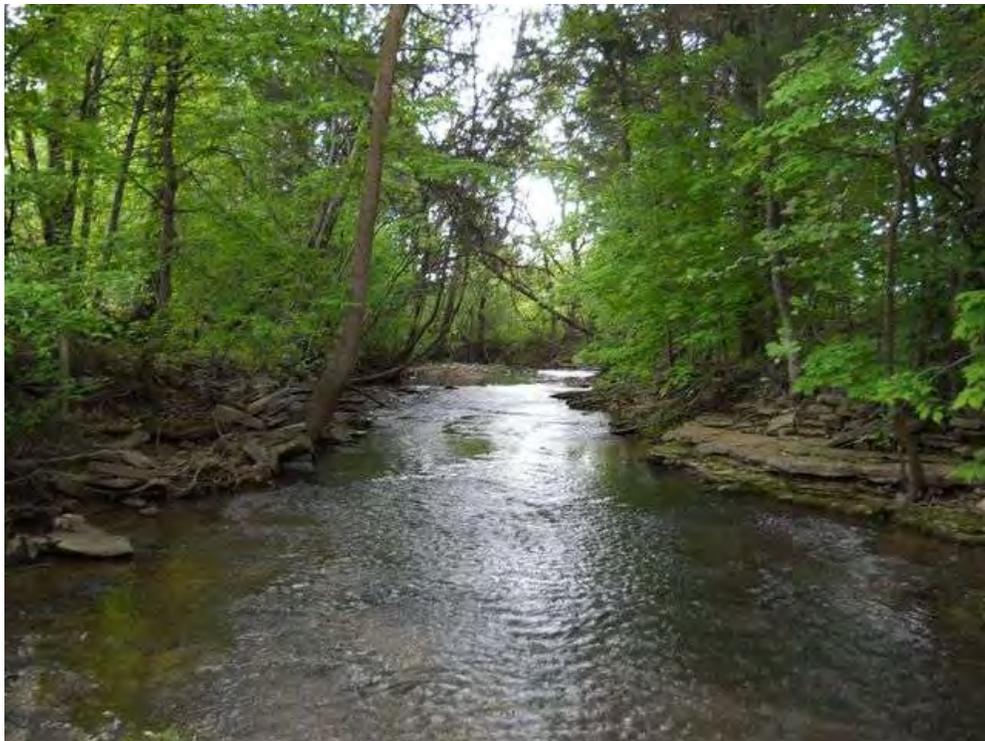


Photo 182 (152) STR-37 South Fork  
View of channel looking upstream (south side of I-40)



Photo 183 (153) STR-37 South Fork  
View of channel looking downstream at culvert inlet (south side of I-40)



Photo 184 (154) STR-37 South Fork  
Alternate view of channel looking downstream (north side of I-40)



Photo 185 (155) WWC-19  
View of conveyance looking up gradient (north side of I-40)



Photo 186 (156) WWC-19  
View of conveyance looking down gradient (north side of I-40)



Photo 187 (157) WTL-23  
View of wetland area looking east (north side of I-40)



Photo 188 (158) WTL-23  
Soil profile: Matrix – 10YR 4/2, Mottles – 7.5YR 5/6, Fe concretions



Photo 189 (159) WTL-24  
View of wetland area looking northeast (north side of I-40)



Photo 190 (160) WTL-25  
View of wetland area looking south (north side of I-40)



Photo 191 (161) WTL-25

Soil profile: Matrix – 10YR 4/2, Mottles – 7.5YR 5/6, Fe concretions



Photo 192 (162) STR-38 Middle Fork

View of channel looking upstream at culvert outlet (north side of I-40)



Photo 193 (163) STR-38 Middle Fork  
View of channel looking downstream (north side of I-40)



Photo 194 (164) WTL-26  
View of wetland area looking west (south side of I-40)



Photo 195 (165) WTL-26

Soil profile: Matrix – 10YR 5/2, Mottles – 7.5YR 5/4, Fe concretions



Photo 196 (166) STR-41 Middle Fork

View of channel looking upstream at culvert outlet (south side of I-40)



Photo 197 (167) STR-41 Middle Fork  
View of channel looking downstream (south side of I-40)



Photo 198 (168) STR-40  
View of channel looking upstream (north side of I-40)

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Photo 199 (169) STR-39  
View of channel looking upstream (north side of I-40)



Photo 200 (170) STR-39  
View of channel looking downstream (north side of I-40)

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