

Appendix I: Hazardous Materials Technical Memorandum

State Route 19 Environmental Assessment

*From East of Eastland Avenue to East of SR-87
Lauderdale and Haywood Counties, Tennessee*

PIN 102251.00



Contents

1.0	Introduction	3
1.1	Project Background.....	3
1.2	Alternatives Under Consideration	6
1.2.1	No-Build Alternative	6
1.2.2	Build Alternative	6
1.3	Environmental Technical Study Area.....	8
2.0	Hazardous Materials	9
2.1	Environmental Studies Request.....	9
3.0	Impacts to Hazardous Materials.....	11
3.1	No-Build Alternative.....	11
3.2	Build Alternative	11
4.0	Minimization and Mitigation Measures to Address Impacts	12
5.0	Hazardous Materials Memorandum Summary.....	12

Tables

Table 1	Hazardous Materials Memorandum Summary	13
---------	--	----

Figures

Figure 1	Project Location.....	4
Figure 2	PIN Identification.....	5
Figure 3	SR-19 Improvement Locations	7

_Toc217373824

Attachments

- Attachment A TDOT Hazardous Materials Section Coordination
- Attachment B Asbestos Containing Material (ACM) Surveys

1.0 Introduction

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing improvements to approximately 15.2 miles of State Route (SR) 19 from east of Eastland Avenue in Lauderdale County to east of SR-87 in Haywood County, Tennessee (**Figure 1**). Since the proposed project would be funded in part with federal transportation funds, it is subject to the requirements of the National Environmental Policy Act (NEPA). An Environmental Assessment (EA) is being prepared in accordance with NEPA to identify and evaluate the environmental effects of the proposed project and to identify measures to minimize harm.

This technical memorandum identifies potential hazardous material sites within the limits of the proposed SR-19 project area and provides an estimated impact determination for both the No-Build and Build Alternatives.

1.1 Project Background

On February 1, 2018, the FHWA approved a D-List Categorical Exclusion for the proposed widening of SR-19 from east of Eastland Avenue to east of SR-87 under TDOT project identification number (PIN) 102251.00.

Since the approval of 2018 D-List CE, the proposed SR-19 project has been divided into three segments for funding purposes; PIN 102251.01, 102251.02, and PIN 102251.03. The current EA effort is analyzing the entirety of the proposed SR-19 corridor from east of Eastland Avenue to east of SR-87 (PIN 102251.00) which is comprised of PIN 102251.01, PIN 102251.02, and PIN 102251.03 (**Figure 2**).

For more information on the proposed project background, please refer to Chapter 1 in the EA.

Figure 1 Project Location

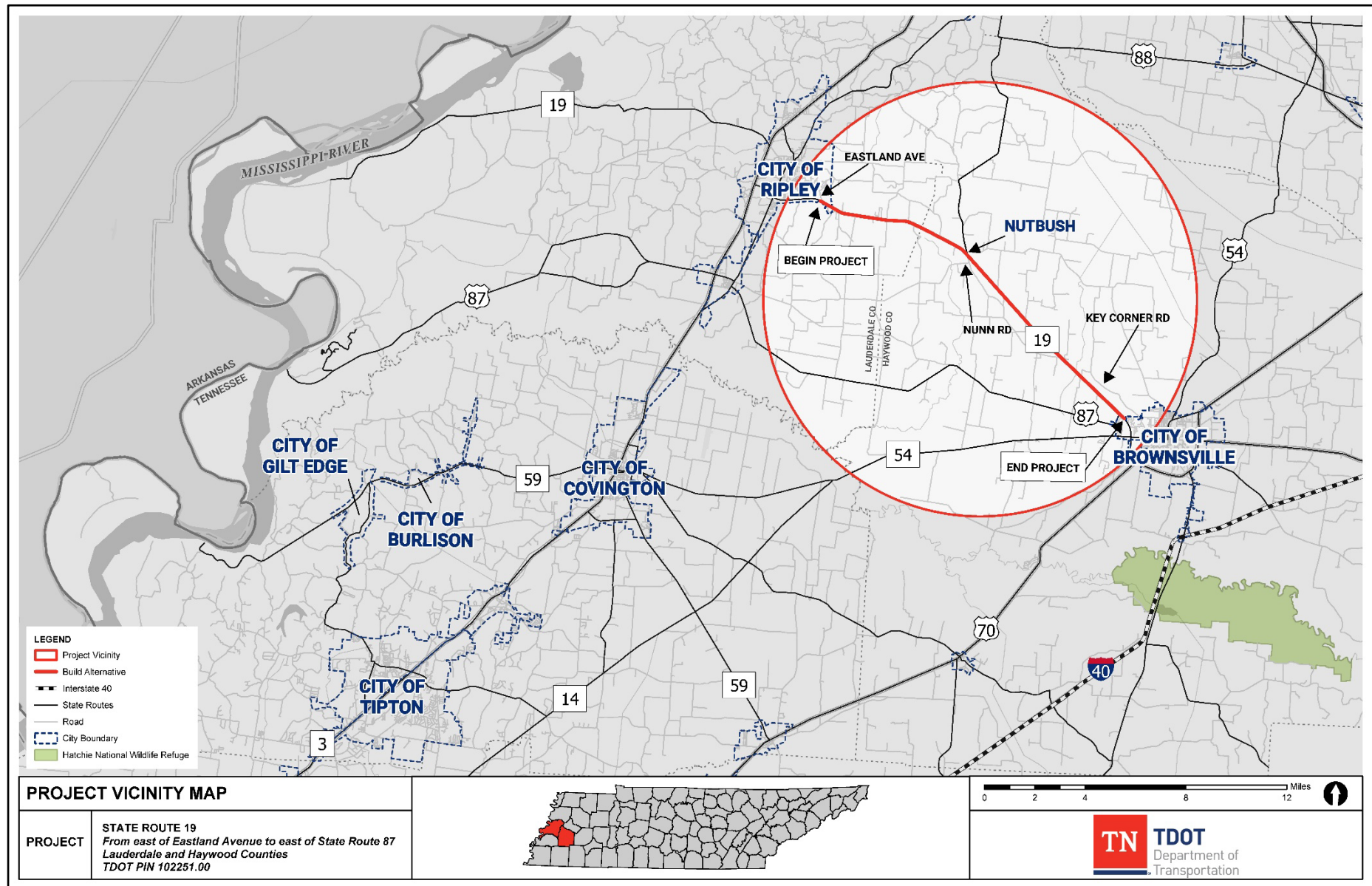
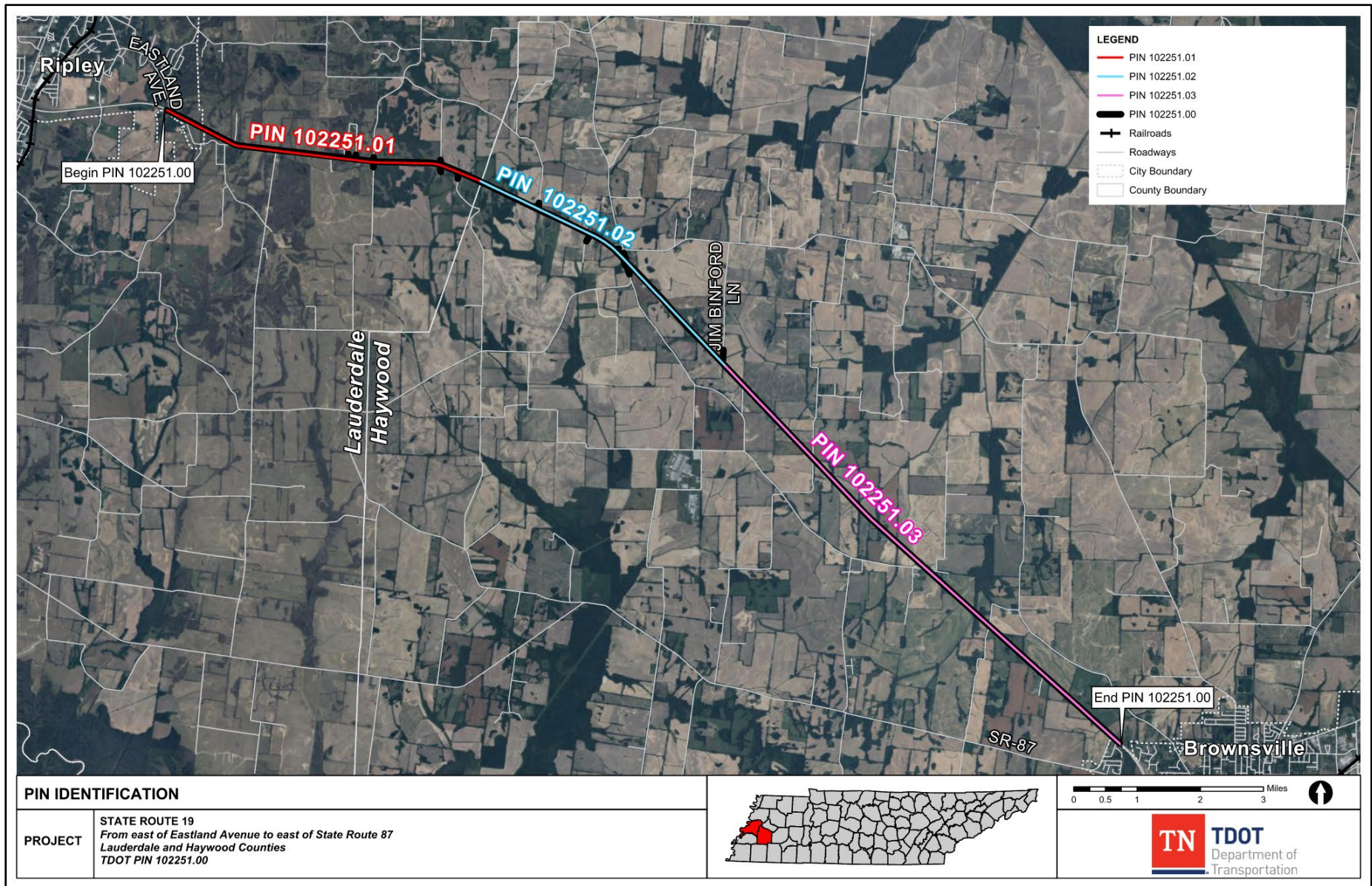


Figure 2 PIN Identification



1.2 Alternatives Under Consideration

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

1.2.1 No-Build Alternative

The No-Build Alternative would leave the segment of SR-19 from east of Eastland Avenue to east of SR-87 as it currently exists except for routine maintenance and safety upgrades, as needed, or modifications that have been programmed and approved for implementation through TDOT's 25-Year Long Range Transportation Policy Plan, State Transportation Improvement Program (STIP), or TDOT 10-Year Project Plan. The No-Build Alternative is required by federal regulations to be evaluated in the EA and provides a baseline for comparing other alternatives.

1.2.2 Build Alternative

The Build Alternative proposes various roadway improvements along SR-19, from east of Eastland Avenue to east of SR-87. Proposed improvements would include widening, resurfacing, realignment of select intersections, and slope improvements (**Figure 3**).

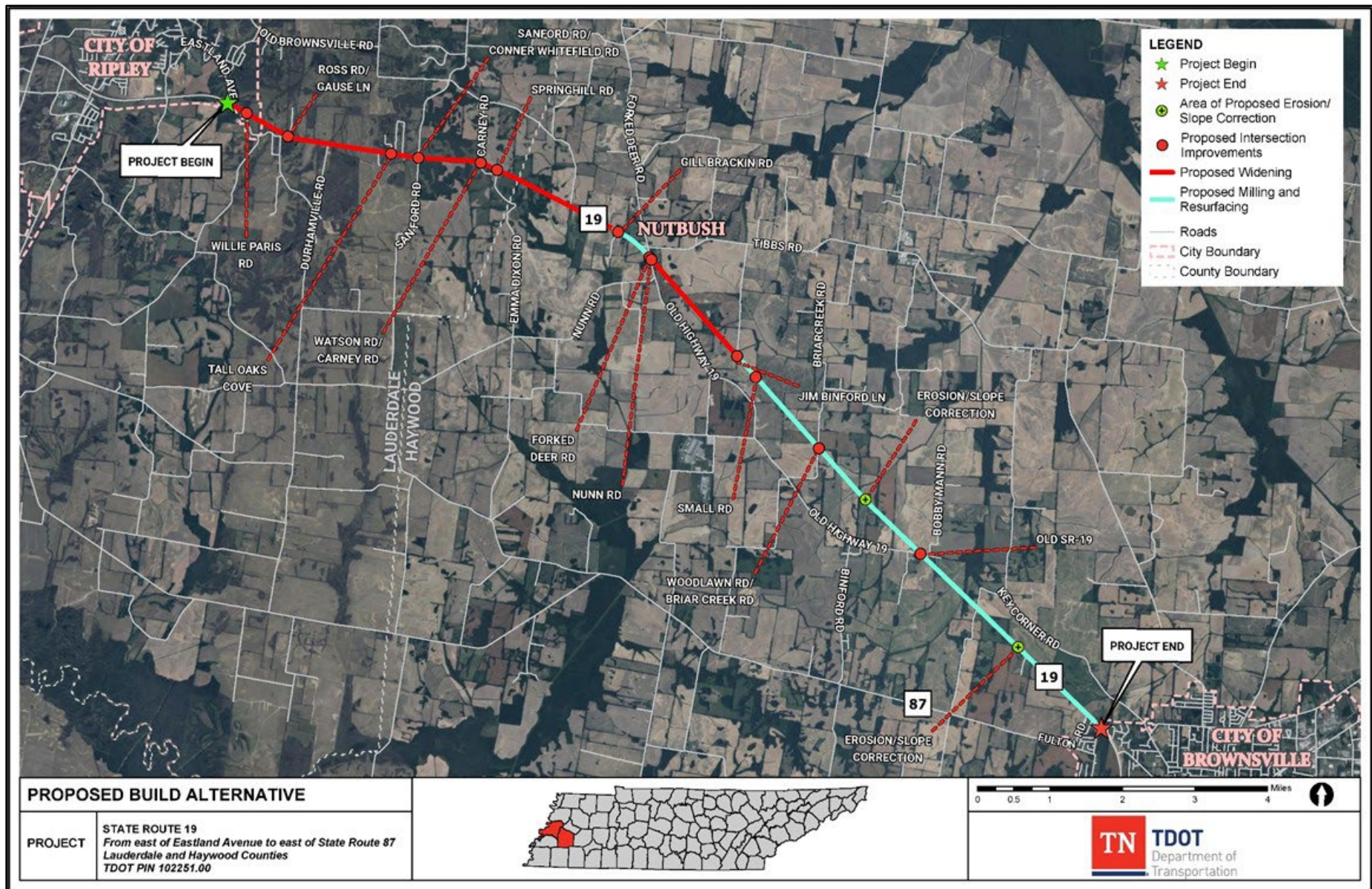
From east of Eastland Avenue in Lauderdale County to just west of Gill Brackin Road in Haywood County, the proposed project would widen the existing 11-foot travel lanes (one in each direction) to two 12-foot travel lanes with 2-foot to 10-foot shoulders (8-foot paved). Along this segment of the proposed project, the roadway would be widened primarily to the north side of the existing roadway in the Lauderdale County portion and to the south side in Haywood County. In this section, the following intersections are proposed to be realigned:

- Willie Paris Road
- Ross Road/Gause Lane
- Tall Oaks Cove
- Sanford Road/Conner Whitefield Road
- Watson Road/Carney Road
- Springhill Road

From just west of Gill Brackin Road to Nunn Road, the proposed project would mill and resurface the existing 11-foot travel lanes and 2-foot shoulders. In this section, the following intersections are proposed to be realigned:

- Forked Deer Road (SR-180)
- Nunn Road

Figure 3 SR-19 Improvement Locations



From Nunn Road to east of Jim Binford Lane, the proposed project would widen the existing roadway to two 12-foot travel lanes with 10-foot shoulders (8-foot paved). In this section, the following SR-19 intersection is proposed to be realigned:

- Jim Binford Lane

From east of Jim Binford Lane to east of SR-87, the proposed project would mill and resurface the existing 11-foot travel lanes and 2-foot shoulders. Additionally, the proposed project would correct erosion/slope issues from approximately 4,351 feet east of Woodlawn Road to approximately 4,411 feet west of Old SR-19 (approximately 1,700 feet) and from approximately 3,417 feet east of Patton Road to approximately 279 feet east of Westpointe Road (approximately 1,800 feet). In this section, the following intersections are proposed to be realigned:

- Small Road at SR-19
- Woodlawn Road/Briar Creek Road at SR-19
- Old SR-19 at SR-19

1.3 Environmental Technical Study Area

An Environmental Technical Study Area (ETSA) was developed for the proposed SR-19 project in order to document natural, cultural, and community resources within a broader study area than the immediate project footprint. Generally, the ETSA boundary is 250 feet on either side of the proposed centerline, 300 feet from the project termini, and 150 feet from intersections with sideroads. That way, if shifts to the proposed project design occur during project development, TDOT staff are aware of any resources that are present in the larger ETSA boundary.

2.0 Hazardous Materials

2.1 Environmental Studies Request

An Environmental Studies Request (ESR) was submitted to TDOT's Hazardous Materials Section on February 3, 2025, based on 2024 Line and Grade Plans. The TDOT Hazardous Materials Section provided the following response on February 4, 2025:

"Based on the Environmental Technical Study Area¹ figures, the following applies to each child PIN section. An asbestos survey will be required for any structure within the proposed right of way that will be removed. All groundwater supply wells within the construction zone or within a tract with right of way [ROW] acquisition must be inventoried and properly abandoned according to TDEC DWR Water Well Standards Chapter 0400-45-09-16 Well Abandonment.

For 102251.01², the building at the SW corner of the intersection with Sanford Rd is a country store that may be an old gas station.³ A Phase I ESA may be recommended based on planned ROW acquisition.

For 102251.02⁴, no known hazardous materials sites. However, the cluster of structures at the intersections in Nutbush are owned by Nutbush Gin Company and may have unregistered tank facilities, one building is clearly an old gas station (SW side of road).⁵ A Phase I ESA may be recommended based on updated plans and needs of Right of Way, but the ETSA does not show proposed ROW. One former TDEC UST Facility also exists along this section. English And Sons Farms, Facility #8380095, 9829 Highway 19, Brownsville, TN 38012. This facility had a registered diesel tank 30 years ago, removed in 1993. The address plots at the house but I'm sure the tank would have been back at shops and barns. Nothing to recommend at this farm.⁶

For 102251.03⁷, no known hazardous materials sites.

¹ The TDOT Hazardous Materials Section's ESR response references the Environmental Technical Study Area. However, the February 2, 2025 ESR also included the 2024 Line and Grade Plans and were used during the review. The TDOT Hazardous Materials Section's findings remain valid.

² SR-19, from east of Eastland Avenue to Haywood County Line

³ The referenced country store is Tract 106 of PIN 102251.01.

⁴ SR-19, from Haywood County Line to east of Binford Lane

⁵ The referenced building is Tract 42 of PIN 102251.02.

⁶ The referenced farm is Tracts 57, 58, and 59 of PIN 102251.02.

⁷ SR-19, from east of Binford Lane to east of SR-87

Asbestos bridge surveys have been completed along the corridor and the following commitments have been submitted.”⁸

EDHZ001 - *No special accommodations for demolition and waste disposal are anticipated for these structures and the material can be deposited in a C&D landfill. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08 D and 202.03).*

EDHZ002 - *An Asbestos Containing Material (ACM) survey was conducted on Bridge No. 49SR0190035, SR-19 over Branch, LM 23.90 (49-SR019-23.90). No ACM was detected. See note EDHZ001.*

EDHZ003 - *An asbestos Containing Material (ACM) survey was conducted on Bridge No. 38SR0190001, SR-19 over Briar Creek, LM 7.16 (38-SR019-07.16). No ACM was detected, see note EDHZ001.*

EDHZ004 - *The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08 D and 202.03).*

EDHZ005 - *An asbestos Containing Material (ACM) survey was conducted on Bridge No. 38SR0190003, SR-19 over Meridian Creek, LM 8.49 (38-SR019-08.49). Asbestos was detected in the deck drains; approximately 20 linear feet of drains at 15% chrysotile and 1% crocidolite. See note EDHZ004.*

⁸ The environmental commitments identified by the TDOT Hazardous Materials Section reflect standard TDOT practices and are in compliance with applicable state regulations, federal regulations, and TDOT policies pertaining to hazardous materials.

Following changes to the proposed project design, Revised Line and Grade Plans from July 2025 were provided to the TDOT Hazardous Materials Section. In an email dated July 14, 2025, the TDOT Hazardous Materials Section stated that, *"The hazmat review from 4 February 2025 remains valid."*

Copies of the TDOT Hazardous Materials Section ESR response dated February 4, 2025, and TDOT Hazardous Materials Section email dated July 14, 2025, are in Attachment A. The referenced Asbestos Containing Material (ACM) surveys are in Attachment B.

3.0 Impacts to Hazardous Materials

3.1 No-Build Alternative

The No-Build Alternative would not make changes to the existing roadway network. Therefore, no direct impacts to any properties containing or potentially containing hazardous materials would occur.

3.2 Build Alternative

Based on the July 2025 Revised Line and Grade Plans and comments from the TDOT Hazardous Materials Section in their ESR response, the following impacts are anticipated within the proposed project area:

Currently, no permanent ROW or permanent easement acquisition is proposed at the country store located at the SR-19 intersection with Sanford Road (Tract 106 on PIN 102251.01). A temporary construction easement is proposed at Tract 106; however, this is not anticipated to result in adverse impacts to the resource or warrant further investigation. Should permanent ROW or easement acquisition be required later in project development, a Phase I ESA may be required.

There is currently no proposed ROW near the old gas station (Tract 42 on PIN 102251.02). Should ROW acquisition be required later in project development at Tract 42, a Phase I ESA may be required. No further recommendations are made for the farm at Tracts 57, 58, and 59.

4.0 Minimization and Mitigation Measures to Address Impacts

At this time, no additional studies, avoidance, or minimization are recommended for the proposed project. However, in the event hazardous substances or wastes are encountered within the right-of-way, their abatement shall be subject to all applicable regulations, including applicable sections of the [Federal Resource Conservation and Recovery Act \(RCRA\) of 1976](#)⁹, as amended; the [Comprehensive Environmental Response, Compensation, and Liability Act \(CERCLA\) of 1980](#)¹⁰, as amended; the [Superfund Amendments and Reauthorization Act \(SARA\) of 1986](#)¹¹; and the [Tennessee Hazardous Waste Management Act of 1983](#)¹², as amended.

5.0 Hazardous Materials Memorandum Summary

Table 1 summarizes potential impacts to hazardous materials and proposed minimization and mitigation efforts, as necessary, for the No-Build and Build Alternatives.

⁹ [Summary of the Resource Conservation and Recovery Act | US EPA](https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act)

¹⁰ <https://www.epa.gov/superfund/superfund-cercla-overview#:~:text=The%20Comprehensive%20Environmental%20Response%2C%20Compensation%2C%20and%20Liability%20Act%20of%201980,waste%20at%20these%20sites%3B%20and>

¹¹ [The Superfund Amendments and Reauthorization Act \(SARA\) | US EPA](https://www.epa.gov/superfund/superfund-amendments-and-reauthorization-act-saraperfund)

¹² [Part 2 - Hazardous Waste Management Act of 1983 :: 2016 Tennessee Code :: US Codes and Statutes :: US Law :: Justia](#)

Table 1 Hazardous Materials Memorandum Summary

	No-Build Alternative	Build Alternative	
Impact Category	Effect Determination	Effect Determination	Minimization/Mitigation Measures to Address Impacts
Hazardous Materials	No Effect	Two potential hazardous materials sites were identified on Tracts 106 and 42 within the project area. The proposed Build Alternative is not anticipated to acquire additional right-of-way (ROW) on either of these tracts. However, should ROW acquisition become necessary on either tract, a Phase I Environmental Site Assessment (ESA) may be required.	At this time, no additional studies, avoidance, or minimization are recommended for the proposed project. However, in the event hazardous substances/wastes are encountered within the right-of-way, their abatement shall be subject to all applicable regulations.

ATTACHMENTS

ATTACHMENT A

TDOT Hazardous Materials Section Coordination

Environmental Studies

Hazardous Materials

Environmental Studies Request

Project Information

Route: State Route 19

Termini: From east of Eastland Avenue in Lauderdale County to east of SR-87 in Haywood County

County: Lauderdale and Haywood County

PIN: 102251.00
102251.00, 102251.02, 102251.03

Request

Request Type: Initial Environmental Study

Project Plans: ETSA

Date of Plans: 05/16/2024

Location: FTP

Link: https://tennessee-my.sharepoint.com/:f:/g/personal/jjct871_tn_gov/EifR8AHZOdxGhggLA_YFoIIB8bCrYwDxUhgrZnv1uiQCkg?e=4OBbsV

Certification

Requestor: Braxton Eden

Title: NEPA Consultant

Signature: Braxton Eden



Digitally signed by
Braxton Eden
Date: 2025.02.03
12:51:29 -06'00'

Environmental Study

Technical Section

Section: Hazardous Materials

Study Results

Based on the Environmental Technical Study Area figures, the following applies to each child PIN section. An asbestos survey will be required for any structure within the proposed right of way that will be removed. All groundwater supply wells within the construction zone or within a tract with right of way acquisition must be inventoried and properly abandoned according to TDEC DWR Water Well Standards Chapter 0400-45-09-.16 Well Abandonment.

- For 102251.01, the building at the SW corner of the intersection with Sanford Rd is a country store that may be an old gas station. A Phase I ESA may be recommended based on planned ROW acquisition.
- For 102251.02, no known hazardous materials sites. However, the cluster of structures at the intersections in Nutbush are owned by Nutbush Gin Company and may have unregistered tank facilities, one building is clearly an old gas station (SW side of road). A Phase I ESA may be recommended based on updated plans and the needs of Right of Way, but the ETSA doesn't show proposed ROW. One former TDEC UST Facility also exists along this section. English And Sons Farms, Facility #8380095, 9829 Highway 19, Brownsville, TN 38012. This facility had a registered diesel tank 30 years ago, removed in 1993. The address plots at the house but I'm sure the tank would have been back at shops and barns. Nothing to recommend at this farm.
- For 102251.03, no known hazardous materials sites.

Asbestos bridge surveys have been completed along the corridor and the following commitments have been submitted.

Commitments

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

Yes

EDHZ001. No special accommodations for demolition and waste disposal are anticipated for these structures and the material can be deposited in a C&D landfill. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08 D and 202.03).

EDHZ002. An Asbestos Containing Material (ACM) survey was conducted on Bridge No. 49SR0190035, SR-19 over Branch, LM 23.90 (49-SR019-23.90). No ACM was detected. See note EDHZ001.

EDHZ003. An asbestos Containing Material (ACM) survey was conducted on Bridge No. 38SR0190001, SR-19 over Briar Creek, LM 7.16 (38-SR019-07.16). No ACM was detected, see note EDHZ001.

EDHZ004. The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08 D and 202.03).

EDHZ005. An asbestos Containing Material (ACM) survey was conducted on Bridge No. 38SR0190003, SR-19 over Meridian Creek, LM 8.49 (38-SR019-08.49). Asbestos was detected in the deck drains; approximately 20 linear feet of drains at 15% chrysotile and 1% crocidolite. See note EDHZ004.

Additional Information

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

No

Certification

Responder:

Kyle Kirschenmann

Title:

Statewide Technical Specialist

Signature:



Digitally signed by Kyle Kirschenmann

Date: 2025.02.04 13:30:52 -05'00'

HazMat Tech Review ETSA SR-19 from SR-3 to the Brownsville By-Pass Haywood Lauderdale 102251.00

From TDOT.Env HazmatOffice <TDOT.Env.HazmatOffice@tn.gov>

Date Tue 2/4/2025 12:32 PM

To Braxton Eden <Braxton.Eden@tn.gov>

Cc Erick Hunt-Hawkins <Erick.Hunt-Hawkins@tn.gov>; Rachel Head <Rachel.Head@tn.gov>; Birch, Valerie <Valerie.Birch@hdrinc.com>; Banaszak, Jennifer <Jennifer.Banaszak@hdrinc.com>; Ryan Cleveland <Ryan.Cleveland@tn.gov>

 1 attachment (1 MB)

R4, InitialESR, Lauderdale & Haywood, PIN 102251.00_hazmat.pdf;

Based on the Environmental Technical Study Area figures, the following applies to each child PIN section. An asbestos survey will be required for any structure within the proposed right of way that will be removed. All groundwater supply wells within the construction zone or within a tract with right of way acquisition must be inventoried and properly abandoned according to TDEC DWR Water Well Standards Chapter 0400-45-09-.16 Well Abandonment.

- For 102251.01, the building at the SW corner of the intersection with Sanford Rd is a country store that may be an old gas station. A Phase I ESA may be recommended based on planned ROW acquisition.
- For 102251.02, no known hazardous materials sites. However, the cluster of structures at the intersections in Nutbush are owned by Nutbush Gin Company and may have unregistered tank facilities, one building is clearly an old gas station (SW side of road). A Phase I ESA may be recommended based on updated plans and the needs of Right of Way, but the ETSA doesn't show proposed ROW. One former TDEC UST Facility also exists along this section. English And Sons Farms, Facility #8380095, 9829 Highway 19, Brownsville, TN 38012. This facility had a registered diesel tank 30 years ago, removed in 1993. The address plots at the house but I'm sure the tank would have been back at shops and barns. Nothing to recommend at this farm.
- For 102251.03, no known hazardous materials sites.

Asbestos bridge surveys have been completed along the corridor and the following commitments have been submitted.

EDHZ001. No special accommodations for demolition and waste disposal are anticipated for these structures and the material can be deposited in a C&D landfill. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08 D and 202.03).

EDHZ002. An Asbestos Containing Material (ACM) survey was conducted on Bridge No. 49SR0190035, SR-19 over Branch, LM 23.90 (49-SR019-23.90). No ACM was detected. See note EDHZ001.

EDHZ003. An asbestos Containing Material (ACM) survey was conducted on Bridge No. 38SR0190001, SR-19 over Briar Creek, LM 7.16 (38-SR019-07.16). No ACM was detected, see note EDHZ001.

EDHZ004. The State of Tennessee asbestos accreditation requirements (TDEC Rules Chapter 1200-01-20) mandates that ACM abatement work be performed by an accredited firm (contractor) using accredited abatement workers and supervisors. Abatement of this material should be accomplished per SP202ACM Special Provision Regarding Removal of Asbestos-Containing Materials. ACM abatement should be completed prior to any demolition activities if possible. Prior to the demolition or rehabilitation of any structure (bridge or building), the contractor is required to submit the National Emission Standards for Hazardous Air Pollutants standard 10-day notice of demolition to the TDEC Division of Air Pollution Control (per TDOT Standard Specifications for Road and Bridge Construction (January 1, 2021) Sections 107.08 D and 202.03).

EDHZ005. An asbestos Containing Material (ACM) survey was conducted on Bridge No. 38SR0190003, SR-19 over Meridian Creek, LM 8.49 (38-SR019-08.49). Asbestos was detected in the deck drains; approximately 20 linear feet of drains at 15% chrysotile and 1% crocidolite. See note EDHZ004.



Kyle Kirschenmann, P.G. | Statewide Technical Specialist
Environmental Division | Hazardous Materials, Air Quality and Noise Studies Unit
James K. Polk Building, Suite 900
505 Deaderick Street, Nashville, TN 37243
(615) 598-1522
kyle.kirschenmann@tn.gov

From: Braxton Eden <Braxton.Eden@tn.gov>

Sent: Monday, February 3, 2025 2:03 PM

To: TDOT.Env AirNoise <TDOT.Env.AirNoise@tn.gov>; TDOT.Env Ecology <TDOT.Env.Ecology@tn.gov>; TDOT.Env HazmatOffice <TDOT.Env.HazmatOffice@tn.gov>; TDOT.Env CulturalResources <TDOT.Env.CulturalResources@tn.gov>; TDOT.MultimodalPlanning <TDOT.MultimodalPlanning@tn.gov>

Cc: Erick Hunt-Hawkins <Erick.Hunt-Hawkins@tn.gov>; Rachel Head <Rachel.Head@tn.gov>; Birch, Valerie <Valerie.Birch@hdrinc.com>; Eden, Braxton <Braxton.Eden@hdrinc.com>; Banaszak, Jennifer <Jennifer.Banaszak@hdrinc.com>

Subject: R4, InitialTechReq, Haywood and Lauderdale County, PIN 102251.00

Date ESR request transmitted to tech: 2/3/2025	
Completed ESR due: 3/25/2025	
*Review the feasibility of the above due date and respond to sender regarding the feasibility of that date by: 2/17/2025 or the next business day if on a weekend or holiday. If infeasible, in the response to NEPA, briefly note why and provide an anticipated completion date.	
Project Information:	
County	Haywood, Lauderdale
Route	SR-19
Termini	From east of Eastland Avenue in Lauderdale County to east of SR-87 in Haywood County
PIN	102251.00 102251.00, 102251.02, 102251.03
Brief Project Description/Scope	From east of Eastland Avenue in Lauderdale County to just west of Gill Brackin Road in Haywood County, the project would widen the two travel lanes to 12 feet with 10-foot shoulders (8-foot paved), correct geometric deficiencies and realign several intersections. From just west of Gill Bracken Road to the project terminus east of SR-87, the project would mill and resurface the existing 11-foot travel lanes and 2-foot shoulders and realign several intersections.
Federal Funding #	PIN 102251.00 PE-N: STP-19(47)
State Funding #	PIN 102251.00 PE-N: 38004-0217-14, 49005-0226-14
If State Only , is Federal funding anticipated?	
*Note for above: If not already known by NEPA Planner, Planner will mark "unknown." If "unknown" and a technical discipline needs this information for their work, that technical discipline is responsible for investigating. Any findings should be shared with the NEPA Planner.	
List of attachments or links to associated documentation:	1. ESR 2) ETSA (Three Files) 3) Aerial Layout KMZ OneDrive Link: SR-19, PIN 102251.00, ESR

*Note for above: ESR responses must be based on the plans/documents noted in the ESR form. Responses must not be based on other documents, even if more recently provided. NEPA Planners will submit an updated ESR if the review should be based on different plans/documents.	
Current NEPA Office Action	Original NEPA Document
Date of last official NEPA/TEER approval	D-List CE, 02/01/2018 (see other relevant history and notes below)
*Note for above: Where applicable, technical reviews should compare the current plans to those relevant to the above noted official NEPA or TEER effort to ensure we are capturing the cumulative change(s) since the last official approval.	
Known changes since the last official NEPA/TEER approval	Due to an increase in relocations along the project corridor, the scope was reduced from the Super 2 originally proposed in the 2018 D-List CE. See project description above for details. The project has also since been broken up into three child PINs.
*Note for above: Though NEPA provides the results of their comparison above, tech should still do a reasonable independent review for changes. Some changes will be more apparent to some than to others (often depending on subject matter expertise).	
Other Relevant History and Notes:	Through coordination with FHWA, the class of action was raised from a D-List CE to an EA due to proposed relocations.

If you are unable to access the link or have additional questions, please reach out.

Please continue to copy those originally copied on this request on your section's responses.

Thank you!



Braxton Eden

Environmental Division | NEPA Section
James K. Polk Building, 9th Floor
505 Deaderick Street, Suite 900, Nashville, TN 37243
Email: TDOT.Env.LocalPrograms@tn.gov

RE: R4, InitialTechReq, Haywood and Lauderdale County, PIN 102251.00

From TDOT.Env HazmatOffice <TDOT.Env.HazmatOffice@tn.gov>

Date Mon 7/14/2025 12:25 PM

To Braxton Eden <Braxton.Eden@tn.gov>

Cc Erick Hunt-Hawkins <erick.hunt-hawkins@tn.gov>; Birch, Valerie <Valerie.Birch@hdrinc.com>; Eden, Braxton <Braxton.Eden@hdrinc.com>; Banaszak, Jennifer <Jennifer.Banaszak@hdrinc.com>; Jessica Schlagenhaft <Jessica.Schlagenhaft@tn.gov>; Monica Kain <Monica.Kain@tn.gov>; Benjamin Webb <Benjamin.Webb@tn.gov>; Seth Hendren <seth.hendren@tn.gov>; Ryan Cleveland <Ryan.Cleveland@tn.gov>

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

The hazmat review from 4 February 2025 remains valid



Kyle Kirschenmann, P.G. | Statewide Technical Specialist

Environmental Division | Hazardous Materials, Air Quality and Noise Studies Unit

James K. Polk Building, Suite 900

505 Deaderick Street, Nashville, TN 37243

(615) 598-1522

kyle.kirschenmann@tn.gov

From: Braxton Eden <Braxton.Eden@tn.gov>

Sent: Monday, July 14, 2025 1:01 PM

To: TDOT.Env AirNoise <TDOT.Env.AirNoise@tn.gov>; TDOT.Env Ecology <TDOT.Env.Ecology@tn.gov>; TDOT.Env HazmatOffice <TDOT.Env.HazmatOffice@tn.gov>; TDOT.Env CulturalResources <TDOT.Env.CulturalResources@tn.gov>; TDOT MultimodalPlanning <TDOT.MultimodalPlanning@tn.gov>

Cc: Erick Hunt-Hawkins <Erick.Hunt-Hawkins@tn.gov>; Birch, Valerie <Valerie.Birch@hdrinc.com>; Eden, Braxton <Braxton.Eden@hdrinc.com>; Banaszak, Jennifer <Jennifer.Banaszak@hdrinc.com>; Jessica Schlagenhaft <Jessica.Schlagenhaft@tn.gov>; Monica Kain <Monica.Kain@tn.gov>; Benjamin Webb <Benjamin.Webb@tn.gov>; Seth Hendren <Seth.Hendren@tn.gov>

Subject: RE: R4, InitialTechReq, Haywood and Lauderdale County, PIN 102251.00

Good afternoon,

Since the distribution of the original ESR in February, the proposed project design has changed after discussions with TDOT Project Management.

Please see the current proposed project description below:

The Build Alternative proposes to widen the existing two 11-foot travel lanes of SR-19 from east of Eastland Avenue in Lauderdale County to just west of Gill Brackin Road in Haywood County to two 12-foot travel lanes and widen the shoulders from 2-foot shoulders to 10-foot shoulders (8-foot paved). To widen the travel lanes in this section of the proposed project, right-of-way would need to be acquired and the travel lanes reconstructed primarily to the north side of the existing roadway in the Lauderdale County section and primarily to the south side of the roadway in Haywood County. Also, in this section of the proposed project, the following SR-19 intersections are proposed to be realigned:

- Willie Paris Road
- Ross Road/Gause Lane
- Tall Oaks Cove
- Sanford Road/Conner Whitefield Road
- Watson Road/Carney Road
- Springhill Road

From just west of Gill Brackin Road to Nunn Road, the proposed project would mill and resurface the existing 11-foot travel lanes and 2-foot shoulders. In this section, the following SR-19 intersections are proposed to be realigned:

- Forked Deer Road (SR-180)
- Nunn Road

From Nunn Road to east of Jim Binford Lane, the proposed project would widen the two existing 11-foot travel lanes and 2-foot shoulders to two 12-foot travel lanes with 10-foot shoulders (8-foot paved). In this section, the following SR-19 intersection is proposed to be realigned:

- Jim Binford Lane

From east of Jim Binford Lane to the project terminus east of SR-87, the proposed project would mill and resurface the existing 11-foot travel lanes and 2-foot shoulders. Additional right-of-way would be needed to correct erosion/slope issues from approximately 4,351 feet east of Woodlawn Road to approximately 4,411 feet west of Old SR-19 (approximately 1,700 feet) and from approximately 3,417 feet east of Patton Road to approximately 279 feet east of Westpointe Road (approximately 1,800 feet). In this section, the following intersections are proposed to be realigned:

- Small Road at SR-19
- Woodlawn Road/Briar Creek Road at SR-19
- Old SR-19 at SR-19

Attached is a revised KMZ that captures the current proposed project design for the entirety of the project corridor. NEPA is requesting a review of the above listed proposed project description + revised KMZ.

This KMZ is based on forthcoming Simplified Functional plans for all three child PINs for the whole corridor. The updated KMZ has also been placed in the OneDrive link provided in the original ESR. If your respective section requires the full PDF version of the plan sets to make a determination, those will be circulated upon receipt. However, the provided KMZ will not vary from what will be presented in the Simplified Functional plans.

Please let us know if previous responses would remain valid, if additional studies would be necessary, or any other concerns your section may have.

We appreciate your flexibility with this project. If you have any questions, please reach out!

Thank you,



Braxton Eden

Environmental Division | NEPA Section

James K. Polk Building, 9th Floor

Email: TDOT.Env.LocalPrograms@tn.gov

From: Braxton Eden <Braxton.Eden@tn.gov>

Sent: Monday, February 3, 2025 1:03 PM

To: TDOT.Env AirNoise <TDOT.Env.AirNoise@tn.gov>; TDOT.Env Ecology <TDOT.Env.Ecology@tn.gov>; TDOT.Env HazmatOffice <TDOT.Env.HazmatOffice@tn.gov>; TDOT.Env CulturalResources <TDOT.Env.CulturalResources@tn.gov>; TDOT MultimodalPlanning <TDOT.MultimodalPlanning@tn.gov>

Cc: Erick Hunt-Hawkins <Erick.Hunt-Hawkins@tn.gov>; Rachel Head <Rachel.Head@tn.gov>; Birch, Valerie <Valerie.Birch@hdrinc.com>; Eden, Braxton <Braxton.Eden@hdrinc.com>; Banaszak, Jennifer <Jennifer.Banaszak@hdrinc.com>

Subject: R4, InitialTechReq, Haywood and Lauderdale County, PIN 102251.00

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Date ESR request transmitted to tech: 2/3/2025	
Completed ESR due: 3/25/2025	
*Review the feasibility of the above due date and respond to sender regarding the feasibility of that date by: 2/17/2025 or the next business day if on a weekend or holiday. If infeasible, in the response to NEPA, briefly note why and provide an anticipated completion date.	
Project Information:	
County	Haywood, Lauderdale
Route	SR-19
Termini	From east of Eastland Avenue in Lauderdale County to east of SR-87 in Haywood County
PIN	102251.00 102251.00, 102251.02, 102251.03
Brief Project Description/Scope	From east of Eastland Avenue in Lauderdale County to just west of Gill Brackin Road in Haywood County, the project would widen the two travel lanes to 12 feet with 10-foot shoulders (8-foot paved), correct geometric deficiencies and realign several intersections. From just west of Gill Bracken Road to the project terminus east of SR-87, the project would mill and resurface the existing 11-foot travel lanes and 2-foot shoulders and realign several intersections.
Federal Funding #	PIN 102251.00 PE-N: STP-19(47)
State Funding #	PIN 102251.00 PE-N: 38004-0217-14, 49005-0226-14
If State Only , is Federal funding anticipated?	
*Note for above: If not already known by NEPA Planner, Planner will mark "unknown." If "unknown" and a technical discipline needs this information for their work, that technical discipline is responsible for investigating. Any findings should be shared with the NEPA Planner.	
List of attachments or links to associated documentation:	1. ESR 2) ETSA (Three Files) 3) Aerial Layout KMZ OneDrive Link: ☐ SR-19_PIN 102251.00_ESR
*Note for above: ESR responses must be based on the plans/documents noted in the ESR form. Responses must not be based on other documents, even if more recently provided. NEPA Planners will submit an updated ESR if the review should be based on different plans/documents.	
Current NEPA Office Action	Original NEPA Document
Date of last official NEPA/TEER approval	D-List CE, 02/01/2018 (see other relevant history and notes below)
*Note for above: Where applicable, technical reviews should compare the current plans to those relevant to the above noted official NEPA or TEER effort to ensure we are capturing the cumulative change(s) since the last official approval.	
Known changes since the last official NEPA/TEER approval	Due to an increase in relocations along the project corridor, the scope was reduced from the Super 2 originally proposed in the 2018 D-List CE. See project description above for details. The project has also since been broken up into three child PINs.
*Note for above: Though NEPA provides the results of their comparison above, tech should still do a reasonable independent review for changes. Some changes will be more apparent to some than to others (often depending on subject matter expertise).	
Other Relevant History and Notes:	Through coordination with FHWA, the class of action was raised from a D-List CE to an EA due to proposed relocations.

If you are unable to access the link or have additional questions, please reach out.

Please continue to copy those originally copied on this request on your section's responses.

Thank you!



Braxton Eden

Environmental Division | NEPA Section

James K. Polk Building, 9th Floor

505 Deaderick Street, Suite 900, Nashville, TN 37243

Email: TDOT.Env.LocalPrograms@tn.gov

ATTACHMENT B

Asbestos Containing Material (ACM) Surveys



TENNESSEE DEPARTMENT OF TRANSPORTATION

ASBESTOS INSPECTION REPORT

SR-19 from SR-3 (US-51) to the West End of Brownsville By-pass
PE-N Number 49005-0226-14
PIN Number 102251.00
Bridge ID Number 49SR0190035



Prepared by:



K. S. WARE & ASSOCIATES, L.L.C.

54 Lindsley Avenue
Nashville, Tennessee 37210

December 15, 2017
KSWA Project Number: 100-17-0058

James Dye

Tennessee Asbestos Inspector Accreditation A-I-99965-56894

A handwritten signature in black ink that reads "James Dye".

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	TDOT BRIDGE IDENTIFICATION	1
1.2	GENERAL DESCRIPTION	1
2.0	INSPECTION	2
2.1	PERSONNEL AND DATE(S) OF INSPECTION	2
2.2	VISUAL SURVEY	2
2.3	ACCESS TO BRIDGE COMPONENTS	3
2.3.1	Concrete Wingwalls – Homogeneous Area A	3
2.3.2	Concrete Abutments – Homogeneous Area B	3
2.3.3	Concrete Guardrails – Homogeneous Area C	3
2.3.4	Concrete Decking – Homogeneous Area D	3
2.3.5	Concrete Beams – Homogeneous Area E	3
2.3.6	Black Abutment Padding– Homogeneous Area F	3
2.4	BRIDGE DRAINAGE SYSTEM	4
2.5	UTILITY CONDUITS	4
3.0	ANALYTICAL PROCEDURES	5
3.1	ASBESTOS ANALYSIS PROCEDURES	5
3.2	LABORATORY NAME AND ACCREDITATION	5
4.0	REGULATORY OVERVIEW	6
4.1	NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS	6
4.1.1	Definitions	6
5.0	RESULTS	7
5.1	RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS	7
6.0	QUALIFICATIONS	8

TABLES

Table – 1: Bridge Component Description	3
Table – 2: Analytical Laboratory	5

FIGURES

Figure – 1: Site Vicinity Map	9
Figure – 2: Bridge Homogenous Areas (Bottom)	10

APPENDICES

Appendix A: Photographs

Appendix B: Asbestos Sample Laboratory Analysis Data

Appendix C: Asbestos Accreditations

Appendix D: Health and Safety Plan

Appendix E: Activity Hazard Analysis

1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed in accordance with the State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements.

1.1 TDOT BRIDGE IDENTIFICATION

The bridge is identified in the TDOT Project System/Bridge Management System as:

TDOT PE-N Number: 49005-0226-14

TDOT PIN Number: 102251.00

Bridge Inventory Number: 49SR0190035

Termini: SR-19 from SR-3 (US-51) to the West End of the Brownsville By-pass

Log Mile Number: 23.90

1.2 GENERAL DESCRIPTION

The SR-19 bridge over Branch at LM 23.90 (49-SR019-23.90) is a 33-foot, 2-lane, single-span bridge constructed of concrete deck girders and box beams with a concrete deck and asphalt wearing surface. The bridge was constructed in 1928. The KSWA field crew observed metal deck drains and metal lined abutment drains on the bridge. The general location of the bridge is shown in **Figure – 1**. Photographs of the subject Lauderdale County bridge are presented in **Appendix A**. The analytical results of all the samples collected from the bridge and the chain-of-custody records are included in **Appendix B**.

2.0 INSPECTION

The identification of ACM was performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. ACM are those materials found to contain greater than one percent asbestos by calibrated visual area estimation (CVAE) using Polarized Light Microscopy (PLM).

Bulk sampling is a procedure in which representative homogeneous sampling areas in a structure are identified and then sampled. A homogeneous sampling area is defined as an area that contains material of the same type (uniform in color and texture) and is applied during the same general time period. Once the homogeneous sampling areas are identified, bulk samples of suspect materials are obtained at the discretion of our inspectors, based on site conditions and past experience.

2.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on October 26, 2017 by KWSA representative Mr. James Dye. Mr. Dye is an accredited State of Tennessee Asbestos Inspector. A copy of Mr. Dye's current accreditation from the State of Tennessee is included in **Appendix C**. Field activities were conducted under a Health and Safety Plan (**Appendix D**) and an Activity Hazard Analysis (**Appendix E**) prepared prior to mobilizing to the site.

2.2 VISUAL SURVEY

The KWSA field crew began with a visual survey of the bridge. The visual survey consisted of:

- producing a sketch of the structure and/or verifying the plans provided;
- locating and identifying homogeneous areas of suspect materials that may contain asbestos minerals; and
- determining applicable sampling locations.

The homogeneous areas identified during the visual survey are listed in **Table – 1**. The general locations of the identified homogeneous areas are shown in **Figure – 2**.

Table – 1: Bridge Component Descriptions

Homogeneous Area	Description	Sample Numbers
A	Concrete Wingwalls	19-01, 19-02, 19-03
B	Concrete Abutments	19-04, 19-05, 19-06
C	Concrete Guardrails	19-07, 19-08, 19-09
D	Concrete Decking	19-10, 19-11, 19-12
E	Concrete Beams	19-13, 19-14, 19-15
F	Black Abutment Padding	19-16, 19-17, 19-18

2.3 ACCESS TO BRIDGE COMPONENTS

Individual bridge components were accessed by the following methods.

2.3.1 Concrete Wingwalls – Homogeneous Area A

The concrete wingwalls were accessed and sampled from beneath the bridge.

2.3.2 Concrete Abutments – Homogeneous Area B

The concrete abutments were accessed and sampled from beneath the bridge.

2.3.3 Concrete Guardrails – Homogeneous Area C

The concrete guardrails were accessed and sampled from the top and shoulders of the bridge.

2.3.4 Concrete Decking – Homogeneous Area D

The concrete decking was accessed and sampled from the top and shoulders of the bridge.

2.3.5 Concrete Beams – Homogeneous Area E

The concrete beams were accessed and sampled from beneath the bridge.

2.3.6 Black Abutment Padding– Homogeneous Area F

The black abutment padding was accessed and sampled from beneath the bridge.

2.4 BRIDGE DRAINAGE SYSTEM

The KSWA field crew observed a bridge drainage system on the subject Lauderdale County bridge consisting of metal pipe deck drains that did not extend through the bridge and are only visible from beneath the bridge. Additionally, multiple metal lined abutment drains were observed.

2.5 UTILITY CONDUITS

The KSWA field crew did not observe utility conduits on the subject Lauderdale County bridge.

3.0 ANALYTICAL PROCEDURES

3.1 ASBESTOS ANALYSIS PROCEDURES

The bulk samples collected from the subject bridge were analyzed in the laboratory using PLM coupled with dispersion staining. PLM is used as an analytical method to identify the specific asbestos minerals by their unique optical properties. The optical properties are a result of the chemical composition, physical atomic structure, and visual morphology specific to that mineral. PLM is the recommended method of analysis for asbestos identification in bulk samples specified in the Environmental Protection Agency Toxic Substances Control Act (appendix E, subpart E, 40 CFR part 763, section 1).

Materials that contain multiple layers or have associated mastic or adhesive backing are separated and analyzed as multiple samples. Standard procedure for samples that are reported to contain 1% or less asbestos minerals is to complete a quantitative point count analysis by the laboratory for confirmation.

3.2 LABORATORY NAME AND ACCREDITATION

The bulk samples collected for this inspection were analyzed by a laboratory that has received accreditation from the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The name and accreditation number of the analytical laboratory that analyzed the samples for this inspection are indicated in **Table - 2**:

Table – 2: Analytical Laboratory

Laboratory	EMSL Analytical, Inc.
NVLAP Number	102104-0

4.0 REGULATORY OVERVIEW

4.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR §61, Subpart M) require that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAP include:

Friable asbestos-containing material ACM is defined by the National Emissions Standard for Asbestos (subpart M, 40 CFR part 61) under NESHAP as “any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Non-friable ACM is defined as “any materials containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141). The National Emission Standard for Asbestos (subpart M, 40 CFR part 61) also defines two categories of nonfriable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is defined as any “asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy” (40 CFR §61.141).

Category II non-friable ACM is defined as “any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Regulated Asbestos-Containing Material (RACM) is defined as any “(a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations” (40 CFR §61.141).

Friable materials are defined as those that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS

The results of the asbestos inspection are presented in the following sections.

5.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

The KSWA field crew collected eighteen (18) samples from the SR-19 Bridge over Branch at LM 23.90. Multiple samples of each homogeneous area were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on the identified homogeneous areas of suspect materials, as described in Section 2.2.

Building material homogeneous areas sampled included: concrete wingwalls, concrete abutments, concrete guardrails, concrete decking, concrete beams, and black abutment padding.

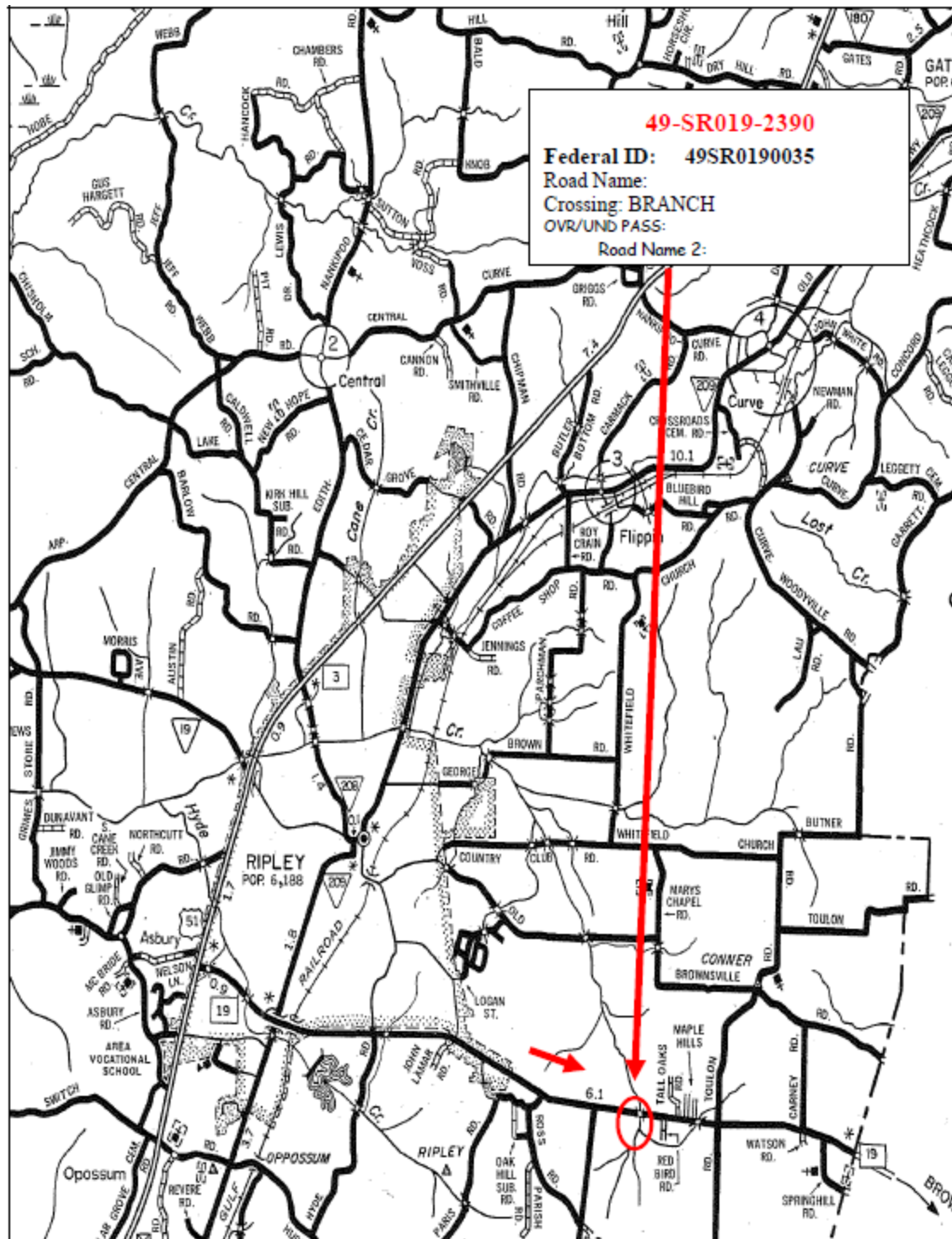
No asbestos was found to be present in any of the materials sampled from the SR-19 Bridge over Branch at LM 23.90.

6.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, K.S. Ware & Associates, L.L.C. requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted.

This report has been prepared on behalf of the Tennessee Department of Transportation. This document is not a Bid Document or a Contract Document. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Furthermore, any party, other than our Client, relying on this document is cautioned that all conclusions made or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

**Figure – 1: Site Vicinity Map
Lauderdale County**





Homogeneous Areas:

- A - Concrete Wingwalls
- B - Concrete Abutments
- C - Concrete Guardrails
- D - Concrete Decking
- E - Concrete Beams
- F - Black Abutment Padding

*Homogeneous area locations are generalized and do not represent actual sample locations.

FIG. NO. 2



49SR0190035 BRIDGE PROFILE HOMOGENEOUS AREAS (BOTTOM)

TERMINI:

SR-19 From SR-3 (US-51) to the West End of the Brownsville By-pass

COUNTY:	Lauderdale	INSPECTOR:	James Dye	ANALYTICAL LABORATORY:	EMSL Kernersville, NC	DATES SAMPLED:	10/26/2017
SCALE:	NTS	TDOT PE-N NO:	49005-0226-14	PIN:	102251.00	Source:	FIELD PHOTOGRAPHS
						KSWA PROJ.NO.	100-17-0058



APPENDIX A: PHOTOGRAPHS

Homogeneous areas that tested positive for asbestos are captioned in red.



Photo 1: View of HA-A on the SR-19 bridge over Branch



Photo 2: View of HA-B on the SR-19 bridge over Branch

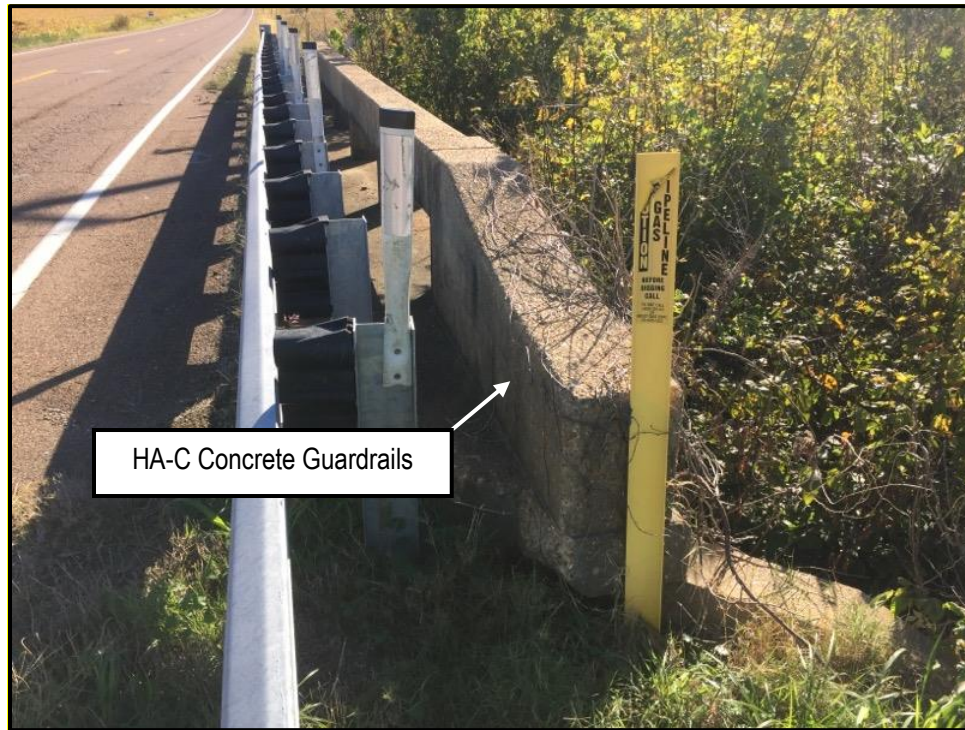


Photo 3: View of HA-C on the SR-19 bridge over Branch



Photo 4: View of HA-D on the SR-19 bridge over Branch

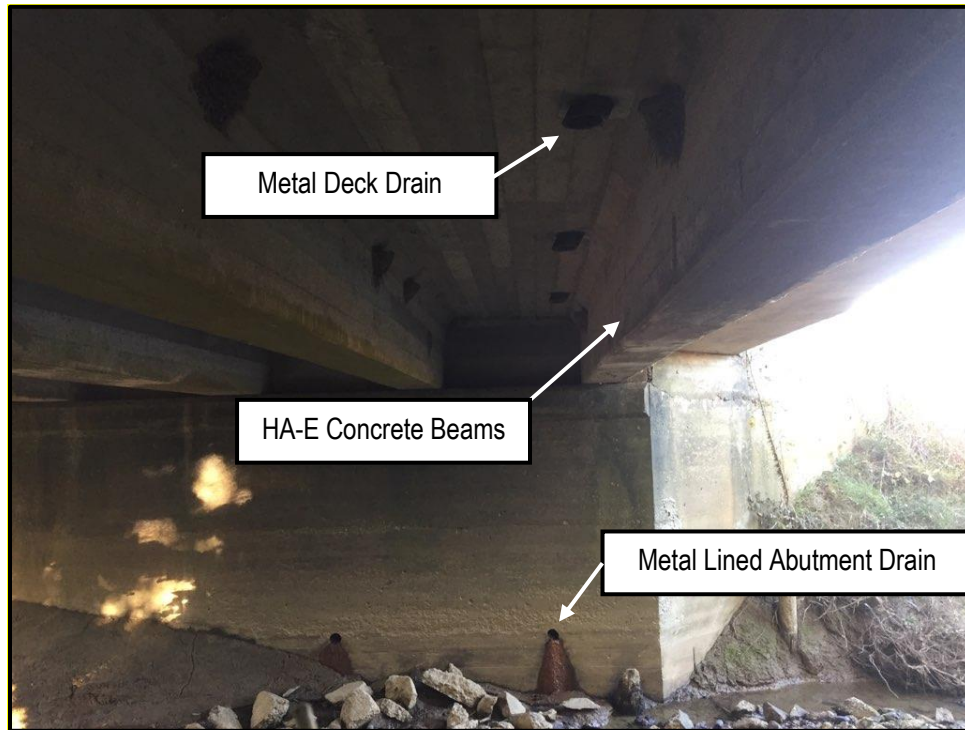


Photo 5: View of HA-E, metal deck drains, and metal lined abutment drains on the SR-19 bridge over Branch

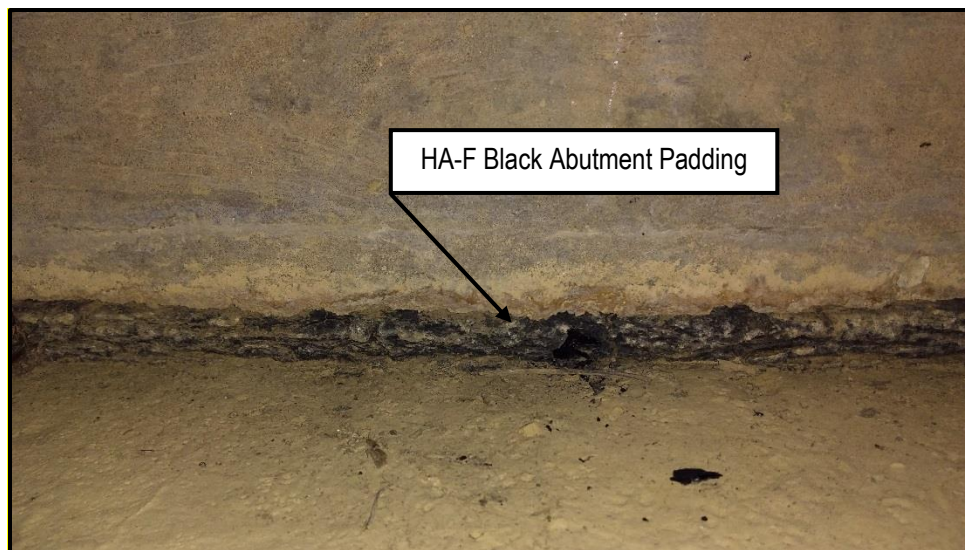


Photo 6: View of HA-F on the SR-19 bridge over Branch

APPENDIX B: ASBESTOS SAMPLE LABORATORY ANALYSIS DATA



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021706895

Customer ID: KSWA77

Customer PO:

Project ID:

Attention: James Dye
K.S. Ware LLC
54 Lindsley Avenue
Nashville, TN 37210

Phone: (615) 255-9702

Fax: (615) 256-5873

Received Date: 10/30/2017 8:30 AM

Analysis Date: 11/01/2017

Collected Date: 10/26/2017

Project: 100-17-0058

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
19-01 021706895-0001	Concrete Wingwalls	Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose	20% Quartz 80% Non-fibrous (Other)	None Detected
19-02 021706895-0002	Concrete Wingwalls	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-03 021706895-0003	Concrete Wingwalls	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	30% Quartz 70% Non-fibrous (Other)	None Detected
19-04 021706895-0004	Concrete Abutments	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-05 021706895-0005	Concrete Abutments	Gray/Tan Non-Fibrous Homogeneous		30% Quartz 70% Non-fibrous (Other)	None Detected
19-06 021706895-0006	Concrete Abutments	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	30% Quartz 70% Non-fibrous (Other)	None Detected
19-07 021706895-0007	Concrete Guardrails	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-08 021706895-0008	Concrete Guardrails	Gray/Tan Non-Fibrous Homogeneous		30% Quartz 70% Non-fibrous (Other)	None Detected
19-09 021706895-0009	Concrete Guardrails	Gray/Tan/Beige Non-Fibrous Heterogeneous		40% Quartz 60% Non-fibrous (Other)	None Detected
19-10 021706895-0010	Concrete Decking	Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-11 021706895-0011	Concrete Decking	Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose	25% Quartz 75% Non-fibrous (Other)	None Detected
19-12 021706895-0012	Concrete Decking	Brown/Gray/Tan Non-Fibrous Heterogeneous		30% Quartz 70% Non-fibrous (Other)	None Detected
19-13 021706895-0013	Concrete Beams	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-14 021706895-0014	Concrete Beams	Brown/Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-15 021706895-0015	Concrete Beams	Gray/Tan Non-Fibrous Heterogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
19-16 021706895-0016	Black Abutment Padding	Black Fibrous Homogeneous	5% Cellulose 1% Synthetic	94% Non-fibrous (Other)	None Detected

Initial report from: 11/01/2017 16:43:48



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021706895

Customer ID: KSWA77

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
19-17	Black Abutment Padding	Brown/Black Fibrous	5% Cellulose 1% Synthetic	94% Non-fibrous (Other)	None Detected
021706895-0017		Homogeneous			
19-18	Black Abutment Padding	Brown/Black Non-Fibrous	3% Cellulose	97% Non-fibrous (Other)	None Detected
021706895-0018		Homogeneous			

Analyst(s)

Kristie Elliott (12)

Scott Combs (6)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from: 11/01/2017 16:43:48



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

6895

Kernersville, NC 27284

PHONE: (336) 992-1025

FAX: (336) 992-4175

Company: K.S. Ware & Associates, LLC		EMSL-Bill to: ☐ Same ☒ Different If Bill to is Different note instructions in Comments**	
Street: 54 Lindsley Ave		Third Party Billing requires written authorization from third party	
City: Nashville	State/Province: TN	Zip/Postal Code: 37210	Country: US
Report To (Name): James Dye		Telephone #: (615)2559702	
Email Address: jdye@kswarellc.com		Fax #:	Purchase Order:
Project Name/Number: 100-17-0058		Please Provide Results: ☐ Fax ☒ Email ☐ Mail	
U.S. State Samples Taken: TN		CT Samples: ☐ Commercial/Taxable ☐ Residential/Tax Exempt	
Turnaround Time (TAT) Options* – Please Check			
☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☒ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week			
*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PLM - Bulk (reporting limit)		TEM – Bulk	
☒ PLM EPA 600/R-93/116 (<1%)		☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1	
☐ PLM EPA NOB (<1%)		☐ NY ELAP Method 198.4 (TEM)	
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)		☐ Chatfield Protocol (semi-quantitative)	
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)		☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2	
☐ NIOSH 9002 (<1%)		☐ TEM Qualitative via Filtration Prep Technique	
☐ NY ELAP Method 198.1 (friable in NY)		☐ TEM Qualitative via Drop Mount Prep Technique	
☐ NY ELAP Method 198.6 NOB (non-friable-NY)		Other	
☐ OSHA ID-191 Modified		☐	
☐ Standard Addition Method			
☐ Check For Positive Stop – Clearly Identify Homogenous Group		Date Sampled: 10/26/2017	
Samplers Name: James Dye		Samplers Signature:	
Sample #	HA #	Sample Location	Material Description
19-01	A	NE	Concrete Wingwalls
19-02	A	West	Concrete Wingwalls
19-03	A	West	Concrete Wingwalls
19-04	B	NE	Concrete Abutments
19-05	B	West	Concrete Abutments
19-06	B	West	Concrete Abutments
19-07	C	NE	Concrete Guardrails
19-08	C	SE	Concrete Guardrails
19-09	C	NW	Concrete Guardrails
19-10	D	NE	Concrete Decking
Client Sample # (s): 19-01 - 19-18		Total # of Samples: 18	
Relinquished (Client):		Date: 10-26-17	Time: 4:15 pm
Received (Lab):		Date: 10/30/17	Time: 8:30
Comments/Special Instructions:			
BillTo: KS Ware & Associates, LLC, 54 Lindsley Ave, Nashville, TN, 37210, US Attention: Jo-Ann Poharcyk Phone: (615)2559702 Email: jpoharcyk@kswarellc.com 0EFX 795359033803			



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

10895

706 Gralin Street

Kernersville, NC 27284

PHONE: (336) 992-1025

FAX: (336) 992-4175

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

[illegible]

***Comments/Special Instructions:**

BillTo: KS Ware & Associates, LLC, 54 Lindsley Ave, Nashville, TN, 37210, US
Attention: Jo-Ann Poharcyk Phone: (615)2559702 Email: jpoharcyk@kswarellc.com

APPENDIX C: ASBESTOS ACCREDITATIONS



THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management
Toxic Substances Program

William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the
Company named below is hereby accredited to offer and/or conduct Asbestos activities
pursuant to Rule 1200-01-20:

K. S. Ware and Associates, LLC

54 Lindsley Avenue Nashville TN, 37210

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee.
This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Re-Accreditation	A-F-620-62396	November 01, 2017	November 30, 2018



Given under the Seal of the State of Tennessee in Nashville.

This 2nd Day of November 2017

Division of Solid Waste Management
Toxic Substance Program

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

104024-33249



Date Issued: 7/22/2017

Initial

Benjamin P Hooks

DOB
12-Sep-1978

Sex
M

HGT
5'11"

WGT
200

Discipline

Accreditation

Expiration

Inspector

A-1-107425-62236

Jul-31-2018

Asbestos Accreditation

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program



Date Issued: 4/26/2017

Re-Accreditation

James M Dye

DOB	Sex	HGT	WGT
18-Jan-1986	M	6' 2"	320
Discipline	Accreditation	Expiration	
Inspector	A-1400005-50894	May-31-2018	

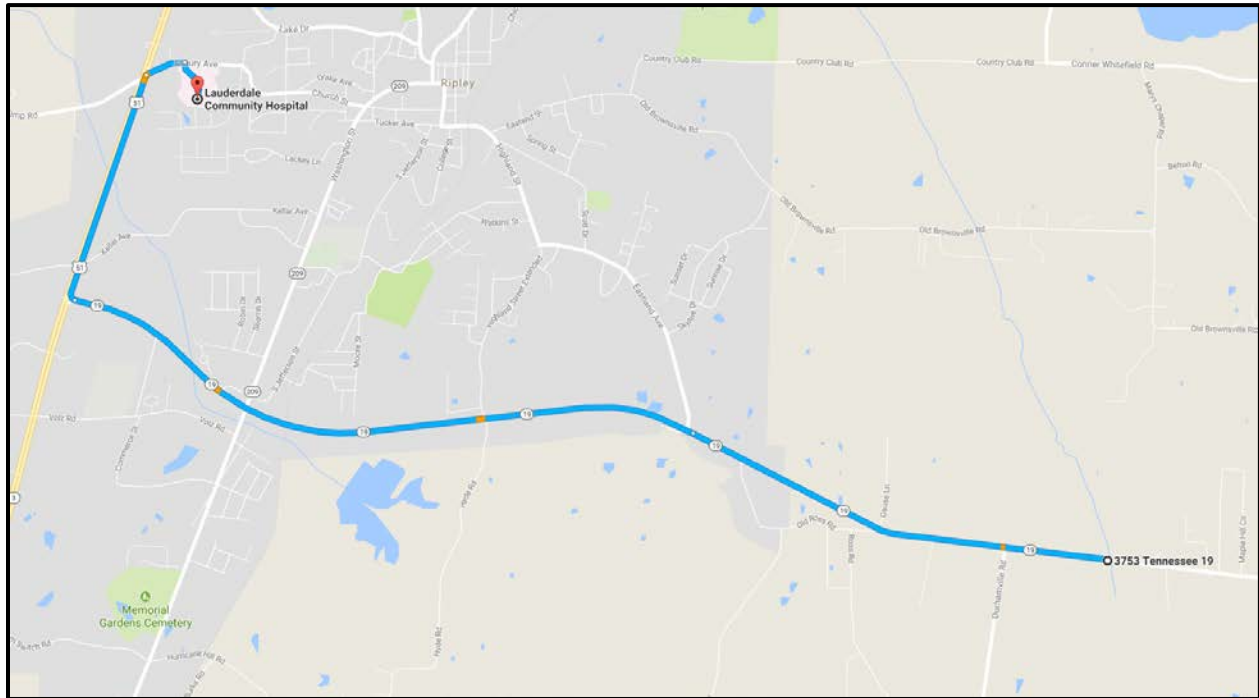
Asbestos Accreditation

APPENDIX D: HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN FOR ASBESTOS CONTAINING MATERIALS SURVEY SERVICES

K. S. WARE AND ASSOCIATES, L.L.C.

54 Lindsley Ave.
Nashville, Tennessee 37210



Directions to Hospital

Head west on SR-19 (4.8 miles)
Turn right onto US-51N (1.0 miles)
Turn right onto Asbury Avenue (0.2 miles)
Hospital will be on the right

Hospital Address

Lauderdale Community Hospital
326 Asbury Avenue
Ripley, TN 38063
(731) 221-2200

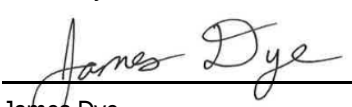
This facility has been verified as mappable by phone ([goo.gl/J4kfMq](https://www.google.com/maps/@35.9888889,-89.2444444,15z)): Bryan P. Hobbs

Project Number: 100-17-0058
Name: TDOT SR-19 from SR-3(US-51) to the West End of the Brownsville By-Pass
Location: Lauderdale County, Tennessee
Client: Tennessee Department of Transportation
Client Contact : Kyle Kirschenmann
Phone No.: (615) 598-1522

KSWA Personnel Contact Information:

<u>Title</u>	<u>Name</u>	<u>Work</u>	<u>Mobile</u>
Field Safety Coordinator	James Dye	(615) 255-9702	(615) 956-0361
Project Manager	James Dye	(615) 255-9702	(615) 956-0361
Health and Safety QA	Ryan Elliott	(850) 530-9209	(850) 865-3056

Review and Approval:

Field Safety Coordinator	 James Dye	<u>July 18, 2017</u> Date
Project Manager	 James Dye	<u>July 18, 2017</u> Date
Health and Safety QA	 Ryan Elliott, PE	<u>July 18, 2017</u> Date

Responsibilities for Field Safety Coordinator:

- Primary on-site contact for KSWA's health and safety procedures during field activities.
- Has the authority to stop KSWA operations if conditions are judged to be hazardous to on-site personnel or the public.
- Perform discretionary audits to determine compliance of Health and Safety Plan requirements.
- Responsible for providing access to the health and safety for all on-site employees.
- Responsible for instructing on-site personnel on the location of emergency communication equipment (i.e. phones and radios as necessary).
- Has no responsibility for health and safety procedures of any contractor, subcontractor, client personnel or others on the site.

Date of Plan Preparation

July 18, 2017

Dates of Planned Field Activities

August/September 2017

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 PURPOSE.....	1
2.0 APPLICABILITY	2
3.0 SITE DESCRIPTION AND HISTORY	3
3.1 INSPECTION EQUIPMENT	3
3.2 WORK PRECAUTIONS	3
3.3 DISPOSAL RESTRICTIONS.....	3
4.0 HAZARD EVALUATION.....	4
4.1 PHYSICAL HAZARDS.....	4
4.1.1 Operational Hazards	4
4.1.2 Fall Hazards.....	4
4.1.3 Heat Stress.....	4
4.1.4 Cold Stress	4
4.1.5 Tools and Equipment	4
4.1.6 Traffic Hazard.....	4
4.1.7 Noise Hazard	4
4.1.8 Water Hazards	4
4.1.9 Asbestos Containing Material.....	4
4.2 CHEMICAL HAZARDS	5
4.3 BIOLOGICAL HAZARDS.....	5
4.3.1 Stinging Insects	5
4.3.2 Ticks, Spiders, and Mosquitos.....	5
4.3.3 Other Wildlife.....	6
5.0 COMMUNICATIONS AND TRAINING	7
5.1 COMMUNICATION.....	7
5.2 HEALTH AND SAFETY TRAINING	7
5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING.....	8
6.0 SITE CONTROL - WORK ZONES.....	9
7.0 PERSONAL PROTECTION	10
8.0 LEVELS OF PROTECTION	11
8.1 LEVEL D	11
8.1.1 Personal Protective Equipment.....	11
8.1.2 Criteria for Use of Level D.....	11
9.0 DECONTAMINATION PROCEDURES	12
9.1 PERSONNEL DECONTAMINATION.....	12
9.2 EQUIPMENT DECONTAMINATION	12
10.0 EMERGENCY PROCEDURES.....	13
10.1 INHALATION	13
10.2 SKIN EXPOSURE.....	13
10.3 INGESTION	13
10.4 EYES.....	13
10.5 EXPOSURE TO HEAT OR COLD	14
10.6 STINGS AND BITES.....	14
10.7 PERSONAL INJURY	14
10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL	14
10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION	14
10.10 EVACUATION.....	14
11.0 MEDICAL MONITORING.....	15
12.0 PERSONNEL AUTHORIZATION.....	16
13.0 FIELD SAFETY COORDINATOR'S SUMMARY	17

This page intentionally left blank

1.0 PURPOSE

The purpose of this health and safety plan (HASP) is to provide standards for worker safety and protection during field activities conducted on a frequent or routine basis. The plan outlines standards and mandatory procedures relative to physical and chemical hazards encountered at sites, communication, training, worker health monitoring, decontamination procedures and levels of personal protection. Any questions concerning this information should be directed to the K.S. Ware and Associates, L.L.C. (KSWA) Project Manager identified at the beginning of this Health and Safety Plan, at 615-255-9702.

2.0 APPLICABILITY

This plan is applicable to all personnel working at the above referenced site, where mandatory worker health and safety training is required by State or Federal agencies. It is intended for use at the above referenced site where information regarding potential site hazards is available in the form of background research, personal communication with past or present property owners or workers, previous sampling results, etc.

A site specific hazard evaluation is included in Section 4. Available information should be provided to site workers as outlined in Section 5.

Sampling of items that may contain asbestos containing material (ACM) and other routine field activities are activities for which this plan is applicable. Activities involving contact with unknown substances and activities on sites where little background information is available will require more extensive and specific HASP development.

This plan does not cover procedures for entry into confined spaces. Project-specific attachments should be prepared and appended to this Health and Safety Plan if those activities are planned. Work of this nature shall be performed in accordance with 29 CFR 1926.250 subpart P "Excavation, Trenching and Shoring", 29 CFR 1910.146 "Permit Required Confined Space Entry" and the KSWA "Employee Confined Space Entry Program".

3.0 SITE DESCRIPTION AND HISTORY

The project consists of performing an asbestos bridge survey on one bridges located along SR-19 over an unnamed branch in Lauderdale County, Tennessee.

The SR-19 bridge include:

- 49-SR019-23.90 (49SR0190035) over Branch is a 33-foot, 2-lane, single-span bridge constructed concrete deck girders and box beams with a concrete deck and asphalt wearing surface. The bridge was constructed in 1928; and

3.1 INSPECTION EQUIPMENT

KSWA will be on site to perform an asbestos survey on the SR-19 bridge. Equipment to be used during the survey will include asbestos sample collection equipment.

3.2 WORK PRECAUTIONS

- No eating, drinking, using tobacco products, chewing gum, or putting hands in mouth while on the site.
- Wear the TDOT required roadway safety gear (hard hat, Class III reflective vest, boots) at all times while on the project site.
- Wear gloves at applicable times while at the work site.
- Wear protective eyewear at applicable times while at the work site.
- Wash all exposed skin areas with soap and water before departing from the site.
- Remove and change any non-impervious clothing that becomes contaminated during site activities.
- Do not go anywhere on the site other than where directed by the Field Safety Coordinator.
- Use safe and legal procedures for sample storage and shipment.

3.3 DISPOSAL RESTRICTIONS

Treat disposable items as ordinary refuse except when gross contamination is expected. In the event that refuse including disposable personnel protective equipment is suspected of being contaminated, the refuse will be collected and stored on site for future disposal.

4.0 HAZARD EVALUATION

4.1 PHYSICAL HAZARDS

4.1.1 Operational Hazards

Prior to commencement of field activities, the Field Safety Coordinator will conduct a site reconnaissance to identify any visible or operational hazards.

Additionally, because there is a possibility that asbestos may be present at the site, the appropriate Personal Protective Equipment (PPE) will be worn at all times that work is being performed.

4.1.2 Fall Hazards

Field activities can have the potential for fall hazards. Be aware of any uneven terrain, clear paths of debris and materials that may be a hazard. While on the bridges, be aware of slick surfaces and gaps while accessing the different components.

4.1.3 Heat Stress

Field activities in hot climates create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy, comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall drink adequate amounts of water and/or electrolyte replacement fluids, and maintain scheduled work/rest periods.

4.1.4 Cold Stress

Field activities in cold climates create a potential for cold stress. The warning symptoms of cold stress include fatigue; shivering; numbness; blue or pale skin; and reduced alertness and mental capacity. To prevent cold stress, personnel shall wear adequate clothing, and maintain scheduled work/rest periods.

4.1.5 Tools and Equipment

Tools and equipment used by KSWA shall be inspected and maintained to be safe and adequate for their designated use. Housekeeping of the site shall be maintained as to prevent tripping hazards.

4.1.6 Traffic Hazard

Field activities will encounter traffic on this project. Be aware of surroundings and watch for traffic.

4.1.7 Noise Hazard

Operation of equipment may present a noise hazard to workers. KSWA personnel will be provided with hearing protection to be utilized when noise levels are excessive.

4.1.8 Water Hazards

Field activities will encounter a creek on this project. Use caution in or near the creek. Additional PPE including but not limited to a personal flotation device (PFD) and waders shall be taken to the project area and utilized if necessary.

4.1.9 Asbestos Containing Material

KSWA personnel will wear a respirator while sampling, and all sampling equipment will be properly decontaminated between sample collection and after field activities. KSWA personnel will limit exposure by adhering to this health and safety plan.

Precautions: In order to reduce the health and safety risk to workers due to physical hazards at the project site, the following precautions will be observed:

1. ANSI Class III High Visibility clothing will be worn by personnel at all times on the project site.
2. Hard hats shall include high visibility reflective tape.
3. Protective eyewear will be worn by personnel in the work area when appropriate.
4. Hearing protection will be worn by personnel as deemed necessary by the Field Safety Coordinator (typically noised levels greater than 85 dBA).
5. Safety toed boots with non-conductive soles will be worn by personnel at all times on the project site.
6. Hand protection (leather gloves) will be worn by personnel when moving and/or lifting equipment as well as when using large hand tools (machetes, sledges, shovels, etc.).
7. All equipment and related support equipment and vehicles shall have a daily safety inspection (29 CFR 1926.550). The inspections shall include, but are not limited to: all hydraulic lines and fittings for wear and damage, all cable systems and pull ropes for damage and proper installation, exhaust systems and drill controls, electrical lines for damage and/or contact with standing water, etc. Inspection schedules, the vehicle and equipment description, nomenclature, the license plate or ID number for the equipment, the findings of the inspections and the corrective action(s) taken shall be maintained.
8. Before beginning each work shift, the area will be checked for site hazards including overhead lines, underground lines, above ground obstructions, tripping hazards, etc.
9. All vehicles will be fitted with a cab-top rotating or strobe light bar. Light bar is to be active when vehicle is on site.

4.2 CHEMICAL HAZARDS

Chemical hazards are not anticipated at this site.

4.3 BIOLOGICAL HAZARDS

4.3.1 Stinging Insects

The most common stinging insects are bees, wasps, and ants. Few species of ants have medically significant stings. While most bees possess a defensive sting, and will sting if grasped or crushed, only a few social species sting often enough, or have sufficiently venomous stings to be of medical significance. These include the honeybees and the bumblebees. Most fatalities from bee and wasp stings occur in hypersensitive individuals; death is most often induced by a single sting, and occurs most often within 1 hour after the sting. The victim is typically over 40 years of age and stung on the head or neck. Most deaths are caused by respiratory dysfunction with the second most common cause being anaphylaxis; arteriosclerosis may be a compounding factor. If stung, seek medical attention immediately.

4.3.2 Ticks, Spiders, and Mosquitos

Transit through areas near water and/or overgrown with vegetation expose personnel to potential contact with ticks, spiders, and mosquitos. Ticks and mosquitos can transmit disease and bites from any insect can cause discomfort and potential allergic reactions, itching, and severe pain. Personnel should take precautions against contact with insects by using insect repellent sprays and wearing long pants and shirts with long sleeves. Immediately following field work, personnel should inspect their body and clothing for ticks.

4.3.3 Other Wildlife

Wildlife, such as raccoons, opossum, armadillo, coyote and wild dogs, black bears, cougars, wild boars, and snakes, can be found across Tennessee. Many of these animals will bite and/or scratch if they, or their young, are provoked or feel threatened. In addition to physical harm, some of these animals can be venomous or carry dangerous diseases like leprosy and rabies. Care should be taken to avoid contact with any wild animals observed during field work. If a sick or injured animal is present on site, the local animal control should be contacted to remove the animal safely.

5.0 COMMUNICATIONS AND TRAINING

Workers at State and Federally listed or recognized sites must be provided with adequate information and training to recognize and evaluate potential hazards. Training shall comply with applicable regulations including 29 CFR 1910.1200 "Hazard Communication Standard".

5.1 COMMUNICATION

The Field Safety Coordinator shall supply all on site personnel with readily available access to this Health and Safety Plan. This plan shall cover, at a minimum, the following topics:

- A. A brief description of the history of the location with regard to health and environmental hazards.
- B. A description of the activities to which the hazard evaluation summary is applicable.
- C. A description of any hazards which may be encountered, including:
 - 1. Physical Hazards - terrain, traffic, equipment, severe weather (heat stress and frostbite), electrical hazards, noise, water hazards.
 - 2. Chemical Hazards - materials used and stored at the site, materials released at the site.
 - 3. Biological Hazards - insects, plants, animals, pathogens, and infectious materials.
- D. A description of the levels of protection selected for the operation.
- E. Equipment decontamination procedure if different from those specified herein.
- F. Summary of emergency contacts for use in the event of fire, explosion, medical emergency or other emergency, including the project address and phone number to provide to emergency personnel.

1. Emergency	911
2. Lauderdale County Ambulance Authority	(731) 635-5989
3. East Lauderdale County Fire Department	(731) 635-7722
4. Lauderdale County Sheriff	(731) 635-1311
- G. A map showing the route to the nearest hospital.

Prior to any employee or subcontractor beginning work on the site, the Field Safety Coordinator shall brief all KSWA employees as well as subcontractors on the contents of this plan. Personnel will have the opportunity to review the plan, and ask questions about the planned work or hazards. Also, the Field Safety Coordinator will conduct site reconnaissance in order to familiarize all personnel with site conditions, boundaries, and physical hazards.

By KSWA voluntarily sharing this information with subcontractors and contractors, those firms are not relieved of the responsibility to provide their personnel with adequate and proper supervision, safety information, instruction, and equipment.

5.2 HEALTH AND SAFETY TRAINING

All personnel will be provided with approved health and safety training as outlined in 29 CFR 1910.120(e). Documentation for KSWA employees should also be maintained at a central location at the KSWA office.

5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING

Prior to assignment to a site where respirator use may be required, employees will be provided with respirator training as outlined in 29 CFR 1910.134(e)(5). Respirator fit tests are to be conducted at 6 to 10 month intervals, or at any time when a condition that may change the fit of a respirator has occurred, such as change in weight, change in facial structure, extensive dental work, etc. All use of respirators shall comply with KSWA's written respiratory program.

6.0 SITE CONTROL - WORK ZONES

It is not anticipated that special measures or restriction of normal site activities and/or access will be required to achieve site security. The work area includes the SR-19 bridge and adjacent areas. The work will be performed along the side and underneath the bridge. The work zone will be delineated in accordance with TDOT temporary lane closure guidelines. Work zones will be identified with flashing lights, illuminated and non-illuminated signage, traffic spotter, etc.

7.0 PERSONAL PROTECTION

PPE and safety requirements must be appropriate to protect against the known or worst potential hazards on the site. Protective equipment should be selected based on the concentrations and possible routes of exposure to known or potential worst case substances. All KSWA engineering or assessment personnel engaged in work on site will be participants in the KSWA medical monitoring program described in Section 11, or a similar program.

KSWA anticipates that Level D protection and basic site safety measures will be sufficient at this project site. Level D PPE is described in Section 8. Any conditions warranting upgrading of the required level of protection to Level C, B, or A will be cause for all personnel to immediately leave the work site. The site will be re-evaluated and a new site Health and Safety Plan will be prepared which incorporates the additional site information.

8.0 LEVELS OF PROTECTION

This plan is not intended for use at sites where levels of protection above Level D is required. Level D is described below.

8.1 LEVEL D

Level D is the basic work uniform for all site operations. Level D should be selected when performing environmental sampling involving dilute concentrations of contaminants on sites that have been characterized by previous analyses or research.

8.1.1 Personal Protective Equipment

The following equipment is necessary for Level D personal protection:

- Standard work clothing.
- Optional disposable chemical-resistant clothing appropriate for known or expected levels of contamination.
- Boots/Shoes - safety or chemical-resistant boots.
- Safety glasses or safety goggles.
- Gloves - disposable latex or nitrile.
- Optional moisture resistant outer gloves.
- Hardhat.

8.1.2 Criteria for Use of Level D

The following criteria indicate situations where Level D personal protection is adequate:

- No indication of airborne health hazards present.
- No gross indication, above background concentrations, on the photoionization detector and/or organic vapor analyzer.

Additionally, a half-face, full-face, or powered air purifying respirator will be used with appropriate particulate filter(s).

9.0 DECONTAMINATION PROCEDURES

9.1 PERSONNEL DECONTAMINATION

If Level D protection is used, any disposable inner gloves or protective clothing should be sealed in a plastic bag and disposed of properly. Moisture resistant outer gloves and outer boots should be scrubbed with a stiff brush in soapy water, then rinsed to remove possible residual contamination. Disposable equipment should be used whenever possible.

9.2 EQUIPMENT DECONTAMINATION

Proper decontamination of all equipment is necessary to avoid transferring contaminants from the site, thereby increasing potential for exposure of on site and off site personnel. The measures described below should be followed prior to leaving all sites, as applicable to the equipment being used. Any variations from the procedures described below for reasons of worker health or safety must be described by the Project Manager in the site-specific hazard summary.

These measures are separate from, and may not be substituted for, other decontamination procedures associated with proper sampling protocol.

- A. The equipment may be thoroughly rinsed with clean water or an appropriate cleaning solution and wiped dry with paper towels before leaving the work site. Alternatively, the equipment may be wrapped in absorbent material and/or stored in plastic bags sealed to prevent contact with workers, vehicles, etc.
- B. The rinse water from this operation will be allowed to percolate into the ground or as specified by the client.

10.0 EMERGENCY PROCEDURES

10.1 INHALATION

If warning signals such as: dizziness, nausea, headache, shortness of breath, burning sensation in mouth, throat or lung or symptoms specific to hazard found at the site are apparent, the victim should leave the contaminated air space immediately. Have someone contact emergency services and obtain health and safety information about potential contaminants.

If unconscious, the victim should be pulled out of the contaminated area immediately if they do not have any injuries which would prohibit moving them (i.e. spinal injury). The rescuers should make sure that the area is safe to enter. If the area cannot be safely entered, attempt to ventilate this area. Do not attempt a rescue. Rescuers should make sure they are properly trained in First Aid and rescue and that they are wearing proper respiratory and protective equipment before attempting the rescue.

If the victim is no longer breathing, mouth-to-mouth resuscitation or some other form of artificial respiration should be administered by a person who is properly trained and certified in a location away from the contaminated area.

Medical attention should be obtained immediately.

10.2 SKIN EXPOSURE

The skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water. If a shower is available, it should be used immediately. Clothes should be removed while showering. This procedure may be life-saving as certain highly toxic chemicals are rapidly absorbed through the skin.

All contaminated parts of the body, including the hair, should be thoroughly decontaminated. It may be necessary to wash repeatedly.

10.3 INGESTION

A poison control center or emergency service should be contacted immediately to determine an appropriate course of action. If possible, have health and safety information on the poison available when you call for help. Vomiting should be induced except when the substance presents an aspiration hazard, such as from a petroleum product; or when the substance is a strong acid or base. To induce vomiting, a tablespoon of salt or powdered mustard in a glass of warm water, or syrup of ipecac from the First Aid Kit, can be taken as an emetic.

Drinking plenty of water and placing a finger down the throat may also be effective in inducing vomiting. The treatment should be repeated until vomit is clear.

Medical attention should be obtained immediately.

10.4 EYES

If a toxicant should get in the eyes, they should be washed with plenty of water. The eye itself should be held open, rotated, and flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least 15 minutes.

Medical attention should be obtained immediately.

10.5 EXPOSURE TO HEAT OR COLD

When working under severe weather conditions, personnel should be aware of the signs of heat stress, hypothermia and frostbite as well as the appropriate response actions.

Heat Stress - If a worker shows signs of heat stroke (dry, hot, red skin, high body temperature) or heat exhaustion (cool, moist, pale or red skin, dilated pupils, nausea, dizziness), the worker must be removed from the work area and cooled. Loosen clothing, elevate feet, and provide cool liquids. Heat stroke can be life threatening and requires rapid action.

Hypothermia - If a worker shows signs of hypothermia (shivering, impaired judgement, drowsiness, clumsiness) the worker must be removed from the work area and warmed gradually.

Frostbite - If a worker shows signs of frostbite (skin color changes to white or grayish-yellow then grayish-blue), the worker must be moved to a warm place. The affected area should be placed in warm (100-105°F) water. Do not rub or massage.

10.6 STINGS AND BITES

If still present, remove stinger with fingernail. Wash the the location of the sting with soap and water, cover with bandage and apply ice. If severe allergic reactions appear (hives, itching, rash, nausea, vomiting, dizziness, swelling) seek medical attention immediately.

10.7 PERSONAL INJURY

A first aid kit shall be readily available in case of an injury. Administer first aid and/or seek medical help, if necessary. Medical emergencies take precedence over decontamination procedures. A map showing the route to the nearest hospital is provided at the end of this Health and Safety Plan. It is the responsibility of the field safety coordinator to ensure that a phone is readily available on-site, and to identify which personnel have phones and provide this information to all on site personnel.

10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL

Clean up, isolate or contain spill as appropriate. Contact emergency response personnel, project manager, and/or client company officials as appropriate.

10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION

If it is safe to do so, on site personnel may use available fire fighting equipment to control or extinguish the fire, and remove or isolate materials which may contribute to the fire. Contact the fire department project manager and/or client company officials as appropriate.

10.10 EVACUATION

In the event of an emergency that requires an evacuation of the site, verbal instruction will be given by the Field Safety Coordinator to evacuate the area. Personnel will immediately exit the site to the pre-designated upwind "clean" location. The Field Safety Coordinator will account for KSWA personnel, and will advise personnel of further instructions, if necessary. The Field Safety Coordinator will also advise responding off site emergency personnel, if necessary. Personnel shall not re-enter the site until the emergency conditions have been corrected and the Field Safety Coordinator has authorized re-entry.

11.0 MEDICAL MONITORING

All engineering and assessment personnel engaged in on site activities shall be participants in a medical monitoring program similar to the following. As participants in this program, these individuals will have had recent physical examinations.

The following personnel will be accessing the site during field activities and the dates at which their medical monitoring program was last updated:

1. James Dye (February 2017)
2. Benjamin Hooks (April 2017)
3. Victoria Gallagher (April 2017)

The primary goal of this medical monitoring program is to provide evaluation and ongoing surveillance of the health status of employees potentially exposed to toxic substances as a result of their work-related activities. An active health monitoring program for those employees potentially at risk is an important tool in evaluating the effects of chronic low-level exposures or acute exposures related to operations at hazardous waste sites. The effects of low-level exposures may not become apparent until years after the initial exposure.

This medical monitoring program includes laboratory testing, personnel medical history evaluation, physical examination and other specific testing.

Each participant in this medical monitoring program undergoes a complete occupational history evaluation and baseline physical examination including the following parameters:

- Pulmonary Function Studies
- Complete Blood Count
- Chemical Blood Profile
- Urinalysis
- Chest X-Ray
- Electrocardiogram
- Specific parameters as necessary dependent upon exposure

Following the establishment of each participant's baseline values for the above parameters, an annual re-evaluation is conducted to monitor potential changes due to work with hazardous materials.

In addition to this annual re-examination, provisions are made for specific post-exposure examinations in the event of a suspected exposure during a particular field event.

The program shall meet or exceed the minimum requirements established in OSHA standard 20 CFR 1910.120.

All personnel engaged in on site activities must read this Health and Safety Plan. By signing and dating this form, the listed individual acknowledges that he/she has read, understands and will comply with the requirements of this Health and Safety Plan.

[illegible]

13.0 FIELD SAFETY COORDINATOR'S SUMMARY

(To be completed by Field Safety Coordinator after completion of each phase of field work, and returned to Project Manager.)

Project Summary

Project Name:	TDOT Haywood Co Sr-19 from SR-3(US-51) to West End of the Brownsville By-Pass
Project Number:	100-17-0058
Activities Completed:	10-26-17
Date of Activities:	10-26-17

During the execution of the activities covered by this Health and Safety Plan, there were:

- a) No violations of the Safety Plan provisions and no obvious contamination of KSWA employees or subcontractors.
- b) The following incidents, violations of the Safety Plan provisions, or obvious contamination of KSWA personnel or subcontractors. (Give details of who, when, type of contamination, circumstances, first aid or medical assistance administered in the space below.)

Time and Date of Incident	People Involved	Description of Incident

Signature  Date 10-26-17
Field Safety Coordinator

APPENDIX E: ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Asbestos Survey
SR-19 from SR-3(US-51W) to the West End of the Brownsville By-Pass
Lauderdale County, Tennessee

PIN: 102251.00

TDOT Project No.: 49005-0226-14

Bridge No.: 49SR0190035

KSWA Project Number: 100-17-0058

Prepared by:



K. S. WARE AND ASSOCIATES, L.L.C
54 Lindsley Avenue
Nashville, Tennessee 37210

July 18, 2017

ACTIVITY HAZARD ANALYSIS FOR ASBESTOS SURVEY

EM 385-1-1 Reference:

Hard hats and safety toe boots are mandatory. Eye and hearing protection are mandatory during sampling and as appropriate.

Principal Steps	Potential Hazards	Action to Minimize Hazard
1. Asbestos exposure	1. Inhalation, skin irritation	1. All personnel that will be present on the project must wear the proper PPE. Use all safety precautions to ensure that all state and federal guidelines are followed and to limit the exposure to asbestos. Asbestos samplers are to use a respirator when sampling.
2. Heat stress exposure	2. Heat stroke	2. Monitor all personnel for signs of fatigue, dizziness or other physical abnormalities. Personnel should wear clothing suited for the weather conditions and breaks will be given for intake of fluids, etc. Ensure that water or sports hydration fluid (Gatorade, PowerAde) is available on site.
3. Cold stress exposure	3. Hypothermia, frostbite, trench foot	3. Monitor all personnel for signs of shivering, loss of coordination, confusion, disorientation, slowed pulse and breathing, and loss of consciousness. Personnel should wear clothing suited for the weather conditions, including effects of wind and extreme cold. Ensure that a location shielded from the wind and with a heat source is available. If cold temperatures and wind chill conditions are present, warming breaks should be planned to avoid prolonged exposure.
4. Traffic Hazards	4. Moving vehicles	4. Field activities will encounter traffic on this project. Be aware of your surroundings, watch for traffic when performing in areas that have moving vehicles. Use a spotter or traffic control when sampling in the roadway or crossing the road. Maintain safe positioning. Use "Men Working" signs to delineate the work area and slow down drivers.
5. Site Maintenance	5. Slip, trip, and fall.	5. Prior to field activities, the Field Safety Coordinator should observe the terrain on site and monitor the conditions throughout the survey. Be aware of steep and/or rocky slopes. Also be aware of potholes around the bridge.
6. Overhead Utilities	6. Electrocution, explosion, fire	6. Be aware of fallen or low hanging utility lines while on the ground level. Remain at least 10 feet from all utility lines with all equipment.
7. Biological Hazards	7. Small animals, insects	7. Be aware of animal habitat in and around the work area. Do not put hands into areas you cannot inspect for potential insects, mammals, and reptiles. Beware of waterborne snakes, colonies of stinging insects, and vector species that could transmit disease.
8. Noise	8. Damage to hearing	8. Operations that generate sound levels 85 dBA and above require hearing protection. Either muffs or plugs are acceptable. Heavy traffic can be a cause.

Principal Steps	Potential Hazards	Action to Minimize Hazard
9. Hand/Finger Protection	9. Physical injury to personnel	9. Wear gloves when there is exposure to potential hazards that could produce scrapes and cuts. Do not wear jewelry. Any jewelry can be dangerous. Handle sharp or pointed tools with extreme care. Be careful when using a hammer to not smash hand or fingers. Use the proper gloves for the job at hand.
10. Hand Tools and Equipment	10. Physical injury to personnel	10. Use the right tool or piece of equipment for the job. Use only tools in safe condition. Tools and equipment must be used properly and not abused. Take precautions to avoid injury by cutting tools by keeping them sheathed until use.
11. Ladders	11. Fall from excessive height	11. Use caution and maintain three points of contact when climbing a ladder. Always have other site personnel support the ladder while in use. Maintain a safe distance from overhead utilities and obstructions. Always place the ladder on stable, even ground.
12. Severe Weather	12. Thunderstorms, lightning hazard	12. Cease work immediately and take cover in a vehicle or structure until lightning has ceased.
13. Waterways	13. Rise/fall of water level, current, holes in waterbed, slippery surfaces	13. Be conscious of the water level and current. When walking through water, be careful when stepping in case of holes and/or slippery surfaces. Use a personal flotation device (PFD) if water is above knee height or is swift moving.

This Activity Hazard Analysis has been prepared by K.S. Ware and Associates.

The KSWA field safety coordinator for this project will be Mr. James Dye. Mr. Dye's health and safety training and certifications include:

- Completed OSHA 10 Hour Construction Safety Course
- Completed OSHA 40 Hour HAZWOPER Course



TENNESSEE DEPARTMENT OF TRANSPORTATION

ASBESTOS INSPECTION REPORT

SR-19 from SR-3 (US-51) to the West End of
the Brownsville By-pass, Haywood County
PE-N Number 38004-0217-14
PIN Number 102251.00
Bridge ID Number 38SR0190001



Prepared by:



K. S. WARE & ASSOCIATES, L.L.C.

54 Lindsley Avenue
Nashville, Tennessee 37210
December 15, 2017

KSWA Project Number: 100-17-0057

James Dye

Tennessee Asbestos Inspector Accreditation A-I-99965-56894]

A handwritten signature in black ink that reads "James Dye".

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	TDOT BRIDGE IDENTIFICATION	1
1.2	GENERAL DESCRIPTION	1
2.0	INSPECTION	2
2.1	PERSONNEL AND DATE(S) OF INSPECTION	2
2.2	VISUAL SURVEY	2
2.3	ACCESS TO BRIDGE COMPONENTS	3
2.3.1	Concrete Wingwalls– Homogeneous Area A.....	3
2.3.2	Concrete Base– Homogeneous Area B.....	3
2.3.3	Concrete Decking– Homogeneous Area C.....	3
2.3.4	Concrete Barrel Walls– Homogeneous Area D	3
2.3.5	Concrete Apron– Homogeneous Area E	3
2.4	BRIDGE DRAINAGE SYSTEM	3
2.5	UTILITY CONDUITS	3
3.0	ANALYTICAL PROCEDURES.....	4
3.1	ASBESTOS ANALYSIS PROCEDURES	4
3.2	LABORATORY NAME AND ACCREDITATION	4
4.0	REGULATORY OVERVIEW.....	5
4.1	NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS.....	5
4.1.1	Definitions.....	5
5.0	RESULTS	6
5.1	RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS	6
6.0	QUALIFICATIONS	7

TABLES

Table – 1: Bridge Component Description	2
Table – 2: Analytical Laboratory.....	5

FIGURES

Figure – 1: Site Vicinity Map	8
Figure – 2: Bridge Homogenous Areas (Bottom)	9

APPENDICES

Appendix A: Photographs
Appendix B: Asbestos Sample Laboratory Analysis Data
Appendix C: Asbestos Accreditations
Appendix D: Health and Safety Plan
Appendix E: Activity Hazard Analysis

1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed in accordance with the State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements.

1.1 TDOT BRIDGE IDENTIFICATION

The bridge is identified in the TDOT Project System/Bridge Management System as:

TDOT PE-N Number: 38004-0217-14
TDOT PIN Number: 102251.00
Bridge Inventory Number: 38SR0190001
Termini: SR-19 From SR-3 (US-51) to the West End of the Brownsville By-pass
Log Mile Number: 7.16

1.2 GENERAL DESCRIPTION

The SR-19 bridge over Briar Creek at LM 7.16 (38-SR019-07.16) is a 33-foot, 2-lane, 2-span bridge constructed of concrete box culverts with an asphalt wearing surface. The bridge was constructed in 1930. The KSWA field crew observed a concrete deck drain and concrete abutment drains on the bridge. The general location of the bridge is shown in **Figure – 1**. Photographs of the subject Haywood County bridge are presented in **Appendix A**. The analytical results of all the samples collected from the bridge and the chain-of-custody records are included in **Appendix B**.

2.0 INSPECTION

The identification of ACM was performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. ACM are those materials found to contain greater than one percent asbestos by calibrated visual area estimation (CVAE) using Polarized Light Microscopy (PLM).

Bulk sampling is a procedure in which representative homogeneous sampling areas in a structure are identified and then sampled. A homogeneous sampling area is defined as an area that contains material of the same type (uniform in color and texture) and is applied during the same general time period. Once the homogeneous sampling areas are identified, bulk samples of suspect materials are obtained at the discretion of our inspectors, based on site conditions and past experience.

2.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on August 9, 2017 by KWSA representative Mr. James Dye. Mr. Dye is an accredited State of Tennessee Asbestos Inspector. A copy of Mr. Dye's current accreditation from the State of Tennessee is included in **Appendix C**. Field activities were conducted under a Health and Safety Plan (**Appendix D**) and an Activity Hazard Analysis (**Appendix E**) prepared prior to mobilizing to the site.

2.2 VISUAL SURVEY

The KSWA field crew began with a visual survey of the bridge. The visual survey consisted of:

- producing a sketch of the structure and/or verifying the plans provided;
- locating and identifying homogeneous areas of suspect materials that may contain asbestos minerals; and
- determining applicable sampling locations.

The homogeneous areas identified during the visual survey are listed in **Table – 1**. The general locations of the identified homogeneous areas are shown in **Figure – 2**.

Table – 1: Bridge Component Descriptions

Homogeneous Area	Description	Sample Numbers
A	Concrete Wingwalls	BC-01, BC-02, BC-03
B	Concrete Base	BC-04, BC-05, BC-06
C	Concrete Decking	BC-07, BC-08, BC-09
D	Concrete Barrel Walls	BC-10, BC-11, BC-12
E	Concrete Apron	BC-13, BC-14, BC-15

2.3 ACCESS TO BRIDGE COMPONENTS

Individual bridge components were accessed by the following methods.

2.3.1 Concrete Wingwalls– Homogeneous Area A

The concrete wingwalls were accessed and sampled from beneath the bridge.

2.3.2 Concrete Base– Homogeneous Area B

The concrete base was accessed and sampled from beneath the bridge.

2.3.3 Concrete Decking– Homogeneous Area C

The concrete decking was accessed and sampled from beneath the bridge.

2.3.4 Concrete Barrel Walls– Homogeneous Area D

The concrete barrel walls were accessed and sampled from beneath bridge.

2.3.5 Concrete Apron– Homogeneous Area E

The concrete apron was accessed and sampled from beneath the bridge.

2.4 BRIDGE DRAINAGE SYSTEM

The KSWA field crew observed a bridge drainage system on the subject Haywood County bridge consisting of a horizontal concrete deck drain and concrete abutment drains. The deck drain did not appear to extend through the deck but may have been infilled. No liner was observed in any of the drains.

2.5 UTILITY CONDUITS

The KSWA field crew did not observe utility conduits on the subject Haywood County bridge.

3.0 ANALYTICAL PROCEDURES

3.1 ASBESTOS ANALYSIS PROCEDURES

The bulk samples collected from the subject bridge were analyzed in the laboratory using PLM coupled with dispersion staining. PLM is used as an analytical method to identify the specific asbestos minerals by their unique optical properties. The optical properties are a result of the chemical composition, physical atomic structure, and visual morphology specific to that mineral. PLM is the recommended method of analysis for asbestos identification in bulk samples specified in the Environmental Protection Agency Toxic Substances Control Act (appendix E, subpart E, 40 CFR part 763, section 1).

Materials that contain multiple layers or have associated mastic or adhesive backing are separated and analyzed as multiple samples. Standard procedure for samples that are reported to contain 1% or less asbestos minerals is to complete a quantitative point count analysis by the laboratory for confirmation.

3.2 LABORATORY NAME AND ACCREDITATION

The bulk samples collected for this inspection were analyzed by a laboratory that has received accreditation from the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The name and accreditation number of the analytical laboratory that analyzed the samples for this inspection are indicated in **Table - 2**:

Table – 2: Analytical Laboratory

Laboratory	EMSL Analytical, Inc.
NVLAP Number	102104-0

4.0 REGULATORY OVERVIEW

4.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR §61, Subpart M) require that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAP include:

Friable asbestos-containing material ACM is defined by the National Emissions Standard for Asbestos (subpart M, 40 CFR part 61) under NESHAP as “any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Non-friable ACM is defined as “any materials containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141). The National Emission Standard for Asbestos (subpart M, 40 CFR part 61) also defines two categories of nonfriable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is defined as any “asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy” (40 CFR §61.141).

Category II non-friable ACM is defined as “any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Regulated Asbestos-Containing Material (RACM) is defined as any “(a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations” (40 CFR §61.141).

Friable materials are defined as those that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS

The results of the asbestos inspection are presented in the following sections.

5.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

The KSWA field crew collected fifteen (15) samples from the SR-19 bridge over Briar Creek at LM 7.16. Multiple samples of each homogeneous area were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on the identified homogeneous areas of suspect materials, as described in Section 2.2.

Building material homogeneous areas sampled included: concrete wingwalls, concrete base, concrete decking, concrete barrel walls, and concrete apron.

No asbestos was found to be present in any of the materials sampled from the SR-19 bridge over Briar Creek at LM 7.16. Analytical results of all samples collected at the bridge are included in Appendix B.

6.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, K.S. Ware & Associates, L.L.C. requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted.

This report has been prepared on behalf of the Tennessee Department of Transportation. This document is not a Bid Document or a Contract Document. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Furthermore, any party, other than our Client, relying on this document is cautioned that all conclusions made or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.



Homogeneous Areas:

- A - Concrete Wingwalls
- B - Concrete Base
- C - Concrete Decking
- D - Concrete Barrel Walls
- E - Concrete Apron

*Homogeneous area locations are generalized and do not represent actual sample locations.

FIG. NO. 2

	38SR0190001 BRIDGE PROFILE HOMOGENEOUS AREAS (BOTTOM)				
	TERMINI:				
	SR-19 From SR-3 (US-51) to the West End of the Brownsville By-pass				
	COUNTY: Haywood	INSPECTOR: James Dye	ANALYTICAL LABORATORY: EMSL Kernersville, NC	DATES SAMPLED: 8/09/2017	
	SCALE: NTS	TDOT PE-N NO: 38004-0217-14	PIN: 102251.00	SOURCE: FIELD PHOTOGRAPHS	KSWA PROJ.NO. 100-17-0057



APPENDIX A: PHOTOGRAPHS

Homogeneous areas that tested positive for asbestos are captioned in red.



Photo 1: View of HA-A on the SR-19 bridge over Briar Creek



Photo 2: View of HA-B on the SR-19 bridge over Briar Creek



Photo 3: View of HA-C on the SR-19 bridge over Briar Creek



Photo 4: View of HA-D on the SR-19 bridge over Briar Creek

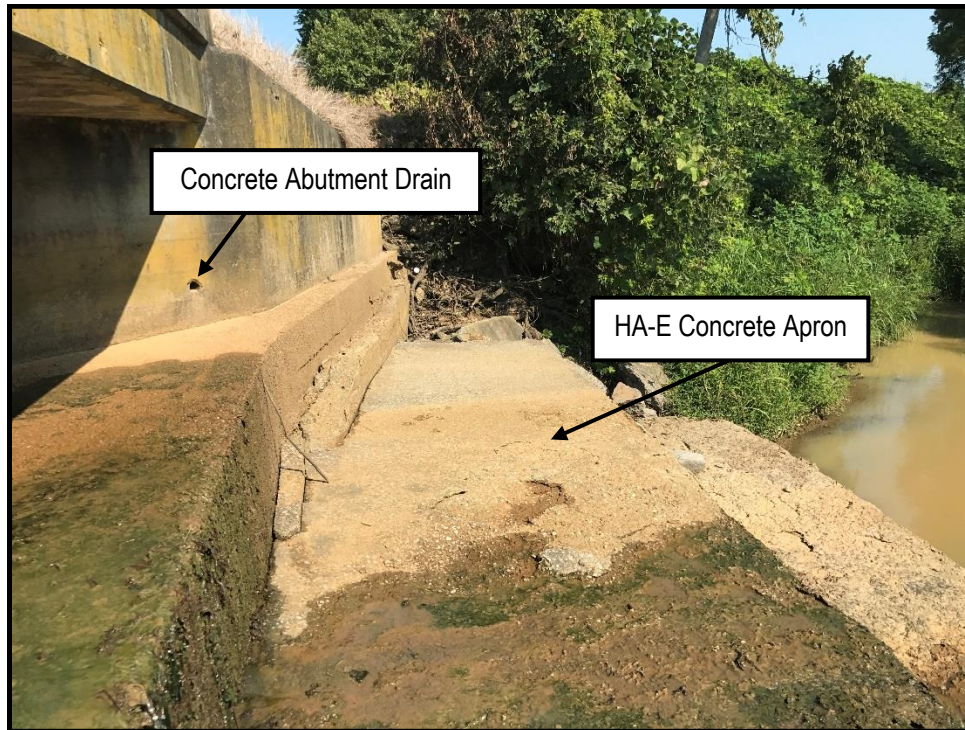


Photo 5: View of HA-E and concrete abutment drain on the SR-19 bridge over Briar Creek



Photo 6: View of concrete deck drain on the SR-19 bridge over Briar Creek

APPENDIX B: ASBESTOS SAMPLE LABORATORY ANALYSIS DATA



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021705059

Customer ID: KSWA77

Customer PO:

Project ID:

Attention: James Dye
K.S. Ware LLC
54 Lindsley Avenue
Nashville, TN 37210

Phone: (615) 255-9702

Fax: (615) 256-5873

Received Date: 08/14/2017 9:00 AM

Analysis Date: 08/16/2017

Collected Date: 08/09/2017

Project: 100-17-0057 Briar Creek

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
BC-01 021705059-0001	Concrete Wingwalls	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
BC-02 021705059-0002	Concrete Wingwalls	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
BC-03 021705059-0003	Concrete Wingwalls	Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	25% Quartz 75% Non-fibrous (Other)	None Detected
BC-04 021705059-0004	Concrete Base	Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose	20% Quartz 80% Non-fibrous (Other)	None Detected
BC-05 021705059-0005	Concrete Base	Gray/Tan Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
BC-06 021705059-0006	Concrete Base	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
BC-07 021705059-0007	Concrete Decking	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
BC-08 021705059-0008	Concrete Decking	Gray Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
BC-09 021705059-0009	Concrete Decking	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
BC-10 021705059-0010	Concrete Barrell Walls	Gray Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
BC-11 021705059-0011	Concrete Barrell Walls	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
BC-12 021705059-0012	Concrete Barrell Walls	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
BC-13 021705059-0013	Concrete Apron	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
BC-14 021705059-0014	Concrete Apron	Gray/Tan Non-Fibrous Homogeneous	<1% Cellulose	25% Quartz 75% Non-fibrous (Other)	None Detected
BC-15 021705059-0015	Concrete Apron	Brown/Gray/Tan Non-Fibrous Heterogeneous	<1% Cellulose	25% Quartz 75% Non-fibrous (Other)	None Detected

Initial report from: 08/16/2017 15:38:54



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021705059

Customer ID: KSWA77

Customer PO:

Project ID:

Analyst(s)

Kristie Elliott (10)

Nicole Shutts (5)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from: 08/16/2017 15:38:54



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

5059

Kernersville, NC 27284

PHONE: (336) 992-1025

FAX: (336) 992-4175

Company: K.S. Ware & Associates, LLC		EMSL-Bill to: ☐ Same ☒ Different If Bill to is Different note instructions in Comments**	
Street: 54 Lindsley Ave		Third Party Billing requires written authorization from third party	
City: Nashville	State/Province: TN	Zip/Postal Code: 37210	Country: US
Report To (Name): James Dye		Telephone #: (615)2559702	
Email Address: jdye@kswarellc.com		Fax #:	Purchase Order:
Project Name/Number: 100-17-0057 Briar Creek		Please Provide Results: ☐ Fax ☒ Email ☐ Mail	
U.S. State Samples Taken: TN		CT Samples: ☐ Commercial/Taxable ☐ Residential/Tax Exempt	
Turnaround Time (TAT) Options* – Please Check			
☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☒ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week			
*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PLM - Bulk (reporting limit)		TEM – Bulk	
☒ PLM EPA 600/R-93/116 (<1%)		☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1	
☐ PLM EPA NOB (<1%)		☐ NY ELAP Method 198.4 (TEM)	
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)		☐ Chatfield Protocol (semi-quantitative)	
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)		☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2	
☐ NIOSH 9002 (<1%)		☐ TEM Qualitative via Filtration Prep Technique	
☐ NY ELAP Method 198.1 (friable in NY)		☐ TEM Qualitative via Drop Mount Prep Technique	
☐ NY ELAP Method 198.6 NOB (non-friable-NY)		Other	
☐ OSHA ID-191 Modified		☐	
☐ Standard Addition Method			
☐ Check For Positive Stop – Clearly Identify Homogenous Group		Date Sampled: 08/09/2017	
Samplers Name: James Dye		Samplers Signature: <i>James Dye</i>	
Sample #	HA #	Sample Location	Material Description
BC-01	A	NW	Concrete Wingwalls
BC-02	A	NW	Concrete Wingwalls
BC-03	A	NE	Concrete Wingwalls
BC-04	B	NW	Concrete Base
BC-05	B	NW	Concrete Base
BC-06	B	NE	Concrete Base
BC-07	C	NW	Concrete Decking
BC-08	C	NW	Concrete Decking
BC-09	C	NE	Concrete Decking
BC-10	D	NE	Concrete Barrel Walls
Client Sample # (s): BC-01 - BC-15		Total # of Samples: 15	
Relinquished (Client): <i>James Dye</i>		Date: 8-11-17	Time: 11:30 am
Received (Lab): <i>JDH</i>		Date: 8/14/17	Time: 9 AM
Comments/Special Instructions:			
BillTo: KS Ware & Associates, LLC, 54 Lindsley Ave, Nashville, TN, 37210, US Attention: James Dye Phone: (615)2559702 Email: jdye@kswarellc.com and jpoharcyk@kswarellc.com Please analyze all layers in samples with multiple layers.			

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

5059

706 Gralin Street

Kernersville, NC 27284

PHONE: (336) 992-1025

FAX: (336) 992-4175

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

[illegible]

***Comments/Special Instructions:**

BillTo: KS Ware & Associates, LLC, 54 Lindsley Ave, Nashville, TN, 37210, US
Attention: James Dye Phone: (615)2559702 Email: jdye@kswarellc.com and jpharcy@kswarell.com

Please analyze all layers in samples with multiple layers.

APPENDIX C: ASBESTOS ACCREDITATIONS



THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management
Toxic Substances Program

William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the
Company named below is hereby accredited to offer and/or conduct Asbestos activities
pursuant to Rule 1200-01-20:

K. S. Ware and Associates, LLC

54 Lindsley Avenue Nashville TN, 37210

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee.
This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Re-Accreditation	A-F-620-62396	November 01, 2017	November 30, 2018



Given under the Seal of the State of Tennessee in Nashville.

This 2nd Day of November 2017

Division of Solid Waste Management
Toxic Substance Program

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

104024-33249



Date Issued: 7/22/2017

Initial

Benjamin P Hooks

DOB
12-Sep-1978

Sex
M

HGT
5'11"

WGT
200

Discipline

Accreditation

Expiration

Inspector

A-1-107425-62236

Jul-31-2018

Asbestos Accreditation

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program



Date Issued: 4/26/2017

Re-Accreditation

James M Dye

DOB	Sex	HGT	WGT
18-Jan-1986	M	6' 2"	320
Discipline	Accreditation	Expiration	
Inspector	A-1400005-50894	May-31-2018	

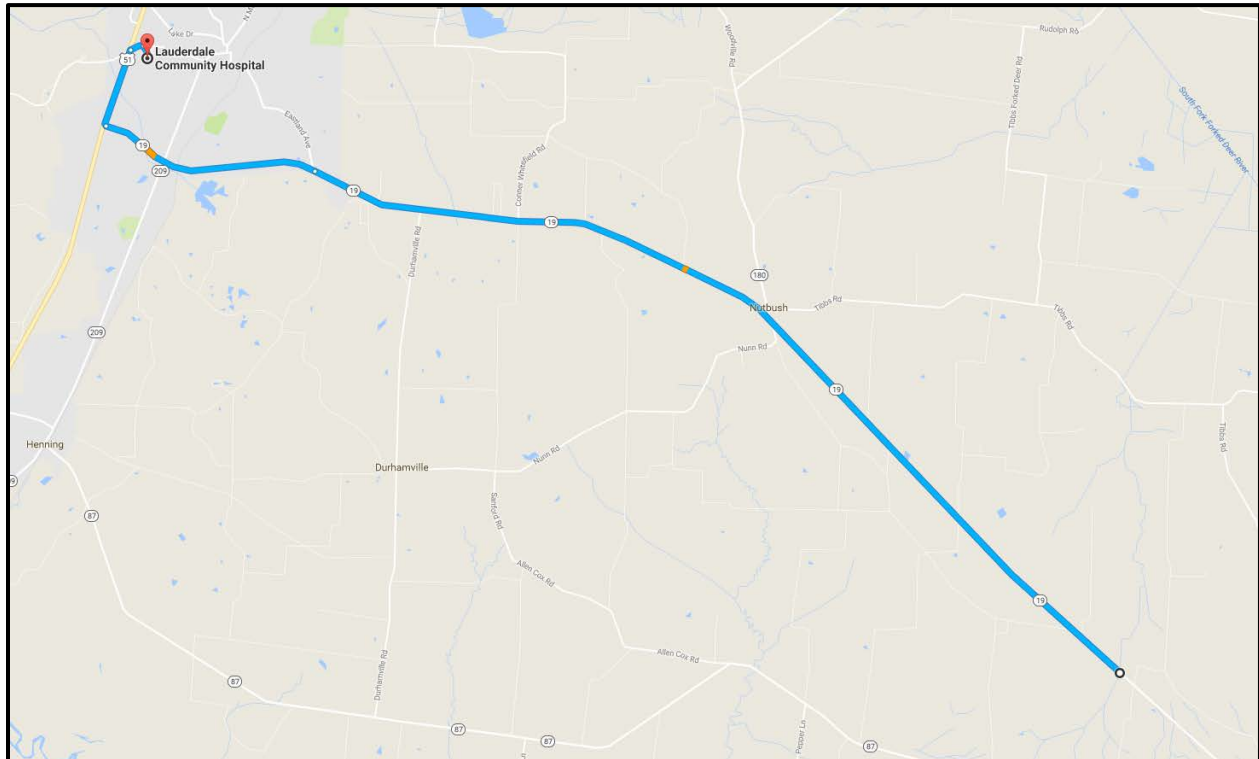
Asbestos Accreditation

APPENDIX D: HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN FOR ASBESTOS CONTAINING MATERIALS SURVEY SERVICES

K. S. WARE AND ASSOCIATES, L.L.C.

54 Lindsley Ave.
Nashville, Tennessee 37210



Directions to Hospital

Head west on SR-19 (15.5 miles)
Turn right onto US-51N (1.0 miles)
Turn right onto Asbury Avenue (0.2 miles)
Hospital will be on the right

Hospital Address

Lauderdale Community Hospital
326 Asbury Avenue
Ripley, TN 38063
(731) 221-2200

This facility has been verified as mappable by phone ([goo.gl/jQEMHB](https://www.google.com/maps/@35.985,89.25,15z)):

Bryan P. Hobbs

Project Number: 100-17-0057
Name: TDOT SR-19 from SR-3(US-51) to the West End of the Brownsville By-Pass
Location: Haywood County, Tennessee
Client: Tennessee Department of Transportation
Client Contact : Kyle Kirschenmann
Phone No.: (615) 598-1522

KSWA Personnel Contact Information:

<u>Title</u>	<u>Name</u>	<u>Work</u>	<u>Mobile</u>
Field Safety Coordinator	James Dye	(615) 255-9702	(615) 956-0361
Project Manager	James Dye	(615) 255-9702	(615) 956-0361
Health and Safety QA	Ryan Elliott	(850) 530-9209	(850) 865-3056

Review and Approval:

Field Safety Coordinator



James Dye
Date

July 5, 2017

Project Manager



James Dye
Date

July 17, 2017

Health and Safety QA



Ryan Elliott, PE
Date

July 25, 2017

Responsibilities for Field Safety Coordinator:

- Primary on-site contact for KSWA's health and safety procedures during field activities.
- Has the authority to stop KSWA operations if conditions are judged to be hazardous to on-site personnel or the public.
- Perform discretionary audits to determine compliance of Health and Safety Plan requirements.
- Responsible for providing access to the health and safety for all on-site employees.
- Responsible for instructing on-site personnel on the location of emergency communication equipment (i.e. phones and radios as necessary).
- Has no responsibility for health and safety procedures of any contractor, subcontractor, client personnel or others on the site.

Date of Plan Preparation

July 17, 2017

Dates of Planned Field Activities

August/September 2017

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 PURPOSE.....	3
2.0 APPLICABILITY	1
3.0 SITE DESCRIPTION AND HISTORY	2
3.1 INSPECTION EQUIPMENT	2
3.2 WORK PRECAUTIONS	2
3.3 DISPOSAL RESTRICTIONS	2
4.0 HAZARD EVALUATION.....	3
4.1 PHYSICAL HAZARDS	3
4.1.1 Operational Hazards	3
4.1.2 Fall Hazards	3
4.1.3 Heat Stress.....	3
4.1.4 Cold Stress.....	3
4.1.5 Tools and Equipment	3
4.1.6 Traffic Hazard	3
4.1.7 Noise Hazard	3
4.1.8 Water Hazards	3
4.1.9 Asbestos Containing Material.....	3
4.2 CHEMICAL HAZARDS	4
4.3 BIOLOGICAL HAZARDS	4
4.3.1 Stinging Insects.....	4
4.3.2 Ticks, Spiders, and Mosquitos	4
4.3.3 Other Wildlife	5
5.0 COMMUNICATIONS AND TRAINING.....	6
5.1 COMMUNICATION.....	6
5.2 HEALTH AND SAFETY TRAINING.....	6
5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING	7
6.0 SITE CONTROL - WORK ZONES	8
7.0 PERSONAL PROTECTION	9
8.0 LEVELS OF PROTECTION	10
8.1 LEVEL D.....	10
8.1.1 Personal Protective Equipment	10
8.1.2 Criteria for Use of Level D	10
9.0 DECONTAMINATION PROCEDURES.....	11
9.1 PERSONNEL DECONTAMINATION	11
9.2 EQUIPMENT DECONTAMINATION	11
10.0 EMERGENCY PROCEDURES.....	12
10.1 INHALATION.....	12
10.2 SKIN EXPOSURE	12
10.3 INGESTION	12
10.4 EYES.....	12
10.5 EXPOSURE TO HEAT OR COLD.....	13
10.6 STINGS AND BITES.....	13
10.7 PERSONAL INJURY	13
10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL	13
10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION	13
10.10 EVACUATION	13
11.0 MEDICAL MONITORING	14
12.0 PERSONNEL AUTHORIZATION	15
13.0 FIELD SAFETY COORDINATOR'S SUMMARY	16

1.0 PURPOSE

The purpose of this health and safety plan (HASP) is to provide standards for worker safety and protection during field activities conducted on a frequent or routine basis. The plan outlines standards and mandatory procedures relative to physical and chemical hazards encountered at sites, communication, training, worker health monitoring, decontamination procedures and levels of personal protection. Any questions concerning this information should be directed to the K.S. Ware and Associates, L.L.C. (KSWA) Project Manager identified at the beginning of this Health and Safety Plan, at 615-255-9702.

2.0 APPLICABILITY

This plan is applicable to all personnel working at the above referenced site, where mandatory worker health and safety training is required by State or Federal agencies. It is intended for use at the above referenced site where information regarding potential site hazards is available in the form of background research, personal communication with past or present property owners or workers, previous sampling results, etc.

A site specific hazard evaluation is included in Section 4. Available information should be provided to site workers as outlined in Section 5.

Sampling of items that may contain asbestos containing material (ACM) and other routine field activities are activities for which this plan is applicable. Activities involving contact with unknown substances and activities on sites where little background information is available will require more extensive and specific HASP development.

This plan does not cover procedures for entry into confined spaces. Project-specific attachments should be prepared and appended to this Health and Safety Plan if those activities are planned. Work of this nature shall be performed in accordance with 29 CFR 1926.250 subpart P "Excavation, Trenching and Shoring", 29 CFR 1910.146 "Permit Required Confined Space Entry" and the KSWA "Employee Confined Space Entry Program".

3.0 SITE DESCRIPTION AND HISTORY

The project consists of performing an asbestos bridge survey on two bridges located along SR-19 over Briar and Meridian Creeks in Haywood County, Tennessee.

The SR-19 bridges include:

- 38-SR019-07.16 (38SR0190001) over Briar Creek is a 33-foot, 2-lane, 2-span bridge constructed concrete box culverts with an asphalt wearing surface. The bridge was constructed in 1930; and
- 38-SR019-08.49 (38SR0190003) over Meridian Creek is a 71-foot, 2-lane, 5-span bridge constructed concrete box culverts with an asphalt wearing surface. The bridge was constructed in 1950

3.1 INSPECTION EQUIPMENT

KSWA will be on site to perform an asbestos survey on the SR-19 bridges. Equipment to be used during the survey will include asbestos sample collection equipment.

3.2 WORK PRECAUTIONS

- No eating, drinking, using tobacco products, chewing gum, or putting hands in mouth while on the site.
- Wear the TDOT required roadway safety gear (hard hat, Class III reflective vest, boots) at all times while on the project site.
- Wear gloves at applicable times while at the work site.
- Wear protective eyewear at applicable times while at the work site.
- Wash all exposed skin areas with soap and water before departing from the site.
- Remove and change any non-impervious clothing that becomes contaminated during site activities.
- Do not go anywhere on the site other than where directed by the Field Safety Coordinator.
- Use safe and legal procedures for sample storage and shipment.

3.3 DISPOSAL RESTRICTIONS

Treat disposable items as ordinary refuse except when gross contamination is expected. In the event that refuse including disposable personnel protective equipment is suspected of being contaminated, the refuse will be collected and stored on site for future disposal.

4.0 HAZARD EVALUATION

4.1 PHYSICAL HAZARDS

4.1.1 Operational Hazards

Prior to commencement of field activities, the Field Safety Coordinator will conduct a site reconnaissance to identify any visible or operational hazards.

Additionally, because there is a possibility that asbestos may be present at the site, the appropriate Personal Protective Equipment (PPE) will be worn at all times that work is being performed.

4.1.2 Fall Hazards

Field activities can have the potential for fall hazards. Be aware of any uneven terrain, clear paths of debris and materials that may be a hazard. While on the bridges, be aware of slick surfaces and gaps while accessing the different components.

4.1.3 Heat Stress

Field activities in hot climates create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy, comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall drink adequate amounts of water and/or electrolyte replacement fluids, and maintain scheduled work/rest periods.

4.1.4 Cold Stress

Field activities in cold climates create a potential for cold stress. The warning symptoms of cold stress include fatigue; shivering; numbness; blue or pale skin; and reduced alertness and mental capacity. To prevent cold stress, personnel shall wear adequate clothing, and maintain scheduled work/rest periods.

4.1.5 Tools and Equipment

Tools and equipment used by KSWA shall be inspected and maintained to be safe and adequate for their designated use. Housekeeping of the site shall be maintained as to prevent tripping hazards.

4.1.6 Traffic Hazards

Field activities will encounter traffic on this project. Be aware of surroundings and watch for traffic.

4.1.7 Noise Hazards

Operation of equipment may present a noise hazard to workers. KSWA personnel will be provided with hearing protection to be utilized when noise levels are excessive.

4.1.8 Water Hazards

Field activities will encounter a creek on this project. Use caution in or near the creek. Additional PPE including but not limited to a personal flotation device (PFD) and waders shall be taken to the project area and utilized if necessary.

4.1.9 Asbestos Containing Material

KSWA personnel will wear a respirator while sampling, and all sampling equipment will be properly decontaminated between sample collection and after field activities. KSWA personnel will limit exposure by adhering to this health and safety plan.

Precautions: In order to reduce the health and safety risk to workers due to physical hazards at the project site, the following precautions will be observed:

1. ANSI Class III High Visibility clothing will be worn by personnel at all times on the project site.
2. Hard hats shall include high visibility reflective tape.
3. Protective eyewear will be worn by personnel in the work area when appropriate.
4. Hearing protection will be worn by personnel as deemed necessary by the Field Safety Coordinator (typically noised levels greater than 85 dBA).
5. Safety toed boots with non-conductive soles will be worn by personnel at all times on the project site.
6. Hand protection (leather gloves) will be worn by personnel when moving and/or lifting equipment as well as when using large hand tools (machetes, sledges, shovels, etc.).
7. All equipment and related support equipment and vehicles shall have a daily safety inspection (29 CFR 1926.550). The inspections shall include, but are not limited to: all hydraulic lines and fittings for wear and damage, all cable systems and pull ropes for damage and proper installation, exhaust systems and drill controls, electrical lines for damage and/or contact with standing water, etc. Inspection schedules, the vehicle and equipment description, nomenclature, the license plate or ID number for the equipment, the findings of the inspections and the corrective action(s) taken shall be maintained.
8. Before beginning each work shift, the area will be checked for site hazards including overhead lines, underground lines, above ground obstructions, tripping hazards, etc.
9. All vehicles will be fitted with a cab-top rotating or strobe light bar. Light bar is to be active when vehicle is on site.

4.2 CHEMICAL HAZARDS

Chemical hazards are not anticipated at this site.

4.3 BIOLOGICAL HAZARDS

4.3.1 Stinging Insects

The most common stinging insects are bees, wasps, and ants. Few species of ants have medically significant stings. While most bees possess a defensive sting, and will sting if grasped or crushed, only a few social species sting often enough, or have sufficiently venomous stings to be of medical significance. These include the honeybees and the bumblebees. Most fatalities from bee and wasp stings occur in hypersensitive individuals; death is most often induced by a single sting, and occurs most often within 1 hour after the sting. The victim is typically over 40 years of age and stung on the head or neck. Most deaths are caused by respiratory dysfunction with the second most common cause being anaphylaxis; arteriosclerosis may be a compounding factor. If stung, seek medical attention immediately.

4.3.2 Ticks, Spiders, and Mosquitos

Transit through areas near water and/or overgrown with vegetation expose personnel to potential contact with ticks, spiders, and mosquitos. Ticks and mosquitos can transmit disease and bites from any insect can cause discomfort and potential allergic reactions, itching, and severe pain. Personnel should take precautions against contact with insects by using insect repellent sprays and wearing long pants and shirts with long sleeves. Immediately following field work, personnel should inspect their body and clothing for ticks.

4.3.3 Other Wildlife

Wildlife, such as raccoons, opossum, armadillo, coyote and wild dogs, black bears, cougars, wild boars, and snakes, can be found across Tennessee. Many of these animals will bite and/or scratch if they, or their young, are provoked or feel threatened. In addition to physical harm, some of these animals can be venomous or carry dangerous diseases like leprosy and rabies. Care should be taken to avoid contact with any wild animals observed during field work. If a sick or injured animal is present on site, the local animal control should be contacted to remove the animal safely.

5.0 COMMUNICATIONS AND TRAINING

Workers at State and Federally listed or recognized sites must be provided with adequate information and training to recognize and evaluate potential hazards. Training shall comply with applicable regulations including 29 CFR 1910.1200 "Hazard Communication Standard".

5.1 COMMUNICATION

The Field Safety Coordinator shall supply all on site personnel with readily available access to this Health and Safety Plan. This plan shall cover, at a minimum, the following topics:

- A. A brief description of the history of the location with regard to health and environmental hazards.
- B. A description of the activities to which the hazard evaluation summary is applicable.
- C. A description of any hazards which may be encountered, including:
 - 1. Physical Hazards - terrain, traffic, equipment, severe weather (heat stress and frostbite), electrical hazards, noise, water hazards.
 - 2. Chemical Hazards - materials used and stored at the site, materials released at the site.
 - 3. Biological Hazards - insects, plants, animals, pathogens, and infectious materials.
- D. A description of the levels of protection selected for the operation.
- E. Equipment decontamination procedure if different from those specified herein.
- F. Summary of emergency contacts for use in the event of fire, explosion, medical emergency or other emergency, including the project address and phone number to provide to emergency personnel.

1. Emergency	911
2. Haywood County Ambulance Authority	(731) 772-4979
3. Haywood County Fire Department	(731) 772-1396
4. Haywood County Sheriff	(731) 772-2412
5. Haywood County Animal Control	(731) 772-2908
- G. A map showing the route to the nearest hospital.

Prior to any employee or subcontractor beginning work on the site, the Field Safety Coordinator shall brief all KSWA employees as well as subcontractors on the contents of this plan. Personnel will have the opportunity to review the plan, and ask questions about the planned work or hazards. Also, the Field Safety Coordinator will conduct site reconnaissance in order to familiarize all personnel with site conditions, boundaries, and physical hazards.

By KSWA voluntarily sharing this information with subcontractors and contractors, those firms are not relieved of the responsibility to provide their personnel with adequate and proper supervision, safety information, instruction, and equipment.

5.2 HEALTH AND SAFETY TRAINING

All personnel will be provided with approved health and safety training as outlined in 29 CFR 1910.120(e). Documentation for KSWA employees should also be maintained at a central location at the KSWA office.

5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING

Prior to assignment to a site where respirator use may be required, employees will be provided with respirator training as outlined in 29 CFR 1910.134(e)(5). Respirator fit tests are to be conducted at 6 to 10 month intervals, or at any time when a condition that may change the fit of a respirator has occurred, such as change in weight, change in facial structure, extensive dental work, etc. All use of respirators shall comply with KSWA's written respiratory program.

6.0 SITE CONTROL - WORK ZONES

It is not anticipated that special measures or restriction of normal site activities and/or access will be required to achieve site security. The work area includes the SR-19 bridges and adjacent areas. The work will be performed along the side and underneath the bridge. The work zone will be delineated in accordance with TDOT temporary lane closure guidelines. Work zones will be identified with flashing lights, illuminated and non-illuminated signage, traffic spotter, etc.

7.0 PERSONAL PROTECTION

PPE and safety requirements must be appropriate to protect against the known or worst potential hazards on the site. Protective equipment should be selected based on the concentrations and possible routes of exposure to known or potential worst case substances. All KSWA engineering or assessment personnel engaged in work on site will be participants in the KSWA medical monitoring program described in Section 11, or a similar program.

KSWA anticipates that Level D protection and basic site safety measures will be sufficient at this project site. Level D PPE is described in Section 8. Any conditions warranting upgrading of the required level of protection to Level C, B, or A will be cause for all personnel to immediately leave the work site. The site will be re-evaluated and a new site Health and Safety Plan will be prepared which incorporates the additional site information.

8.0 LEVELS OF PROTECTION

This plan is not intended for use at sites where levels of protection above Level D is required. Level D is described below.

8.1 LEVEL D

Level D is the basic work uniform for all site operations. Level D should be selected when performing environmental sampling involving dilute concentrations of contaminants on sites that have been characterized by previous analyses or research.

8.1.1 Personal Protective Equipment

The following equipment is necessary for Level D personal protection:

- Standard work clothing.
- Optional disposable chemical-resistant clothing appropriate for known or expected levels of contamination.
- Boots/Shoes - safety or chemical-resistant boots.
- Safety glasses or safety goggles.
- Gloves - disposable latex or nitrile.
- Optional moisture resistant outer gloves.
- Hardhat.

8.1.2 Criteria for Use of Level D

The following criteria indicate situations where Level D personal protection is adequate:

- No indication of airborne health hazards present.
- No gross indication, above background concentrations, on the photoionization detector and/or organic vapor analyzer.

Additionally, a half-face, full-face, or powered air purifying respirator will be used with appropriate particulate filter(s).

9.0 DECONTAMINATION PROCEDURES

9.1 PERSONNEL DECONTAMINATION

If Level D protection is used, any disposable inner gloves or protective clothing should be sealed in a plastic bag and disposed of properly. Moisture resistant outer gloves and outer boots should be scrubbed with a stiff brush in soapy water, then rinsed to remove possible residual contamination. Disposable equipment should be used whenever possible.

9.2 EQUIPMENT DECONTAMINATION

Proper decontamination of all equipment is necessary to avoid transferring contaminants from the site, thereby increasing potential for exposure of on site and off site personnel. The measures described below should be followed prior to leaving all sites, as applicable to the equipment being used. Any variations from the procedures described below for reasons of worker health or safety must be described by the Project Manager in the site-specific hazard summary.

These measures are separate from, and may not be substituted for, other decontamination procedures associated with proper sampling protocol.

- A. The equipment may be thoroughly rinsed with clean water or an appropriate cleaning solution and wiped dry with paper towels before leaving the work site. Alternatively, the equipment may be wrapped in absorbent material and/or stored in plastic bags sealed to prevent contact with workers, vehicles, etc.
- B. The rinse water from this operation will be allowed to percolate into the ground or as specified by the client.

10.0 EMERGENCY PROCEDURES

10.1 INHALATION

If warning signals such as: dizziness, nausea, headache, shortness of breath, burning sensation in mouth, throat or lung or symptoms specific to hazard found at the site are apparent, the victim should leave the contaminated air space immediately. Have someone contact emergency services and obtain health and safety information about potential contaminants.

If unconscious, the victim should be pulled out of the contaminated area immediately if they do not have any injuries which would prohibit moving them (i.e. spinal injury). The rescuers should make sure that the area is safe to enter. If the area cannot be safely entered, attempt to ventilate this area. Do not attempt a rescue. Rescuers should make sure they are properly trained in First Aid and rescue and that they are wearing proper respiratory and protective equipment before attempting the rescue.

If the victim is no longer breathing, mouth-to-mouth resuscitation or some other form of artificial respiration should be administered by a person who is properly trained and certified in a location away from the contaminated area.

Medical attention should be obtained immediately.

10.2 SKIN EXPOSURE

The skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water. If a shower is available, it should be used immediately. Clothes should be removed while showering. This procedure may be life-saving as certain highly toxic chemicals are rapidly absorbed through the skin.

All contaminated parts of the body, including the hair, should be thoroughly decontaminated. It may be necessary to wash repeatedly.

10.3 INGESTION

A poison control center or emergency service should be contacted immediately to determine an appropriate course of action. If possible, have health and safety information on the poison available when you call for help. Vomiting should be induced except when the substance presents an aspiration hazard, such as from a petroleum product; or when the substance is a strong acid or base. To induce vomiting, a tablespoon of salt or powdered mustard in a glass of warm water, or syrup of ipecac from the First Aid Kit, can be taken as an emetic.

Drinking plenty of water and placing a finger down the throat may also be effective in inducing vomiting. The treatment should be repeated until vomit is clear.

Medical attention should be obtained immediately.

10.4 EYES

If a toxicant should get in the eyes, they should be washed with plenty of water. The eye itself should be held open, rotated, and flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least 15 minutes.

Medical attention should be obtained immediately.

10.5 EXPOSURE TO HEAT OR COLD

When working under severe weather conditions, personnel should be aware of the signs of heat stress, hypothermia and frostbite as well as the appropriate response actions.

Heat Stress - If a worker shows signs of heat stroke (dry, hot, red skin, high body temperature) or heat exhaustion (cool, moist, pale or red skin, dilated pupils, nausea, dizziness), the worker must be removed from the work area and cooled. Loosen clothing, elevate feet, and provide cool liquids. Heat stroke can be life threatening and requires rapid action.

Hypothermia - If a worker shows signs of hypothermia (shivering, impaired judgement, drowsiness, clumsiness) the worker must be removed from the work area and warmed gradually.

Frostbite - If a worker shows signs of frostbite (skin color changes to white or grayish-yellow then grayish-blue), the worker must be moved to a warm place. The affected area should be placed in warm (100-105°F) water. Do not rub or massage.

10.6 STINGS AND BITES

If still present, remove stinger with fingernail. Wash the the location of the sting with soap and water, cover with bandage and apply ice. If severe allergic reactions appear (hives, itching, rash, nausea, vomiting, dizziness, swelling) seek medical attention immediately.

10.7 PERSONAL INJURY

A first aid kit shall be readily available in case of an injury. Administer first aid and/or seek medical help, if necessary. Medical emergencies take precedence over decontamination procedures. A map showing the route to the nearest hospital is provided at the end of this Health and Safety Plan. It is the responsibility of the field safety coordinator to ensure that a phone is readily available on-site, and to identify which personnel have phones and provide this information to all on site personnel.

10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL

Clean up, isolate or contain spill as appropriate. Contact emergency response personnel, project manager, and/or client company officials as appropriate.

10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION

If it is safe to do so, on site personnel may use available fire fighting equipment to control or extinguish the fire, and remove or isolate materials which may contribute to the fire. Contact the fire department project manager and/or client company officials as appropriate.

10.10 EVACUATION

In the event of an emergency that requires an evacuation of the site, verbal instruction will be given by the Field Safety Coordinator to evacuate the area. Personnel will immediately exit the site to the pre-designated upwind "clean" location. The Field Safety Coordinator will account for KSWA personnel, and will advise personnel of further instructions, if necessary. The Field Safety Coordinator will also advise responding off site emergency personnel, if necessary. Personnel shall not re-enter the site until the emergency conditions have been corrected and the Field Safety Coordinator has authorized re-entry.

11.0 MEDICAL MONITORING

All engineering and assessment personnel engaged in on site activities shall be participants in a medical monitoring program similar to the following. As participants in this program, these individuals will have had recent physical examinations.

The following personnel will be accessing the site during field activities and the dates at which their medical monitoring program was last updated:

1. James Dye (February 2017)
2. Benjamin Hooks (April 2017)
3. Victoria Gallagher (April 2017)

The primary goal of this medical monitoring program is to provide evaluation and ongoing surveillance of the health status of employees potentially exposed to toxic substances as a result of their work-related activities. An active health monitoring program for those employees potentially at risk is an important tool in evaluating the effects of chronic low-level exposures or acute exposures related to operations at hazardous waste sites. The effects of low-level exposures may not become apparent until years after the initial exposure.

This medical monitoring program includes laboratory testing, personnel medical history evaluation, physical examination and other specific testing.

Each participant in this medical monitoring program undergoes a complete occupational history evaluation and baseline physical examination including the following parameters:

- Pulmonary Function Studies
- Complete Blood Count
- Chemical Blood Profile
- Urinalysis
- Chest X-Ray
- Electrocardiogram
- Specific parameters as necessary dependent upon exposure

Following the establishment of each participant's baseline values for the above parameters, an annual re-evaluation is conducted to monitor potential changes due to work with hazardous materials.

In addition to this annual re-examination, provisions are made for specific post-exposure examinations in the event of a suspected exposure during a particular field event.

The program shall meet or exceed the minimum requirements established in OSHA standard 20 CFR 1910.120.

All personnel engaged in on site activities must read this Health and Safety Plan. By signing and dating this form, the listed individual acknowledges that he/she has read, understands and will comply with the requirements of this Health and Safety Plan.

[illegible]

13.0 FIELD SAFETY COORDINATOR'S SUMMARY

(To be completed by Field Safety Coordinator after completion of each phase of field work, and returned to Project Manager.)

Project Summary

Project Name:	TDOT Haywood Co Sr-19 from SR-3(US-51) to West End of the Brownsville By-Pass
Project Number:	100-17-0057
Activities Completed:	8-9-17
Date of Activities:	8-8 + 8-9-17

During the execution of the activities covered by this Health and Safety Plan, there were:

- a) No violations of the Safety Plan provisions and no obvious contamination of KSWA employees or subcontractors.
- b) The following incidents, violations of the Safety Plan provisions, or obvious contamination of KSWA personnel or subcontractors. (Give details of who, when, type of contamination, circumstances, first aid or medical assistance administered in the space below.)

Time and Date of Incident	People Involved	Description of Incident

Signature

Field Safety Coordinator

Date

8-9-17

APPENDIX E: ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Asbestos Survey
SR-19 from SR-3(US-51) to the West End of the Brownsville By-Pass
Haywood County, Tennessee

PIN: 102251.00

TDOT Project No.: 38004-0217-14

Bridge Nos.: 38SR0190001
38SR0190003

KSWA Project Number: 100-17-0057

Prepared by:



K. S. WARE AND ASSOCIATES, L.L.C
54 Lindsley Avenue
Nashville, Tennessee 37210

July 17, 2017

ACTIVITY HAZARD ANALYSIS FOR ASBESTOS SURVEY

EM 385-1-1 Reference:

Hard hats and safety toe boots are mandatory. Eye and hearing protection are mandatory during sampling and as appropriate.

Principal Steps	Potential Hazards	Action to Minimize Hazard
1. Asbestos exposure	1. Inhalation, skin irritation	1. All personnel that will be present on the project must wear the proper PPE. Use all safety precautions to ensure that all state and federal guidelines are followed and to limit the exposure to asbestos. Asbestos samplers are to use a respirator when sampling.
2. Heat stress exposure	2. Heat stroke	2. Monitor all personnel for signs of fatigue, dizziness or other physical abnormalities. Personnel should wear clothing suited for the weather conditions and breaks will be given for intake of fluids, etc. Ensure that water or sports hydration fluid (Gatorade, PowerAde) is available on site.
3. Cold stress exposure	3. Hypothermia, frostbite, trench foot	3. Monitor all personnel for signs of shivering, loss of coordination, confusion, disorientation, slowed pulse and breathing, and loss of consciousness. Personnel should wear clothing suited for the weather conditions, including effects of wind and extreme cold. Ensure that a location shielded from the wind and with a heat source is available. If cold temperatures and wind chill conditions are present, warming breaks should be planned to avoid prolonged exposure.
4. Traffic Hazards	4. Moving vehicles	4. Field activities will encounter traffic on this project. Be aware of your surroundings, watch for traffic when performing in areas that have moving vehicles. Use a spotter or traffic control when sampling in the roadway or crossing the road. Maintain safe positioning. Use "Men Working" signs to delineate the work area and slow down drivers.
5. Site Maintenance	5. Slip, trip, and fall.	5. Prior to field activities, the Field Safety Coordinator should observe the terrain on site and monitor the conditions throughout the survey. Be aware of steep and/or rocky slopes. Also be aware of potholes around the bridge.
6. Overhead Utilities	6. Electrocution, explosion, fire	6. Be aware of fallen or low hanging utility lines while on the ground level. Remain at least 10 feet from all utility lines with all equipment.
7. Biological Hazards	7. Small animals, insects	7. Be aware of animal habitat in and around the work area. Do not put hands into areas you cannot inspect for potential insects, mammals, and reptiles. Beware of waterborne snakes, colonies of stinging insects, and vector species that could transmit disease.
8. Noise	8. Damage to hearing	8. Operations that generate sound levels 85 dBA and above require hearing protection. Either muffs or plugs are acceptable. Heavy traffic can be a cause.

Principal Steps	Potential Hazards	Action to Minimize Hazard
9. Hand/Finger Protection	9. Physical injury to personnel	9. Wear gloves when there is exposure to potential hazards that could produce scrapes and cuts. Do not wear jewelry. Any jewelry can be dangerous. Handle sharp or pointed tools with extreme care. Be careful when using a hammer to not smash hand or fingers. Use the proper gloves for the job at hand.
10. Hand Tools and Equipment	10. Physical injury to personnel	10. Use the right tool or piece of equipment for the job. Use only tools in safe condition. Tools and equipment must be used properly and not abused. Take precautions to avoid injury by cutting tools by keeping them sheathed until use.
11. Ladders	11. Fall from excessive height	11. Use caution and maintain three points of contact when climbing a ladder. Always have other site personnel support the ladder while in use. Maintain a safe distance from overhead utilities and obstructions. Always place the ladder on stable, even ground.
12. Severe Weather	12. Thunderstorms, lightning hazard	12. Cease work immediately and take cover in a vehicle or structure until lightning has ceased.
13. Waterways	13. Rise/fall of water level, current, holes in waterbed, slippery surfaces	13. Be conscious of the water level and current. When walking through water, be careful when stepping in case of holes and/or slippery surfaces. Use a personal flotation device (PFD) if water is above knee height or is swift moving.

This Activity Hazard Analysis has been prepared by K.S. Ware and Associates.

The KSWA field safety coordinator for this project will be Mr. James Dye. Mr. Dye's health and safety training and certifications include:

- Completed OSHA 10 Hour Construction Safety Course
- Completed OSHA 40 Hour HAZWOPER Course



TENNESSEE DEPARTMENT OF TRANSPORTATION

ASBESTOS INSPECTION REPORT

SR-19 From SR-3 (US-51) to the West End of
the Brownsville By-pass
PE-N Number 38004-0217-14
PIN Number 102251.00
Bridge ID Number 38SR0190003



Prepared by:



K. S. WARE & ASSOCIATES, L.L.C.

54 Lindsley Avenue
Nashville, Tennessee 37210

December 15, 2017
KSWA Project Number: 100-17-0057

James Dye

Tennessee Asbestos Inspector Accreditation A-I-99965-56894

A handwritten signature in black ink that reads "James Dye". The signature is written over a horizontal line.

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	TDOT BRIDGE IDENTIFICATION	1
1.2	GENERAL DESCRIPTION	1
2.0	INSPECTION	2
2.1	PERSONNEL AND DATE(S) OF INSPECTION	2
2.2	VISUAL SURVEY	2
2.3	ACCESS TO BRIDGE COMPONENTS	3
2.3.1	Concrete Wingwalls– Homogeneous Area A.....	3
2.3.2	Concrete Base– Homogeneous Area B.....	3
2.3.3	Concrete Decking– Homogeneous Area C.....	3
2.3.4	Concrete Apron– Homogeneous Area D	3
2.3.5	Concrete Barrel Walls– Homogeneous Area E	3
2.3.6	Cementitious Deck Drains- Homogenous Area F.....	3
2.3.7	Concrete Barrel Walls Addition- Homogenous Area G.....	4
2.3.8	Concrete Decking Addition– Homogeneous Area H	4
2.4	BRIDGE DRAINAGE SYSTEM	4
2.5	UTILITY CONDUITS	4
3.0	ANALYTICAL PROCEDURES.....	5
3.1	ASBESTOS ANALYSIS PROCEDURES	5
3.2	LABORATORY NAME AND ACCREDITATION	5
4.0	REGULATORY OVERVIEW.....	6
4.1	NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS.....	6
4.1.1	Definitions.....	6
5.0	RESULTS	7
5.1	RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS.....	7
6.0	QUALIFICATIONS	8

TABLES

Table – 1: Bridge Component Description	3
Table – 2: Analytical Laboratory.....	5

FIGURES

Figure – 1: Site Vicinity Map	9
Figure – 2: Bridge Homogenous Areas (Bottom)	10

APPENDICES

Appendix A: Photographs

Appendix B: Asbestos Sample Laboratory Analysis Data

Appendix C: Asbestos Accreditations

Appendix D: Health and Safety Plan

Appendix E: Activity Hazard Analysis

1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed in accordance with the State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements.

1.1 TDOT BRIDGE IDENTIFICATION

The bridge is identified in the TDOT Project System/Bridge Management System as:

TDOT PE-N Number: 38004-0217-14

TDOT PIN Number: 102251.00

Bridge Inventory Number: 38SR0190003

Termini: SR-19 From SR-3 (US-51) to the West End of the Brownsville By-pass

Log Mile Number: 8.49

1.2 GENERAL DESCRIPTION

The SR-19 bridge over Meridian Creek at LM 8.49 (38-SR019-08.49) is a 71-foot, 2-lane, 5-span bridge constructed of concrete box culverts with an asphalt wearing surface. The bridge was constructed in 1950. The KSWA field crew observed cementitious deck drains on the bridge. The general location of the bridge is shown in **Figure – 1**. Photographs of the subject Haywood County bridge are presented in **Appendix A**. The analytical results of all the samples collected from the bridge and the chain-of-custody records are included in **Appendix B**.

2.0 INSPECTION

The identification of ACM was performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. ACM are those materials found to contain greater than one percent asbestos by calibrated visual area estimation (CVAE) using Polarized Light Microscopy (PLM).

Bulk sampling is a procedure in which representative homogeneous sampling areas in a structure are identified and then sampled. A homogeneous sampling area is defined as an area that contains material of the same type (uniform in color and texture) and is applied during the same general time period. Once the homogeneous sampling areas are identified, bulk samples of suspect materials are obtained at the discretion of our inspectors, based on site conditions and past experience.

2.1 PERSONNEL AND DATE(S) OF INSPECTION

The sampling and field activities were performed on August 8, 2017 by KWSA representative Mr. James Dye. Mr. Dye is an accredited State of Tennessee Asbestos Inspector. A copy of Mr. Dye's current accreditation from the State of Tennessee is included in **Appendix C**. Field activities were conducted under a Health and Safety Plan (**Appendix D**) and an Activity Hazard Analysis (**Appendix E**) prepared prior to mobilizing to the site.

2.2 VISUAL SURVEY

The KWSA field crew began with a visual survey of the bridge. The visual survey consisted of:

- producing a sketch of the structure and/or verifying the plans provided;
- locating and identifying homogeneous areas of suspect materials that may contain asbestos minerals; and
- determining applicable sampling locations.

The homogeneous areas identified during the visual survey are listed in **Table – 1**. The general locations of the identified homogeneous areas are shown in **Figure – 2**.

Table – 1: Bridge Component Descriptions

Homogeneous Area	Description	Sample Numbers
A	Concrete Wingwalls	MC-01, MC-02, MC-03
B	Concrete Base	MC-04, MC-05, MC-06
C	Concrete Decking	MC-07, MC-08, MC-09
D	Concrete Apron	MC-10, MC-11, MC-12
E	Concrete Barrel Walls	MC-13, MC-14, MC-15
F	Cementitious Deck Drains	MC-16, MC-17, MC-18
G	Concrete Barrel Walls Addition	MC-19, MC-20, MC-21
H	Concrete Decking Addition	MC-22, MC-23, MC-24

2.3 ACCESS TO BRIDGE COMPONENTS

Individual bridge components were accessed by the following methods.

2.3.1 Concrete Wingwalls– Homogeneous Area A

The concrete wingwalls were accessed and sampled from beneath the bridge.

2.3.2 Concrete Base– Homogeneous Area B

The concrete base was accessed and sampled from beneath the bridge.

2.3.3 Concrete Decking– Homogeneous Area C

The concrete decking was accessed and sampled from beneath the bridge.

2.3.4 Concrete Apron– Homogeneous Area D

The concrete apron was accessed and sampled from beneath bridge.

2.3.5 Concrete Barrel Walls– Homogeneous Area E

The concrete barrel walls were accessed and sampled from beneath bridge.

2.3.6 Cementitious Deck Drains- Homogenous Area F

The cementitious deck drains were accessed and sampled from beneath the bridge.

2.3.7 Concrete Barrel Walls Addition- Homogenous Area G

The concrete barrel walls addition was accessed and sampled from beneath the bridge.

2.3.8 Concrete Decking Addition– Homogeneous Area H

The concrete decking addition was accessed and sampled from beneath the bridge.

2.4 BRIDGE DRAINAGE SYSTEM

The KSWA field crew observed a bridge drainage system on the subject Haywood County bridge consisting of ten (10), eighteen (18) inch long cementitious deck drains within the concrete decking addition. An additional two (2) drains exist, one (1) within each barrel wall of the bridge.

2.5 UTILITY CONDUITS

The KSWA field crew did not observe utility conduits on the subject Haywood County bridge.

3.0 ANALYTICAL PROCEDURES

3.1 ASBESTOS ANALYSIS PROCEDURES

The bulk samples collected from the subject bridge were analyzed in the laboratory using PLM coupled with dispersion staining. PLM is used as an analytical method to identify the specific asbestos minerals by their unique optical properties. The optical properties are a result of the chemical composition, physical atomic structure, and visual morphology specific to that mineral. PLM is the recommended method of analysis for asbestos identification in bulk samples specified in the Environmental Protection Agency Toxic Substances Control Act (appendix E, subpart E, 40 CFR part 763, section 1).

Materials that contain multiple layers or have associated mastic or adhesive backing are separated and analyzed as multiple samples. Standard procedure for samples that are reported to contain 1% or less asbestos minerals is to complete a quantitative point count analysis by the laboratory for confirmation.

3.2 LABORATORY NAME AND ACCREDITATION

The bulk samples collected for this inspection were analyzed by a laboratory that has received accreditation from the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The name and accreditation number of the analytical laboratory that analyzed the samples for this inspection are indicated in **Table - 2**:

Table – 2: Analytical Laboratory

Laboratory	EMSL Analytical, Inc.
NVLAP Number	102104-0

4.0 REGULATORY OVERVIEW

4.1 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations (40 CFR §61, Subpart M) require that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.
- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAP include:

Friable asbestos-containing material ACM is defined by the National Emissions Standard for Asbestos (subpart M, 40 CFR part 61) under NESHAP as “any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Non-friable ACM is defined as “any materials containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141). The National Emission Standard for Asbestos (subpart M, 40 CFR part 61) also defines two categories of nonfriable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is defined as any “asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy” (40 CFR §61.141).

Category II non-friable ACM is defined as “any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarizing Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure” (40 CFR §61.141).

Regulated Asbestos-Containing Material (RACM) is defined as any “(a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations” (40 CFR §61.141).

Friable materials are defined as those that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS

The results of the asbestos inspection are presented in the following sections.

5.1 RESULTS OF ASBESTOS BULK SAMPLE ANALYSIS

The KSWA field crew collected twenty-four (24) samples from the SR-19 bridge over Meridian Creek at LM 8.49. Multiple samples of each homogeneous area were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Hazardous Materials Section requirements and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on the identified homogeneous areas of suspect materials, as described in Section 2.2. The field crew did not identify coatings in the field, but the laboratory identified a coating on the concrete base samples (HA-B). Samples with multiple layers were analyzed separately from their respective homogeneous areas resulting in a total of twenty-seven (27) analyzed samples.

Building material homogeneous areas sampled included: concrete wingwalls, concrete base, concrete decking, concrete apron, concrete barrel walls, cementitious deck drains, concrete barrel walls addition, and concrete decking addition.

Table-3 shows that all three samples of Homogeneous Area F were found to contain Regulated Concentrations of Asbestos Minerals (RACM). The cementitious deck drain samples contained 15% chrysotile and 1% crocidolite. Approximately 10 deck drains were counted during field activities. The cementitious deck drains extended from the asphalt overlay through the concrete decking addition.

Table – 3: Materials Containing Asbestos

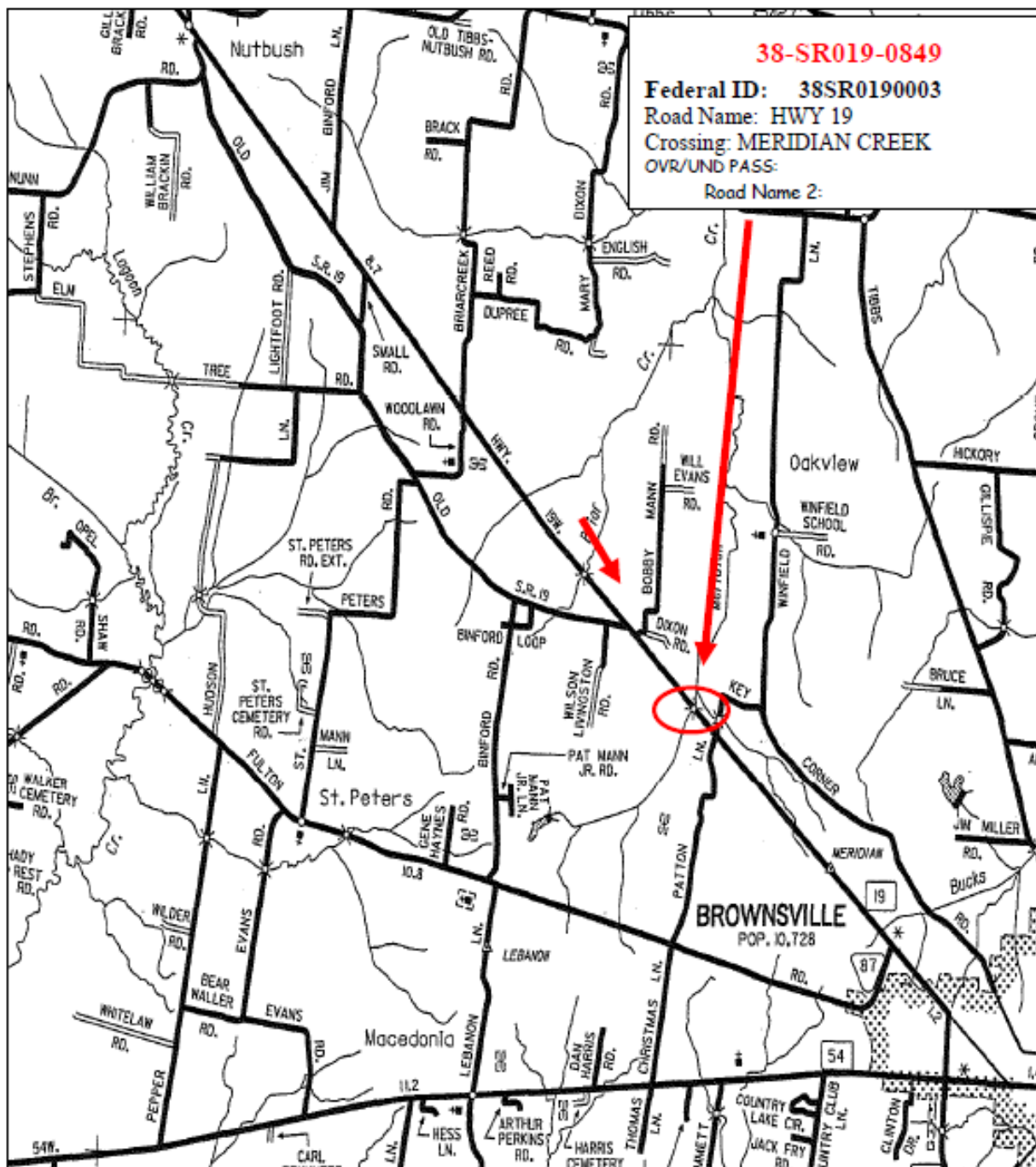
Sample	Sample Location	Material Description	Approx. Qty.	Friable (Y/N)	Asbestos Type and Content by PLM
MC-16	Northeast	Cementitious Deck Drains	20 linear feet	No	15% Chrysotile and 1% Crocidolite
MC-17	North	Cementitious Deck Drains	20 linear feet	No	15% Chrysotile and 1% Crocidolite
MC-18	Northwest	Cementitious Deck Drains	20 linear feet	No	15% Chrysotile and 1% Crocidolite

6.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit and from previous experience. If additional information becomes available which might impact our conclusions or recommendations, K.S. Ware & Associates, L.L.C. requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted.

This report has been prepared on behalf of the Tennessee Department of Transportation. This document is not a Bid Document or a Contract Document. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Furthermore, any party, other than our Client, relying on this document is cautioned that all conclusions made or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

Figure – 1: Site Vicinity Map
Haywood County





Homogeneous Areas:

- A - Concrete Wingwalls
- B - Concrete Base
- C - Concrete Decking
- D - Concrete Apron
- E - Concrete Barrel Walls
- F- Cementitious Deck Drains
- G- Concrete Barrel Wall Addition
- H- Concrete Decking Addition

*Homogeneous area locations are generalized and do not represent actual sample locations.

FIG. NO. 2



38SR0190003 BRIDGE PROFILE HOMOGENEOUS AREAS (BOTTOM)

TERMINI:

SR-19 From SR-3 (US-51) to the West End of the Brownsville By-pass

COUNTY: Haywood

INSPECTOR: James Dye

ANALYTICAL LABORATORY: EMSL Kenersville, NC

DATES SAMPLED: 8/08/2017

SCALE: NTS

TDOT PE-N NO: 38004-0217-14

PIN: 102251.00

Source: FIELD PHOTOGRAPHS

KSWA PROJ.NO. 100-17-0057



APPENDIX A: PHOTOGRAPHS

Homogeneous areas that tested positive for asbestos are captioned in red.



Photo 1: View of HA-A on the SR-19 bridge over Meridian Creek



Photo 2: View of HA-B on the SR-19 bridge over Meridian Creek



Photo 3: View of HA-C on the SR-19 bridge over Meridian Creek



Photo 4: View of HA-D on the SR-19 bridge over Meridian Creek



Photo 5: View of HA-E on the SR-19 bridge over Meridian Creek

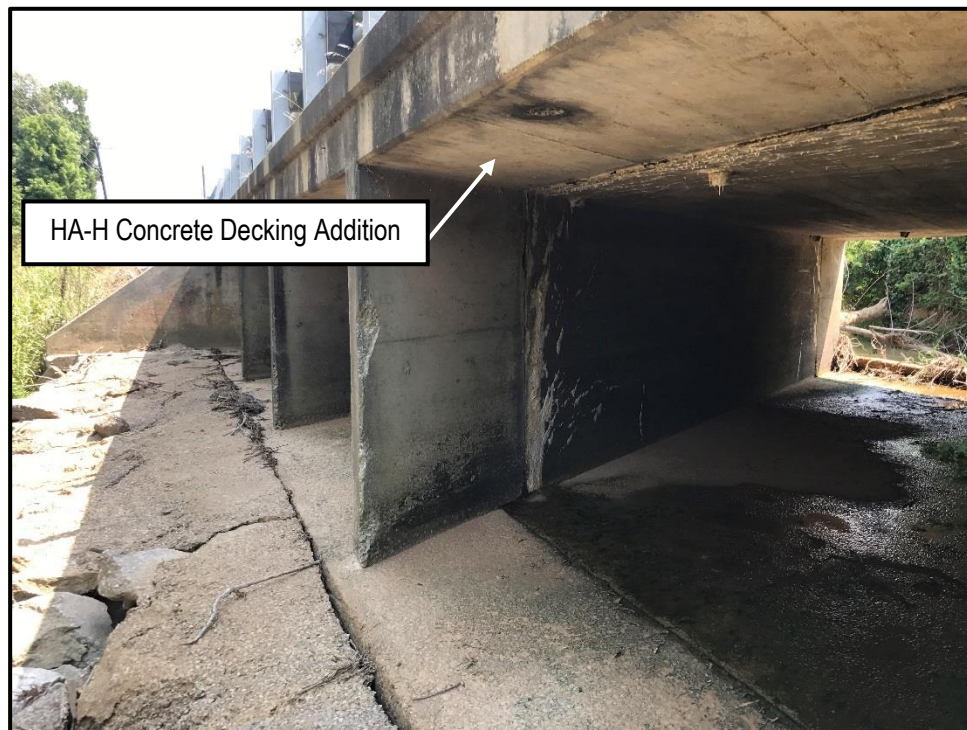


Photo 6: View of HA-F on the SR-19 bridge over Meridian Creek



HA-G Concrete Barrel
Wall Addition

Photo 7: View of HA-G on the SR-19 bridge over Meridian Creek



HA-H Concrete Decking Addition

Photo 8: View of HA-H on the SR-19 bridge over Meridian Creek

APPENDIX B: ASBESTOS SAMPLE LABORATORY ANALYSIS DATA



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021705060

Customer ID: KSWA77

Customer PO:

Project ID:

Attention: James Dye
K.S. Ware LLC
54 Lindsley Avenue
Nashville, TN 37210

Phone: (615) 255-9702

Fax: (615) 256-5873

Received Date: 08/14/2017 9:00 AM

Analysis Date: 08/16/2017

Collected Date: 08/08/2017

Project: 100-17-0057 / Meridian Creek

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
MC-01 021705060-0001	Concrete Wingwalls	Gray Non-Fibrous Homogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
MC-02 021705060-0002	Concrete Wingwalls	Gray Non-Fibrous Homogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
MC-03 021705060-0003	Concrete Wingwalls	Gray/Tan Non-Fibrous Heterogeneous		10% Quartz 90% Non-fibrous (Other)	None Detected
MC-04-Coating 021705060-0004	Concrete Base	Tan/Beige Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
MC-04-Concrete 021705060-0004A	Concrete Base	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-05-Coating 021705060-0005	Concrete Base	Tan/Beige Non-Fibrous Homogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
MC-05-Concrete 021705060-0005A	Concrete Base	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-06-Coating 021705060-0006	Concrete Base	Tan/Beige Non-Fibrous Heterogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
MC-06-Concrete 021705060-0006A	Concrete Base	Gray Non-Fibrous Heterogeneous		30% Quartz 70% Non-fibrous (Other)	None Detected
MC-07 021705060-0007	Concrete Decking	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-08 021705060-0008	Concrete Decking	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-09 021705060-0009	Concrete Decking	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
MC-10 021705060-0010	Concrete Apron	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-11 021705060-0011	Concrete Apron	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-12 021705060-0012	Concrete Apron	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected
MC-13 021705060-0013	Concrete Barrell Walls	Gray/Tan Non-Fibrous Homogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected

Initial report from: 08/16/2017 15:37:39



EMSL Analytical, Inc.

706 Gralin Street Kernersville, NC 27284

Tel/Fax: (336) 992-1025 / (336) 992-4175

<http://www.EMSL.com> / greensborolab@emsl.com

EMSL Order: 021705060

Customer ID: KSWA77

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
MC-14 021705060-0014	Concrete Barrell Walls	Gray/Tan Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-15 021705060-0015	Concrete Barrell Walls	Gray/Tan Non-Fibrous Heterogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-16 021705060-0016	Cementitious Deck Drains	Gray Fibrous Homogeneous		84% Non-fibrous (Other)	15% Chrysotile 1% Crocidolite
MC-17 021705060-0017	Cementitious Deck Drains	Gray Fibrous Homogeneous		84% Non-fibrous (Other)	15% Chrysotile 1% Crocidolite
MC-18 021705060-0018	Cementitious Deck Drains	Gray/Tan Fibrous Heterogeneous		84% Non-fibrous (Other)	15% Chrysotile 1% Crocidolite
MC-19 021705060-0019	Concrete Barrel Wall Addition	Gray Non-Fibrous Homogeneous	1% Cellulose	25% Quartz 74% Non-fibrous (Other)	None Detected
MC-20 021705060-0020	Concrete Barrel Wall Addition	Gray Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-21 021705060-0021	Concrete Barrel Wall Addition	Gray Non-Fibrous Heterogeneous		15% Quartz 85% Non-fibrous (Other)	None Detected
MC-22 021705060-0022	Concrete Decking Addition	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-23 021705060-0023	Concrete Decking Addition	Gray Non-Fibrous Homogeneous		25% Quartz 75% Non-fibrous (Other)	None Detected
MC-24 021705060-0024	Concrete Decking Addition	Gray/Tan Non-Fibrous Heterogeneous		20% Quartz 80% Non-fibrous (Other)	None Detected

Analyst(s)

Kristie Elliott (18)

Nicole Shutts (9)

Stephen Bennett, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc. Kernersville, NC NVLAP Lab Code 102104-0, CA ELAP 2689, Virginia 3333-000228, West Virginia LT000321

Initial report from: 08/16/2017 15:37:39



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

5060

Kernersville, NC 27284

PHONE: (336) 992-1025

FAX: (336) 992-4175

Company: K.S. Ware & Associates, LLC		EMSL-Bill to: ☐ Same ☒ Different If Bill to is Different note instructions in Comments**	
Street: 54 Lindsley Ave		Third Party Billing requires written authorization from third party	
City: Nashville	State/Province: TN	Zip/Postal Code: 37210	Country: US
Report To (Name): James Dye		Telephone #: (615)2559702	
Email Address: jdye@kswarellc.com Meridian Creek		Fax #:	Purchase Order:
Project Name/Number: 100-17-0057		Please Provide Results: ☐ Fax ☒ Email ☐ Mail	
U.S. State Samples Taken: TN		CT Samples: ☐ Commercial/Taxable ☐ Residential/Tax Exempt	
Turnaround Time (TAT) Options* – Please Check			
☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☒ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week			
*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PLM - Bulk (reporting limit)		TEM – Bulk	
☒ PLM EPA 600/R-93/116 (<1%)		☐ TEM EPA NOB – EPA 600/R-93/116 Section 2.5.5.1	
☐ PLM EPA NOB (<1%)		☐ NY ELAP Method 198.4 (TEM)	
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)		☐ Chatfield Protocol (semi-quantitative)	
Point Count w/Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)		☐ TEM % by Mass – EPA 600/R-93/116 Section 2.5.5.2	
☐ NIOSH 9002 (<1%)		☐ TEM Qualitative via Filtration Prep Technique	
☐ NY ELAP Method 198.1 (friable in NY)		☐ TEM Qualitative via Drop Mount Prep Technique	
☐ NY ELAP Method 198.6 NOB (non-friable-NY)		Other	
☐ OSHA ID-191 Modified		☐	
☐ Standard Addition Method			
☐ Check For Positive Stop – Clearly Identify Homogenous Group		Date Sampled: 08/08/2017	
Samplers Name: James Dye		Samplers Signature:	
Sample #	HA #	Sample Location	Material Description
MC-01	A	NW	Concrete Wingwalls
MC-02	A	NE	Concrete Wingwalls
MC-03	A	NE	Concrete Wingwalls
MC-04	B	NW	Concrete Base
MC-05	B	NW	Concrete Base
MC-06	B	NE	Concrete Base
MC-07	C	SW	Concrete Decking
MC-08	C	SW	Concrete Decking
MC-09	C	NE	Concrete Decking
MC-10	D	NE	Concrete Apron
Client Sample # (s): MC-01 - MC-24		Total # of Samples: 24	
Relinquished (Client):		Date: 8-11-17	Time: 11:30 am
Received (Lab):		Date: 8/14/17	Time: 9am
Comments/Special Instructions: ② EX 790697791456			
Bill To: KS Ware & Associates, LLC, 54 Lindsley Ave, Nashville, TN, 37210, US Attention: James Dye Phone: (615)2559702 Email: jdye@kswarellc.com and jpharcy@kswarellc.com Please analyze all layers in samples with multiple layers.			



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

706 Gralin Street

Kernersville, NC 27284

PHONE: (336) 992-1025

FAX: (336) 992-4175

5060

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

[illegible]

***Comments/Special Instructions:**

BillTo: KS Ware & Associates, LLC, 54 Lindsley Ave, Nashville, TN, 37210, US
Attention: James Dye Phone: (615)2559702 Email: jdye@kswarellc.com and jpoharcyk@kswarellc.com

Please analyze all layers in samples with multiple layers.

APPENDIX C: ASBESTOS ACCREDITATIONS



THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management
Toxic Substances Program

William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the
Company named below is hereby accredited to offer and/or conduct Asbestos activities
pursuant to Rule 1200-01-20:

K. S. Ware and Associates, LLC

54 Lindsley Avenue Nashville TN, 37210

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee.
This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Re-Accreditation	A-F-620-62396	November 01, 2017	November 30, 2018



Given under the Seal of the State of Tennessee in Nashville.

This 2nd Day of November 2017

Division of Solid Waste Management
Toxic Substance Program

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program

104024-33249



Initial

Benjamin P Hooks

DOB	Sex	HGT	WGT
12-Sep-1978	M	5'11"	200

Discipline	Accreditation	Expiration
Inspector	A-1-107425-62236	Jul-31-2018

Asbestos Accreditation

THE STATE OF TENNESSEE

Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program



Date Issued: 4/26/2017

Re-Accreditation

James M Dye

DOB	Sex	HGT	WGT
18-Jan-1986	M	6' 2"	320
Discipline	Accreditation	Expiration	
Inspector	A-1400005-50894	May-31-2018	

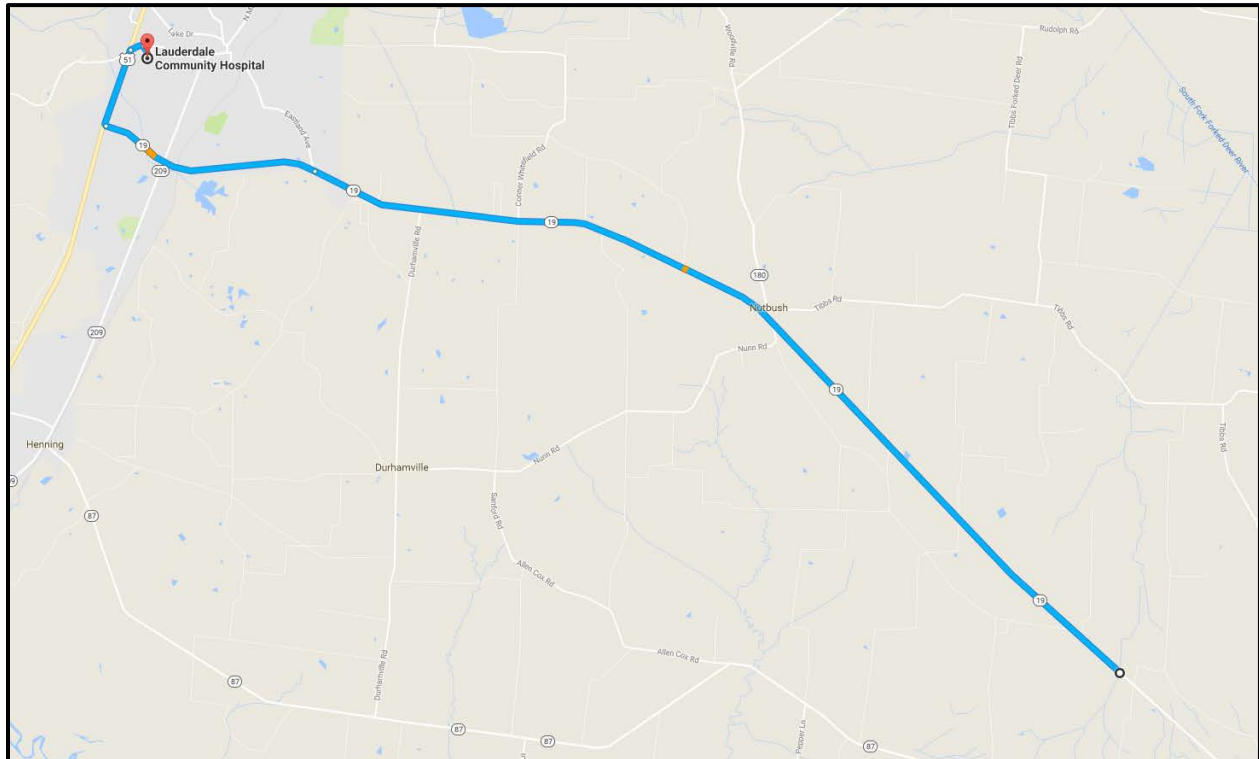
Asbestos Accreditation

APPENDIX D: HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN FOR ASBESTOS CONTAINING MATERIALS SURVEY SERVICES

K. S. WARE AND ASSOCIATES, L.L.C.

54 Lindsley Ave.
Nashville, Tennessee 37210



Directions to Hospital

Head west on SR-19 (15.5 miles)
Turn right onto US-51N (1.0 miles)
Turn right onto Asbury Avenue (0.2 miles)
Hospital will be on the right

Hospital Address

Lauderdale Community Hospital
326 Asbury Avenue
Ripley, TN 38063
(731) 221-2200

This facility has been verified as mappable by phone (goo.gl/jQEMHB):

Bryan P. Hobbs

Project Number: 100-17-0057
Name: TDOT SR-19 from SR-3(US-51) to the West End of the Brownsville By-Pass
Location: Haywood County, Tennessee
Client: Tennessee Department of Transportation
Client Contact : Kyle Kirschenmann
Phone No.: (615) 598-1522

KSWA Personnel Contact Information:

<u>Title</u>	<u>Name</u>	<u>Work</u>	<u>Mobile</u>
Field Safety Coordinator	James Dye	(615) 255-9702	(615) 956-0361
Project Manager	James Dye	(615) 255-9702	(615) 956-0361
Health and Safety QA	Ryan Elliott	(850) 530-9209	(850) 865-3056

Review and Approval:

Field Safety Coordinator



James Dye
Date

July 5, 2017

Project Manager



James Dye
Date

July 17, 2017

Health and Safety QA



Ryan Elliott, PE
Date

July 25, 2017

Responsibilities for Field Safety Coordinator:

- Primary on-site contact for KSWA's health and safety procedures during field activities.
- Has the authority to stop KSWA operations if conditions are judged to be hazardous to on-site personnel or the public.
- Perform discretionary audits to determine compliance of Health and Safety Plan requirements.
- Responsible for providing access to the health and safety for all on-site employees.
- Responsible for instructing on-site personnel on the location of emergency communication equipment (i.e. phones and radios as necessary).
- Has no responsibility for health and safety procedures of any contractor, subcontractor, client personnel or others on the site.

Date of Plan Preparation

July 17, 2017

Dates of Planned Field Activities

August/September 2017

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 PURPOSE.....	3
2.0 APPLICABILITY	1
3.0 SITE DESCRIPTION AND HISTORY	2
3.1 INSPECTION EQUIPMENT	2
3.2 WORK PRECAUTIONS	2
3.3 DISPOSAL RESTRICTIONS	2
4.0 HAZARD EVALUATION.....	3
4.1 PHYSICAL HAZARDS	3
4.1.1 Operational Hazards	3
4.1.2 Fall Hazards	3
4.1.3 Heat Stress.....	3
4.1.4 Cold Stress.....	3
4.1.5 Tools and Equipment	3
4.1.6 Traffic Hazard	3
4.1.7 Noise Hazard	3
4.1.8 Water Hazards	3
4.1.9 Asbestos Containing Material.....	3
4.2 CHEMICAL HAZARDS	4
4.3 BIOLOGICAL HAZARDS	4
4.3.1 Stinging Insects.....	4
4.3.2 Ticks, Spiders, and Mosquitos	4
4.3.3 Other Wildlife	5
5.0 COMMUNICATIONS AND TRAINING.....	6
5.1 COMMUNICATION.....	6
5.2 HEALTH AND SAFETY TRAINING.....	6
5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING	7
6.0 SITE CONTROL - WORK ZONES	8
7.0 PERSONAL PROTECTION	9
8.0 LEVELS OF PROTECTION	10
8.1 LEVEL D.....	10
8.1.1 Personal Protective Equipment	10
8.1.2 Criteria for Use of Level D	10
9.0 DECONTAMINATION PROCEDURES.....	11
9.1 PERSONNEL DECONTAMINATION	11
9.2 EQUIPMENT DECONTAMINATION	11
10.0 EMERGENCY PROCEDURES.....	12
10.1 INHALATION.....	12
10.2 SKIN EXPOSURE	12
10.3 INGESTION	12
10.4 EYES.....	12
10.5 EXPOSURE TO HEAT OR COLD.....	13
10.6 STINGS AND BITES.....	13
10.7 PERSONAL INJURY	13
10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL	13
10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION	13
10.10 EVACUATION	13
11.0 MEDICAL MONITORING	14
12.0 PERSONNEL AUTHORIZATION	15
13.0 FIELD SAFETY COORDINATOR'S SUMMARY	16

1.0 PURPOSE

The purpose of this health and safety plan (HASP) is to provide standards for worker safety and protection during field activities conducted on a frequent or routine basis. The plan outlines standards and mandatory procedures relative to physical and chemical hazards encountered at sites, communication, training, worker health monitoring, decontamination procedures and levels of personal protection. Any questions concerning this information should be directed to the K.S. Ware and Associates, L.L.C. (KSWA) Project Manager identified at the beginning of this Health and Safety Plan, at 615-255-9702.

2.0 APPLICABILITY

This plan is applicable to all personnel working at the above referenced site, where mandatory worker health and safety training is required by State or Federal agencies. It is intended for use at the above referenced site where information regarding potential site hazards is available in the form of background research, personal communication with past or present property owners or workers, previous sampling results, etc.

A site specific hazard evaluation is included in Section 4. Available information should be provided to site workers as outlined in Section 5.

Sampling of items that may contain asbestos containing material (ACM) and other routine field activities are activities for which this plan is applicable. Activities involving contact with unknown substances and activities on sites where little background information is available will require more extensive and specific HASP development.

This plan does not cover procedures for entry into confined spaces. Project-specific attachments should be prepared and appended to this Health and Safety Plan if those activities are planned. Work of this nature shall be performed in accordance with 29 CFR 1926.250 subpart P "Excavation, Trenching and Shoring", 29 CFR 1910.146 "Permit Required Confined Space Entry" and the KSWA "Employee Confined Space Entry Program".

3.0 SITE DESCRIPTION AND HISTORY

The project consists of performing an asbestos bridge survey on two bridges located along SR-19 over Briar and Meridian Creeks in Haywood County, Tennessee.

The SR-19 bridges include:

- 38-SR019-07.16 (38SR0190001) over Briar Creek is a 33-foot, 2-lane, 2-span bridge constructed concrete box culverts with an asphalt wearing surface. The bridge was constructed in 1930; and
- 38-SR019-08.49 (38SR0190003) over Meridian Creek is a 71-foot, 2-lane, 5-span bridge constructed concrete box culverts with an asphalt wearing surface. The bridge was constructed in 1950

3.1 INSPECTION EQUIPMENT

KSWA will be on site to perform an asbestos survey on the SR-19 bridges. Equipment to be used during the survey will include asbestos sample collection equipment.

3.2 WORK PRECAUTIONS

- No eating, drinking, using tobacco products, chewing gum, or putting hands in mouth while on the site.
- Wear the TDOT required roadway safety gear (hard hat, Class III reflective vest, boots) at all times while on the project site.
- Wear gloves at applicable times while at the work site.
- Wear protective eyewear at applicable times while at the work site.
- Wash all exposed skin areas with soap and water before departing from the site.
- Remove and change any non-impervious clothing that becomes contaminated during site activities.
- Do not go anywhere on the site other than where directed by the Field Safety Coordinator.
- Use safe and legal procedures for sample storage and shipment.

3.3 DISPOSAL RESTRICTIONS

Treat disposable items as ordinary refuse except when gross contamination is expected. In the event that refuse including disposable personnel protective equipment is suspected of being contaminated, the refuse will be collected and stored on site for future disposal.

4.0 HAZARD EVALUATION

4.1 PHYSICAL HAZARDS

4.1.1 Operational Hazards

Prior to commencement of field activities, the Field Safety Coordinator will conduct a site reconnaissance to identify any visible or operational hazards.

Additionally, because there is a possibility that asbestos may be present at the site, the appropriate Personal Protective Equipment (PPE) will be worn at all times that work is being performed.

4.1.2 Fall Hazards

Field activities can have the potential for fall hazards. Be aware of any uneven terrain, clear paths of debris and materials that may be a hazard. While on the bridges, be aware of slick surfaces and gaps while accessing the different components.

4.1.3 Heat Stress

Field activities in hot climates create a potential for heat stress. The warning symptoms of heat stress include fatigue; loss of strength; reduced accuracy, comprehension and retention; and reduced alertness and mental capacity. To prevent heat stress, personnel shall drink adequate amounts of water and/or electrolyte replacement fluids, and maintain scheduled work/rest periods.

4.1.4 Cold Stress

Field activities in cold climates create a potential for cold stress. The warning symptoms of cold stress include fatigue; shivering; numbness; blue or pale skin; and reduced alertness and mental capacity. To prevent cold stress, personnel shall wear adequate clothing, and maintain scheduled work/rest periods.

4.1.5 Tools and Equipment

Tools and equipment used by KSWA shall be inspected and maintained to be safe and adequate for their designated use. Housekeeping of the site shall be maintained as to prevent tripping hazards.

4.1.6 Traffic Hazards

Field activities will encounter traffic on this project. Be aware of surroundings and watch for traffic.

4.1.7 Noise Hazards

Operation of equipment may present a noise hazard to workers. KSWA personnel will be provided with hearing protection to be utilized when noise levels are excessive.

4.1.8 Water Hazards

Field activities will encounter a creek on this project. Use caution in or near the creek. Additional PPE including but not limited to a personal flotation device (PFD) and waders shall be taken to the project area and utilized if necessary.

4.1.9 Asbestos Containing Material

KSWA personnel will wear a respirator while sampling, and all sampling equipment will be properly decontaminated between sample collection and after field activities. KSWA personnel will limit exposure by adhering to this health and safety plan.

Precautions: In order to reduce the health and safety risk to workers due to physical hazards at the project site, the following precautions will be observed:

1. ANSI Class III High Visibility clothing will be worn by personnel at all times on the project site.
2. Hard hats shall include high visibility reflective tape.
3. Protective eyewear will be worn by personnel in the work area when appropriate.
4. Hearing protection will be worn by personnel as deemed necessary by the Field Safety Coordinator (typically noised levels greater than 85 dBA).
5. Safety toed boots with non-conductive soles will be worn by personnel at all times on the project site.
6. Hand protection (leather gloves) will be worn by personnel when moving and/or lifting equipment as well as when using large hand tools (machetes, sledges, shovels, etc.).
7. All equipment and related support equipment and vehicles shall have a daily safety inspection (29 CFR 1926.550). The inspections shall include, but are not limited to: all hydraulic lines and fittings for wear and damage, all cable systems and pull ropes for damage and proper installation, exhaust systems and drill controls, electrical lines for damage and/or contact with standing water, etc. Inspection schedules, the vehicle and equipment description, nomenclature, the license plate or ID number for the equipment, the findings of the inspections and the corrective action(s) taken shall be maintained.
8. Before beginning each work shift, the area will be checked for site hazards including overhead lines, underground lines, above ground obstructions, tripping hazards, etc.
9. All vehicles will be fitted with a cab-top rotating or strobe light bar. Light bar is to be active when vehicle is on site.

4.2 CHEMICAL HAZARDS

Chemical hazards are not anticipated at this site.

4.3 BIOLOGICAL HAZARDS

4.3.1 Stinging Insects

The most common stinging insects are bees, wasps, and ants. Few species of ants have medically significant stings. While most bees possess a defensive sting, and will sting if grasped or crushed, only a few social species sting often enough, or have sufficiently venomous stings to be of medical significance. These include the honeybees and the bumblebees. Most fatalities from bee and wasp stings occur in hypersensitive individuals; death is most often induced by a single sting, and occurs most often within 1 hour after the sting. The victim is typically over 40 years of age and stung on the head or neck. Most deaths are caused by respiratory dysfunction with the second most common cause being anaphylaxis; arteriosclerosis may be a compounding factor. If stung, seek medical attention immediately.

4.3.2 Ticks, Spiders, and Mosquitos

Transit through areas near water and/or overgrown with vegetation expose personnel to potential contact with ticks, spiders, and mosquitos. Ticks and mosquitos can transmit disease and bites from any insect can cause discomfort and potential allergic reactions, itching, and severe pain. Personnel should take precautions against contact with insects by using insect repellent sprays and wearing long pants and shirts with long sleeves. Immediately following field work, personnel should inspect their body and clothing for ticks.

4.3.3 Other Wildlife

Wildlife, such as raccoons, opossum, armadillo, coyote and wild dogs, black bears, cougars, wild boars, and snakes, can be found across Tennessee. Many of these animals will bite and/or scratch if they, or their young, are provoked or feel threatened. In addition to physical harm, some of these animals can be venomous or carry dangerous diseases like leprosy and rabies. Care should be taken to avoid contact with any wild animals observed during field work. If a sick or injured animal is present on site, the local animal control should be contacted to remove the animal safely.

5.0 COMMUNICATIONS AND TRAINING

Workers at State and Federally listed or recognized sites must be provided with adequate information and training to recognize and evaluate potential hazards. Training shall comply with applicable regulations including 29 CFR 1910.1200 "Hazard Communication Standard".

5.1 COMMUNICATION

The Field Safety Coordinator shall supply all on site personnel with readily available access to this Health and Safety Plan. This plan shall cover, at a minimum, the following topics:

- A. A brief description of the history of the location with regard to health and environmental hazards.
- B. A description of the activities to which the hazard evaluation summary is applicable.
- C. A description of any hazards which may be encountered, including:
 - 1. Physical Hazards - terrain, traffic, equipment, severe weather (heat stress and frostbite), electrical hazards, noise, water hazards.
 - 2. Chemical Hazards - materials used and stored at the site, materials released at the site.
 - 3. Biological Hazards - insects, plants, animals, pathogens, and infectious materials.
- D. A description of the levels of protection selected for the operation.
- E. Equipment decontamination procedure if different from those specified herein.
- F. Summary of emergency contacts for use in the event of fire, explosion, medical emergency or other emergency, including the project address and phone number to provide to emergency personnel.

1. Emergency	911
2. Haywood County Ambulance Authority	(731) 772-4979
3. Haywood County Fire Department	(731) 772-1396
4. Haywood County Sheriff	(731) 772-2412
5. Haywood County Animal Control	(731) 772-2908
- G. A map showing the route to the nearest hospital.

Prior to any employee or subcontractor beginning work on the site, the Field Safety Coordinator shall brief all KSWA employees as well as subcontractors on the contents of this plan. Personnel will have the opportunity to review the plan, and ask questions about the planned work or hazards. Also, the Field Safety Coordinator will conduct site reconnaissance in order to familiarize all personnel with site conditions, boundaries, and physical hazards.

By KSWA voluntarily sharing this information with subcontractors and contractors, those firms are not relieved of the responsibility to provide their personnel with adequate and proper supervision, safety information, instruction, and equipment.

5.2 HEALTH AND SAFETY TRAINING

All personnel will be provided with approved health and safety training as outlined in 29 CFR 1910.120(e). Documentation for KSWA employees should also be maintained at a central location at the KSWA office.

5.3 RESPIRATOR USAGE TRAINING AND FIT TESTING

Prior to assignment to a site where respirator use may be required, employees will be provided with respirator training as outlined in 29 CFR 1910.134(e)(5). Respirator fit tests are to be conducted at 6 to 10 month intervals, or at any time when a condition that may change the fit of a respirator has occurred, such as change in weight, change in facial structure, extensive dental work, etc. All use of respirators shall comply with KSWA's written respiratory program.

6.0 SITE CONTROL - WORK ZONES

It is not anticipated that special measures or restriction of normal site activities and/or access will be required to achieve site security. The work area includes the SR-19 bridges and adjacent areas. The work will be performed along the side and underneath the bridge. The work zone will be delineated in accordance with TDOT temporary lane closure guidelines. Work zones will be identified with flashing lights, illuminated and non-illuminated signage, traffic spotter, etc.

7.0 PERSONAL PROTECTION

PPE and safety requirements must be appropriate to protect against the known or worst potential hazards on the site. Protective equipment should be selected based on the concentrations and possible routes of exposure to known or potential worst case substances. All KSWA engineering or assessment personnel engaged in work on site will be participants in the KSWA medical monitoring program described in Section 11, or a similar program.

KSWA anticipates that Level D protection and basic site safety measures will be sufficient at this project site. Level D PPE is described in Section 8. Any conditions warranting upgrading of the required level of protection to Level C, B, or A will be cause for all personnel to immediately leave the work site. The site will be re-evaluated and a new site Health and Safety Plan will be prepared which incorporates the additional site information.

8.0 LEVELS OF PROTECTION

This plan is not intended for use at sites where levels of protection above Level D is required. Level D is described below.

8.1 LEVEL D

Level D is the basic work uniform for all site operations. Level D should be selected when performing environmental sampling involving dilute concentrations of contaminants on sites that have been characterized by previous analyses or research.

8.1.1 Personal Protective Equipment

The following equipment is necessary for Level D personal protection:

- Standard work clothing.
- Optional disposable chemical-resistant clothing appropriate for known or expected levels of contamination.
- Boots/Shoes - safety or chemical-resistant boots.
- Safety glasses or safety goggles.
- Gloves - disposable latex or nitrile.
- Optional moisture resistant outer gloves.
- Hardhat.

8.1.2 Criteria for Use of Level D

The following criteria indicate situations where Level D personal protection is adequate:

- No indication of airborne health hazards present.
- No gross indication, above background concentrations, on the photoionization detector and/or organic vapor analyzer.

Additionally, a half-face, full-face, or powered air purifying respirator will be used with appropriate particulate filter(s).

9.0 DECONTAMINATION PROCEDURES

9.1 PERSONNEL DECONTAMINATION

If Level D protection is used, any disposable inner gloves or protective clothing should be sealed in a plastic bag and disposed of properly. Moisture resistant outer gloves and outer boots should be scrubbed with a stiff brush in soapy water, then rinsed to remove possible residual contamination. Disposable equipment should be used whenever possible.

9.2 EQUIPMENT DECONTAMINATION

Proper decontamination of all equipment is necessary to avoid transferring contaminants from the site, thereby increasing potential for exposure of on site and off site personnel. The measures described below should be followed prior to leaving all sites, as applicable to the equipment being used. Any variations from the procedures described below for reasons of worker health or safety must be described by the Project Manager in the site-specific hazard summary.

These measures are separate from, and may not be substituted for, other decontamination procedures associated with proper sampling protocol.

- A. The equipment may be thoroughly rinsed with clean water or an appropriate cleaning solution and wiped dry with paper towels before leaving the work site. Alternatively, the equipment may be wrapped in absorbent material and/or stored in plastic bags sealed to prevent contact with workers, vehicles, etc.
- B. The rinse water from this operation will be allowed to percolate into the ground or as specified by the client.

10.0 EMERGENCY PROCEDURES

10.1 INHALATION

If warning signals such as: dizziness, nausea, headache, shortness of breath, burning sensation in mouth, throat or lung or symptoms specific to hazard found at the site are apparent, the victim should leave the contaminated air space immediately. Have someone contact emergency services and obtain health and safety information about potential contaminants.

If unconscious, the victim should be pulled out of the contaminated area immediately if they do not have any injuries which would prohibit moving them (i.e. spinal injury). The rescuers should make sure that the area is safe to enter. If the area cannot be safely entered, attempt to ventilate this area. Do not attempt a rescue. Rescuers should make sure they are properly trained in First Aid and rescue and that they are wearing proper respiratory and protective equipment before attempting the rescue.

If the victim is no longer breathing, mouth-to-mouth resuscitation or some other form of artificial respiration should be administered by a person who is properly trained and certified in a location away from the contaminated area.

Medical attention should be obtained immediately.

10.2 SKIN EXPOSURE

The skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water. If a shower is available, it should be used immediately. Clothes should be removed while showering. This procedure may be life-saving as certain highly toxic chemicals are rapidly absorbed through the skin.

All contaminated parts of the body, including the hair, should be thoroughly decontaminated. It may be necessary to wash repeatedly.

10.3 INGESTION

A poison control center or emergency service should be contacted immediately to determine an appropriate course of action. If possible, have health and safety information on the poison available when you call for help. Vomiting should be induced except when the substance presents an aspiration hazard, such as from a petroleum product; or when the substance is a strong acid or base. To induce vomiting, a tablespoon of salt or powdered mustard in a glass of warm water, or syrup of ipecac from the First Aid Kit, can be taken as an emetic.

Drinking plenty of water and placing a finger down the throat may also be effective in inducing vomiting. The treatment should be repeated until vomit is clear.

Medical attention should be obtained immediately.

10.4 EYES

If a toxicant should get in the eyes, they should be washed with plenty of water. The eye itself should be held open, rotated, and flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least 15 minutes.

Medical attention should be obtained immediately.

10.5 EXPOSURE TO HEAT OR COLD

When working under severe weather conditions, personnel should be aware of the signs of heat stress, hypothermia and frostbite as well as the appropriate response actions.

Heat Stress - If a worker shows signs of heat stroke (dry, hot, red skin, high body temperature) or heat exhaustion (cool, moist, pale or red skin, dilated pupils, nausea, dizziness), the worker must be removed from the work area and cooled. Loosen clothing, elevate feet, and provide cool liquids. Heat stroke can be life threatening and requires rapid action.

Hypothermia - If a worker shows signs of hypothermia (shivering, impaired judgement, drowsiness, clumsiness) the worker must be removed from the work area and warmed gradually.

Frostbite - If a worker shows signs of frostbite (skin color changes to white or grayish-yellow then grayish-blue), the worker must be moved to a warm place. The affected area should be placed in warm (100-105°F) water. Do not rub or massage.

10.6 STINGS AND BITES

If still present, remove stinger with fingernail. Wash the the location of the sting with soap and water, cover with bandage and apply ice. If severe allergic reactions appear (hives, itching, rash, nausea, vomiting, dizziness, swelling) seek medical attention immediately.

10.7 PERSONAL INJURY

A first aid kit shall be readily available in case of an injury. Administer first aid and/or seek medical help, if necessary. Medical emergencies take precedence over decontamination procedures. A map showing the route to the nearest hospital is provided at the end of this Health and Safety Plan. It is the responsibility of the field safety coordinator to ensure that a phone is readily available on-site, and to identify which personnel have phones and provide this information to all on site personnel.

10.8 SPILL OR RELEASE OF HAZARDOUS MATERIAL

Clean up, isolate or contain spill as appropriate. Contact emergency response personnel, project manager, and/or client company officials as appropriate.

10.9 POTENTIAL OR ACTUAL FIRE/EXPLOSION

If it is safe to do so, on site personnel may use available fire fighting equipment to control or extinguish the fire, and remove or isolate materials which may contribute to the fire. Contact the fire department project manager and/or client company officials as appropriate.

10.10 EVACUATION

In the event of an emergency that requires an evacuation of the site, verbal instruction will be given by the Field Safety Coordinator to evacuate the area. Personnel will immediately exit the site to the pre-designated upwind "clean" location. The Field Safety Coordinator will account for KSWA personnel, and will advise personnel of further instructions, if necessary. The Field Safety Coordinator will also advise responding off site emergency personnel, if necessary. Personnel shall not re-enter the site until the emergency conditions have been corrected and the Field Safety Coordinator has authorized re-entry.

11.0 MEDICAL MONITORING

All engineering and assessment personnel engaged in on site activities shall be participants in a medical monitoring program similar to the following. As participants in this program, these individuals will have had recent physical examinations.

The following personnel will be accessing the site during field activities and the dates at which their medical monitoring program was last updated:

1. James Dye (February 2017)
2. Benjamin Hooks (April 2017)
3. Victoria Gallagher (April 2017)

The primary goal of this medical monitoring program is to provide evaluation and ongoing surveillance of the health status of employees potentially exposed to toxic substances as a result of their work-related activities. An active health monitoring program for those employees potentially at risk is an important tool in evaluating the effects of chronic low-level exposures or acute exposures related to operations at hazardous waste sites. The effects of low-level exposures may not become apparent until years after the initial exposure.

This medical monitoring program includes laboratory testing, personnel medical history evaluation, physical examination and other specific testing.

Each participant in this medical monitoring program undergoes a complete occupational history evaluation and baseline physical examination including the following parameters:

- Pulmonary Function Studies
- Complete Blood Count
- Chemical Blood Profile
- Urinalysis
- Chest X-Ray
- Electrocardiogram
- Specific parameters as necessary dependent upon exposure

Following the establishment of each participant's baseline values for the above parameters, an annual re-evaluation is conducted to monitor potential changes due to work with hazardous materials.

In addition to this annual re-examination, provisions are made for specific post-exposure examinations in the event of a suspected exposure during a particular field event.

The program shall meet or exceed the minimum requirements established in OSHA standard 20 CFR 1910.120.

All personnel engaged in on site activities must read this Health and Safety Plan. By signing and dating this form, the listed individual acknowledges that he/she has read, understands and will comply with the requirements of this Health and Safety Plan.

[illegible]

13.0 FIELD SAFETY COORDINATOR'S SUMMARY

(To be completed by Field Safety Coordinator after completion of each phase of field work, and returned to Project Manager.)

Project Summary

Project Name:	TDOT Haywood Co Sr-19 from SR-3(US-51) to West End of the Brownsville By-Pass
Project Number:	100-17-0057
Activities Completed:	8-9-17
Date of Activities:	8-8 + 8-9-17

During the execution of the activities covered by this Health and Safety Plan, there were:

- a) No violations of the Safety Plan provisions and no obvious contamination of KSWA employees or subcontractors.
- b) The following incidents, violations of the Safety Plan provisions, or obvious contamination of KSWA personnel or subcontractors. (Give details of who, when, type of contamination, circumstances, first aid or medical assistance administered in the space below.)

Time and Date of Incident	People Involved	Description of Incident

Signature

Field Safety Coordinator

Date

8-9-17

APPENDIX E: ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Asbestos Survey
SR-19 from SR-3(US-51) to the West End of the Brownsville By-Pass
Haywood County, Tennessee

PIN: 102251.00

TDOT Project No.: 38004-0217-14

Bridge Nos.: 38SR0190001
38SR0190003

KSWA Project Number: 100-17-0057

Prepared by:



K. S. WARE AND ASSOCIATES, L.L.C
54 Lindsley Avenue
Nashville, Tennessee 37210

July 17, 2017

ACTIVITY HAZARD ANALYSIS FOR ASBESTOS SURVEY

EM 385-1-1 Reference:

Hard hats and safety toe boots are mandatory. Eye and hearing protection are mandatory during sampling and as appropriate.

Principal Steps	Potential Hazards	Action to Minimize Hazard
1. Asbestos exposure	1. Inhalation, skin irritation	1. All personnel that will be present on the project must wear the proper PPE. Use all safety precautions to ensure that all state and federal guidelines are followed and to limit the exposure to asbestos. Asbestos samplers are to use a respirator when sampling.
2. Heat stress exposure	2. Heat stroke	2. Monitor all personnel for signs of fatigue, dizziness or other physical abnormalities. Personnel should wear clothing suited for the weather conditions and breaks will be given for intake of fluids, etc. Ensure that water or sports hydration fluid (Gatorade, PowerAde) is available on site.
3. Cold stress exposure	3. Hypothermia, frostbite, trench foot	3. Monitor all personnel for signs of shivering, loss of coordination, confusion, disorientation, slowed pulse and breathing, and loss of consciousness. Personnel should wear clothing suited for the weather conditions, including effects of wind and extreme cold. Ensure that a location shielded from the wind and with a heat source is available. If cold temperatures and wind chill conditions are present, warming breaks should be planned to avoid prolonged exposure.
4. Traffic Hazards	4. Moving vehicles	4. Field activities will encounter traffic on this project. Be aware of your surroundings, watch for traffic when performing in areas that have moving vehicles. Use a spotter or traffic control when sampling in the roadway or crossing the road. Maintain safe positioning. Use "Men Working" signs to delineate the work area and slow down drivers.
5. Site Maintenance	5. Slip, trip, and fall.	5. Prior to field activities, the Field Safety Coordinator should observe the terrain on site and monitor the conditions throughout the survey. Be aware of steep and/or rocky slopes. Also be aware of potholes around the bridge.
6. Overhead Utilities	6. Electrocution, explosion, fire	6. Be aware of fallen or low hanging utility lines while on the ground level. Remain at least 10 feet from all utility lines with all equipment.
7. Biological Hazards	7. Small animals, insects	7. Be aware of animal habitat in and around the work area. Do not put hands into areas you cannot inspect for potential insects, mammals, and reptiles. Beware of waterborne snakes, colonies of stinging insects, and vector species that could transmit disease.
8. Noise	8. Damage to hearing	8. Operations that generate sound levels 85 dBA and above require hearing protection. Either muffs or plugs are acceptable. Heavy traffic can be a cause.

Principal Steps	Potential Hazards	Action to Minimize Hazard
9. Hand/Finger Protection	9. Physical injury to personnel	9. Wear gloves when there is exposure to potential hazards that could produce scrapes and cuts. Do not wear jewelry. Any jewelry can be dangerous. Handle sharp or pointed tools with extreme care. Be careful when using a hammer to not smash hand or fingers. Use the proper gloves for the job at hand.
10. Hand Tools and Equipment	10. Physical injury to personnel	10. Use the right tool or piece of equipment for the job. Use only tools in safe condition. Tools and equipment must be used properly and not abused. Take precautions to avoid injury by cutting tools by keeping them sheathed until use.
11. Ladders	11. Fall from excessive height	11. Use caution and maintain three points of contact when climbing a ladder. Always have other site personnel support the ladder while in use. Maintain a safe distance from overhead utilities and obstructions. Always place the ladder on stable, even ground.
12. Severe Weather	12. Thunderstorms, lightning hazard	12. Cease work immediately and take cover in a vehicle or structure until lightning has ceased.
13. Waterways	13. Rise/fall of water level, current, holes in waterbed, slippery surfaces	13. Be conscious of the water level and current. When walking through water, be careful when stepping in case of holes and/or slippery surfaces. Use a personal flotation device (PFD) if water is above knee height or is swift moving.

This Activity Hazard Analysis has been prepared by K.S. Ware and Associates.

The KSWA field safety coordinator for this project will be Mr. James Dye. Mr. Dye's health and safety training and certifications include:

- Completed OSHA 10 Hour Construction Safety Course
- Completed OSHA 40 Hour HAZWOPER Course