

**I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Environmental Assessment**



April 14, 2016

---

**I-64 Six Lane Widening**  
**Crooked Creek to Nitro, Putnam County**  
**Environmental Assessment**

Submitted Pursuant to: 42 USC 4332(2)(c)  
US Department of Transportation, Federal Highway Administration  
and  
West Virginia Department of Transportation, Division of Highways

4/7/16  
Date

Paul D. Mattson, Jr.  
For WVDOT

4/13/16  
Date

Jan E. Voh  
For FHWA

The following people may be contacted for additional information concerning this document:

Mr. Ben Hark  
Environmental Section Head  
Engineering Division  
WVDOT – Division of Highways  
1334 Smith Street  
Charleston, WV 25301  
(304) 558-2885

Mr. Jason Workman  
Director, Office of Program Development  
Federal Highway Administration  
Geary Plaza, Suite 200  
700 Washington Street, East  
Charleston, WV 25301  
(304) 347-5928

This Environmental Assessment examines the potential impacts of the proposed action, which is to widen and improve approximately 3.64 miles of I-64 from four to six lanes from Crooked Creek to Nitro in Putnam County. The project will address the region's increasing transportation demands and traffic safety concerns.

Comments on this Environmental Assessment are due by JUN 21 2016 and should be sent to Mr. R.J. Scites, PE; West Virginia Division of Highways, Engineering Division; 1334 Smith Street Charleston, WV 25301.

# Table of Contents

## Executive Summary

|                                   |      |
|-----------------------------------|------|
| ES.1 Project Description.....     | ES-1 |
| ES.2 Need and Purpose.....        | ES-1 |
| ES.3 Alternatives Considered..... | ES-1 |
| ES.4 Environmental Impacts.....   | ES-2 |
| ES.5 Preferred Alternative.....   | ES-2 |

## Chapter 1 Introduction and Purpose and Need

|  |     |
|--|-----|
| 1.1 Introduction.....                  | 1-1 |
| 1.2 Existing Highway Network.....      | 1-1 |
| 1.3 Regional Transportation Plans..... | 1-3 |
| 1.4 Project Funding.....               | 1-3 |
| 1.5 Project Need.....                  | 1-4 |
| 1.5.1 Background.....                  | 1-4 |
| 1.5.2 Traffic Volume Capacity.....     | 1-4 |
| 1.5.3 Traffic Safety.....              | 1-5 |
| 1.5.4 Traffic Operations.....          | 1-6 |
| 1.5.5 Project Need.....                | 1-7 |
| 1.5.6 Project Purpose.....             | 1-7 |

## Chapter 2 Alternatives

|  |      |
|--|------|
| 2.1 Existing Conditions.....                                   | 2-1  |
| 2.1.1 Introduction.....  | 2-1  |
| 2.1.2 Mainline Level of Service.....                           | 2-1  |
| 2.1.3 Intersection Level of Service.....                       | 2-2  |
| 2.1.4 Peak AM/PM Volumes.....                                  | 2-4  |
| 2.1.5 Conclusion.....  | 2-4  |
| 2.2 No Build.....  | 2-7  |
| 2.2.1 Introduction.....  | 2-7  |
| 2.2.2 Mainline Level of Service.....                           | 2-7  |
| 2.2.3 Intersection Level of Service.....                       | 2-8  |
| 2.2.4 Peak AM/PM Volumes.....                                  | 2-11 |
| 2.2.5 Conclusion.....  | 2-11 |
| 2.3 Transportation System Management (TSM).....                | 2-11 |
| 2.4 Mass Transit.....  | 2-13 |
| 2.5 Build Alternatives.....                                    | 2-13 |
| 2.5.1 Design Criteria for Build Alternatives.....              | 2-16 |
| 2.5.2 Widening Upstream (South Side) of Existing I-64.....     | 2-16 |
| 2.5.2.1 St. Albans Interchange: Upstream Alternative #1.....   | 2-16 |
| 2.5.2.2 St. Albans Interchange: Upstream Alternative #2.....   | 2-18 |
| 2.5.2.3 St. Albans Interchange: Upstream Alternative #3.....   | 2-19 |
| 2.5.3 Widening Downstream (North Side) of Existing I-64.....   | 2-21 |
| 2.5.3.1 St. Albans Interchange: Downstream Alternative #1..... | 2-21 |
| 2.5.3.2 St. Albans Interchange: Downstream Alternative #2..... | 2-23 |

2.5.3.3 St. Albans Interchange: Downstream Alternative #3..... 2-25

2.5.3.4 St. Albans Interchange: Downstream Alternative #4..... 2-26

2.5.3.5 St. Albans Interchange: Downstream Alternative #5..... 2-28

2.5.4 Alternative Purpose and Need Analysis ..... 2-29

2.6 Preliminary Impact Analysis..... 2-30

2.6.1 Level of Service..... 2-30

2.6.2 Potential Environmental Impacts ..... 2-30

2.6.3 Right-of-Way and Construction Cost ..... 2-34

2.7 Recommended Preferred Analysis..... 2-35

2.8 Public & Stakeholder Involvement..... 2-36

**Chapter 3 Affected Environment and Mitigation**

3.1 Social and Economic Characteristics ..... 3-1

3.1.1 Demographics ..... 3-1

3.1.2 Environmental Justice ..... 3-3

3.1.3 Socioeconomics ..... 3-3

3.1.4 Community Facilities and Services ..... 3-4

3.1.5 Relocations and Displacements ..... 3-4

3.2 Land Use and Land Cover ..... 3-4

3.3 Farmland..... 3-6

3.4 Cultural Resources..... 3-6

3.4.1 Historic Structures..... 3-6

3.4.2 Archaeological Survey ..... 3-8

3.5 Section 4(f) Resources ..... 3-10

3.6 Section 6(f) Resources ..... 3-10

3.7 Air Quality ..... 3-10

3.8 Noise..... 3-12

3.9 Soils..... 3-12

3.10 Geology ..... 3-12

3.11 Groundwater ..... 3-14

3.12 Hazardous Materials Assessment..... 3-15

3.12.1 Toxic Chemicals and Superfund Sites ..... 3-15

3.12.2 Underground Storage Tanks..... 3-16

3.12.3 Potential Impacts ..... 3-16

3.12.4 Minimization Measures..... 3-16

3.12.4.1 Implementation of Hazardous Materials Contingency Plan..... 3-16

3.13 Surface Water Resources ..... 3-16

3.13.1 Stream & Wetland Valuation Metric (SWVM) ..... 3-17

3.13.2 Field Investigation Results ..... 3-17

3.13.3 Summarized Results of Field Investigation..... 3-19

3.13.4 Surface Water Impacts and Mitigation..... 3-20

3.14 Floodplains..... 3-21

3.15 Terrestrial Vegetation and Wildlife..... 3-21

3.16 Rare, Threatened and Endangered Species ..... 3-23

3.16.1 Freshwater Mussels..... 3-23

3.16.1.1 Summary of Impacts..... 3-25

|  |      |
|--|------|
| 3.17 Energy.....                           | 3-25 |
| 3.18 Secondary and Cumulative Impacts..... | 3-25 |
| 3.18.1 Secondary Impacts.....              | 3-25 |
| 3.18.2 Cumulative Impacts.....             | 3-25 |
| 3.18.2.1 Defining Cumulative Impacts ..... | 3-25 |
| 3.19 Temporary Construction Impacts.....   | 3-28 |
| 3.20 Impact Summary .....                  | 3-29 |

## Chapter 4 References

## Chapter 5 List of Preparers and Reviewers

## Chapter 6 Distribution List

## List of Figures

|  |      |
|--|------|
| Figure 1-1. Project Location Map .....   | 1-2  |
| Figure 2-1. 2013 Existing Freeway LOS, I-64 Exit 44 & 45 – St. Albans & Nitro Interchange<br>Revised Access .....              | 2-3  |
| Figure 2-2. 2013 Existing Intersection LOS, I-64 Exit 44 & 45 – St. Albans & Nitro Interchange<br>Revised Access.....          | 2-5  |
| Figure 2-3. 2013 Peak Hour Volumes, I-64 Exit 44 & 45 – St. Albans & Nitro Interchange<br>Revised Access.....                  | 2-6  |
| Figure 2-4. 2033 Existing Freeway LOS-No Build, I-64 Exit 44 & 45 – St. Albans & Nitro<br>Interchange Revised Access.....      | 2-9  |
| Figure 2-5. 2033 Existing Intersection LOS-No Build, I-64 Exit 44 & 45 – St. Albans & Nitro<br>Interchange Revised Access..... | 2-10 |
| Figure 2-6. 2033 Peak Hour Volumes, I-64 Exit 44 & 45 – St. Albans & Nitro Interchange<br>Revised Access.....                  | 2-12 |
| Figure 2-7. Build Alternatives.....  | 2-15 |
| Figure 2-8. St. Albans Interchange: Upstream Alternative #1 .....  | 2-17 |
| Figure 2-9. St. Albans Interchange: Upstream Alternative #2 .....  | 2-18 |
| Figure 2-10. St. Albans Interchange: Upstream Alternative #3 .....   | 2-20 |
| Figure 2-11. St. Albans Interchange: Downstream Alternative #1 .....   | 2-22 |
| Figure 2-12. St. Albans Interchange: Downstream Alternative #2 .....   | 2-24 |
| Figure 2-13. St. Albans Interchange: Downstream Alternative #3 .....   | 2-25 |
| Figure 2-14. St. Albans Interchange: Downstream Alternative #4 .....   | 2-27 |
| Figure 2-15 St. Albans Interchange Downstream Alternative #5 .....   | 2-28 |
| Figure 3-1. Census Boundaries.....   | 3-2  |
| Figure 3-2. Land Cover.....  | 3-5  |
| Figure 3-3. Farmland Soils .....   | 3-7  |
| Figure 3-4. Cultural Resources .....   | 3-9  |
| Figure 3-5. Noise Receptors.....   | 3-13 |
| Figure 3-6. Streams/Wetlands Proposed Impact Area.....   | 3-18 |
| Figure 3-7. Floodplains.....   | 3-22 |
| Figure 3-8. Mussel Survey Sample locations at the I64 bridge, Kanawha River, July 2014 .....                                   | 3-24 |

## List of Tables

|  |      |
|--|------|
| Table S-1. Summary of Key Impacts .....  | ES-2 |
| Table 1-1. Crash Data Summary .....  | 1-5  |
| Table 2-1. Level of Service Definitions .....  | 2-1  |
| Table 2-2. Segment LOS during AM (PM) Peak Hour in 2013 .....                                | 2-2  |
| Table 2-3. Intersection LOS during AM (PM) Peak Hour in 2013 .....                           | 2-2  |
| Table 2-4. Segment LOS during AM (PM) Peak Hour, 2013 vs. 2033 LOS .....                     | 2-8  |
| Table 2-5. Intersection LOS during AM (PM) Peak Hour, 2013 vs. 2033 LOS .....                | 2-8  |
| Table 2-6. Purpose and Need Alternative Evaluation .....                                     | 2-29 |
| Table 2-7. LOS during AM (PM) Peak Hour, 2033 LOS by Alternative .....                       | 2-30 |
| Table 2-8. Summary of Environmental Impacts by Build Alternative .....                       | 2-31 |
| Table 2-9. Potential Stream Impacts by Build Alternative (Based on Desktop Analysis) .....   | 2-32 |
| Table 2-10. Potential Wetland Impacts by Build Alternative (Based on Desktop Analysis) ..... | 2-33 |
| Table 2-11. Impacts to Forested Areas by Build Alternative (Based on Desktop Analysis) ..... | 2-34 |
| Table 2-12. Traffic Noise Impacts by Alternative .....                                       | 2-34 |
| Table 2-13. Additional Right-of-Way and Construction Cost Estimates by Alternative .....     | 2-35 |
| Table 3-1. Overview of Demographics from Census Data .....                                   | 3-1  |
| Table 3-2. NRHP Eligible Recommendations from Representative Sample .....                    | 3-8  |
| Table 3-3. Traffic Noise Impacts by Alternative .....  | 3-12 |
| Table 3-4. Jurisdictional Streams Delineated within the Study Area .....                     | 3-19 |
| Table 3-5. Jurisdictional Wetlands Delineated within the Study Area .....                    | 3-20 |
| Table 3-6. Summary of Preferred Alternative Impacts .....                                    | 3-29 |

## Appendices

Appendix A Agency Coordination

Appendix B May 2013 Public Workshop Information and Comments

Appendix C Air Quality Report

This page intentionally left blank.



# Executive Summary

## ES.1 Project Description

The West Virginia Department of Transportation, Division of Highways (WVDOH), in cooperation with the Federal Highway Administration (FHWA), proposes to widen I-64 from four to six lanes east of the recently constructed US 35 interchange at Crooked Creek (Exit 40) to east of the SR 25 Nitro Interchange (Exit 45) in Putnam County. This 3.79-mile stretch of interstate lies between two existing six lane sections of I-64 and includes a truss bridge over the Kanawha River. There are two interchanges within the project area: the St. Albans Interchange (Exit 44) and the Nitro Interchange (Exit 45). Mainline annual average daily traffic (AADT) volumes are estimated at 54,200 to 68,700 vehicles per day, based on 2013 traffic counts from WVDOH.

## ES.2 Need and Purpose

The I-64 project has the following needs:

- Improve traffic volume capacity
- Enhance safety by improving existing interchange geometry at the Saint Albans and Nitro interchanges, which currently results in sudden stops and accidents
- Support continued growth and economic development in the project area

Thus, a widened I-64 and improved interchange configuration would alleviate congestion and provide the infrastructure to significantly reduce the number of sudden stops required currently. The proposed project would thereby improve regional accessibility and facilitate continued growth and economic development in the project area.

In keeping with these transportation needs, the following is the project purpose statement:

*The purpose of the proposed project is to increase system capacity on mainline I-64 from US 35 (Exit 40) to Nitro (Exit 45), improve interchange traffic operations, enhance safety and facilitate growth in accordance with regional and local land use planning.*

## ES.3 Alternatives Considered

In addition to the No Build Alternative, eight build alternatives were considered to address the project purpose and need. All eight build alternatives would include three identical components:

- Widening I-64 from east of Exit 40 to just west of Bills Creek Road (west of Mile Marker [MM] 43);
- Improving SR 817/I-64 connector by constructing a southbound lane to receive eastbound I-64 off ramp traffic and adding a left-turn lane on SR 817 for traffic approaching from SR 817 to the ramp connector; and

- Constructing an eastbound and westbound auxiliary lane between the St. Albans (Exit 44) and Nitro (Exit 45) interchanges.

From just west of Bills Creek Road (west of MM 43) to just east of the Nitro Interchange (Exit 45) is where the eight build alternatives diverge and split into two groupings: three configurations for upstream widening and four configurations for downstream widening. Chapter 2 contains additional graphics and descriptions.

## ES.4 Environmental Impacts

Table S1 contains a summary of key impacts for the eight build alternatives.

**Table S1 - Summary of Key Impacts**

| Environmental Feature                 | Upstream Alt #1 | Upstream Alt #2 | Upstream Alt #3 | Downstream Alt #1 | Downstream Alt #2 | Downstream Alt #3 | Downstream Alt #4 | Downstream Alt #5 |
|---------------------------------------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Displaced Structures                  | 0               | 0               | 0               | 0                 | 0                 | 0                 | 0                 | 0                 |
| Environmental Justice Populations     | No              | No              | No              | No                | No                | No                | No                | No                |
| Community Facilities                  | No              | No              | No              | No                | No                | No                | No                | No                |
| Historic Structures*                  | NAE             | NAE             | NAE             | NAE               | NAE               | NAE               | NAE               | NAE               |
| Archaeological Sites                  | No              | No              | No              | No                | No                | No                | No                | No                |
| Section 4(f)/6(f) Properties          | No              | No              | No              | No                | No                | No                | No                | No                |
| Statewide Important Farmlands (acres) | 0.52            | 0.49            | 3.52            | 0.70              | 0.12              | 2.73              | 0.33              | 0.12              |
| Stream Impacts (linear feet)          | 2,552           | 2,453           | 2,598           | 2,436             | 2,359             | 2,447             | 2,365             | 2,359             |
| Wetland Impacts (acres)               | 0.23            | 0.23            | 0.23            | 0.08              | 0.08              | 0.08              | 0.08              | 0.08              |
| Floodplain Impacts                    | Yes             | Yes             | Yes             | Yes               | Yes               | Yes               | Yes               | Yes               |
| Forested Habitat (acres)              | 26              | 26              | 32              | 18                | 17                | 23                | 18                | 17                |
| T&E Species Habitats**                | No              | No              | No              | No                | No                | No                | No                | No                |
| Contaminated Sites                    | 1               | 1               | 1               | No                | No                | No                | No                | No                |
| Air Quality+                          | No              | No              | No              | No                | No                | No                | No                | No                |
| Noise++                               | Yes             | Yes             | Yes             | Yes               | Yes               | Yes               | Yes               | Yes               |
| Soils & Geology                       | No              | No              | No              | No                | No                | No                | No                | No                |
| Groundwater                           | No              | No              | No              | No                | No                | No                | No                | No                |

Notes: \*NAE = No Adverse Effect on Historic Resources; +No additional air quality analysis required; ++Impacted receptors but barrier wall does not meet DOH threshold for reasonableness.

## ES.5 Preferred Downstream Alternate #4

Downstream Alternative #4 is recommended as the preferred alternative. Comparatively, all the build alternates are very similar with regards to capacity analysis. A cost comparison estimates all alternates will be within 4 percent of each other. However, Downstream Alternate #4 offers

several advantages over the other options. This alternative allows for free-flow traffic movements and eliminates all stop-controlled intersections at the St. Albans Interchange (Exit 44). Additionally, in this alternative, the distance between the exit and entrance ramp locations is longer, and the design speeds are higher, allowing for improved maneuverability and safety.

Thus, Downstream Alternative #4 would serve to improve traffic operations and volume capacity within the project area, and would alleviate and improve upon existing safety considerations. Among the build alternatives, Downstream Alternative #4 would best fulfill the purpose and need of the proposed project.

This page intentionally left blank.

# Chapter 1

## Introduction and Purpose and Need

### 1.1 Introduction

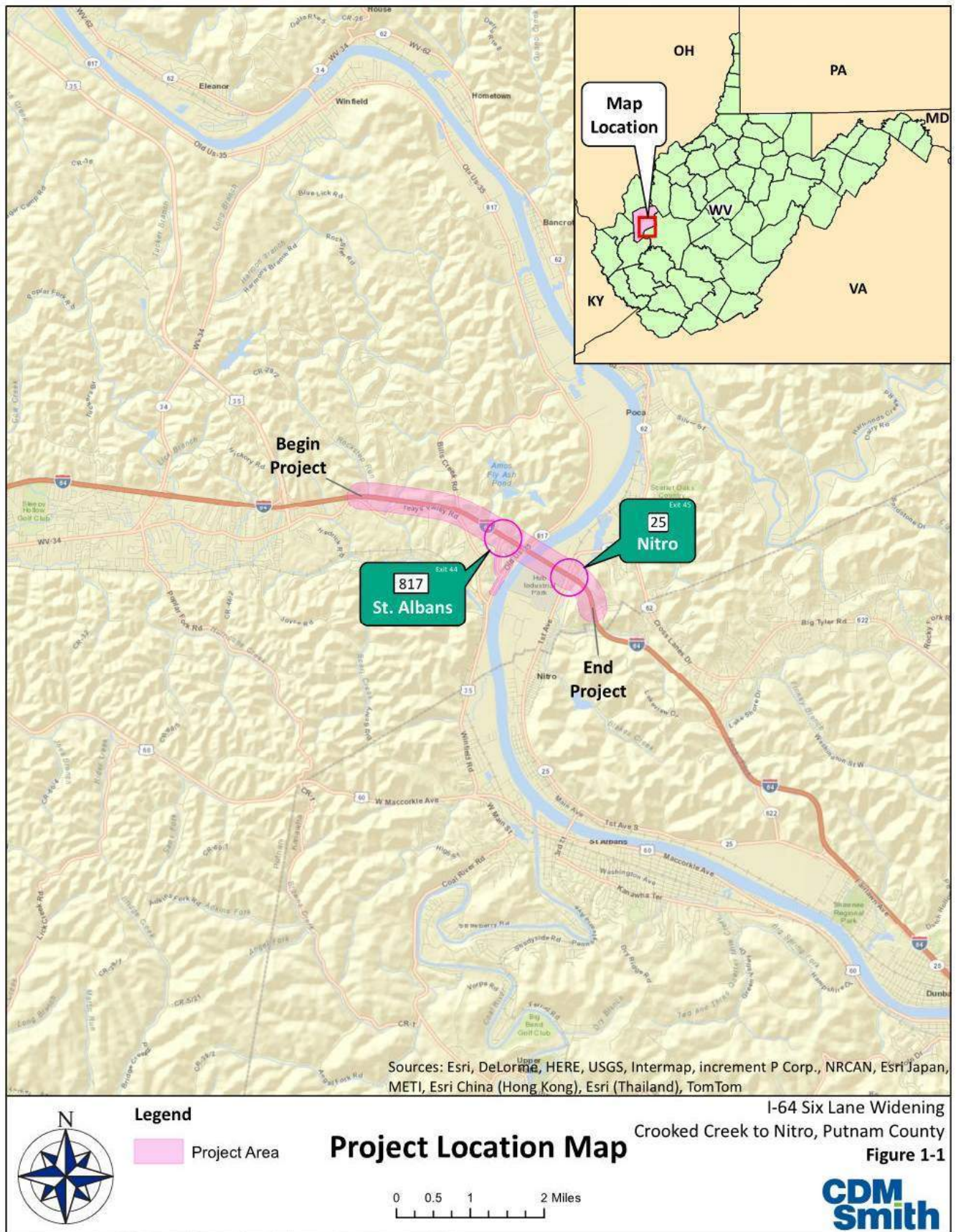
The West Virginia Department of Transportation Division of Highways (WVDOH), in cooperation with the Federal Highway Administration (FHWA), proposes to widen I-64 from four to six lanes east of the US 35 Interchange at Crooked Creek (Exit 40) to east of the SR 25 Nitro Interchange (Exit 45) in Putnam County, a total distance of 3.79 miles. The proposed project area also includes the SR 817 Interchange at St. Albans (Exit 44).

A conceptual study was completed in 2006 to identify issues and alternatives for the project. This Environmental Assessment (EA) evaluates the alternatives developed and discloses potential impacts of the Preferred Alternative on the environment.

### 1.2 Existing Highway Network

I-64 runs east-west through the state, passing through Huntington, Charleston, Beckley, and Lewisburg. The project area lies between the communities of Scott Depot and Nitro in Putnam County, west of Charleston. **Figure 1-1** shows the general location of the project in the region.

In Putnam County, I-64 has two travel lanes per direction from the Cabell County line to SR 34 (Exit 39), three lanes per direction from SR 34 (Exit 39) to east of US 35 (Exit 40), two lanes per direction from east of US 35 (Exit 40) to the SR 25 Nitro Interchange (Exit 45), and three lanes per direction from Exit 45 into Kanawha County. Mainline average annual daily traffic (AADT) volumes are estimated at 54,200 to 68,700 vehicles per day (vpd), based on 2013 traffic counts from WVDOH.



Within the project area, there are two interchanges along I-64:

- Exit 44 at St. Albans is a diamond interchange that provides a connection to SR 817. SR 817 runs parallel to the Kanawha River and provides a link to US 60 in St. Albans. This route was designated as US 35 until US 35 was rerouted further west, creating a new interchange with I-64 immediately west of the study area. SR 817 carried approximately 7,250 to 14,550 vpd in 2013. An estimated 10,500 to 21,150 vpd are projected to use SR 817 in the year 2033.
- Exit 45 at Nitro is a diamond interchange that provides a connection to SR 25. SR 25 (40<sup>th</sup> Street) is the main thoroughfare through Nitro, carrying an estimated 17,950 to 18,250 vpd in 2013. An estimated 25,800 to 26,000 vpd are projected to use SR 25 in the year 2033.

There are ten bridge structures within the project area. The westernmost of four Kanawha River crossings along I-64 is within the project area. The Donald Legg Memorial Bridge is a three-span cantilever truss bridge. The bridge is 1,400 feet in length and 68 feet in width (out to out), carrying four lanes of interstate traffic. It spans the river, SR 817, and a CSX rail line.

The other nine structures within the project area are:

- Parallel I-64 structures over CR 29 (Rocky Step Road) and Rocky Step Run Creek (Bridge # 2130), between mile marker (MM) 41 and 42
- Parallel I-64 structures over CR 33/5 (McCloud Road) (Bridge # 2131), MM 42
- CR 44 (Bills Creek Road) overpass of I-64 (Bridge # 2132), MM 43
- Overpass at St. Albans Interchange (Bridge # 2133), MM 44
- Parallel I-64 structures over SR 25, CR 25, and railroad tracks at Nitro Interchange (Bridge # 2135), MM 45
- Double Barrel reinforced concrete box culvert that conveys Armour Creek under I-64 (Bridge # 5537), MM 45

### 1.3 Regional Transportation Plans

Plans to widen I-64 in Putnam County are consistent with the area's future vision described in the local Metropolitan Planning Organization (MPO): the Regional Intergovernmental Council's (RIC), planning documents. This project, widening I-64 from US 35 (Exit 40) to SR 35 Nitro (Exit 45), is included in the RIC's *Transportation Improvement Programs for Fiscal Years 2014-2017*. Further, *Metro Mobility 2040*, the MPO's long range transportation plan, includes widening from SR 34 (Exit 39) to the Cabell County line.

### 1.4 Project Funding

The National Highway Performance Program (NHPP) funding for engineering, right-of-way and construction is included in the WVDOT Statewide Transportation Improvement Program (STIP)

FY 2014-2019 as of November 2, 2016. Right-of-way is scheduled for Federal Fiscal Year (FFY) 2017. Construction is scheduled to begin in FFY 2020.

## 1.5 Project Need

### 1.5.1 Background

Communities along I-64 and the Kanawha River, including Teays Valley and the City of St. Albans in Kanawha County, have all experienced substantial growth and development resulting in congestion of the existing transportation infrastructure. This growth is expected to continue as these communities expand to meet the residential and commercial needs of the region. The study section of I-64 is generally bounded by the Teays Valley community to the west and the Nitro community to the east. These communities experience a significant number of commuter trips that occur between the two regional city centers: Huntington to the west and Charleston to the east. Commuters in the project area utilize the I-64 corridor for trips made from this growing suburban area to the city centers. Also, regionally, this corridor provides one of the few crossings of the Kanawha River -- the Donald Legg Memorial Bridge.

### 1.5.2 Traffic Volume Capacity

I-64 is among the most heavily traveled roadways within the state, with significant commuter and commercial traffic. According to the FHWA, nationwide, trucks account for 4.3 percent of all highway vehicles.<sup>1</sup> In the study area, trucks accounted for 16 to 20 percent during observed traffic classification counts in 2013.

WVDOH has collected existing (Year 2013) traffic data and developed AADT forecasts for the 20-year horizon design year (Year 2033). Year 2013 AADT for the I-64 segment between the US 35 Interchange (Exit 40) and the St. Albans Interchange (Exit 44) is 54,200 vpd and the 2013 AADT for the I-64 segment between the St. Albans Interchange (Exit 44) and the Nitro Interchange (Exit 45) is approximately 68,700 vpd. By 2033, these volumes are anticipated to increase to 80,800 vpd and 102,300 vpd, respectively.

These traffic volumes were used to estimate Level of Service (LOS), a qualitative measure of highway traffic conditions, as identified in the 2010 *Highway Capacity Manual* (HCM). Individual levels of service characterize conditions in terms of speed, travel time, freedom to maneuver, traffic interruptions, and comfort, convenience and safety. Six LOSs are defined and given letter designations from A to F, with LOS A representing free flow conditions and LOS F representing severe congestion and/or time delays. Typically, a minimum LOS D is considered acceptable in urban areas and LOS C is considered acceptable in rural areas. In 2013, mainline I-64 LOS analysis identified several eastbound segments operating at LOS E or F during the AM peak period and several westbound segments operating at LOS D during the PM peak period. By 2033, increased traffic volumes degrade operations for much of the mainline corridor to LOS E or F during both peak periods if capacity improvements are not implemented. Additional traffic information is presented in **Chapter 2**.

---

<sup>1</sup> FHWA, Office of Freight Management and Operations. "Freight Facts and Figures, 2011." Accessed: [http://ops.fhwa.dot.gov/freight/freight\\_analysis/nat\\_freight\\_stats/docs/11factsfigures/pdfs/fff2011\\_highres.pdf](http://ops.fhwa.dot.gov/freight/freight_analysis/nat_freight_stats/docs/11factsfigures/pdfs/fff2011_highres.pdf)



At the St. Albans Interchange (Exit 44), year 2013 AADT ramp volumes range from 2,300 vpd to 4,200 vpd, with the heaviest movement using the eastbound on-ramp. By 2033, these AADT volumes would increase to between 3,400 vpd and 6,300 vpd. Eastbound ramps operate at LOS E/F during the morning peak period and westbound ramps operate at LOS D during the afternoon peak period based on year 2013 traffic volumes and existing geometry. By 2033, increased traffic volumes would degrade operations to LOS F for eastbound morning and westbound afternoon peak periods, assuming no capacity improvements are implemented.

At the Nitro Interchange (Exit 45), year 2013 AADT ramp volumes range from 5,800 vpd to 6,300 vpd. By 2033, these AADT volumes would increase to between 8,600 vpd and 9,400 vpd. Eastbound ramps operate at LOS F during the morning peak period and westbound ramps operate at LOS C during the afternoon peak period based on year 2013 traffic volumes and geometry. By 2033, increased traffic volumes would degrade operations to LOS F for eastbound morning and westbound afternoon peak periods, assuming no capacity improvements are implemented.

### 1.5.3 Traffic Safety

Existing crash data within West Virginia and along I-64 was provided by WVDOH. As shown in **Table 1-1**, from MM 0 on the Kentucky-West Virginia state border to MM 58, approaching the I-77 junction in Charleston, there were 128.6 crashes per million vehicle-miles traveled (VMT), with 37.3 resulting in injuries and 0.7 resulting in fatalities. The study area has a markedly higher crash rate than the larger I-64 segment and West Virginia interstates overall. Between MM 42 and 46, the total number of crashes per million VMT increases to 224.8, of which 68.4 involve injuries, and 0.9 involve fatalities.

**Table 1-1: Crash Data Summary**

| Location                          | Crash Rate | Injury Crash Rate | Fatal Crash Rate |
|-----------------------------------|------------|-------------------|------------------|
| I-64, MM 42 – 46                  | 224.8      | 68.4              | 0.9              |
| I-64, KY to Charleston, MM 0 – 58 | 128.6      | 37.3              | 0.7              |
| All Interstates in WV             | 87         | 27                | 0.83             |

From 2011 to 2013, 131 crashes were reported on I-64 within the vicinity of the St. Albans Interchange (Exit 44). These 131 crashes resulted in 41 reported injuries, but no fatalities. Approximately 34 percent were single-vehicle accidents, and approximately 7 percent involved three or more vehicles. Nearly 47 percent of reported crashes were rear end collisions. Four single vehicle crashes involved overturned vehicles. Approximately 75 percent occurred during daylight hours, and nearly 70 percent of total crashes with reported conditions, occurred during dry conditions.

Mainline I-64 has a four-lane typical section, located between six-lane segments. A significant contribution to the traffic accidents is the backup caused by the insufficient capacity of the 4-lane. During the PM peak hour, a backup consistently forms in the westbound lanes east of the Nitro Interchange. This backup, at times, extends towards the Cross Lanes interchange. Vehicles approaching the backup typically travel on a down grade, which increases the stopping distance. There are also occasions when this backup nears a crest vertical curve. Even though the stopping

sight distance meets criteria, the sight distance limitation contributes to the potential for accidents. The WVDOH, as an interim safety improvement, resurfaced the east bound travel lanes just west of the Nitro interchange with High Friction Surface Treatment (HFST) to help reduce skidding and increase driver control during emergency braking. The eastbound lanes typically backup during the AM peak hour, and also contribute to the segment crash rate.

Traffic safety issues are located at both the Nitro and St. Albans Interchanges. The westbound entrance ramp at the Nitro Interchange has a relatively short acceleration lane. The short lane under heavy traffic conditions does not allow enough length to merge and potentially causes traffic to stop. The accidents are somewhat mitigated at this location because there is an adequate shoulder that affords some protection if a motorist is unable to merge.

A similar condition exists on both the eastbound and westbound entrance ramps at the St. Albans Interchange. The existing bridge is located at the end of the acceleration lane. The shoulder at this terminus isn't wide enough to accommodate the traffic who are unable to merge. The motorists in some cases stop on the ramp, which can cause rear end accidents. In other cases they attempt to unsafely merge, which can cause both sideswipes and mainline rear end crashes. The westbound ramp has sight distance limitations because of the interchange overpass, and suffers from a short acceleration lane. In this case traffic is speeding up because of the proximity of the six-lane, which makes entering the traffic stream more difficult for ramp traffic.

The St. Albans interchange configuration is unconventional for an interstate facility. The westbound intersection formed by the entrance and exit ramps accessing the WV 817 Connector is controlled by a stop sign for the entrance ramp traffic and a free flow condition for the exit ramp. Accidents are caused by the entrance ramp traffic not realizing there is a stop sign and entering the intersection. The eastbound exit ramp has a stop sign and a single lane ahead of the gore. Traffic not realizing there's a stop sign can cause an accident by entering the traffic stream.

One other safety issue is the occurrence of fog on the Kanawha River. Although limited in occurrences, the fog does contribute to accidents on the bridge. The WVDOH constructed fog warning signals to help mitigate the accident potential when visibility is compromised.

### **1.5.4 Traffic Operations**

Within the project area, along I-64 from east of the US 35 Interchange (Exit 40) to east of the Nitro Interchange (Exit 45), I-64 is a four-lane roadway, with two lanes in each direction. Other segments of I-64, including the segment directly to the west of the project area, have already been widened from four to six lanes, where an extra lane per direction was constructed within the existing median and direction traffic was separated by a concrete barrier. Thus, currently traffic merges from six lanes to four lanes as it enters the project area from the west.

The two interchanges within the project area (St. Albans – Exit 44, and Nitro – Exit 45) are diamond interchanges, and as a result traffic is subject to stop and go operations.

### 1.5.5 Project Need

The I-64 project has the following needs:

1. Improve traffic volume capacity.
2. Enhance safety by improving existing interchange geometry at the Saint Albans and Nitro interchanges, which currently results in sudden stops and accidents.
3. Support continued growth and economic development in the project area.

Thus, a widened I-64 and improved interchange configuration would alleviate congestion and provide the infrastructure to significantly reduce the number of sudden stops required currently. The proposed project would thereby improve regional accessibility and facilitate continued growth and economic development in the project area.

### 1.5.6 Project Purpose

Based on these transportation needs, WVDOH developed the following project purpose statement:

*The purpose of the proposed project is to increase system capacity on mainline I-64 from US 35 (Exit 40) to Nitro (Exit 45), improve interchange traffic operations, enhance safety and facilitate growth in accordance with regional and local land use planning.*

This page intentionally left blank.

# Chapter 2

## Alternatives

A number of alternatives were considered to improve mobility and connectivity along I-64 in Putnam County: No Build, Transportation System Management, Mass Transit, and various Build Alternatives. Each alternative was evaluated according to its ability to meet the purpose and need of the proposed project.

### 2.1 Existing Conditions

#### 2.1.1 Introduction

Level of Service (LOS) is a commonly used methodology to measure the performance level of the roadway network; it is based on the concepts and procedures in the Transportation Research Board's 2010 *Highway Capacity Manual (HCM)*. LOS is often quantified as a grade between A and F: segments or intersections with a lower grade have been determined to be worse with respect to identified performance or service measures, which include speed, travel time, maneuverability, traffic interruptions, comfort, safety and convenience. The A to F scale is detailed in **Table 2-1** below.

**Table 2-1: Level of Service Definitions**

| Grade | Description   |
|-------|---|
| A     | Optimal environment: free flow conditions, unimpeded maneuverability            |
| B     | Good environment: stable flow conditions, slightly restricted maneuverability   |
| C     | Fair environment: stable flow conditions, noticeably restricted maneuverability |
| D     | Poor environment: reduced flow conditions, limited maneuverability              |
| E     | Very poor environment: operating conditions at or near capacity levels          |
| F     | Extremely poor environment: operating conditions beyond capacity levels         |

Under existing baseline conditions (year 2013), LOS was established for freeway segments, merge and diverge areas, and intersections within the project area. In addition, the volume-to-capacity ratio ( $v/c$ ) of the signalized intersections was calculated. The  $v/c$  ratio measures the overall critical volume against the overall capacity, while taking into consideration delays due to signal type, timing, phasing and progression. A  $v/c$  ratio of 1.00 indicates that the intersection is operating at full capacity, signifying high congestion and low maneuverability.

#### 2.1.2 Mainline Level of Service

As **Table 2-2** demonstrates, within the project area, during the AM peak hour westbound I-64 is graded A or B, whereas eastbound I-64 is graded mostly E or F. Only a segment east of Exit 45 (Nitro Interchange) is considered to operate at an acceptable LOS C or better, as shown in **Figure 2-1**. The segment east of Exit 45 has a six-lane typical section as compared to the four-lane typical section, which occurs within the project limits. The PM peak hour sees a relative reversal, where westbound degrades to C or D, and eastbound improves to C or B.

**Table 2-2: Segment LOS during AM (PM) Peak Hour in 2013**

| Segment                 | Location        | 2013 LOS |
|-------------------------|-----------------|----------|
| <b>Segment Analysis</b> |                 |          |
| Eastbound I-64          | Exit 40 to 44   | E (C)    |
| Eastbound I-64          | Exit 44 to 45   | F (C)    |
| Eastbound I-64          | East of Exit 45 | C (B)    |
| Westbound I-64          | East of Exit 45 | A (C)    |
| Westbound I-64          | Exit 45 to 44   | B (D)    |
| Westbound I-64          | Exit 44 to 40   | A (D)    |
| <b>Diverge Analysis</b> |                 |          |
| EB Off Ramp             | Exit 44         | E (C)    |
| WB Off Ramp             | Exit 44         | B (D)    |
| EB Off Ramp             | Exit 45         | F (C)    |
| WB Off Ramp             | Exit 45         | A (C)    |
| <b>Merge Analysis</b>   |                 |          |
| EB On Ramp              | Exit 44         | F (C)    |
| WB On Ramp              | Exit 44         | B (D)    |
| EB On Ramp              | Exit 45         | F (B)    |
| WB On Ramp              | Exit 45         | A (C)    |

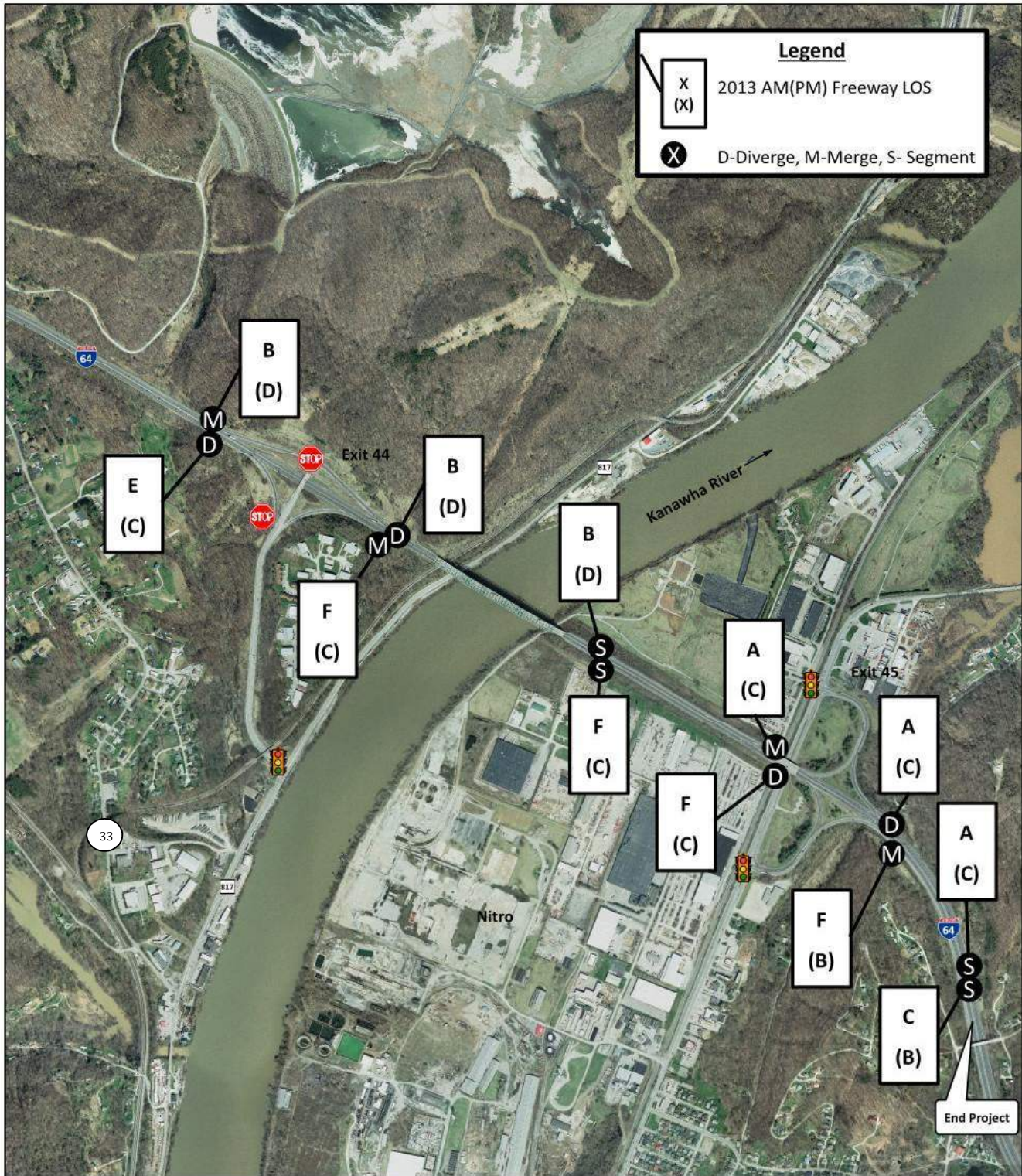
### 2.1.3 Intersection Level of Service

**Table 2-3** and **Figure 2-2** show the major intersections within the general project area and their respective LOS during the AM and PM peak hour. The I-64/SR 817 stop-controlled ramp connectors have the poorest LOS within the project area: the westbound ramp connector was graded an F during the AM and PM peak hour, and the eastbound ramp connector was graded comparatively better at a C during morning and evening peak hour traffic.

Although, the approach from the west at SR 817/SR 817 ramp connector and SR 817/CR 33 was graded poorly (D), all of the signalized intersections were deemed to have overall acceptable morning and peak hour conditions (C and above).

**Table 2-3: Intersection LOS during AM (PM) Peak Hour in 2013**

| Intersection Location  | 2013 LOS |
|--|----------|
| SR 817 Ramp Connector at WB Ramps<br><i>Stop-Controlled NB Left Turn Movement</i>  | F (F)    |
| SR 817 Ramp Connector at EB Ramps<br><i>Stop Controlled EB Right Turn Movement</i> | C (C)    |
| SR 817 at SR 817 Ramp Connector  | C (B)    |
| SR 817 at Cr 33  | B (A)    |
| SR 25 at WB Ramps  | B (B)    |
| SR 25 at EB Ramps  | B (B)    |



**2013 Existing Freeway LOS**  
 I-64 Exit 44 & 45 - St. Albans & Nitro Interchange Revised Access

I-64 Six Lane Widening  
 Crooked Creek to Nitro, Putnam County  
 Figure 2-1

NTS



M:\P\171154\171154.dwg Post 2005 Environmental Assessment\figs\map\figs\map\_report\_1-25-11\64w\_c\_048\_321ba\_8\_5x11.mxd 4/3/2014

### 2.1.4 Peak AM/PM Volumes

**Figure 2-3** displays the peak hour volumes which, along with existing geometry, led to the mainline and intersection LOS grades listed in **Tables 2-2** and **2-3**, respectively. Along I-64 within the project area, eastbound traffic is heavier than westbound traffic throughout the AM peak hour (7 am to 9 am), and westbound traffic is heavier than eastbound traffic during the PM peak hour (4 pm to 6 pm).

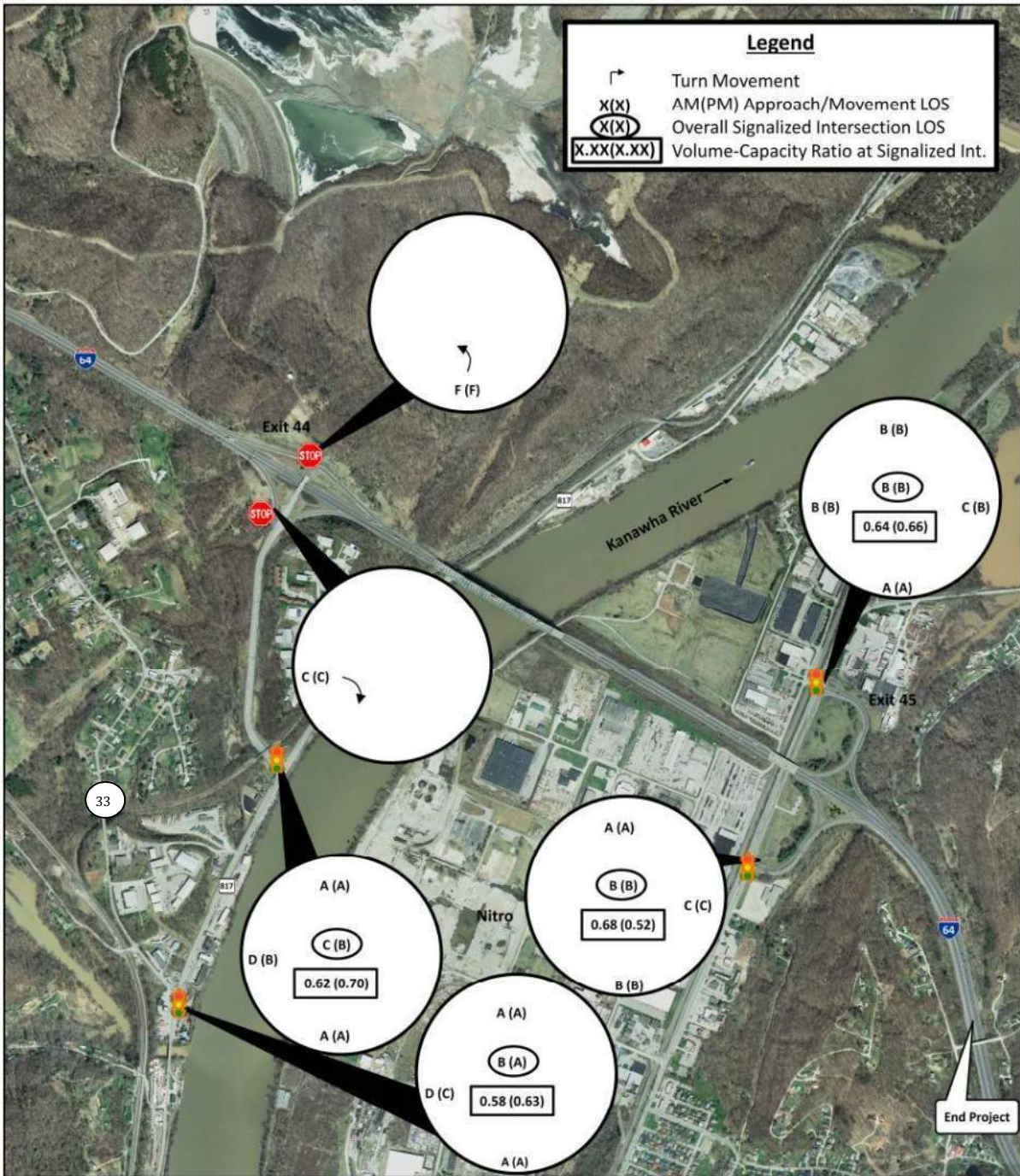
Of the major intersections, SR 817/CR 33 has the heaviest movement heading south through the intersection during both the AM and PM peak hour (649 and 568 vehicles, respectively). However, as shown on **Figure 2-2**, that approach enjoys free flow conditions and is graded an A during the AM and PM peak hour. Overall, the SR 817/CR 33 signalized intersection was graded the best for performance.

**Figure 2-2** also displays the v/c ratio of the signalized intersections. Per the Federal Highway Administration's Signalized Intersections: Informational Guide, a v/c ratio of less than 0.85 indicates that the intersection is operating under capacity, and that excessive delays are not experienced. The signalized intersections within the general project area have a v/c ratio ranging from 0.58 to 0.68 during the AM peak hour, and 0.52 to 0.70 during the PM peak hour. These v/c ratios signify low to moderate congestion.

### 2.1.5 Conclusion

Under existing conditions, the majority of eastbound I-64 within the project area is operating at failing conditions during the AM peak hour, indicating extreme delays and high congestion. Westbound I-64 operates at optimal or good free flow conditions during the am peak hour, indicating no delays and low congestion. During the PM peak hour, I-64 eastbound improves, and I-64 westbound degrades to a LOS D, which means I-64 operates at stable to reduced flow conditions in both directions. With the exception of the westbound I-64/SR 817 stop-controlled ramp connector, all major intersections within the project area are operating at stable to free flow conditions, with low to moderate congestion.

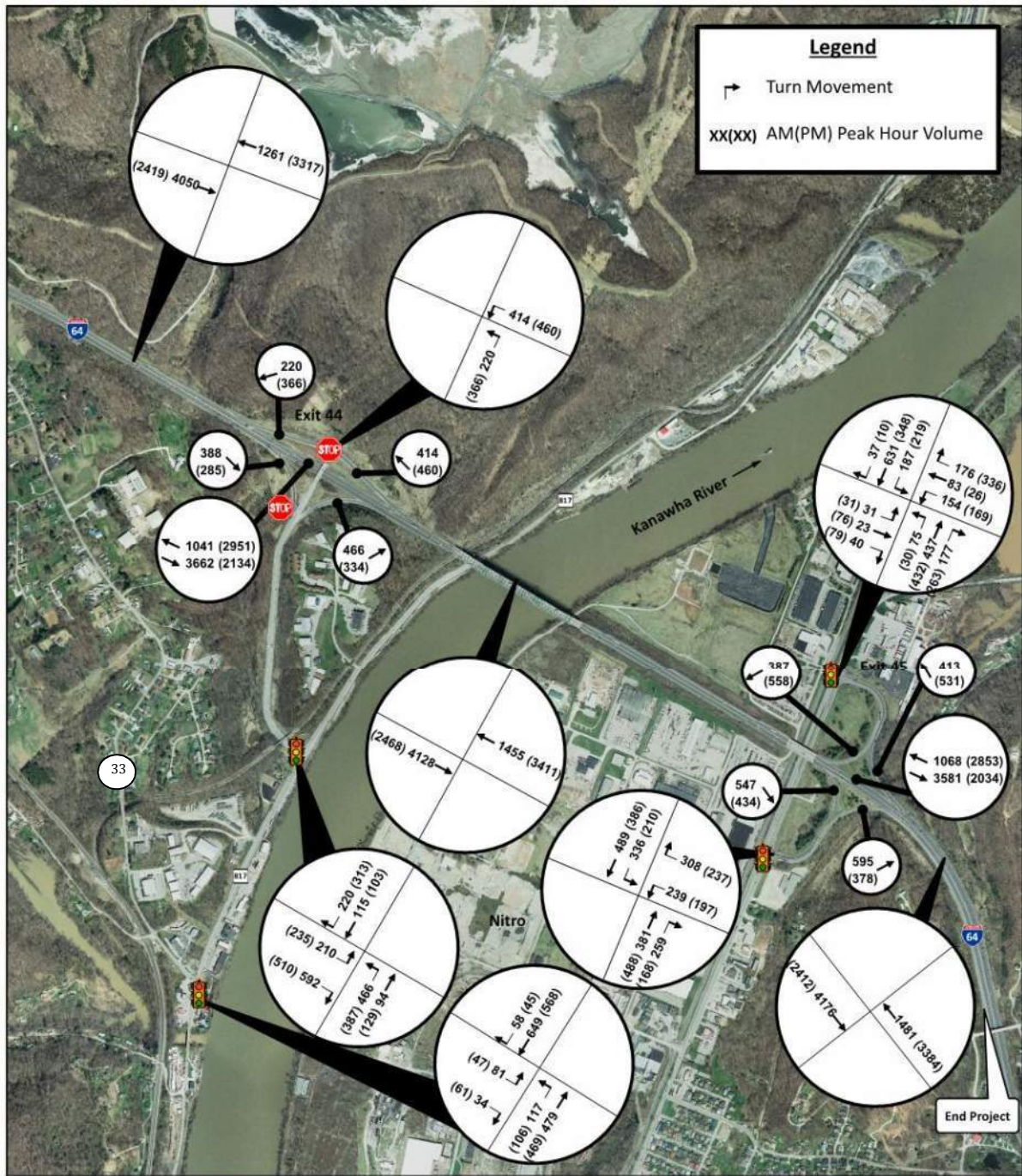




I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
**2013 Existing Intersection LOS**  
I-64 Exit 44 & 45 - St. Albans & Nitro Interchange Revised Access  
Figure 2-2

NTS





I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
**2013 Peak Hour Volumes**  
Figure 2-3  
I-64 Exit 44 & 45 - St. Albans & Nitro Interchange Revised Access

NTS



## 2.2 No Build

### 2.2.1 Introduction

Under the No Build Alternative, I-64 will not be widened from east of Exit 40 (US 35) to Exit 45 (Nitro), and the Exit 44 (St. Albans) and Exit 45 interchanges will not be reconstructed.

As part of the 2014 Interchange Modification Report (IMR) developed for the project, traffic volumes were projected out to horizon year 2033 (20 years from the existing baseline year) and the level of service of existing freeway and intersection facilities was determined, as well as the v/c ratio of the major signalized intersections within the project area.

Putnam County has, and is projected to continue to experience, substantial economic and residential growth. I-64 is a major east-west corridor, connecting the Charleston and Huntington metropolitan areas, which are major employment centers. However, I-64 itself serves as an economic driver. According to the Putnam County West Virginia Final Draft Community Plan – 2014: Bridging to the Future, high growth areas cluster around the highway access, and the highest intensity land uses are clustered around the I-64 and SR 34 interchange (Exit 39), just west of the proposed project area. This area includes many commercial establishments, including restaurants, medical services, retail and lodging. The growth along the I-64 corridor leads to more traffic entering the transportation network, which in turn leads to degradation of levels of service under existing conditions.

### 2.2.2 Mainline Level of Service

Under the No Build Alternative, as shown in **Table 2-4**, with the exception of the westbound on ramp at St. Albans (Exit 44) during the AM peak hour, every location within the project area is projected to deteriorate in the horizon year as compared to the baseline year. **Figure 2-4**, presenting the LOS for the horizon year, shows that the majority of the I-64 corridor worsens to failing levels.

**Table 2-4: Segment LOS during AM (PM) Peak Hour, 2013 vs. 2033 LOS**

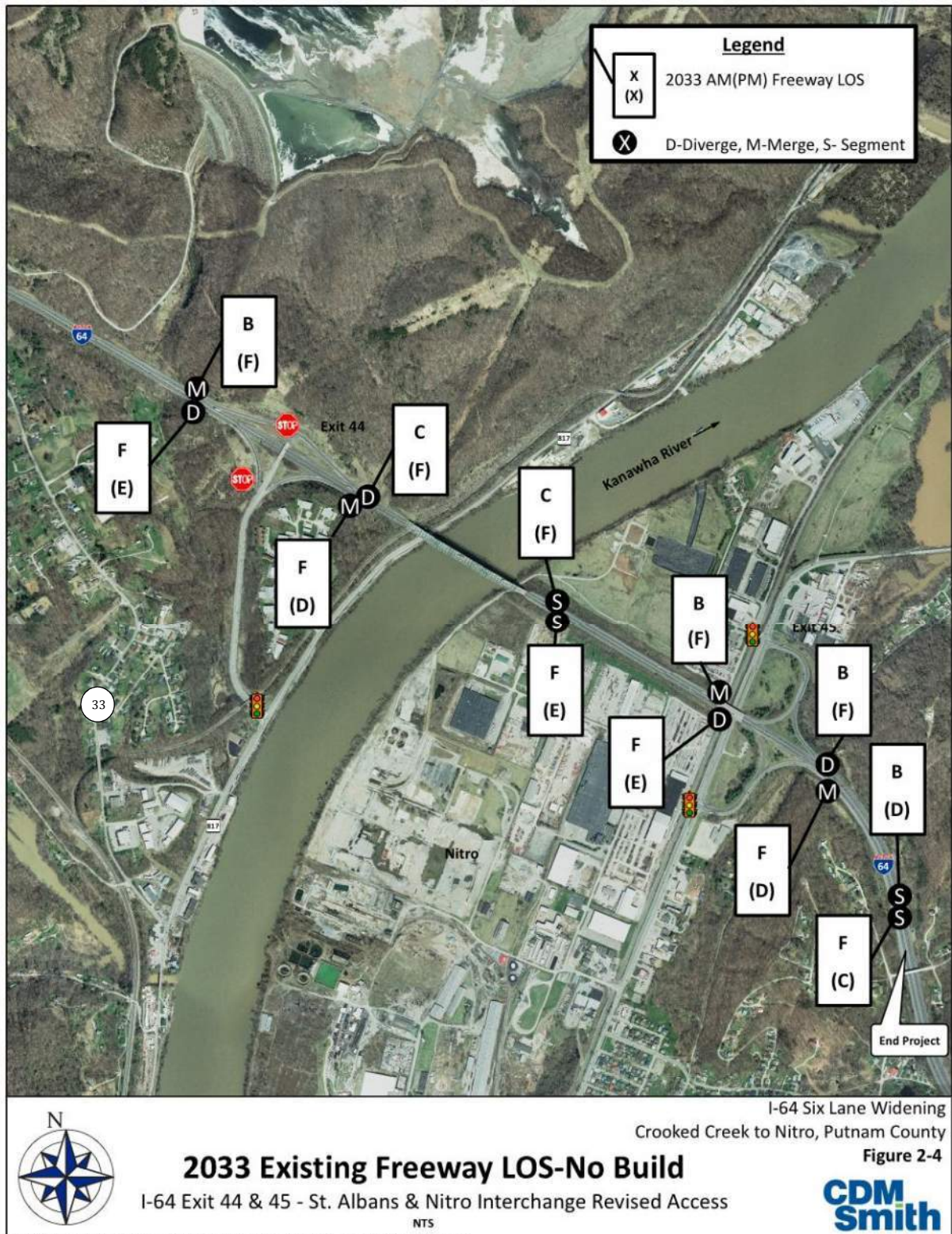
| Segment                 | Location        | 2013 LOS | 2033 LOS |
|-------------------------|-----------------|----------|----------|
| <b>Segment Analysis</b> |                 |          |          |
| Eastbound I-64          | Exit 40 to 44   | E (C)    | F (E)    |
| Eastbound I-64          | Exit 44 to 45   | F (C)    | F (E)    |
| Eastbound I-64          | East of Exit 45 | C (B)    | F (C)    |
| Westbound I-64          | East of Exit 45 | A (C)    | B (D)    |
| Westbound I-64          | Exit 45 to 44   | B (D)    | C (F)    |
| Westbound I-64          | Exit 44 to 40   | A (D)    | B (F)    |
| <b>Diverge Analysis</b> |                 |          |          |
| EB Off Ramp             | Exit 44         | E (C)    | D (E)    |
| WB Off Ramp             | Exit 44         | B (D)    | C (F)    |
| EB Off Ramp             | Exit 45         | F (C)    | F (E)    |
| WB Off Ramp             | Exit 45         | A (C)    | B (F)    |
| <b>Merge Analysis</b>   |                 |          |          |
| EB On Ramp              | Exit 44         | F (C)    | F (D)    |
| WB On Ramp              | Exit 44         | B (D)    | B (F)    |
| EB On Ramp              | Exit 45         | F (B)    | F (D)    |
| WB On Ramp              | Exit 45         | A (C)    | B (F)    |

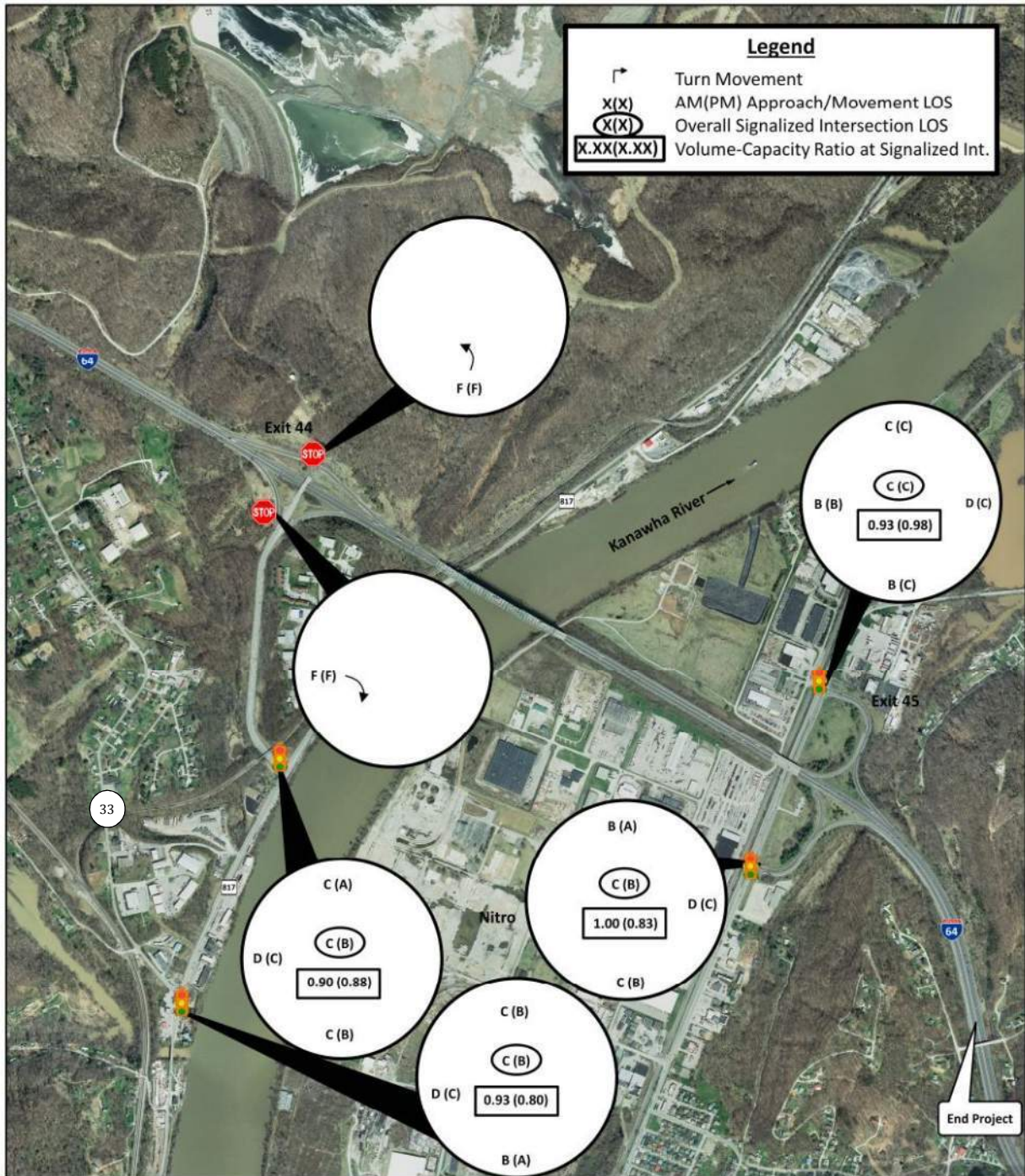
### 2.2.3 Intersection Level of Service

Overall, particularly at the SR 817 ramp connectors at I-64, the LOS at major intersections within the project area will continue to deteriorate under the No Build Alternative. Table 2-5 shows the horizon year LOS as compared to the baseline year, and Figure 2-5 demonstrates the horizon year intersection LOS.

**Table 2-5: Intersection LOS during AM (PM) Peak Hour, 2013 vs. 2033 LOS**

| Intersection Location  | 2013 LOS | 2033 LOS |
|--|----------|----------|
| SR 817 Ramp Connector at WB Ramps<br><i>Stop-Controlled NB Left Turn Movement</i>  | F (F)    | F (F)    |
| SR 817 Ramp Connector at EB Ramps<br><i>Stop Controlled EB Right Turn Movement</i> | C (C)    | F (F)    |
| SR 817 at SR 817 Ramp Connector  | C (B)    | C (B)    |
| SR 817 at CR 33  | B (A)    | C (B)    |
| SR 25 at WB Ramps  | B (B)    | C (C)    |
| SR 25 at EB Ramps  | B (B)    | C (B)    |





I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 2-5.

**2033 Existing Intersection LOS-No Build**  
I-64 Exit 44 & 45 - St. Albans & Nitro Interchange Revised Access  
NTS

**CDM Smith**

### 2.2.4 Peak AM/PM Volumes

**Figure 2-6** displays the peak hour volumes in 2033 under the No Build Alternative. Traffic volume is projected to increase within the project area, and eastbound I-64 traffic will remain heavier than westbound traffic throughout the AM peak hour and westbound traffic will remain heavier during the PM peak hour.

The SR 817/CR 33 intersection will continue to have the heaviest movement heading south through the intersection during the AM and PM peak hour (967 and 846 vehicles, respectively). That approach, as shown on **Figure 2-5**, will degrade from A during the AM and PM peak hour to C and B during the AM and PM peak hour, respectively.

In addition, the v/c ratios of the signalized intersections, as also displayed in **Figure 2-5**, will continue to increase: ranging from 0.90 to 1.00 during the AM peak hour, and from 0.80 to 0.98 during the PM peak hours. These ratios reflect high congestion and excessive delays, indicating that the intersections are operating at full capacity.

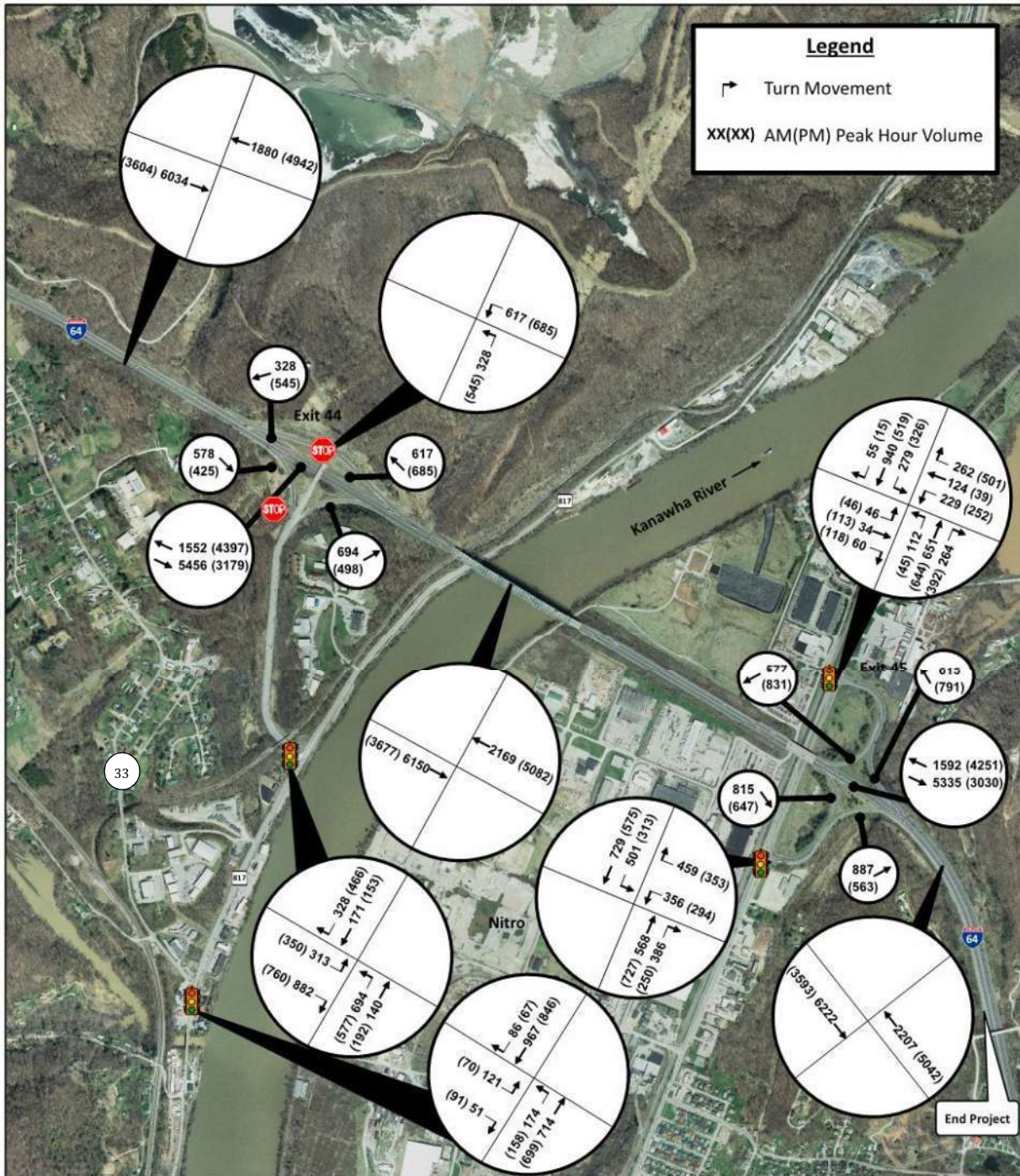
### 2.2.5 Conclusion

Under the No Build Alternative, future traffic growth is anticipated to create substantial delays and high congestion along the I-64 corridor, as well as the major intersections within the project area. Thus, this alternative limits the WVDOT's capability to increase system capacity, improve traffic operations, and improve safety within the project area. As a result, the project purpose and needs would not be met.

## 2.3 Transportation System Management (TSM)

Transportation System Management (TSM) strategies generally focus on reducing traffic demands or increasing capacity without major construction through modification of existing services. A TSM approach, which has already been employed within the project area, is the installation of signs equipped with Intelligent Transportation System (ITS). WVDOT's Transportation Management Center (TMC) integrates and coordinates the state's ITS system, which enables WVDOT to proactively manage traffic by allowing for such tactics as immediate signal timing adjustment and real-time detection and alerts of emergency incidents.

Other TSM strategies include improved signage, pavement striping, and traffic calming techniques such as speed bumps or concrete islands. Some TSM methods would not be practical along the I-64 corridor, while others would not serve to alleviate the projected growth in traffic volumes within the project area. Therefore, this alternative was eliminated from further consideration.



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 2-6

**CDM Smith**

M:\161610 - 7\Projects\0007-048 Widening\01-2012\mxd\maps\Access\am\gis\report\_5-24-11\048wr\_fig\_261.jpg\_8\_Sx11.mxd 4/1/2014



## 2.4 Mass Transit

Mass transit relies on alternative modes of travel (e.g. bus or train) to move people to a common destination, thereby decreasing congestion and improving operational efficiency on existing highways. Effective mass transit requires densely populated areas and a common transportation objective (e.g., an employment center). Intelligent Transit (iT) was a bus service between Charleston and Huntington operated by the Kanawha County Regional Transit Authority (KRT) and the Tri-State Transit Authority (TTA). The service launched in 2009, and ceased operations in August 2015. In 2009, iT carried 9,066 riders and carried a peak of 15,594 in 2012 before declining to 13,451 riders in 2014.<sup>1</sup> As a result of declining ridership and lack of funding, introducing or continuing mass transit within the project area is not a viable alternative. Therefore, this alternative was eliminated from further consideration.

## 2.5 Build Alternatives

Build alternatives involve highway construction improvements. The proposed project is to address the following needs: improve capacity, operations and safety, and support continue growth and economic development in the project area. As the 2014 IMR demonstrates, the existing I-64 corridor east of US 35 (Exit 40) to east of Nitro (Exit 45), including St. Albans (Exit 44) is deficient with respect to capacity, operations and safety, and a change to the existing roadway and Exit 44 interchange configuration is the only practical way to address these needs.

All of the proposed alternatives improve capacity, operations, and safety characteristics of mainline I-64. Eliminating the 4-lane bottleneck will reduce the rear-end crashes which occur because of the morning and evening backups. The auxiliary lane between the St. Albans and Nitro Interchanges eliminates the short acceleration lanes and in combination with the additional capacity provided by the 6-lane provides a safer merge condition

The eight build alternatives evaluated in this document are shown in **Figure 2-7** and discussed below.

All eight build alternatives would include what's marked as "Western Section Widening" and "SR 817 Improvements" on **Figure 2-7**. Western Section Widening would entail widening from the beginning of the I-64 project area (east of Exit 40) to just west of Bills Creek Road (west of MM 43). The widening would occur in a manner consistent with already completed adjacent projects: an extra lane per direction will be constructed within the existing 40-foot wide median and directional traffic will be separated by a concrete barrier within the remaining 16-foot wide median. The proposed construction in this section includes the widening of two mainline bridges, I-64 over CR 29 and Rock Step Run Creek and I-64 over CR 33/4 (McCloud Road). These two bridges will be widened by adding an additional travel lane in each direction with shoulders and a concrete barrier wall in the median. The CR 44 (Bills Creek Road) over I-64 Bridge will be completely replaced independent of which alternate is advanced to construction, because the existing bridge piers conflict with the proposed I-64 widening. The replacement bridge will be constructed as either a single or double span with a 30-foot wide clear roadway width.

<sup>1</sup> *Charleston Gazette-Mail*. "Charleston-Huntington bus service losing funding." March 22, 2015: <http://www.wvgazettemail.com/article/20150322/DM01/150329790>

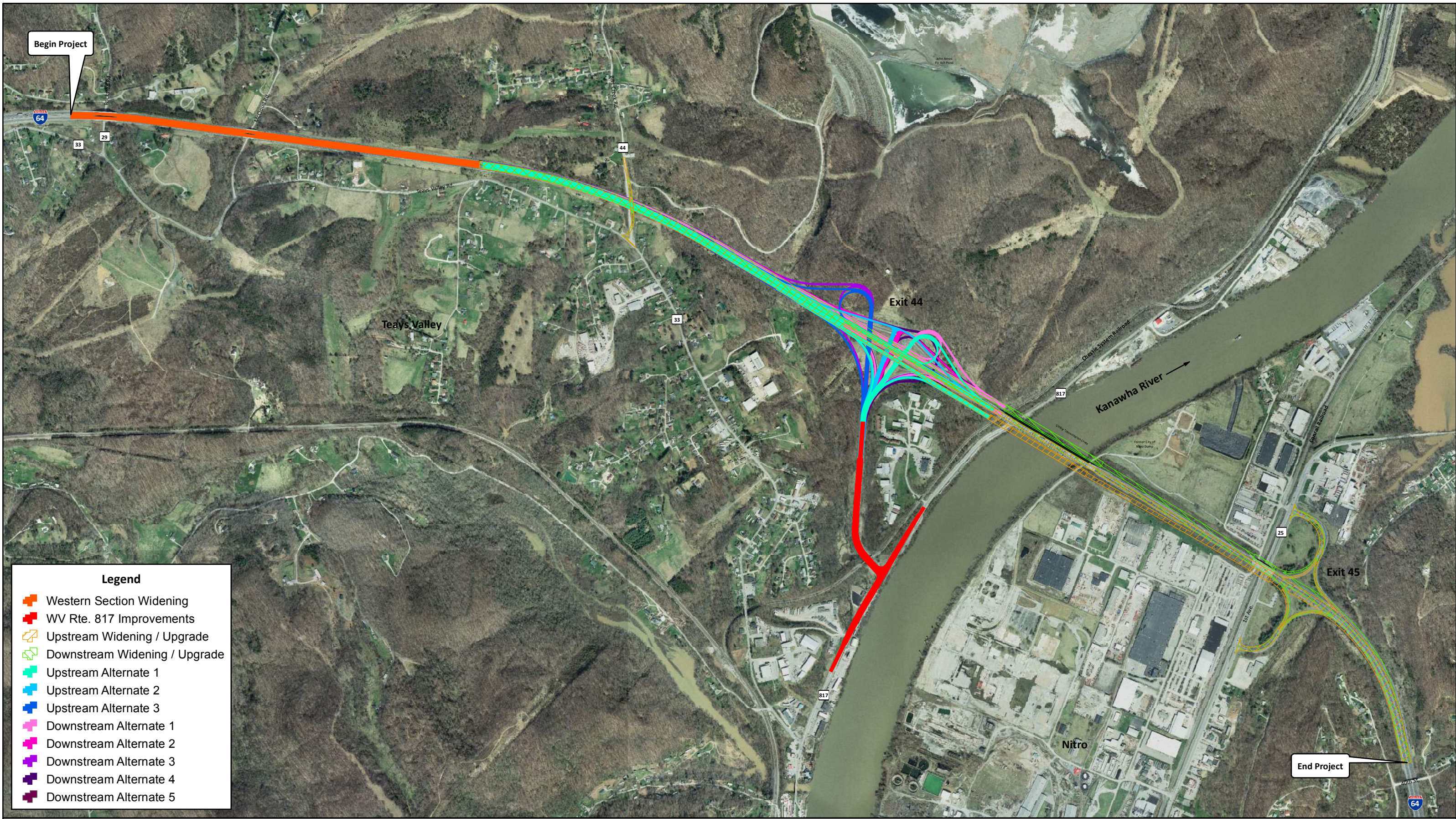
The I-64 over WV 25 Bridge, which is located at the Nitro Interchange will be widened on one side. The selected alternative will determine which side of the bridge is widened. For the downstream alternates, the north side will be widened, and for the upstream alternates the south side will be widened. The bridge will have four-lanes in each direction with associated shoulders and median barrier wall. The double 10' by 10' reinforced concrete box culvert at Armor Creek will need to be extend about 10' to accommodate the downstream alternates. The upstream alternates will not affect it.

SR 817 Improvements would involve improvements to the SR 817/I-64 connector: construction of a southbound lane to receive eastbound I-64 off ramp traffic and the addition of a left-turn lane on SR 817 for traffic approaching from SR 817 to the ramp connector (resulting in a total of two left-turn lanes available to traffic).

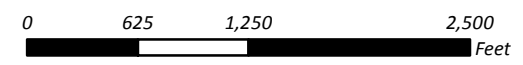
In addition, all eight alternatives would include the construction of an eastbound and westbound auxiliary lane between the St. Albans (Exit 44) and Nitro (Exit 45) interchanges.

East of the Western Section Widening component of the proposed project is where the proposed Build Alternatives diverge and split into two groupings: Upstream Alternatives and Downstream Alternatives.

All of these proposed alternatives improve capacity, operations, and safety characteristics of mainline I-64. Eliminating the four-lane bottleneck, by increasing capacity, reduces the rear-end crashes which occur because of the morning and evening backups. The auxiliary lane between the St. Albans and Nitro Interchanges improves traffic operation by eliminating the short acceleration lanes and in combination with the additional capacity provided by the six-lane provides a safer merge condition.



# Build Alternatives



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 2-7



### **2.5.1 Design Criteria for Build Alternatives**

Design criteria for each of the build alternatives will follow geometric design guidelines established by AASHTO. The design criteria as applied to this project provides a basis for safer highway operation. For principal arterials and freeways, a 70 mile per hour (mph) design speed is proposed with 12-foot lanes and 12-foot shoulders except where guardrail is present. The maximum grade is 4 percent.

Two design exceptions will be required: narrow left shoulders due to the limited width of the existing median, which will require the shoulder width to be less than 7 feet instead of the AASHTO minimum of 12 feet, and restricted sight distance because of the proposed median barrier.

### **2.5.2 Widening Upstream (South Side) of Existing I-64**

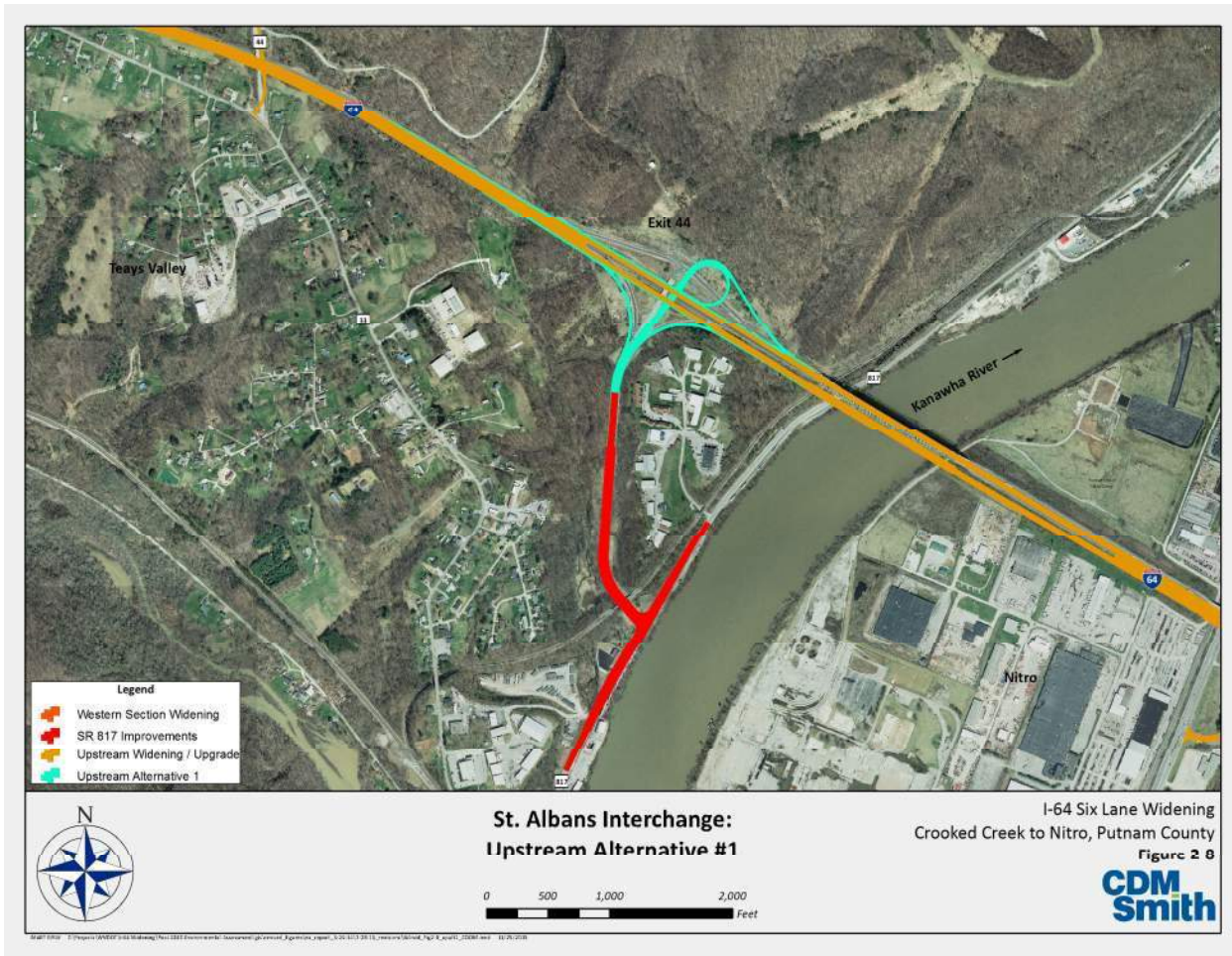
From Bills Creek Road (west of MM 43), the Upstream Widening Alternatives will shift eastbound and westbound lanes upstream (to the south) while widening the median to 26 feet. The existing I-64 Kanawha River crossing (the Donald Legg Memorial Bridge) will be maintained, but modified to carry one-way traffic, and a companion bridge will be constructed upstream of and parallel to the existing bridge. The horizontal and vertical navigation clearance will be no less than the existing clearances and new piers will be similar in size and shape to the existing piers. After construction, the new structure will carry eastbound traffic and the existing structure will carry westbound traffic. East of the bridge, both eastbound and westbound traffic lanes will transition northward to connect to the existing three-lane section east of Nitro (Exit 45).

Minor ramp realignments will be necessary to connect the existing Nitro Interchange ramps (Exit 45) into the widened I-64 alignment in this alternative.

With the Upstream Widening Alternatives, three possible configurations for the St. Albans Interchange (Exit 44) were considered.

#### **2.5.2.1 St. Albans Interchange: Upstream Alternative #1**

The Upstream Alternative #1 for the St. Albans Interchange (Exit 44) includes a trumpet interchange configuration, with a proposed bridge overpass 75 feet east of the existing overpass bridge. The westbound entrance will be the loop ramp of the interchange. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by a 1,420-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will have design speeds of 45 mph and 35 mph respectively. The westbound exit and entrance ramps will both have design speeds of 25 mph.



This configuration provides a number of advantages:

- It eliminates two stop-controlled movements compared to the existing conditions;
- It provides the highest design speed ramp for the highest volume movement, that is, the westbound I-64 exit;
- It has minimal impacts on the Teays Point Industrial Complex located to the southeast; and
- It does not result in any constructability concerns because of the offset configuration.

However, this configuration has safety implications. The tight loop configuration of the westbound entrance ramp, as well as the close proximity of the westbound entrance and exit ramps could be difficult for heavy trucks to navigate and would increase the possibility of overturning vehicles. In addition, the design radius of the westbound entrance ramp would require a design exception from WVDOH.

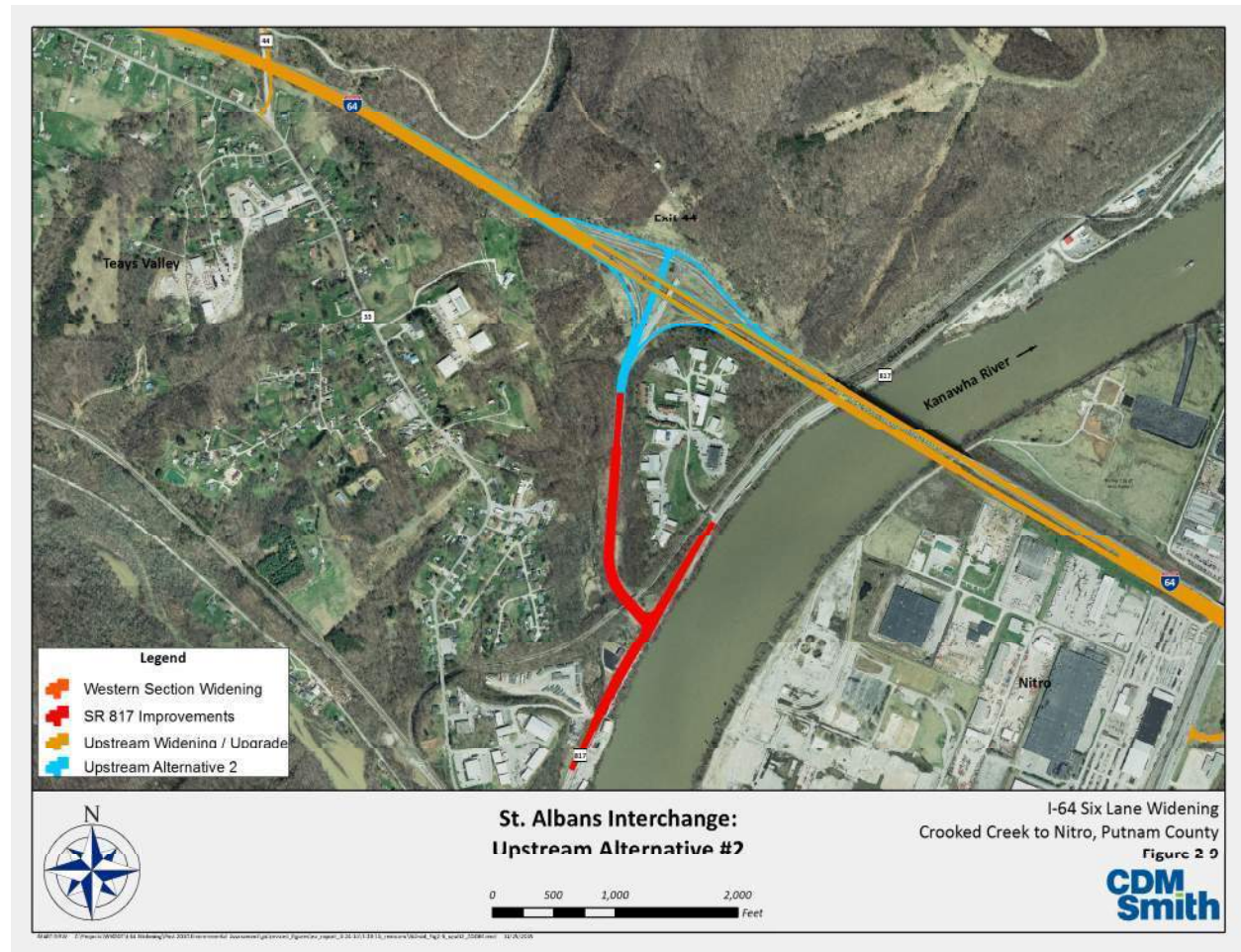
Upstream Alternative #1 would require 341,741 square feet of controlled access right-of-way (ROW), 9,279 square feet of non-controlled access ROW and 37,037 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$124.1 million.

Though Upstream Alternative #1 would serve to improve traffic operations and volume capacity within the project area, it would increase safety concerns, particularly for heavy vehicular traffic. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

### 2.5.2.2 St. Albans Interchange: Upstream Alternative #2

The Upstream Alternative #2 for the St. Albans Interchange (Exit 44) includes a diamond interchange configuration, with a proposed overpass bridge 75 feet west of the existing overpass bridge. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by an 800-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will both have design speeds of 35 mph. The westbound exit and entrance ramps will have design speeds of 50 mph and 55 mph, respectively.



This configuration provides a number of advantages:

- It eliminates one stop-controlled movement compared to the existing conditions;

- It has minimal impacts on the Teays Point Industrial Complex located to the southeast and minimizes earthwork adjacent to the complex; and
- It does not result in any constructability concerns because of the offset configuration.

However, this layout maintains one of the stop-controlled movements, which is projected to have a failing LOS (see **Figure 2-5**). In addition, the proposed configuration is similar to the existing configuration, and thereby does not improve safety within the project area.

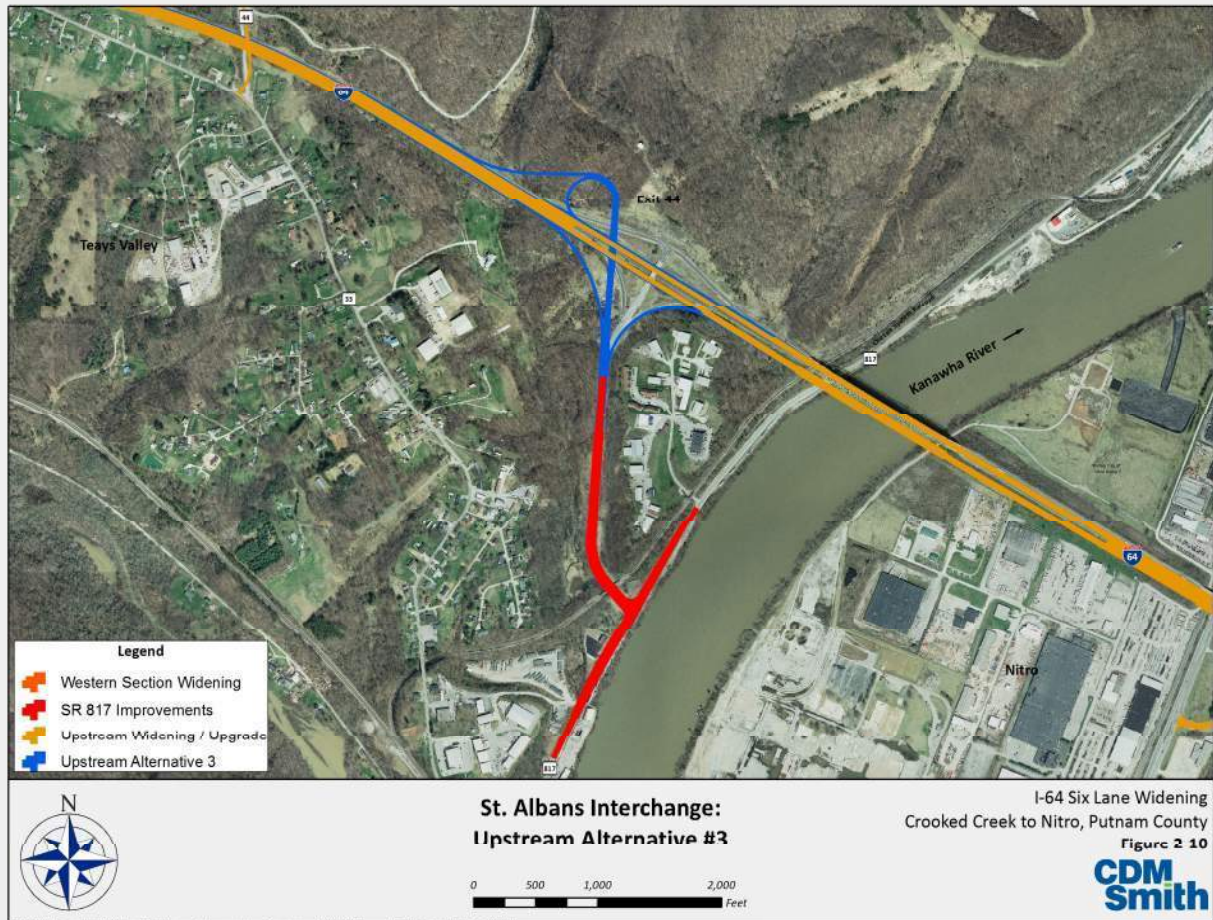
Upstream Alternative #2 would require 259,749 square feet of controlled access ROW, 9,279 square feet of non-controlled access ROW and 37,037 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$123.2 million.

Though Upstream Alternative #2 would serve to improve traffic operations, it would not improve volume capacity throughout the project area, and would not serve to alleviate safety concerns. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

### **2.5.2.3 St. Albans Interchange: Upstream Alternative #3**

The Upstream Alternative #3 for the St. Albans Interchange (Exit 44) includes a trumpet interchange configuration, with a proposed overpass bridge approximately 400 feet west of the existing overpass bridge. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by an 820-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will both have design speeds of 45 mph. The westbound exit and entrance ramps will both have design speeds of 25 mph.



The advantages of this configuration include:

- It eliminates two stop-controlled movements compared to the existing conditions;
- It has minimal impacts on the Teays Point Industrial Complex located to the southeast and minimizes earthwork adjacent to the complex; and
- It does not result in any constructability concerns because of the offset configuration.

However, like Alternative #1, this configuration has several safety implications. The configuration places the ramp with the lowest design speed (25 mph) to serve the highest volume movement, the westbound I-64 exit. The tight loop configuration of the westbound entrance ramp, as well as the close proximity of the westbound entrance and exit ramps could be difficult for heavy trucks to navigate and would increase the possibility of overturning vehicles. In addition, this alternative crosses I-64 at a large skew, increasing the required length of the overpass structure.

Upstream Alternative #3 would require 347,551 square feet of controlled access ROW, 9,279 square feet of non-controlled access ROW and 37,037 square feet of temporary construction easements.



The estimated cost of this proposed alternative is \$126.0 million. This alternative is the most expensive of the three Upstream Alternatives considered because of the increased pavement, earthwork, and bridge costs.

Though Upstream Alternative #3 would serve to improve traffic operations and volume capacity within the project area, it would increase safety concerns, particularly for heavy vehicular traffic. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

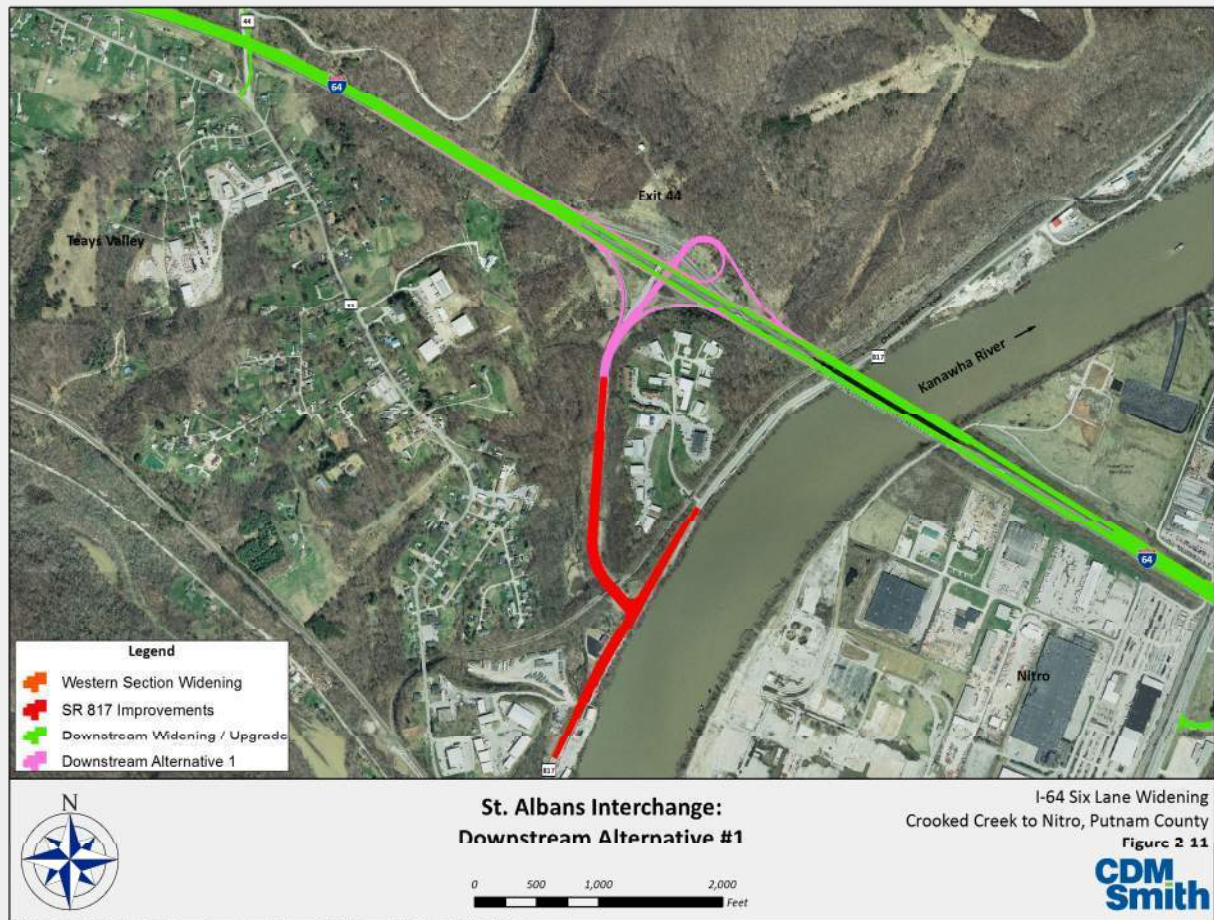
### **2.5.3 Widening Downstream (North Side) of Existing I-64**

From Bills Creek Road (west of MM 43), the Downstream Widening Alternatives will shift eastbound and westbound lanes downstream (to the north) while widening the median to 26 feet. The existing I-64 Kanawha River crossing (the Donald Legg Memorial Bridge) will be maintained, but modified to carry one-way traffic, and a companion bridge will be constructed downstream of and parallel to the existing bridge. The horizontal and vertical navigation clearance will be no less than the existing clearances and new piers will be similar in size and shape to the existing piers. After construction, the new structure will carry westbound traffic and the existing structure will carry eastbound traffic. East of the bridge, both eastbound and westbound traffic lanes will transition southward to connect to the existing three-lane section east of Nitro (Exit 45).

Minor ramp realignments will be necessary to connect the existing Nitro Interchange ramps (Exit 45) into the widened I-64 alignment in this alternative. With the Downstream Widening Alternatives, four possible configurations for the St. Albans Interchange (Exit 44) were analyzed:

#### **2.5.3.1 St. Albans Interchange: Downstream Alternative #1**

The Downstream Alternative #1 for the St. Albans Interchange (Exit 44) includes a trumpet interchange configuration, with a proposed bridge overpass 75 feet east of the existing overpass bridge. The westbound entrance will be the loop ramp of the interchange. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by a 1,420-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will have design speeds of 45 mph and 35 mph respectively. The westbound exit and entrance ramps will both have design speeds of 25 mph.



This configuration provides a number of advantages:

- It eliminates two stop-controlled movements compared to the existing conditions;
- It provides the highest design speed ramp for the highest volume movement, that is, the westbound I-64 exit;
- The lower design speed (25 mph) and tight radius (170 feet) on the westbound entrance ramp minimizes excavation volumes and impacts on the adjacent electrical transmission lines;
- It has minimal impacts on the Teays Point Industrial Complex located to the southeast; and
- It does not result in any constructability concerns because of the offset configuration.

However, this configuration has similar disadvantages as Upstream Alternative #1. The tight loop configuration of the westbound entrance ramp, as well as the close proximity of the westbound entrance and exit ramps could be difficult for heavy trucks to navigate and would increase the possibility of overturning vehicles. In addition, the design radius of the westbound entrance ramp would require a design exception from WVDOH.

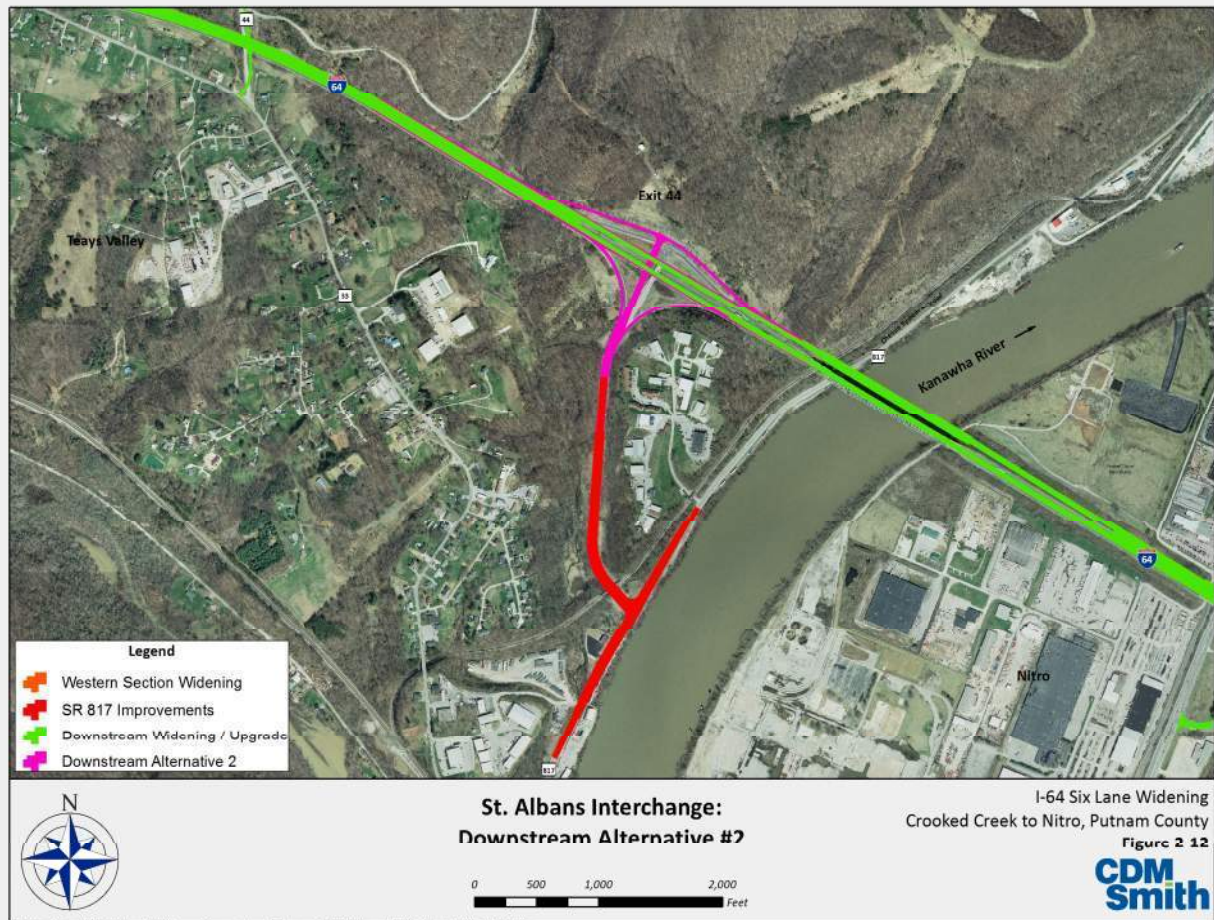
Downstream Alternative #1 would require 411,661 square feet of controlled access ROW, 8,991 square feet of non-controlled access ROW and 11,515 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$123.8 million.

Though Downstream Alternative #1 would serve to improve traffic operations and volume capacity within the project area, it would increase safety concerns, particularly for heavy vehicular traffic. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

### **2.5.3.2 St. Albans Interchange: Downstream Alternative #2**

The Downstream Alternative #2 for the St. Albans Interchange (Exit 44) includes a diamond interchange configuration, with a proposed overpass bridge 75 feet west of the existing overpass bridge. The Downstream Alternative #2 for the St. Albans Interchange (Exit 44) includes a diamond interchange configuration, with a proposed overpass bridge 75 feet west of the existing overpass bridge. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by an 800-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will both have design speeds of 35 mph. The westbound exit and entrance ramps will have design speeds of 50 mph and 55 mph, respectively.



This configuration provides a number of advantages:

- It eliminates one stop-controlled movement compared to the existing conditions;
- It requires no additional right-of-way based on preliminary construction limits;
- It has minimal impacts on the Teays Point Industrial Complex located to the southeast and minimizes earthwork adjacent to the complex; and
- It does not result in any constructability concerns because of the offset configuration.

However, like Upstream Alternative #2, this layout maintains one of the stop-controlled movements, which is projected to have a failing LOS (see **Figure 2-5**). In addition, the proposed configuration is similar to the existing configuration, and thereby does not improve safety within the project area.

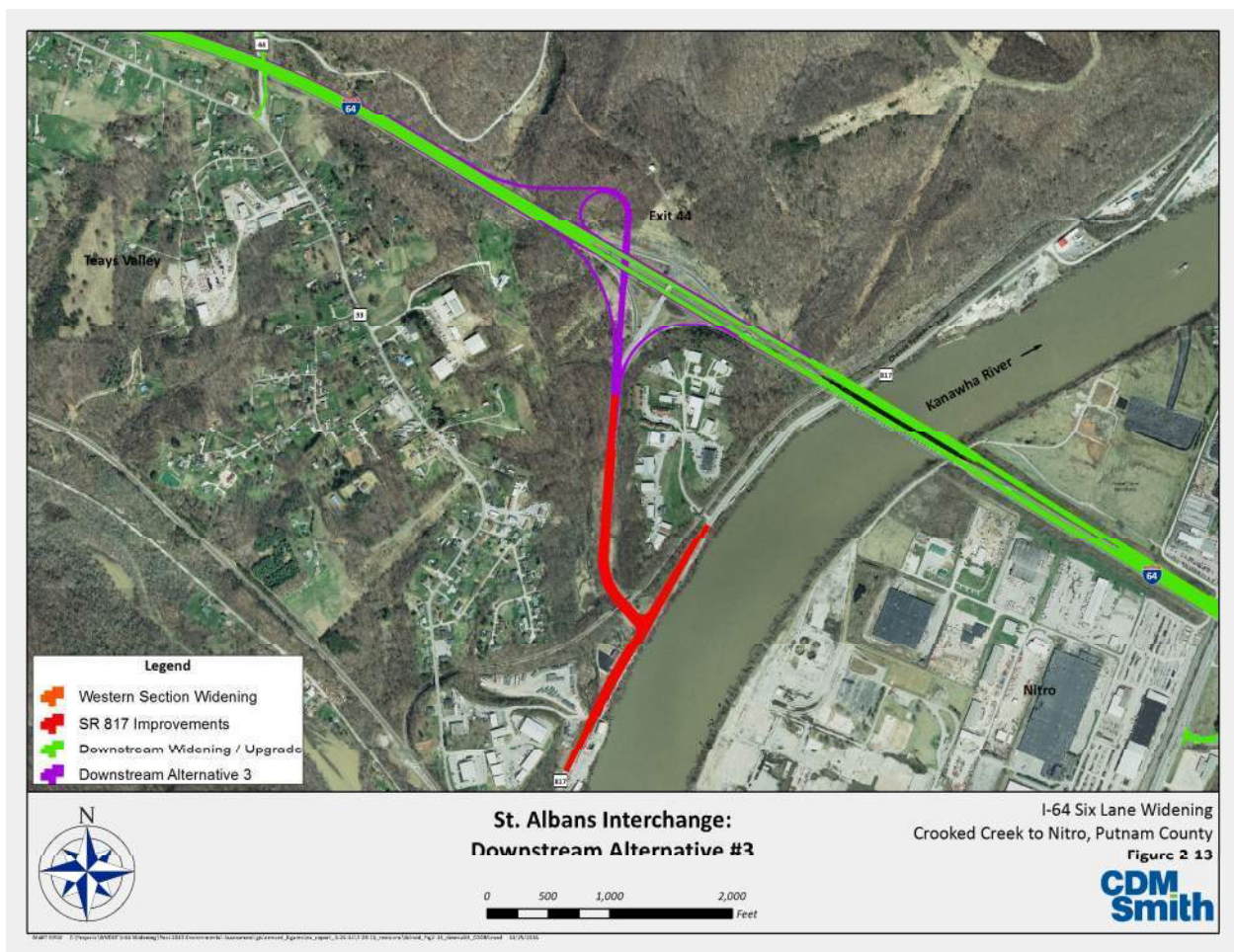
Downstream Alternative #2 would require 274,456 square feet of controlled access ROW, 8,991 square feet of non-controlled access ROW and 11,515 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$121.7 million.

Though Downstream Alternative #2 would serve to improve traffic operations, it would not improve volume capacity throughout the project area, and would not serve to alleviate safety concerns. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

### 2.5.3.3 St. Albans Interchange: Downstream Alternative #3

The Downstream Alternative #3 for the St. Albans Interchange (Exit 44) includes a trumpet interchange configuration, with a proposed overpass bridge approximately 400 feet west of the existing overpass bridge. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by an 820-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will have design speeds of 45 mph and 40 mph, respectively. The westbound exit and entrance ramps will both have design speeds of 25 mph.



The advantages of this configuration include:

- It eliminates two stop-controlled movements compared to the existing conditions;

- It has minimal impacts on the Teays Point Industrial Complex located to the southeast and minimizes earthwork adjacent to the complex; and
- It does not result in any constructability concerns because of the offset configuration.

However, like Upstream Alternative #3, this configuration has several safety implications. The configuration places the ramp with the lowest design speed (25 mph) to serve the highest volume movement, the westbound I-64 exit. The tight loop configuration of the westbound entrance ramp, as well as the close proximity of the westbound entrance and exit ramps could be difficult for heavy trucks to navigate and would increase the possibility of overturning vehicles. In addition, this alternative crosses I-64 at a large skew, increasing the required length of the overpass structure.

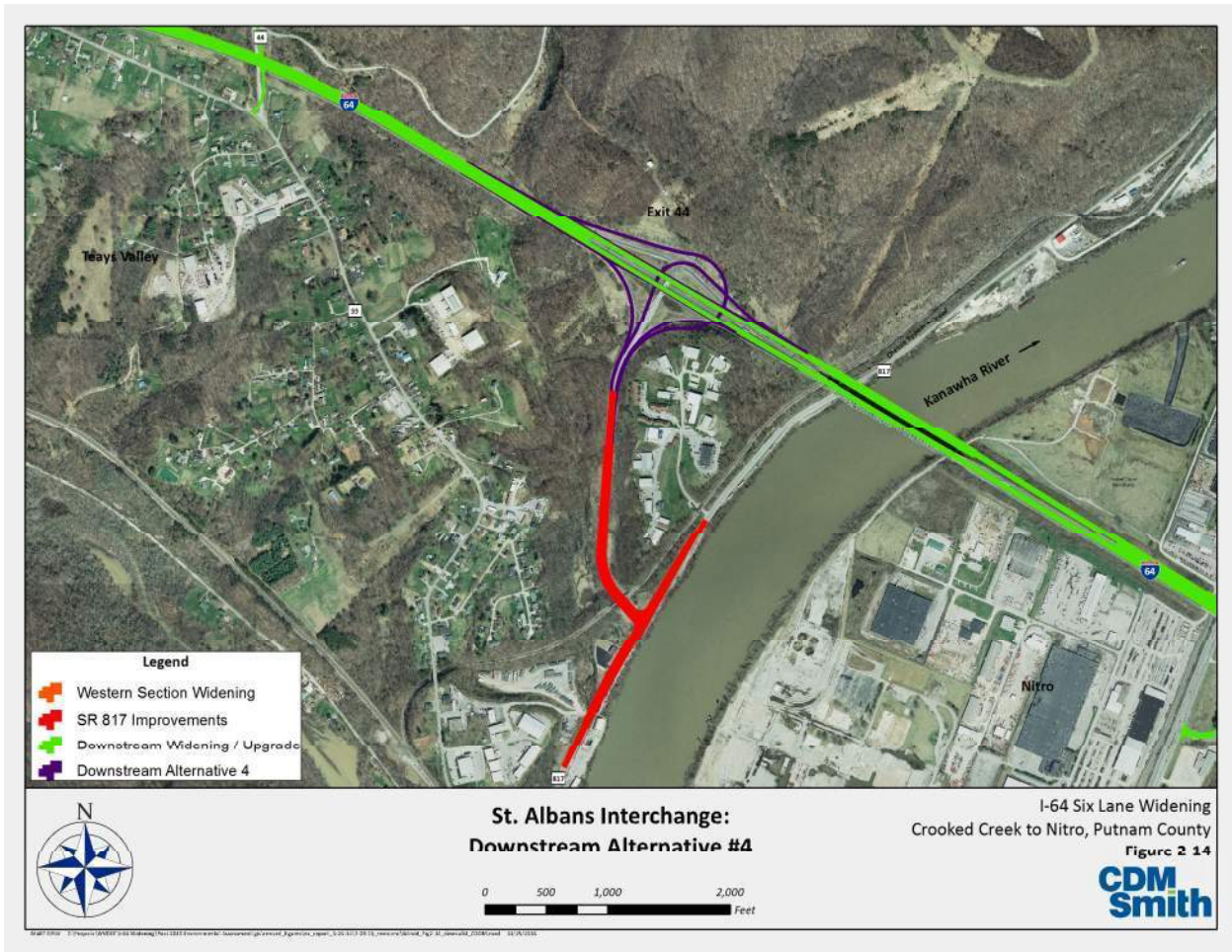
Downstream Alternative #3 would require 626,538 square feet of controlled access ROW, 8,991 square feet of non-controlled access ROW and 11,515 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$125.4 million. This alternative is the most expensive of the four Downstream Alternatives considered because of the increased pavement, earthwork, and bridge costs.

Though Downstream Alternative #3 would serve to improve traffic operations and volume capacity within the project area, it would increase safety concerns, particularly for heavy vehicular traffic. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

#### **2.5.3.4 St. Albans Interchange: Downstream Alternative #4**

The Downstream Alternative #4 for the St. Albans Interchange (Exit 44) includes a flyover interchange configuration, with a proposed overpass bridge approximately 75 feet west of the existing overpass bridge. The westbound entrance will be the flyover ramp of the interchange. Eastbound exiting traffic will be accommodated by a 700-foot deceleration lane, and westbound entrance traffic will be accommodated by a 1,497-foot acceleration lane. The westbound exiting traffic and the eastbound entrance traffic will be accommodated by the proposed auxiliary lanes that are included as part of all discussed alternatives. The eastbound exit and entrance ramps will have design speeds of 45 mph and 35 mph, respectively. The westbound exit and entrance ramps will both have design speeds of 30 mph.



This configuration provides a number of advantages:

- It eliminates two stop-controlled movements compared to the existing conditions;
- It has minimal impacts on the Teays Point Industrial Complex located to the southeast;
- It does not result in any constructability concerns because of the offset configuration;
- All ramps operate with a free-flow configuration; and
- It improves safety concerns, as there is less concern for overturning heavy vehicles, greater spacing between the entrance and exit ramp terminals, and fewer low speed movements.

However, this alternative has the longest westbound entrance acceleration lane among all of the Build Alternatives, and requires the most overhead bridge structure to be constructed.

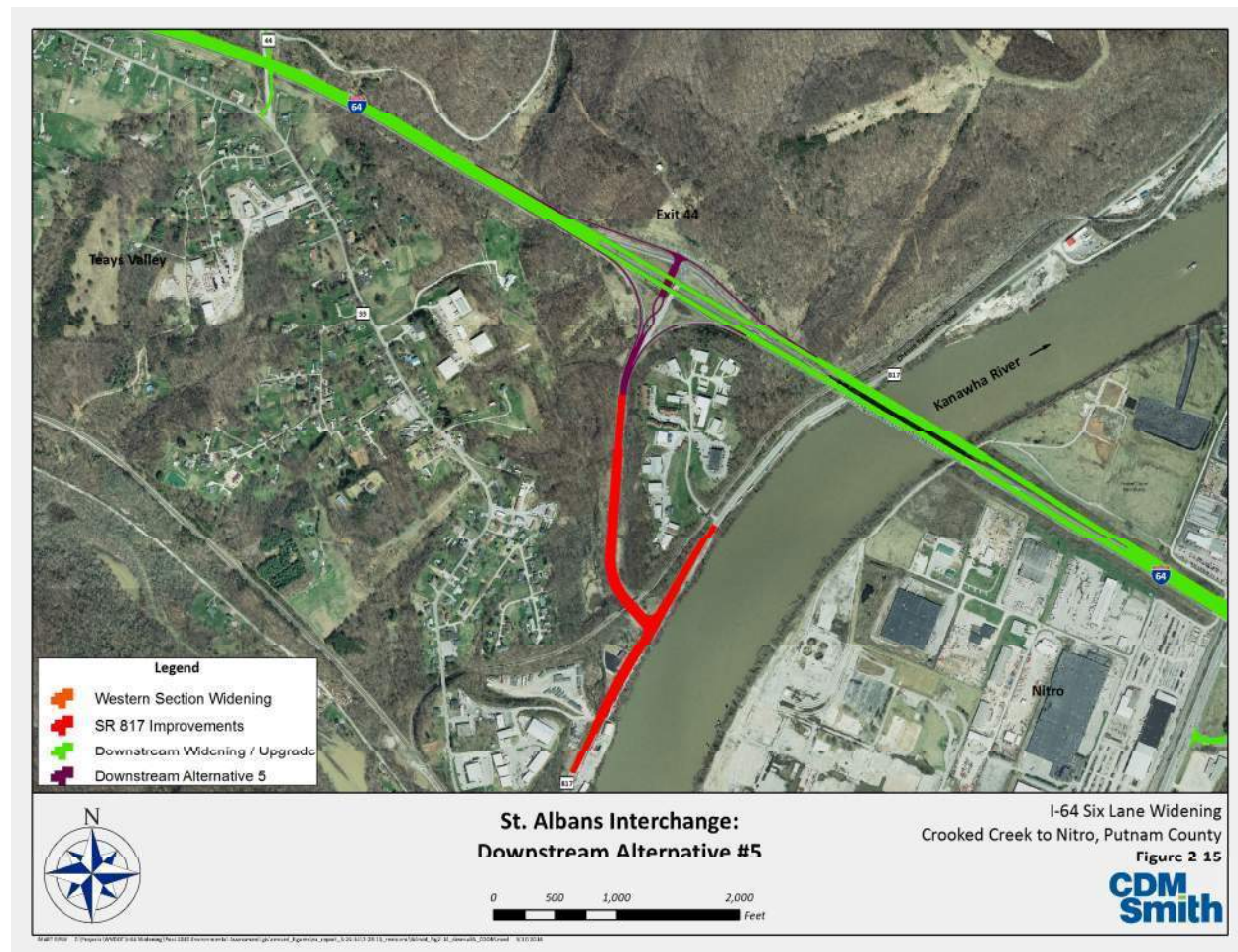
Downstream Alternative #4 would require 312,601 square feet of controlled access ROW, 8,991 square feet of non-controlled access ROW and 11,515 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$125.5 million.

Downstream Alternative #4 would serve to improve traffic operations and volume capacity within the project area, and would alleviate existing safety concerns. Therefore, this proposed alternative is most likely to fulfill the purpose and need of the proposed project.

### 2.5.3.5 St. Albans Interchange: Downstream Alternative #5

A Diverging Diamond Interchange was considered and evaluated as a variation of Downstream Alternative 2, which is a conventional diamond interchange. For the Diverging Diamond concept, the on and off ramps to and from I-64 would be very similar to Alternative 2 but the north-south connector road would have southbound traffic in what would normally be the northbound direction. The westbound I-64 entrance and exit ramp conflict point for the regular diamond would be north of I-64 whereas it would be south of I-64 for the Diverging Diamond. The vertical alignment of ramps eastbound entrance and exit ramps differ from downstream Alternative 2 due to the fact that the road was raised to maintain a 3% grade through the diverging diamond portion of the interchange. This higher grade requires complex construction phasing to maintain traffic through the St. Albans interchange, which makes it the most expensive alternative.



This configuration provides a number of advantages:

- It eliminates one stop-controlled movement compared to the existing conditions;



- It requires no additional right-of-way based on preliminary construction limits;
- It has minimal impacts on the Teays Point Industrial Complex located to the southeast and minimizes earthwork adjacent to the complex; and
- The proposed configuration provides additional storage length of the westbound exit ramp.

However, like Upstream and Downstream Alternative #2, this layout maintains one of the stop-controlled movements. It increases exit ramp storage, but from a traffic operation standpoint works in a manner very similar to both the Upstream and Downstream Alternate #2's, which are projected to have a failing LOS (see **Figure 2-5**). In addition, the proposed configuration's increased storage will only serve to marginally improve safety within the project area.

Downstream Alternative #5 would require 274,456 square feet of controlled access ROW, 8,991 square feet of non-controlled access ROW and 11,515 square feet of temporary construction easements.

The estimated cost of this proposed alternative is \$126.7 million.

Though Downstream Alternative #5 would serve to improve traffic operations, it would not improve volume capacity throughout the project area, and would not serve to alleviate safety concerns. Therefore, this proposed alternative does not fully meet the purpose and need of the proposed project.

## 2.5.4 Alternative Purpose and Need Analysis

The ability of each of the eight build alternatives to satisfy the purpose and need of the project is summarized in **Table 2-6**. All of the build alternatives improve the traffic capacity, enhance safety and support growth through the project area. However, when the alternatives are compared to each other, some are better than others with satisfying the purpose and need. For example, Alternative #1 (Upstream and Downstream) has safety implications because of the tight loop configuration of the westbound entrance ramp. Each alternative has been rated on a scale of 1 to 5, with 5 being the best.

**Table 2-6: Purpose and Need Alternative Evaluation**

|                          | No Build | Upstream Alt #1 | Upstream Alt #2 | Upstream Alt #3 | Downstream Alt #1 | Downstream Alt #2 | Downstream Alt #3 | Downstream Alt #4 | Downstream Alt #5 |
|--------------------------|----------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Improve Traffic Capacity | 1        | 4               | 2               | 4               | 4                 | 2                 | 4                 | 5                 | 2                 |
| Enhance Safety           | 1        | 2               | 2               | 2               | 2                 | 2                 | 2                 | 4                 | 2                 |
| Support Growth           | 1        | 4               | 2               | 4               | 4                 | 2                 | 4                 | 4                 | 2                 |

## 2.6 Preliminary Impact Analysis

The eight build alternatives would each involve improvements to the St. Albans Interchange (Exit 44), as well as improvements and widening of I-64, which would serve to improve the capacity and LOS of the project area. Safety would be improved with the construction of auxiliary lanes, deceleration and acceleration lanes, and associated improvements.

### 2.6.1 Level of Service

As shown in **Table 2-7**, all Build Alternatives would yield similar LOS results. When compared to the No Build Alternative, it is projected that LOS would improve considerably, but would remain in failing conditions during the AM peak hour along the eastbound Exit 44 exit ramp, and eastbound I-64 just east of the proposed improvements.

**Table 2-7: LOS during AM (PM) Peak Hour, 2033 LOS by Alternative**

|                                     | No Build | Upstream Alt #1 | Upstream Alt #2 | Upstream Alt #3 | Downstream Alt #1 | Downstream Alt #2 | Downstream Alt #3 | Downstream Alt #4 | Downstream Alt #5 |
|-------------------------------------|----------|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| EB Exit 44 Exit Ramp                | F (E)    | E (C)           | E (C)           | E (C)           | E (C)             | E (C)             | E (C)             | E (C)             | E (C)             |
| EB Exit 44 Entrance Ramp            | F (D)    | D (B)           | D (B)           | D (B)           | D (B)             | D (B)             | D (B)             | D (B)             | D (B)             |
| WB Exit 44 Exit Ramp                | C (F)    | A (C)           | A (C)           | A (C)           | A (C)             | A (C)             | A (C)             | A (C)             | A (C)             |
| WB Exit 44 Entrance Ramp            | B (F)    | B (D)           | B (D)           | B (D)           | B (D)             | B (D)             | B (D)             | B (D)             | B (D)             |
| <b>I-64 segment east of Exit 44</b> |          |                 |                 |                 |                   |                   |                   |                   |                   |
| Eastbound I-64                      | F (E)    | E (C)           | E (C)           | E (C)           | E (C)             | E (C)             | E (C)             | E (C)             | E (C)             |
| Westbound I-64                      | B (F)    | A (D)           | A (D)           | A (D)           | A (D)             | A (D)             | A (D)             | A (D)             | A (D)             |

However, Upstream Alternative #2 and Downstream Alternative #2 would involve retaining one of the stop-controlled ramp movements, thereby maintaining a failing LOS (F) during the AM and PM peak hour.

### 2.6.2 Potential Environmental Impacts

Potential environmental impacts for the eight build alternatives were identified and are summarized in **Table 2-8** below.

**Table 2-8: Summary of Environmental Impacts by Build Alternative**

| Environmental Feature                   | Upstream Alt #1 | Upstream Alt #2 | Upstream Alt #3 | Downstream Alt #1 | Downstream Alt #2 | Downstream Alt #3 | Downstream Alt #4 | Downstream Alt #5 |
|---|-----------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Displaced Structures                    | 0               | 0               | 0               | 0                 | 0                 | 0                 | 0                 | 0                 |
| Environmental Justice Populations       | No              | No              | No              | No                | No                | No                | No                | No                |
| Community Facilities                    | No              | No              | No              | No                | No                | No                | No                | No                |
| Historic Structures*                    | NAE             | NAE             | NAE             | NAE               | NAE               | NAE               | NAE               | NAE               |
| Archaeological Sites*                   | No              | No              | No              | No                | No                | No                | No                | No                |
| Section 4(f)/6(f) Properties            | No              | No              | No              | No                | No                | No                | No                | No                |
| Statewide Important Farmlands (acres)** | 0.52            | 0.49            | 3.52            | 0.70              | 0.12              | 2.73              | 0.33              | 0.12              |
| Stream Impacts (linear feet)**          | 2,552           | 2,453           | 2,598           | 2,436             | 2,359             | 2,447             | 2,365             | 2,359             |
| Wetland Impacts (acres)**               | 0.23            | 0.23            | 0.23            | 0.08              | 0.08              | 0.08              | 0.08              | 0.08              |
| Floodplain Impacts                      | Yes             | Yes             | Yes             | Yes               | Yes               | Yes               | Yes               | Yes               |
| Forested Habitat (acres)**              | 26              | 26              | 32              | 18                | 17                | 23                | 18                | 17                |
| T&E Species Habitats                    | No              | No              | No              | No                | No                | No                | No                | No                |
| Contaminated Sites                      | 1               | 1               | 1               | No                | No                | No                | No                | No                |
| Air Quality+                            | No              | No              | No              | No                | No                | No                | No                | No                |
| Noise++                                 | Yes             | Yes             | Yes             | Yes               | Yes               | Yes               | Yes               | Yes               |
| Soils & Geology                         | No              | No              | No              | No                | No                | No                | No                | No                |
| Groundwater                             | No              | No              | No              | No                | No                | No                | No                | No                |

Notes: \*NAE = No Adverse Effect on Historic Resources; \*\* Results are based on desktop analysis;+No additional air quality analysis required; ++Impacted receptors but barrier wall does not meet DOH threshold for reasonableness.

No residents or businesses would be displaced as a result of any of the build alternatives. Nor are impacts anticipated to environmental justice (minority and low-income populations), community facilities, historic structures, archaeological sites, Section 4(f) or 6(f) properties, air quality, soil and geology or groundwater as a result of any of the build alternatives.

No prime farmland impacts are anticipated as a result of the build alternatives; however, the build alternatives would impact, to varying degrees, farmland of statewide importance. Upstream Alternative #3 and Downstream Alternative #3 would impact by far the most: 3.52 and 2.73 acres, respectively; whereas, Downstream Alternative #2 and Downstream Alternative #4 would impact the least: 0.12 and 0.33 acres, respectively.

A desktop delineation identified eight streams and ten wetlands within or adjacent (within 200 feet of the existing roadway) to the proposed project area, and a field investigation identified seventeen streams and fourteen wetlands (which include those identified by the desktop

delineation) within or adjacent to the project area (**Section 13.12.2** provides further details). For the purposes of the alternatives analysis, the desktop delineation was used because the field investigation had not occurred by the time the alternatives analysis was performed. All build alternatives would result in stream and wetland impacts. All eight stream systems identified through the desktop delineation are likely to be affected by all seven alternative alignments (**Table 2-9**). The three upstream alignments will impact more linear feet of streams than the downstream alternatives. Upstream Alternative 3, with an anticipated 2,598 linear feet of impacts, will have the largest effect on stream systems. For all streams except the Kanawha River, the entire channel within the project area will likely be disturbed. Currently, most streams are culverted under I-64, and these culverts will likely be extended to convey streams underneath the expanded roadway. The streams likely to be impacted the most by the proposed project include Armour Creek, Little Scary Creek, and the Kanawha River.

**Table 2-9: Potential Stream Impacts by Build Alternative (Based on Desktop Analysis)**

| Stream                                  | Lat/Long Coord.                   | Potential Impacts* (Linear Feet) |                 |                 |                   |                   |                   |                   |                   |
|---|-----------------------------------|----------------------------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|   |                                   | Upstream Alt #1                  | Upstream Alt #2 | Upstream Alt #3 | Downstream Alt #1 | Downstream Alt #2 | Downstream Alt #3 | Downstream Alt #4 | Downstream Alt #5 |
| Rockstep Run                            | 38°27'21.19" N;<br>81°53'00.17" W | 89                               | 89              | 89              | 89                | 89                | 89                | 89                | 89                |
| Un-named Tributary 1 to Rockstep Run    | 38°27'19.72" N;<br>81°52'41.97" W | 119                              | 119             | 119             | 119               | 119               | 119               | 119               | 119               |
| Un-named Tributary 2 to Rockstep Run    | 38°27'19.13" N;<br>81°52'35.76" W | 90                               | 90              | 90              | 90                | 90                | 90                | 90                | 90                |
| Un-named Tributary 3 to Rockstep Run    | 38°27'15.74" N;<br>81°52'01.55" W | 88                               | 88              | 88              | 90                | 90                | 90                | 90                | 90                |
| Little Scary Creek (I-64 Crossing)      | 38°27'01.37" N;<br>81°51'14.91" W | 277                              | 277             | 476             | 278               | 278               | 312               | 278               | 278               |
| Steep Gut Branch                        | 38°26'48.30" N;<br>81°50'45.94" W | 474                              | 374             | 321             | 327               | 250               | 04                | 256               | 250               |
| Kanawha River                           | 38°26'42.53" N;<br>81°50'33.34" W | 866                              | 866             | 866             | 873               | 873               | 873               | 873               | 873               |
| Armour Creek                            | 38°26'23.25" N;<br>81°49'50.70" W | 421                              | 421             | 421             | 442               | 442               | 442               | 442               | 442               |
| Little Scary Creek (Route 817 Crossing) | 38°26'19.21" N;<br>81°51'03.63" W | 129                              | 129             | 129             | 129               | 129               | 129               | 129               | 129               |
| <b>Total Impacts</b>                    |                                   | <b>2,552</b>                     | <b>2,453</b>    | <b>2,598</b>    | <b>2,436</b>      | <b>2,359</b>      | <b>2,447</b>      | <b>2,365</b>      | <b>2,359</b>      |

\*Stream Impacts obtained from GIS calculations on USGS NHD data files and rounded to the nearest whole foot

The three upstream alignments will affect four wetlands (as identified in **Table 2-10**), with two of these being the Kanawha River and a palustrine freshwater emergent wetland (PEM1C). The other two wetlands are a second palustrine freshwater emergent wetland (PEM1C) located along the left bank of Little Scary Creek to the south of the first PEM1C, and a palustrine emergent

wetland (PEM1E) located north of I-64 on the left bank of Armour Creek. Impacts from the upstream alignments on NWI mapped wetlands are minor, with acreages totaling 0.2347 acres.

Of the ten wetland systems identified through the desktop delineation, only two will be affected by the four downstream alignments. One of these is the Kanawha River, which is discussed previously. The other wetland is the aforementioned PEM1C located to the south of I-64 along the left bank of Little Scary Creek. Including the impacts to the Kanawha River, impacts from the downstream alignments on NWI mapped wetlands are minor, with acreages totaling less than 0.1 acre.

**Table 2-10: Potential Wetland Impacts by Build Alternative** (Based on Desktop Analysis)

| Wetland                          | Lat/Long Coord.                   | Potential Impacts* (Acres) |                 |                 |                   |                   |                   |                   |                   |
|----------------------------------|-----------------------------------|----------------------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                                  |                                   | Upstream Alt #1            | Upstream Alt #2 | Upstream Alt #3 | Downstream Alt #1 | Downstream Alt #2 | Downstream Alt #3 | Downstream Alt #4 | Downstream Alt #5 |
| Riverine – Kanawha River (R2UBH) | 38°26'42.53" N;<br>81°50'33.34" W | 0.049                      | 0.049           | 0.049           | 0.049             | 0.049             | 0.049             | 0.049             | 0.049             |
| Freshwater Emergent (PEM1C)      | 38°26'59.45" N;<br>81°51'15.55" W | 0.174                      | 0.174           | 0.174           | 0.032             | 0.032             | 0.032             | 0.032             | 0.032             |
| Freshwater Emergent (PEM1C)      | 38°26'58.56" N;<br>81°51'15.50" W | 0.003                      | 0.003           | 0.003           |                   |                   |                   |                   |                   |
| Freshwater Emergent (PEM1E)      | 38°26'25.21" N;<br>81°49'49.73" W | 0.009                      | 0.009           | 0.009           |                   |                   |                   |                   |                   |
| <b>Total Impacts</b>             |                                   | <b>0.235</b>               | <b>0.235</b>    | <b>0.235</b>    | <b>0.081</b>      | <b>0.081</b>      | <b>0.081</b>      | <b>0.081</b>      | <b>0.081</b>      |

\*Wetland Impacts obtained from GIS calculations on USFWS NWI data files

Each build alternative would require construction within the floodplain, particularly the SR 817 Improvements, included in every alternative and portions of the Upstream and Downstream Widening/Upgrade. As a result, floodplain impacts would be similar across the build alternatives.

The majority of land area adjacent to the I-64 corridor in the project vicinity is forested north of the interstate, with residential land uses to the south and industrial uses to the east. GIS records indicate that approximately 630 acres of forested habitat exist within a quarter-mile buffer of the project area, representing 49 percent of the land cover. Depending on the alternative selected, an estimated 17 to 32 acres of forested habitat may be cleared. **Table 2-11** summarizes impacts to forested areas by alternative.

**Table 2-11: Impacts to Forested Areas by Build Alternative (Based on Desktop Analysis)**

| Alternative               | Forested Acres to be Cleared |
|---------------------------|------------------------------|
| Upstream Alternative #1   | 26 acres                     |
| Upstream Alternative #2   | 26 acres                     |
| Upstream Alternative #3   | 32 acres                     |
| Downstream Alternative #1 | 18 acres                     |
| Downstream Alternative #2 | 17 acres                     |
| Downstream Alternative #3 | 23 acres                     |
| Downstream Alternative #4 | 18 acres                     |
| Downstream Alternative #5 | 17 acres                     |

A noise analysis was conducted, evaluating the existing ambient noise levels at 25 noise monitoring locations and predicting loudest-hour equivalent traffic noise levels at 256 noise sensitive receptors under the existing, No Build, and build alternatives. As shown in **Table 2-12**, under existing conditions, 36 receptors are impacted due to their proximity to I-64. Under the No Build Alternative or any of the Build Alternatives, the number of impacted receptors is expected to increase to 57 or 58 in 2033.

**Table 2-12: Traffic Noise Impacts by Alternative**

| Alternative              | Impacted Receptors per 23 CFR 772 | Description*                 |
|--------------------------|-----------------------------------|------------------------------|
| 2013 Existing Conditions | 36                                | 35 Category B + 1 Category C |
| 2033 No Build            | 57                                | 56 Category B + 1 Category C |
| 2033 Upstream Alt #1     | 58                                | 57 Category B + 1 Category C |
| 2033 Upstream Alt #2     | 58                                | 57 Category B + 1 Category C |
| 2033 Upstream Alt #3     | 58                                | 57 Category B + 1 Category C |
| 2033 Downstream Alt #1   | 57                                | 56 Category B + 1 Category C |
| 2033 Downstream Alt #2   | 57                                | 56 Category B + 1 Category C |
| 2033 Downstream Alt #3   | 57                                | 56 Category B + 1 Category C |
| 2033 Downstream Alt #4   | 57                                | 56 Category B + 1 Category C |
| 2033 Downstream Alt #5   | 57                                | 56 Category B + 1 Category C |

\* Category B represents residential receptors; Category C represents churches, cemeteries, schools, parks, etc.

### 2.6.3 Right-of-Way and Construction Cost

Each build alternative requires acquisition of new right-of-way and construction easements. The Downstream Alternatives require minor realignments to two access roads for drainage improvements, but no build alternatives will cause a loss of access to any parcels. In addition, no private residential or commercial structures would be acquired or displaced. **Table 2-13** presents ROW and construction easement areas for each build alternative, as well as the estimated construction costs.

**Table 2-13: Additional Right-of-Way and Construction Cost Estimates by Alternative**

| Alternative       | New ROW<br>(Controlled Access) | New ROW<br>(Non-Controlled Access) | Construction<br>Easement | Construction Cost |
|-------------------|--------------------------------|------------------------------------|--------------------------|-------------------|
| Upstream Alt #1   | 7.85 acres                     | 0.21 acres                         | 0.85 acres               | \$124.1 million   |
| Upstream Alt #2   | 5.96 acres                     | 0.21 acres                         | 0.85 acres               | \$123.2 million   |
| Upstream Alt #3   | 7.98 acres                     | 0.21 acres                         | 0.85 acres               | \$126.0 million   |
| Downstream Alt #1 | 9.45 acres                     | 0.21 acres                         | 0.26 acres               | \$123.8 million   |
| Downstream Alt #2 | 6.30 acres                     | 0.21 acres                         | 0.26 acres               | \$121.7 million   |
| Downstream Alt #3 | 14.38 acres                    | 0.21 acres                         | 0.26 acres               | \$125.4 million   |
| Downstream Alt #4 | 7.18 acres                     | 0.21 acres                         | 0.26 acres               | \$125.5 million   |
| Downstream Alt #5 | 6.30 acres                     | 0.21 acres                         | 0.26 acres               | \$126.7 million   |

All build alternatives would require the same amount of non-controlled access ROW. Downstream Alternatives would require more than ½-acre less of construction easements than the Upstream Alternatives (0.26 acres versus 0.85 acres). Downstream Alternative 3 requires significantly more new controlled access ROW (14.4 acres) than the other Build Alternatives, followed by Downstream Alternative #1. Upstream Alternative 2 requires the least amount of controlled access ROW, followed by Downstream Alternatives #2 and #5.

Preliminary construction cost estimates for each build alternative are very similar: total costs range from \$121.7 million (for Downstream Alternative #2) to \$126.7 million (for Downstream Alternative #5).

## 2.7 Recommended Preferred Alternative

Downstream Alternative #4 is recommended as the preferred build alternative. Comparatively, all the build alternatives are very similar with regards to capacity analysis, with the exception of Upstream Alternative #2 and Downstream Alternatives #2, and #5, which propose to retain one existing stop-controlled intersection that is projected to exceed capacity. Downstream Alternative #4 is among those alternatives that remove both existing stop-controlled intersections, which increases safety by eliminating conflict points.

With regards to environmental impacts, Downstream Alternative #4 would impact the smallest area (in terms of acreage or linear feet) of farmlands of statewide importance, streams and forested habitat (excluding Downstream Alternatives #2 and #5). In addition, the Downstream Alternatives would impact nearly one-third less wetlands than the Upstream Alternatives.

Downstream Alternative #4 would require the third lowest amount of additional ROW and construction easement areas, and though this alternative is projected to cost the second highest, a cost comparison estimates that all alternatives will be within 4 percent of each other.

In addition to potentially minimal environmental impacts, Downstream Alternative #4 offers several advantages over the other options. As mentioned, this alternative eliminates all stop-controlled intersections at the St. Albans (Exit 44) interchange. In addition, this alternative allows for free-flow traffic movements on all ramps. It is the only alternative to propose a flyover interchange, which avoids the loop ramp geometry of the trumpet interchange as described in Upstream and Downstream Alternatives #1 and #3. The tight radii of the loop ramp design

increases the probability of overturning vehicles, particularly heavy vehicles. The free-flow traffic and longer radius curves provide inherently safer traffic operation and geometric conditions.

Additionally, in this alternative, the distance between the exit and entrance ramp locations is longer, and the design speeds are higher, allowing for improved maneuverability and safety.

Thus, Downstream Alternative #4 would serve to improve traffic operations and volume capacity within the project area, and would alleviate and improve upon existing safety considerations. Among the build alternatives, Downstream Alternative #4 is most likely to fulfill the purpose and need of the proposed project.

## 2.8 Public & Stakeholder Involvement

The project team sent letters to a variety of resource agencies in May 2013 to engage these resources in the environmental review process. Letters were sent to the following agencies and tribal groups:

- Eastern Band of Cherokee Indians of North Carolina
- Eastern Shawnee Tribe of Oklahoma
- Federal Emergency Management Agency
- Kanawha County Planning Commission
- Regional Intergovernmental Council
- Seneca Nation of New York
- Seneca-Cayuga Tribe of Oklahoma
- State Historic Preservation Office
- The Delaware Nation
- US Army Corps of Engineers
- US Department of Agriculture, NRCS
- US Environmental Protection Agency
- US Fish & Wildlife Service
- WV Department of Environmental Protection
- WV Division of Natural Resources
- WVDOH District 1

Copies of response letters are included in **Appendix A**.



A public workshop was held at Rock Branch Elementary School on May 20, 2013. The purpose of the meeting was to provide an update on the study and to solicit public feedback on the alternatives, including Downstream Alternative #4, which was identified during the workshop as the preferred alternative. The meeting was advertised via Twitter, Facebook, television, newspaper, and mailings. In total, 40 people attended the workshop.

Four public comments were received during the workshop, all in favor of the proposed project and the Preferred Alternative. One commenter also asked for consideration of ramp metering on the St. Albans eastbound on ramp and the Nitro westbound on ramp for peak hours as a short-term fix prior to construction of the proposed project.

Meeting handouts, the sign-in sheet, and comments received from the public are included as **Appendix B**.

The project also maintained a website to provide information and collect comments. Five comments were submitted via the website and represented a variety of opinions. One respondent fully supports the proposed project, another would like to see other projects take a higher priority to this one, another supports the proposed project but requests mitigation for sightline concerns to be incorporated, another expressed worry over potential property value impacts, and lastly a respondent cautioned that coordination is required with State and Federal environmental agencies. The comments are included in full in **Appendix B**.

A public meeting will be held following the approval of this Environmental Assessment.

# Chapter 3

## Affected Environment and Mitigation

The following sections summarize background information that is available for the proposed project area as well as site specific information that was obtained during field investigations within the defined study area. This chapter discusses the individual components of the affected environment in relation to an impact analysis conducted for the No-Build and Preferred Alternative. To comply with Council on Environmental Quality (CEQ) and Federal Highway Administration (FHWA) regulations (40 CFR 1500 and 23 CFR 771, respectively), a general overview is provided for resources that are considered unlikely to be affected in either a positive or negative manner by the proposed action. Resources that will be affected in a positive or negative manner by construction of the Preferred Alternative are discussed in greater detail.

Throughout this chapter, the No Build is presented as a baseline for evaluating the Preferred Alternative. Under the No Build, existing highway and roadway infrastructure will remain as is. Only maintenance of the existing roadways will be carried out over the next 20 years. The Preferred Alternative and other Build Alternatives advanced for detailed evaluation were identified in **Chapter 2**. The Preferred Alternative (Downstream Alternative #4) includes a flyover interchange configuration for St. Albans, with a proposed overpass bridge approximately 75 feet west of the existing overpass bridge.

### 3.1 Social and Economic Characteristics

#### 3.1.1 Demographics

Putnam County is one of the fastest growing counties in West Virginia. According to the US Census Bureau, the county population increased from 42,835 in 1990, to 51,589 in 2000, to 55,486 in 2010. The majority of the county population is concentrated in the Teays Valley and Scott Depot areas, immediately west of the study area, and primarily adjacent to the I-64 corridor. **Table 3-1** provides an overview of demographics data for the Census Tracts containing the project area, the surrounding county, and state. Relevant geographic areas are shown on **Figure 3-1**.

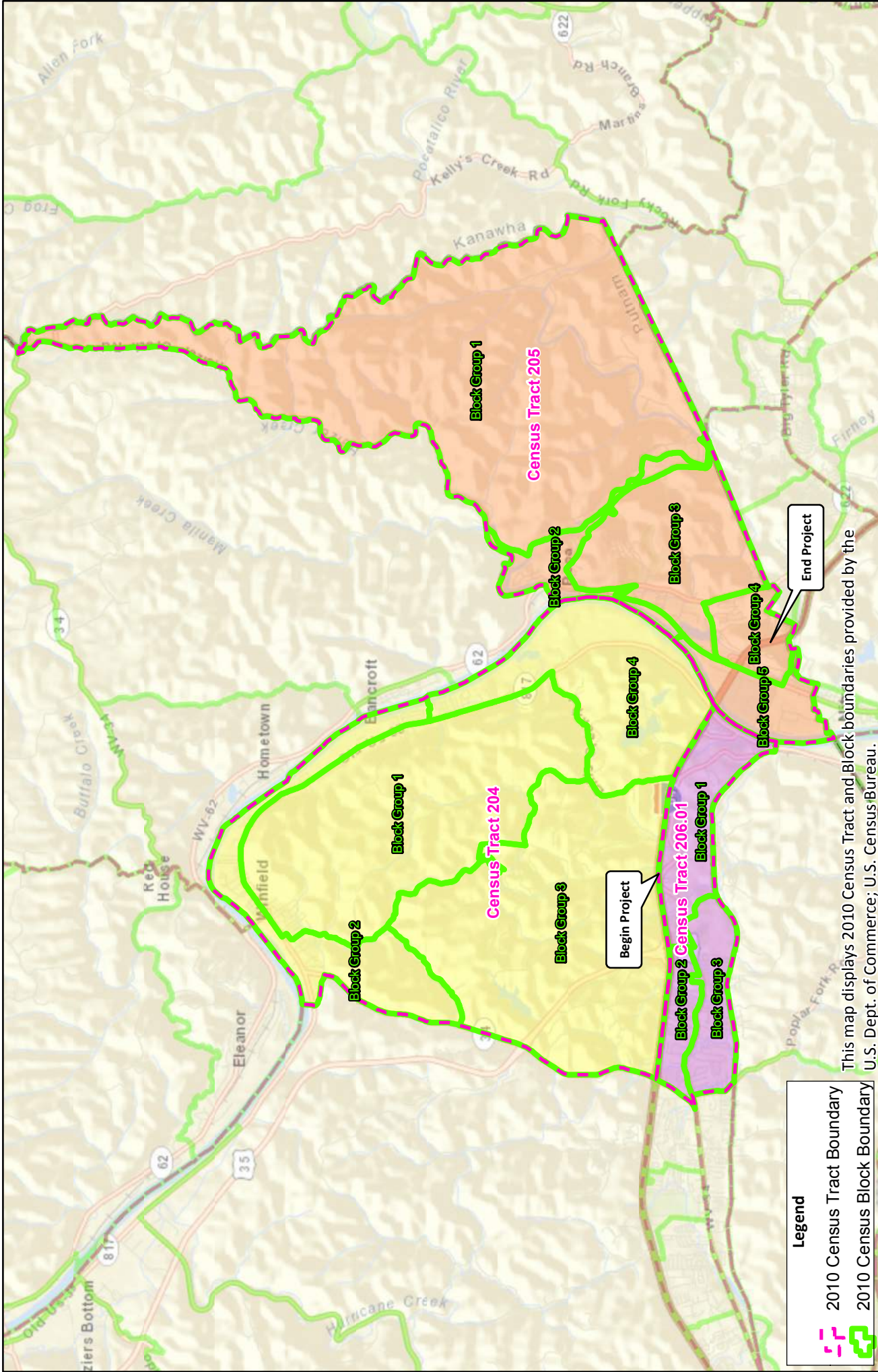
**Table 3-1: Overview of Demographics from Census Data**

| Geography     | Total Population <sup>1</sup> | Minority Population <sup>1</sup> | Population over Age 65 <sup>2</sup> | Population Below Poverty Level <sup>3</sup> |
|---------------|-------------------------------|----------------------------------|-------------------------------------|---|
| West Virginia | 1,850,481                     | 7.0%                             | 16.2%                               | 17.6%                                       |
| Putnam County | 55,660                        | 3.8%                             | 14.5%                               | 10.1%                                       |
| Tract 204     | 6,404                         | 1.6%                             | 11.5%                               | 7.7%  |
| Tract 205     | 6,342                         | 9.2%                             | 15.3%                               | 9.7%  |
| Tract 206.01  | 5,226                         | 4.5%                             | 16.1%                               | 4.6%  |

<sup>1</sup>Table B03002 from 2008-2012 ACS estimates



<sup>2</sup>Table S0101 from 2008-2012 ACS estimates

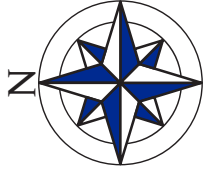
<sup>3</sup>Table S1701 from 2008-2012 ACS estimates



This map displays 2010 Census Tract and Block boundaries provided by the U.S. Dept. of Commerce; U.S. Census Bureau.

**Legend**

-  2010 Census Tract Boundary
-  2010 Census Block Boundary



Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

### Census Boundaries



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 3-1



According to 2008-2012 American Community Survey estimates, there are 23,426 housing units in Putnam County with an average of 2.62 persons per household. The median household income is \$56,081, which is well above the statewide average (\$40,400).

For the civilian labor force (age 16+) in the county, the top three occupation categories are management, business, science, and arts occupations (39%), followed by sales and office occupations (26%) and service occupations (14%). By industry, the top three categories for the county are educational services, health care, and social assistance (23%), retail trade (13%), and manufacturing (9%).

### 3.1.2 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies consider and address disproportionately high and adverse environmental effects of proposed projects on minority and low-income populations. Demographic data was analyzed to identify potential Environmental Justice communities.

At the Census Tract level, two tracts exceed the county threshold for minority populations (3.8%).

- Tract 205 has a minority population of 9.2%. Examining available data for block groups within this tract that border the project, 2010 data shows minority populations of 4.5% for Block Group 5 and 4.7% for Block Group 4. At the block group level, minority concentrations are still above the county threshold but less elevated than for the encompassing tract.
- Tract 206.01 has a minority population of 4.5%. Examining available data for block groups within this tract that border the project, 2010 data shows a minority population of 3.6% for Block Group 1. This is below the county threshold.

At the Census Tract level, no tracts or adjacent block groups exceed the county threshold for individuals living below the poverty level (10.1%).

The I-64 widening project is not expected to have a disproportionate or adverse effect on low-income or minority populations. No homes, community facilities, or businesses will be displaced by the proposed project. The project is limited to interstate widening and reconstruction of the interchanges, which will benefit local communities and environmental justice populations by addressing congestion, improving safety, and supporting economic development. Therefore, no mitigation is warranted.

An opportunity for public involvement has been offered (discussed in **Section 2.7**); future public involvement opportunities will occur during additional design and project development phases. Information will be made readily available to all members of the public, including minority and low-income populations.

### 3.1.3 Socioeconomics

The Region III 2014 *Comprehensive Economic Development Strategy* (CEDS) identifies the top 10 employers in Putnam County as the Putnam County Board of Education, Toyota Motor Manufacturing, Charleston Area Medical Center, Appalachian Electric Power Company, Diamond Electric Manufacturing Company, Wal-Mart, Rite Aid, American Electric Power Service Corporation, U.S. Foodservice Inc, and the Putnam County Commission. The CEDS identifies Putnam County as the fastest growing county in the state, due in part to its proximity to Charleston and Huntington, its interstate access, and its relatively large amount of flat developable land in the Teays Valley area and

along the Kanawha River Valley. The county is rated as one of the top 20% of best communities to locate a business, according to Southern Business & Development Magazine.

The socioeconomic impacts of the proposed project are expected to be minimal. No homes or businesses will be displaced by any of the alternatives considered. In fact, congestion relief along I-64 will benefit local economies by addressing congestion, improving safety, and supporting economic development. Therefore, no mitigation is warranted.

### 3.1.4 Community Facilities and Services

Because it is a controlled access transportation facility, few homes, businesses, or community facilities are located in the immediate vicinity of the project. The majority of the adjacent land is undeveloped; beyond, the western portion of the area is primarily single family residential while the eastern portion is primarily industrial uses. Due to aggressive topography, most of the land north of the interstate is undeveloped. The Teays Valley Christian School and several churches are located southwest of the project, near the US 35 intersection with County Route 33 (Teays Valley Road).

The proposed project will not impact any community facilities or services, such as churches, hospitals, schools, health care, law enforcement agencies, fire departments, emergency medical services, libraries, or post offices. None of these type of resources will be displaced or experience changes in access or operations due to the project. The proposed project will not result in a disruption to communities, neighborhoods, or other social groups. Therefore, no mitigation is warranted.

### 3.1.5 Relocations and Displacements

No homes or businesses will be displaced by any of the alternatives evaluated. The project is contained within existing right-of-way and undeveloped areas adjacent to it.

## 3.2 Land Use and Land Cover

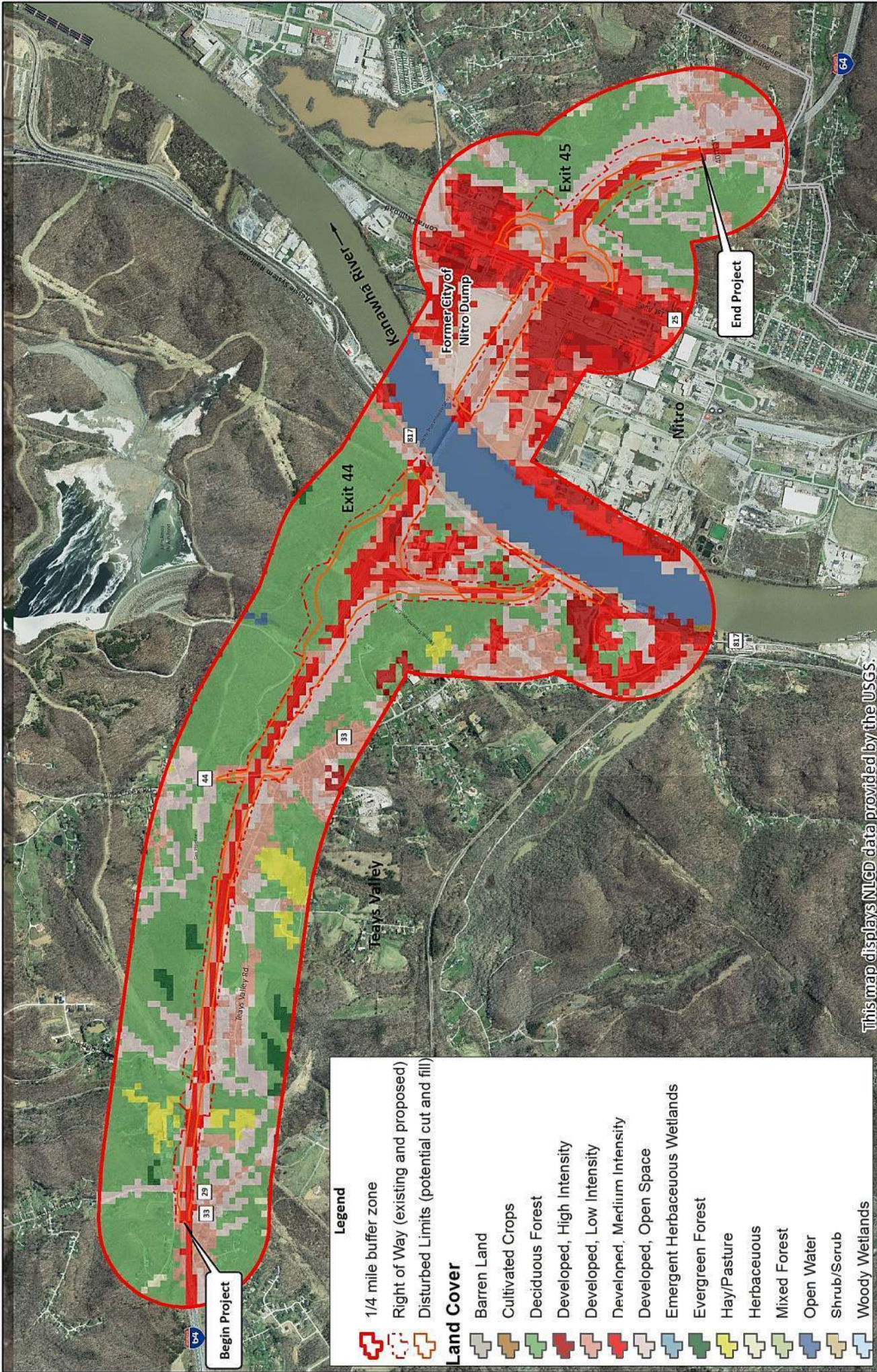
Land cover describes the physical land type such as forest, water, farmland, or impervious surfaces. Land use describes how the land is used such as commercial, residential, and recreational uses. This section describes existing land cover and land use in the vicinity of the proposed project. **Figure 3-2** shows land cover and land use in the vicinity.

### Land Cover

Land cover in the project area is dominated by forested land, grassland/pastureland, and developed land. Land cover in the project area is a combination of developed open space and developed low - high intensity east of the river. The developed land is a mixture of developed low, medium, and high intensity uses. There are also areas of open water north of the project area including Amos Fly Ash Pond; however, this is outside of the project boundaries (Putnam County 2014).

### Land Use

North of the project area and west of the river, there is a large area of land designated as Utility Undeveloped. This area also includes single-family residential and agricultural uses as well as vacant properties (Putnam County 2014). South of the project area and west of the river, there is a mixture of single-family residential, agricultural, and commercial (low, medium, and high intensity). East of the river, land uses are a mixture of industrial and commercial (low, medium, and high intensity). **Figure 3-2** shows the location of these uses.



**Legend**

- 1/4 mile buffer zone
- Right of Way (existing and proposed)
- Disturbed Limits (potential cut and fill)

**Land Cover**

- Barren Land
- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Open Water
- Shrub/Scrub
- Woody Wetlands



This map displays NLCD data provided by the USGS.

**Land Cover**



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 3-2



\\nas01\proj\2016\2016 Environmental Assessment\GIS\Map\_Series\_Report\_3-24-16\Map\_Series\_Report\_3-24-16\Map\_Series\_Report\_3-24-16.mxd

### 3.3 Farmland

The Farmland Protection Policy Act is a public law that is intended to minimize the unnecessary and irreversible conversion of farmland to nonagricultural uses. The act defines farmlands by soil types and characteristics, whether the area is currently being used as cropland or not.

Data from the National Resources Conservation Service (NRCS) website indicates that prime and statewide importance farmlands soils exist within the study corridor, as shown in **Figure 3-3**. Prime farmlands are “lands that have the best combination of physical and chemical properties for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion” (Farmland Protection Policy Act, USC 4201). Statewide Importance farmlands are lands other than prime farmlands that are important for crop production at a state, regional, or local level, as determined by the state. Prime farmlands exist along Scary Creek; statewide important farmland soils are interspersed throughout the corridor, concentrated south of I-64.

The Preferred Alternative (Downstream Alternative #4) will not impact prime farmlands and is anticipated to impact 0.33 acres of statewide important farmlands.

Coordination with the NRCS office in Morgantown, WV was undertaken in early 2002 and again in May 2013.

### 3.4 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, protects properties that are listed on or eligible for listing on the National Register of Historic Places (NRHP). Cultural resource investigations for the project area were conducted in accordance with the requirements of Section 106, regulations of the Advisory Council on Historic Preservation (ACHP) contained in 36 CFR 800, and procedures established by the West Virginia Division of Culture and History in their *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation*, including assessments of both historic structures (50 years of age or older) and archaeological sites.

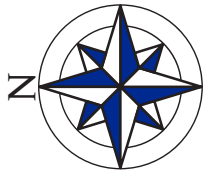
#### 3.4.1 Historic Structures

A Cultural Historic Survey was conducted for the proposed I-64 upgrades from Crooked Creek to Nitro. The aboveground Area of Potential Effect (APE) was defined to include those structures are visible from the project area and stand within ½ mile of the project.

Upon completion of the survey, it was determined that there are 164 new and 5 previously recorded extant resources over 50 years of age within the APE. Due to the large number of new resources identified and the low probability of adverse effects occurring from the proposed project, discussions between the WVDOH and the West Virginia Division of Culture and History (SHPO) took place. After reviewing photographs and locations of each identified resource and conducting a field visit, it was decided that representative samples will be selected from different locations within the APE for further evaluation. A total of 37 representative sample properties were evaluated for the project.



- Legend**
- ▬ Right of Way (existing and proposed)
  - ▬ Disturbed Limits (potential cut and fill)
  - ▬ Farmlands of Statewide Importance
  - ▬ Prime Farmlands



This map displays soil data provided by the USDA; NRGCS Soil Data Mart website and the NRGCS Web Soil Survey.

### Farmland Soils



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 3-3





Of the 37 resources evaluated, one is recommended as a National Register of Historic Places (NRHP) Historic District, six are identified as contributing resources within this historic district, and four are identified as individually eligible resources. These resources, summarized in **Table 3-2**, are shown in **Figure 3-4**.

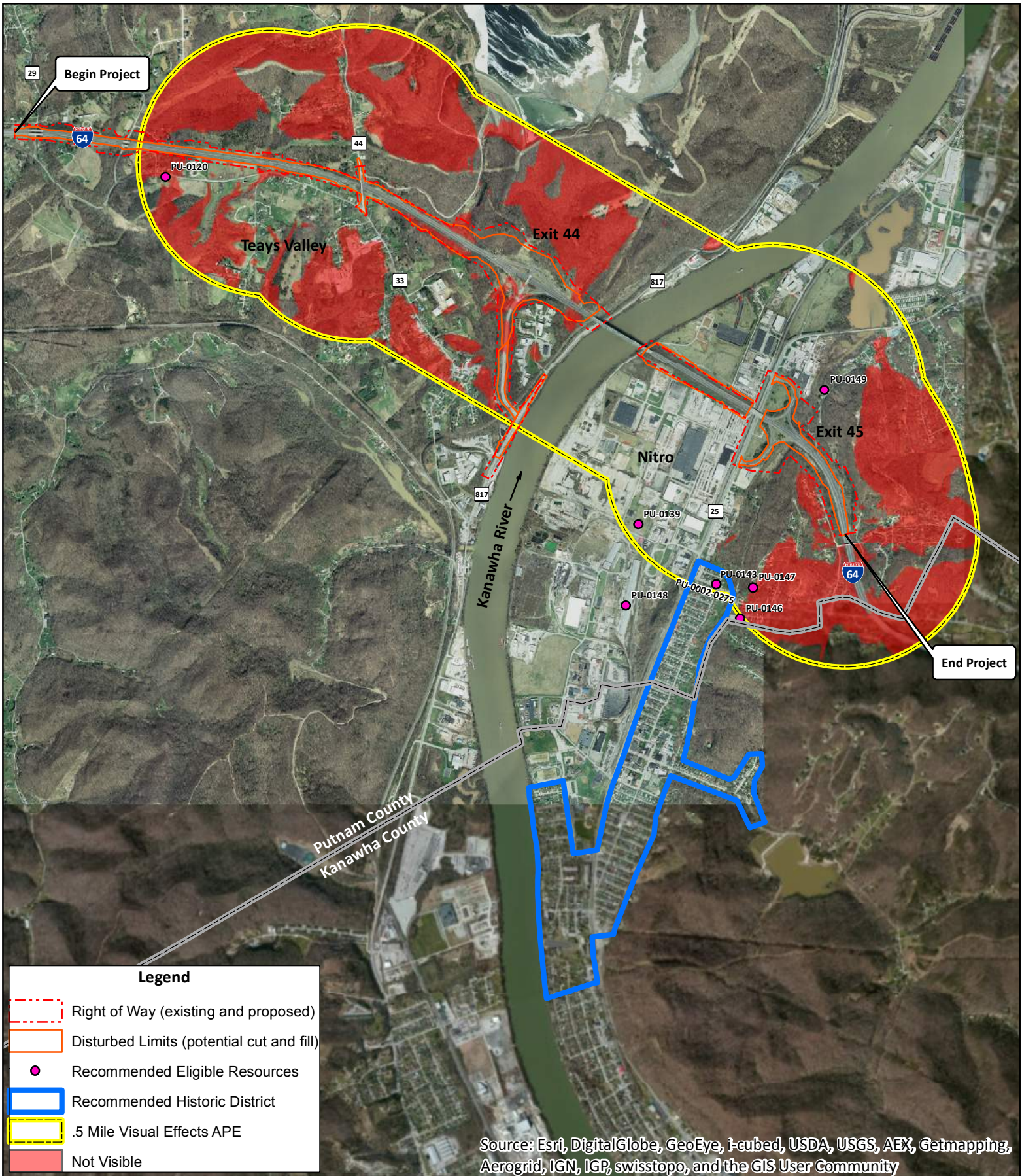
While the project is visible from the recommended eligible resources, none will be directly affected by the proposed project. Based on this, a finding of No Adverse Effect is recommended for each of the NRHP eligible resources. SHPO concurred with the no adverse effect finding by letter dated October 21, 2014 (Appendix A).

**Table 3-2: NRHP Eligible Recommendations from Representative Sample**

| Field Number            | Property Type                  | Status      | Recommended Eligibility         |
|-------------------------|--------------------------------|-------------|---------------------------------|
| PU-0120                 | House                          | Fair        | Eligible (Criterion C)          |
| PU-0136                 | Commercial                     | Good        | Eligible (Criterion C)          |
| PU-0140                 | Depot                          | Good        | Eligible (Criterion C)          |
| PU-0148<br>(Building 1) | Industrial                     | Good        | Eligible (Criterion C)          |
| --                      | <b>Nitro Historic District</b> | <b>Good</b> | <b>Eligible (Criteria A)</b>    |
| PU-002-0275             | Streetscape                    | --          | Contributes to HD (Criterion A) |
| PU-0141                 | House                          | Good        | Contributes to HD (Criterion A) |
| PU-0142                 | House                          | Good        | Contributes to HD (Criterion A) |
| PU-0143                 | House                          | Good        | Contributes to HD (Criterion A) |
| PU-0144                 | House                          | Good        | Contributes to HD (Criterion A) |
| PU-0145                 | House                          | Good        | Contributes to HD (Criterion A) |

### 3.4.2 Archaeological Survey

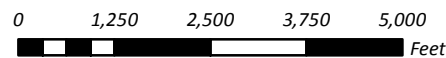
The project area was reviewed based upon the requirements of a Phase I Archaeological Survey of the two proposed alignments, Upstream Widening Alternative, and Downstream Widening Alternative. Two newly documented archeological sites were discovered, 46PU353 and 56PU355. Site 46PU353 appears to be a homestead or small farm situated in a rural area along the Scary Creek floodplain, which empties into the Kanawha River. The site dates from the mid-19th century to the late 20th century, as suggested by the date range of the artifacts. Site 46PU353 did not yield and is considered unlikely to yield information important in prehistory and history since the site has little subsurface integrity, affected by modern activities. Thus it is not recommended for nomination to the NRHP, according to Criterion D. No further archaeological work is recommended for the site.



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

I-64 Six Lane Widening  
 Crooked Creek to Nitro, Putnam County  
 Figure 3-4

# Cultural Resources



Site 46PU355 is the site of a cemetery that may be associated with the Battle of Scary Creek, which took place in 1861. According to a local informant, who did not provide their name, the bodies of three Union soldiers were buried in this area (unnamed informant, personal communication 2013). One rock marker was observed in the area. The marker could represent multiple graves, or additional markers could have been moved. No other evidence indicates association with the Battle of Scary Creek other than informant's comments. There is insufficient information to provide a determination of NRHP eligibility. The preferred alternative (Downstream Alternative #4) as originally conceived had a negative impact on the site. The construction limits were revised to eliminate this impact. Therefore, selection of the revised preferred alternative will not have a negative effect on the site. No further archaeological work is recommended for the site.

Deep testing of the floodplain and terraces of the Kanawha River could not be safely conducted due to the presence of three superfund sites and a landfill within the APE. Because deep testing cannot safely be conducted in these areas, the archaeological deposits are unknown, and based on the numerous, well documented, deeply stratified sites along the Kanawha River, construction activities within the APE will have an adverse effect to unknown archaeological resources. An MOA was executed to mitigate the adverse effect to deeply buried archeological resources within the floodplain adjacent to the highway and bridge abutments.

### 3.5 Section 4(f) Resources

Section 4(f) of the US Department of Transportation Act protects parks, wildlife refuges, and historic resources from conversion to transportation uses. No Section 4(f) resources lie within the footprint of the project.

### 3.6 Section 6(f) Resources

The Land and Water Conservation Fund Act (LWCFA), commonly referred to as Section 6(f), requires that the conversion of lands or facilities acquired with LWCFA funds be coordinated with the Department of the Interior. No Section 6(f) resources lie within the footprint of the project.

### 3.7 Air Quality

The *Clean Air Act* of 1970 requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants that cause adverse effects to public health and the environment. The EPA has established NAAQS for six common air pollutants: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), and lead (Pb). Geographic regions are classified into one of three air quality categories. Areas which meet the requirements for these contaminants are "attainment" areas. Areas that have exceeded criteria pollutant levels but have established conformity efforts are "maintenance" areas. Areas where concentrations of criteria pollutants exceed the levels set by the federal standards are "non-attainment" areas.

The study area is within Putnam County, which is in attainment of CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and 2008 8-hour O<sub>3</sub> (EPA 2012f). The county is within the Charleston nonattainment area for 1997 and 2006 PM<sub>2.5</sub> NAAQS. On August 10, 2006, the Charleston area, including Putnam County, was redesignated as in attainment of the 1997 8-hour O<sub>3</sub> standard and the area has an EPA approved maintenance plan. On December 7, 2012, West Virginia requested the redesignation of the Charleston PM<sub>2.5</sub> nonattainment area. EPA has not redesignated the Charleston PM<sub>2.5</sub> nonattainment area.

This project was included in the 2040 Long Range Transportation Plan prepared for the Charleston region. The I-64 Widening Project from Crooked Creek to Nitro is included in the WVDOT 2011/2016 STIP and is therefore in compliance with the Statewide Implementation Plan.

Approval, funding, or implementation of Federal Highway Administration (FHWA) projects is subject to the transportation conformity regulations under the CAA (40 Code of Federal Regulations [CFR] 93 Subpart A). Each metropolitan planning area is required to develop an official metropolitan transportation plan pursuant to 23 CFR Part 450. If a potential project is included in a transportation plan and transportation improvement program (TIP) that conform to the SIP and the CAA Amendments, then the project is already included in the emission budgets developed for the region. Thus, a unique, regional analysis of project emissions would not be required; however, analysis regarding possible localized impacts is still required. The MPO, or the Boone-Clay-Kanawha-Putnam Regional Intergovernmental Council (RIC) in the study area, is responsible for transportation planning and determining regional conformity.

Transportation conformity applies to nonattainment and maintenance areas. However, the 1997 O3 NAAQS was revoked for transportation conformity purposes as of July 20, 2013, therefore transportation conformity requirements do not apply to the 1997 O3 NAAQS. This project is part of the 2013-2018 WVDOT STIPs, RIC's 2012-2015 TIP, and the air quality conformity analysis for the 2040 RIC Long Range Transportation Plan.

The project does not involve a significant number of diesel vehicles and is not anticipated to significantly increase the number of diesel vehicles, affect intersections that are LOS D, E, or F, or change the LOS of an intersection to D, E, or F. Therefore, the project would not be required to conduct a project-level hotspot analysis for CO or PM<sub>2.5</sub>. See Appendix C for additional information.

For this project, the significance of diesel vehicles is diminished, because the widening of I-64 will reduce delay along the corridor, which decreases the pollutant loading. Additionally, this section of I-64 is not contained within the ATRI and FHWA 250 Freight Significant Highway Locations, which are monitored for congestion.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources (e.g., cars, trucks, and construction equipment), non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories, refineries, and power plants). EPA has also recognized emissions of air toxics from mobile sources as a potential environmental and health concern. The interim guidance released by FHWA dated February 2007 requires discussion of Mobile Source Air Toxics (MSATs) in National Environmental Policy Act (NEPA) documents. The guidance was updated in September 2009 and December 2012.

The current guidance on MSATs is FHWA's Interim Guidance Update on Air Toxic Analysis in NEPA Documents, released on December 6, 2012. This guidance advises on when and how to analyze MSATs in the NEPA process for highway projects. This guidance is interim because MSAT science is still evolving. Currently, there are limitations on tools and techniques for evaluating potential project-level health risks from MSAT exposure. FHWA regularly updates the guidance based on new scientific data.

No significant MSAT impacts are anticipated from this project (see Appendix C). Air toxics analysis is a continuing area of research. At this time, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited.

Based on coordination with the WV Department for Environmental Protection, Division of Air Quality (DAQ) in June 2013, no pre-construction permits, authorizations, or analyses are required. DAQ

approval will be required prior to burn land clearing. Air pollution control measures should be employed during construction demolition, excavation, and transportation of soils/aggregates to reduce dust emissions.

### 3.8 Noise

A Traffic Noise Report completed for the project documents the evaluation of existing ambient noise levels at 25 noise monitoring locations and predicts loudest-hour equivalent traffic noise levels at 256 noise sensitive receptors under the existing, No Build, and Preferred Alternative scenarios. The noise levels for the proposed conditions were modeled using a 70 mph design speed. This report is included in the project files and available upon request. In total, 57 receptors within the study area are expected to be impacted in the future due to the increase in traffic volumes under the No Build Alternative. Most receptors are already impacted in 2013 due to their proximity to the highway and will be impacted in the 2033 No-Build scenario. **Table 3-3** summarizes impacts by alternative.

**Table 3-3: Traffic Noise Impacts by Alternative**

| Scenario                          | Impacted Receptors per 23 CFR 772 | Description*                 |
|-----------------------------------|-----------------------------------|------------------------------|
| 2013 Existing Conditions          | 36                                | 35 Category B + 1 Category C |
| 2033 No Build                     | 57                                | 56 Category B + 1 Category C |
| Preferred Alt (Downstream Alt #4) | 57                                | 56 Category B + 1 Category C |

\* Category B represents residential receptors; Category C represents churches, cemeteries, schools, parks, etc.

For the impacted receptors, noise abatement measures were evaluated per WVDOT's noise abatement policy (Design Directive 253) for the Preferred Alternative only. An optimized barrier (1,900 feet long wall 12 feet in height) was studied for the impacted receptors on Teays Valley Road near Bills Creek Road (west of MM 43). The cost per benefited receptor was \$33,716, which is above the WVDOT allowable of \$30,000. Since it does not meet the reasonableness criteria, the barrier is not recommended for construction. Receptors and the noise barrier that was evaluated are shown in **Figure 3-5**.

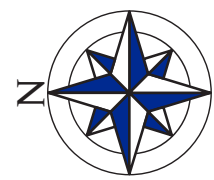
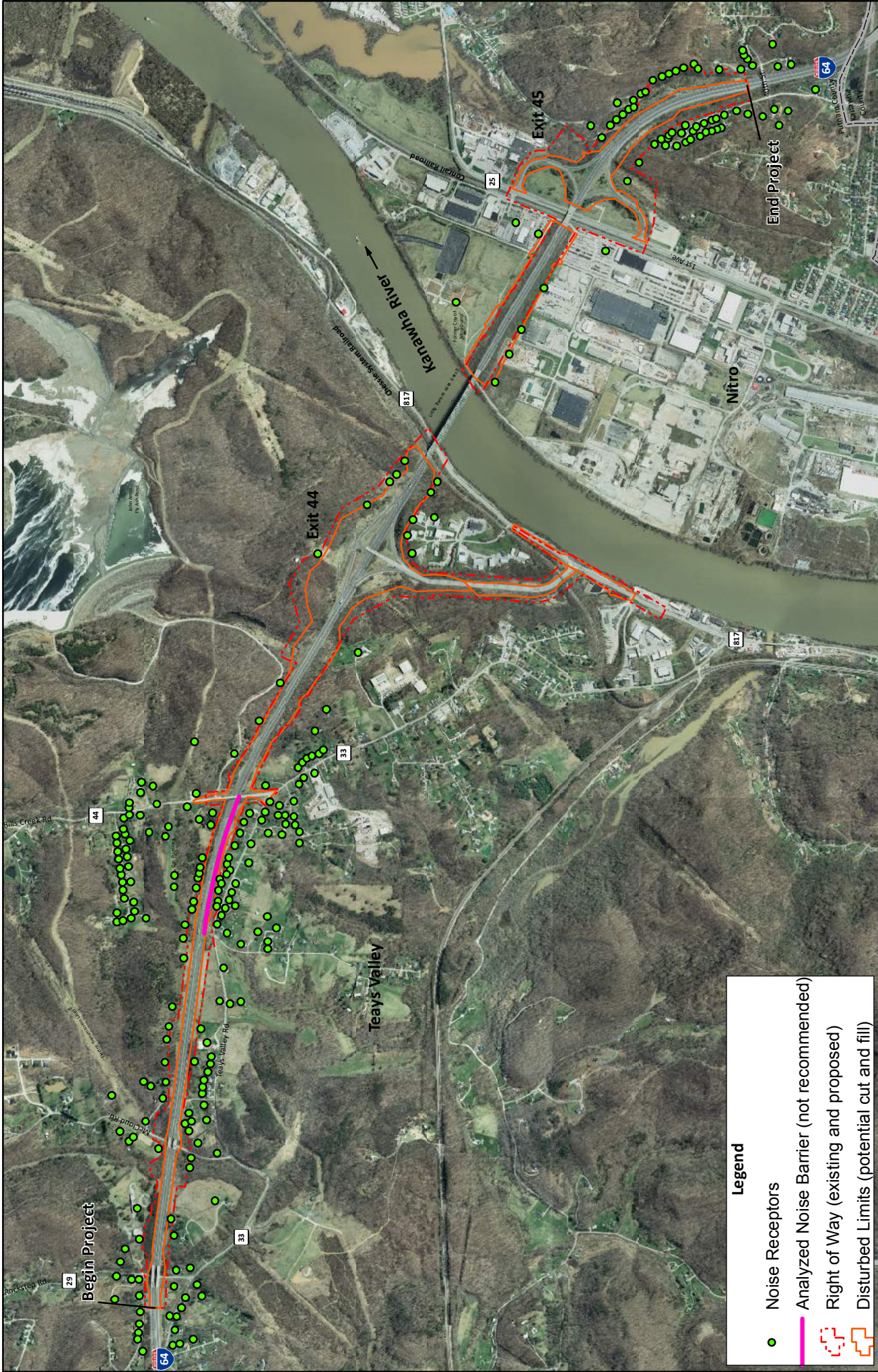
### 3.9 Soils

NRCS Web Soil Survey data available online shows soil types present in the project area. The project footprint is almost entirely contained within areas classified as smoothed Udorthents, a previously disturbed urban area linked to development of the interstate.

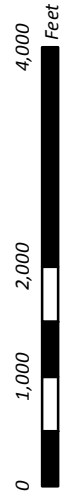
The proposed project will not disturb soils within the project area beyond the construction footprint of the Preferred Alternative.

### 3.10 Geology

The major hydrogeologic formation of the project area is the Lower Pennsylvania formation, which is common throughout the entire Appalachian Plateau. The Appalachian Plateaus are characterized by relatively flat-lying but intensely eroded bedrock, which results in a mountainous terrain capped by resistant layers of bedrock with a dendritic drainage pattern. Geology is comprised of shales, sandstones, and alluvium from the Conemaugh and Monongahela groups.



### Noise Receptors



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 3-5



- Legend**
- Noise Receptors
  - Analyzed Noise Barrier (not recommended)
  - - - Right of Way (existing and proposed)
  - - - Disturbed Limits (potential cut and fill)

relatively flat-lying but intensely eroded bedrock, which results in a mountainous terrain capped by resistant layers of bedrock with a dendritic drainage pattern. Geology is comprised of shales, sandstones, and alluvium from the Conemaugh and Monongahela groups.

The western portion of the project is located at the upstream end of the Teays River Valley, which is an ancient river that was abandoned during the Early Pleistocene epoch. The valley stands over 100 feet above the Kanawha River. The bedrock valley floor is overlain by highly weathered gravel. As much as 100 feet of eroded sediments overlies the gravel.

No known faults or karst topography will be impacted by the Preferred Alternative. The proposed project will not have an impact on geology within the project area, beyond the cuts required to construct the project.

### 3.11 Groundwater

According to the 2000 report prepared by the US Geological Survey, *Ground-Water Quality in the Appalachian Plateaus, Kanawha River Basin, West Virginia*, “the Appalachian Plateaus are underlain by flat-lying, Pennsylvanian age sedimentary rocks. Ground water primarily flows down slopes to the valley through faults, joints, bedding-plane separations, and other fractures. The results of analysis of samples for chlorofluorocarbons were used to determine the apparent age and depth of circulation of potable ground water... Generally, ground-water quality in the study area meets U. S. Environmental Protection Agency maximum contaminant levels and secondary maximum contaminant levels. Bacteria, sulfate, iron, manganese, and radon concentrations, however, exceed U.S. Environmental Protection Agency (USEPA) standards at some sites.”

Per the *Ground-Water Hydrology of the Area Bordering the Kanawha River in West Virginia*, produced in 1997 by the US Geological Survey, “Ground-water use in Fayette, Kanawha, Mason, and Putnam Counties was at least 4.8 billion gallons in 1980 for public supply, mining, and domestic purposes, according to Stevens and Lessing (1982). This includes the entire county areas, but does not include industrial use. Only a small percentage of the 4.8 billion-gallon withdrawal was from the alluvial and bedrock aquifers along the Kanawha River. About 60 million gallons of ground water are withdrawn from the Kanawha River alluvium each year for public supply.”

Potable water in the project area comes from surface water sources and is supplied by Putnam County Public Service District and West Virginia American Water. No groundwater is used in the project area and it is unlikely that there are any public or private groundwater wells in the area unless they are remnant wells that have not been capped (K. Lyons, Putnam County Board of Health 2015).

No groundwater would be used during construction or operation of the proposed project. Therefore, there would be no short-term direct impacts to groundwater resources. No groundwater would be used during operation of the proposed project and there would be no impervious surfaces added that would impede groundwater recharge in the project area. No long-term impacts to groundwater are anticipated from implementation of the project.

## 3.12 Hazardous Materials Assessment

### 3.12.1 Toxic Chemicals and Superfund Sites

At the eastern side of the river, I-64 crosses through the Hub Industrial Park. This area is an active industrial park and is home to many businesses that produce (either primarily or as by-products) or handle hazardous chemicals. The Hub Industrial Site is bounded by I-64 to the north, the Norfolk-Southern Railroad to the east, a local road to the south, and the Kanawha River to the west. This active industrial site contains a Pepsi-Cola distribution warehouse, United Parcel Service, Solutia Nitro, and several other industrial businesses.

Two Superfund sites are located in the vicinity of the project: the Solutia Nitro Site (formerly called the AES-Monsanto property) and the Kanawha River (U.S. EPA CERCLIS facility information 2013).

The Solutia Nitro Site, is located immediately north of I-64 and just west of the Norfolk-Southern rail lines. At this location, four industrial basins were used for industrial sewage from the plant until the 1980s. The basins consisted of an equalization basin, a surge basin, an emergency basin, and a waste pond. In the 1990s, the ponds were cleaned; water was removed from the upper levels of the pond, processed to remove any harmful waste or by-products, and then released. A 'bio-sludge' remained in the bottom of the basin which contained the remaining waste from plant processes, a result of pH adjustment and equalization of the plant wastewater. Dry Portland cement was injected into the bio-sludge to stabilize it in place, forming a solid mass within the basin.

Recent meetings with Potesta & Associates, Inc., the engineering company undertaking cleanup of the Solutia site, indicated that there will be no remediation on the south (upstream) side of I-64. The remediation work on the North side was completed in the fall of 2014.

In U.S. Environmental Protection Agency (USEPA) most recent Waterbody report (2010) for the Kanawha River, the river in the vicinity of the proposed project is listed as impaired due to contamination by dioxins, pathogens, and polychlorinated biphenyls (US EPA 2010). Total Maximum Daily Loads are needed for these water quality impairments.

The closed Nitro Dump is located immediately north of I-64 and just east of the Kanawha River (see **Figure 3-2**). It is unclear what materials may be contained within the landfill. The landfill is not an EPA-designated Superfund site.



### 3.12.2 Underground Storage Tanks

The WV Department of Environmental Protection maintains a database of certified underground storage tanks (USTs). There are 3 USTs within a ¼ mile radius of the project boundary (see **Figure 3-2**). The Pilot Travel Center UST is located northeast of I-64 along First Avenue. The UPS Freight USTs are located southwest of I-64 along McJunkin Road, and the One Stop UST is located southwest of the I-64 along First Avenue (West Virginia Department of Environmental Protection 2009).

### 3.12.3 Potential Impacts

The proposed project would not impact any of these hazardous waste sites. Construction would remain within the existing DOH ROW and would be designed to minimize disturbance of the Solutia Nitro Site and the other hazardous waste sites in the vicinity of the project.

### 3.12.4 Minimization Measures

Given the design of the proposed project and the fact that the proposed project construction would remain within existing ROW, it is unlikely that hazardous materials would be encountered or that any impacts related to hazardous materials would occur. In order to further minimize the potential for any hazardous materials impacts, the following minimization measure would be implemented.

#### 3.12.4.1 Implementation of Hazardous Materials Contingency Plan

The Contractor shall develop a Hazardous Materials Contingency Plan (HMCP) to include standard construction measures required by federal, state, and local policies for hazardous materials, removal of onsite debris, and confirmation of presence of pipelines on-site. At a minimum, this plan would include the following:

- If contaminated soils or other hazardous materials are encountered during any soil moving operation during construction (e.g., trenching, excavation, grading), construction shall be halted and the HMCP implemented.
- Instruct workers on recognition and reporting of materials that may be hazardous.
- Minimize delays by continuing performance of the work in areas not affected by hazardous materials operations.
- Identify and contact subcontractors and licensed personnel qualified to undertake storage, removal, transportation, disposal, and other remedial work required by, and in accordance with, laws and regulations.
- Forward to engineer, copies of reports, permits, receipts, and other documentation related to remedial work.
- Notify such agencies as are required to be notified by laws and regulations within the time stipulated by such laws and regulations.
- File requests for adjustments to contract time and contract price due to the finding of hazardous materials in the work site in accordance with conditions of contract.

## 3.13 Surface Water Resources

The following subsections provide an overview of surface water resources within the project area – streams, wetlands, and floodplains. Following a desktop delineation to identify and approximate boundaries of likely stream and wetland locations, a field investigation was conducted in August 2014 to identify, delineate, and assess surface water resources within the Study Area of the proposed I-64 Widening Project.

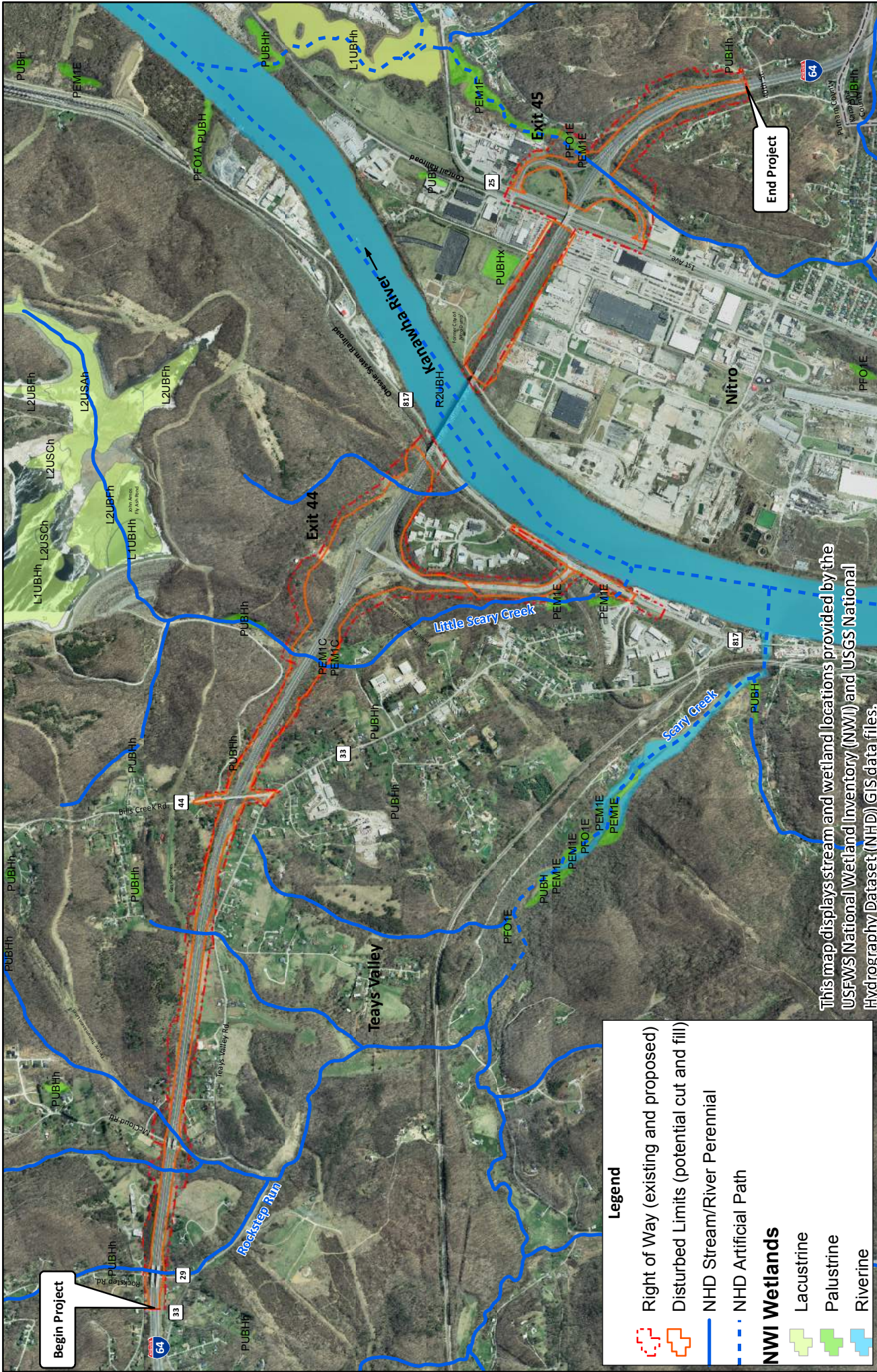
### 3.13.1 Stream & Wetland Valuation Metric (SWVM)

The SWVM is a Microsoft Excel file (<http://www.lrh.usace.army.mil/permits>) that uses project specific data to assess proposed impacts and compare them to proposed mitigation efforts. The data that are entered include: length of proposed impact/mitigation; hydrology, biogeochemical cycling, and habitat index scores from the U.S. Army Corps of Engineers (USACE) Hydrogeomorphic Functional Assessment (HGM), habitat scores from, USEPA habitat assessment score; specific conductivity; pH; dissolved oxygen; West Virginia Stream Condition Index (WVSCI) score; temporal loss impacts; length of long-term protection; and, when appropriate, wetland type, wetland impact/mitigation classification, and wetland acreage.

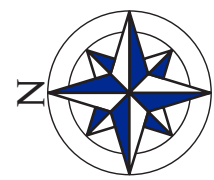
For the purposes of this report, the SWVM has been used to determine an index score for each applicable resource within the study area.

### 3.13.2 Field Investigation Results

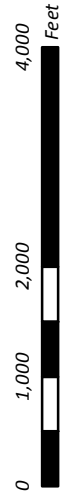
A total of eighteen (18) stream channels totaling 8,127 linear feet were found: seven (7) in the Scary Creek Sub-watershed, six (6) in the Little Scary Creek Sub-watershed, two (2) in the Kanawha River Sub-watershed, and three (3) in the Armour Creek Sub-watershed. In addition, 14 wetlands were located within the Study Area: six (6) in the Scary Creek Sub-watershed, four (4) in the Little Scary Creek Sub-watershed, one (1) in the Kanawha River Sub-watershed, and three (3) in the Armour Creek Sub-watershed (**Figure 3-6**). No other aquatic sites were found. **Table 3-5** and **Table 3-6**, summarize the flow regime, length, Habitat Assessment Value (HAV), WVSCI, and SWVM index for all jurisdictional streams, and the Cowardin Classification and acreage of all jurisdictional wetlands, respectively. Detailed descriptions of these streams and wetlands are provided in the Surface Water Resources Report (Baker, 2015).



This map displays stream and wetland locations provided by the USFWS National Wetland Inventory (NWI) and USGS National Hydrography Dataset (NHD) GIS data files.



### Proposed Impact Area



I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 3-6



### 3.13.3 Summarized Results of Field Investigation

Stream delineations included field identification of ordinary high water mark (OHWM), sufficient measurements of the stream channel, and photographs of the stream within the Study Area. As summarized in **Table 3-4**, seventeen streams comprised of 5,497 linear feet of perennial stream, 917 linear feet of intermittent stream, and 1,032 linear feet of ephemeral stream were identified and delineated within the Study Area. Generally speaking, all of the streams within the Study Area were disturbed by a combination of the road proximity and various developments including houses and the fly ash retention pond above Little Scary Creek. These disturbances have reduced water quality as evidenced by the high specific conductance, low dissolved oxygen levels, and poor WVSCI scores (**Table 3-4**).

Fourteen wetlands comprised of 0.93 acres of emergent (PEM) wetland, 0.10 acres of scrub-shrub (PSS) wetland, 1.24 acres of forested (PFO) wetland, and 0.09 acres of unconsolidated bottom (PUB) wetland were also observed in the Study Area (**Table 3-5**). The wetlands in the Study Area are small and typically the result of disturbed drainage patterns along the highway.

**Table 3-4 Jurisdictional Streams Delineated within the Study Area**

| Jurisdictional Resource    | Flow Regime            | Stream length (linear ft) | HAV | WVSCI | Index Score |
|----------------------------|------------------------|---------------------------|-----|-------|-------------|
| Rockstep Run               | Perennial              | 644                       | 128 | 54.32 | 0.611       |
| UT1 Rockstep Run           | Perennial              | 654                       | 97  | 34.39 | 0.476       |
| UT1 Rockstep Run           | Perennial              | 209                       | 79  | --    | 0.446       |
| UT2 UT1 Rockstep Run       | Perennial              | 345                       | 109 | 43.72 | 0.544       |
| UT2 Rockstep Run           | Perennial              | 168                       | 73  | --    | 0.436       |
| UT3 Rockstep Run           | Perennial              | 374                       | 124 | 33.31 | 0.534       |
| UT1 Scary Creek            | Ephemeral              | 456                       | 34  | NA    | 0.310       |
| Little Scary Creek         | Perennial              | 522                       | 133 | 55.58 | 0.607       |
| UT1 Little Scary Creek     | Perennial              | 1,588                     | 108 | 52.68 | 0.539       |
| UT1 Little Scary Creek     | Ephemeral              | 216                       | 87  | NA    | 0.571       |
| UT2 UT1 Little Scary Creek | Intermittent           | 172                       | 115 | 44.32 | 0.611       |
| UT2 Little Scary Creek     | Ephemeral              | 332                       | 58  | NA    | 0.420       |
| UT1 UT2 Little Scary Creek | Ephemeral              | 29                        | 58  | NA    | 0.420       |
| Kanawha River              | Perennial              | 680                       | NA  | NA    | NA          |
| UT1 Kanawha River          | Intermittent/Perennial | 519/387                   | 86  | 65.41 | 0.580/0.574 |
| Armour Creek               | Perennial              | 606                       | NA  | NA    | NA          |
| UT1 Armour Creek           | Intermittent           | 188                       | 128 | 18.16 | 0.508       |
| UT1 Armour Creek           | Intermittent           | 38                        | 121 | --    | 0.499       |
| <b>Total</b>               |                        | <b>8,127</b>              |     |       |             |

**Table 3-5 Jurisdictional Wetlands Delineated within the Study Area**

| Jurisdictional Resource | Cowardin Class | Acreage     |
|-------------------------|----------------|-------------|
| W1                      | PSS            | 0.10        |
| W2                      | PEM            | 0.19        |
| W3                      | PUB            | 0.09        |
| W4                      | PEM            | 0.19        |
| W5                      | PEM            | 0.02        |
| W6                      | PEM            | 0.02        |
| W7a                     | PEM            | 0.24        |
| W7b                     | PEM            | 0.02        |
| W7c                     | PEM            | 0.05        |
| W7d                     | PEM            | 0.03        |
| W8                      | PEM            | 0.08        |
| W10                     | PFO            | 1.24        |
| W11                     | PEM            | 0.08        |
| W13                     | PEM            | 0.01        |
| <b>Total</b>            |                | <b>2.36</b> |

### 3.13.4 Surface Water Resource Impacts and Mitigation

Based upon a desktop analysis, the preferred alternative (Alternative #4) has the potential to impact 2,365 linear feet of stream and 0.08 acres of wetlands. The project will require a Clean Water Act Section 404 permit. Compensatory mitigation may be required consistent with the USEPA/USACE 2008 Final Compensatory Mitigation Rule.

Note that the Kanawha River was included in this survey in recognition of the resource; however the river is considered a Traditionally Navigable Water and is not applicable to protocols for wadeable streams and cannot be assessed through the SWVM. Any proposed action including the encroachment by piers or abutments will need to be coordinated with the USACE and the U.S. Coast Guard (USCG).

### 3.14 Floodplains

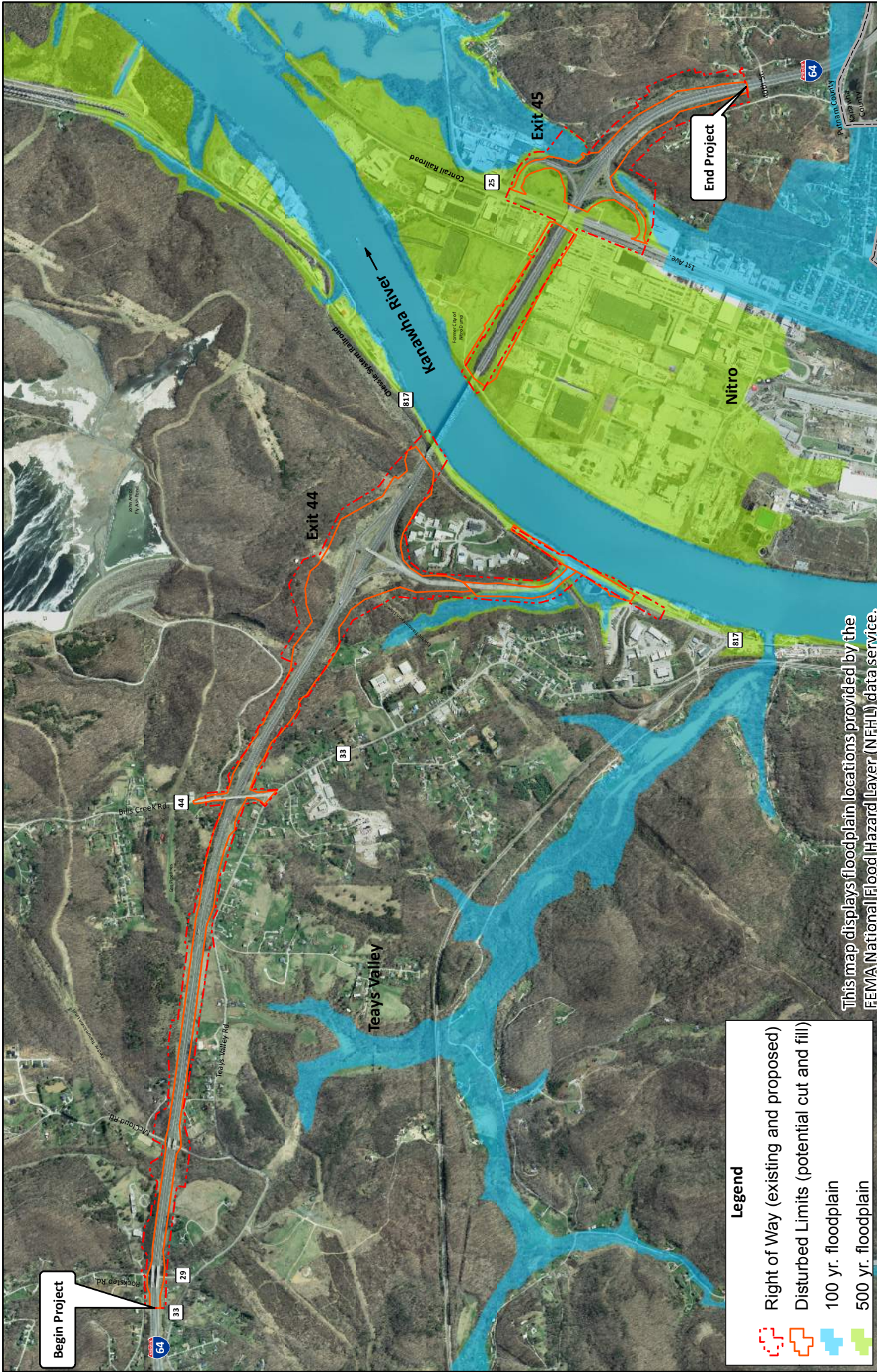
Through EO 11988: Floodplain Management, all Federal agencies are directed to avoid, to the extent possible, long- and short-term adverse impacts associated with the modification of floodplains. In addition, Federal agencies should avoid direct or indirect support of floodplain development wherever there is a practicable alternative. The Federal Emergency Management Agency (FEMA) provides floodplain information and regulates development in and around FEMA-established floodplains for many areas of the country through Flood Insurance Studies (FIS) and their associated Flood Insurance Rate Maps (FIRMs). Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a base floodplain based on the 100-year flood, which is a flood having a 1 percent chance of occurring in any given year (7 CFR 650.25).

Floodplains in the study area generally follow the Kanawha River and flat terrain east of the river to Nitro, as shown in Figure 3-7. In areas where the existing highway alignment is within the floodplain, impacts to floodplain from widening are unavoidable but will be minimized to the extent possible. Impacts to floodway at river crossings are not anticipated.

During construction, impacts to floodplains will be mitigated by using appropriate erosion and sedimentation control measures. Post-construction mitigation measures for base floodplain encroachments may include committing to special flood-related design criteria, elevating facilities above base flood level where feasible, and locating non-conforming structures and facilities out of the floodplain. In addition, appropriate stormwater controls will be installed. Design of these controls will occur during road widening design. Coordination with FEMA regarding impacts within the floodplain will be required during final design.

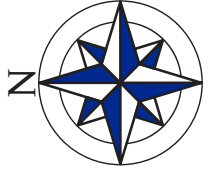
### 3.15 Terrestrial Vegetation and Wildlife

The majority of land area adjacent to the I-64 corridor in the project vicinity is forested north of the interstate, with residential land uses to the south and industrial uses to the east. GIS records indicate that approximately 630 acres of forested habitat exist within a quarter mile buffer of the project area, representing 49% of the land cover. Approximately 18 acres of forested habitat may be cleared under the Preferred Alternative (Downstream Alternative #4).



- Legend**
- Right of Way (existing and proposed)
  - Disturbed Limits (potential cut and fill)
  - 100 yr. floodplain
  - 500 yr. floodplain

This map displays floodplain locations provided by the FEMA National Flood Hazard Layer (NFHL) data service.



### Floodplains

I-64 Six Lane Widening  
Crooked Creek to Nitro, Putnam County  
Figure 3-7



## 3.16 Rare, Threatened and Endangered Species

Coordination with resource agencies was undertaken in Summer 2013 to identify potential threatened and endangered species within the project area. The WV Division of Natural Resources Wildlife Resources Section (WRS) indicated that they have no records of any rare, threatened, or endangered species or natural trout streams within the project area. The US Fish & Wildlife Service (USFWS) indicated that the project area is within the range of the federally listed endangered Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*) and may provide summer foraging and roosting habitats, as well as winter habitat, for these mammals.

Project-related timber will be cleared when bats are in hibernation (November 15 through March 31) to avoid direct impacts to Indiana bats. No more than 32 acres of forest area will be cleared for the project, which will leave approximately 598 acres or 47 percent of forested habitat within the 1/4-mile buffer area after project clearing has been completed. The results of this analysis show that the project will not appreciably affect the availability of suitable summer habitat in the action area. As the area was surveyed for caves and abandoned mine portals and none were found on the property, no Indiana bat winter hibernation habitat will be affected. As a result of this information, USFWS has concluded that the project may affect, but is not likely to adversely affect the Indiana bat and the northern long-eared bat. Additionally, email correspondence with the USFWS on November 19, 2015 confirmed the concurrence with both Indiana and northern long eared bats. (**Appendix A**).

### 3.16.1 Freshwater Mussels

The Kanawha River is a high quality warm water fishery per WRS records. USFWS records indicate that five federally listed mussel species possibly occur within the project location: spectaclecase (*Cumberlandia monodonta*), fanshell (*Cyprogenia stegaria*), pink mucket (*Lapsilis abrupta*), tubercled blossom (*Epioblasma torulosa torulosa*), and sheepnose (*Plethobasus cyphus*). If such freshwater mussels of the order Unionoidae (unionids) are present, they could be affected by dislodging, crushing, or smothering, or modifying hydraulic conditions that affect substrate stability and composition during construction. Due to the potential for construction activities to harm unionid resources in the Kanawha River, a field unionid survey was conducted in July, 2014 in the vicinity of the I64 Bridge to identify the location, density, and distribution of unionids within the project area. The field survey was authorized by USFWS Federal Fish and Wildlife Permit No. TE206781-5 and West Virginia Division of Natural Resources Scientific Collecting Permit No. 2014.174 (**Appendix A**).





Figure 3-8. Sample locations at the I64 bridge, Kanawha River, July 2014.

### 3.16.1.1 Summary of Impacts

A few unionids of common species may be affected by construction activities associated with widening the I-64 Bridge within the Kanawha River. Parts of the area from T1 to T20, 150 m from the RDB to the LDB met one or both of the criteria for a diverse unionid community, and this area could be considered a very low density community. However sampling effort was sufficient to collect most of the species that occur near the I-64 Bridge, and no federally endangered species were found. Five (5) of the 10 species found are typically found within unionid beds, but were scattered throughout the area and were a minority (20.8%) of the unionids collected. Most of the collected individuals were *P. alatus*, a species commonly found in marginal habitat. The distribution, abundance, and species composition near the bridge strongly suggests that federally endangered species are not present. A letter of concurrence from U.S. Fish and Wildlife Service upholds this assertion (**Appendix A**).

## 3.17 Energy

Energy expenditures are required during the construction of any highway or infrastructure project. Energy is also used by vehicular traffic using the highway, varying based on roadway profile, the alignment, grade, traffic density, and other factors.

The No Build may increase fuel consumption over the 20 year analysis period due to increased traffic delay; energy use will slightly higher than current levels. It is anticipated that the Preferred Alternative will actually decrease the amount of energy used since it will reduce traffic congestion and travel times. This is considered a positive impact and no mitigation is being proposed.

During construction, energy use will increase due to the use of fossil fuels to power construction equipment. This short term increase will be offset by the improved movement of traffic after the project is constructed.

## 3.18 Secondary and Cumulative Impacts

This section examines secondary and cumulative impacts. Secondary impacts are caused by an action but occur later in time or further removed in distance. Cumulative impacts are evaluated by considering how the consequences of an action affect the environment in light of other past, present, and reasonably foreseeable future actions.

### 3.18.1 Secondary Impacts

Overall, I-64 is an important resource that impacts the regional economy and its future. While widening the 3.79-mile stretch of the interstate will improve traffic operations, it is not anticipated to induce additional development beyond background growth already occurring in the region.

### 3.18.2 Cumulative Impacts

#### 3.18.2.1 Defining Cumulative Impacts

Cumulative effects analyses are an important element of the environmental documentation and approval process and are required by NEPA. The CEQ defines cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other

past, present, and reasonably foreseeable future actions (40 CFR 1508.7). Cumulative effects are defined under NEPA as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR Section 1508.7).

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impact is the total effect on a given resource, ecosystem, or human community of all actions taken, including actions unrelated to the proposed action (CEQ 1997; CEQ 2005). The CEQ defines reasonably foreseeable future actions as those occurrences which are probable and not completely uncertain (CEQ 1981). FHWA guidance states that reasonably foreseeable events, although still uncertain, must be probable. Further, the “confident prediction of reasonably foreseeable impacts requires judgment based on information obtained from reliable sources. Coordination with local land use agencies and officials, including the review of adopted plans and similar instruments or documentation, if available, are important in this regard. Surveys and consultation with local landowners, developers, real estate agencies, or other individuals with special expertise within the proximity of the project study area can yield useful information. In a State, or region within a State, where growth management laws exist, the restrictions and requirements of those laws should be acknowledged and taken into consideration” (FHWA no date).

Cumulative impact analysis is defined temporally and geographically and these definitions differ based on the specifics of each project. For the I-64 widening alternatives, the timeframe for cumulative projects aligns with the 20 year horizon design year. Given the role that I-64 plays in regional mobility, and thus the economic development and prosperity of the county and the region, the geographic scope of the cumulative analysis considers regional plans for development.

#### *Cumulative Projects Considered*

While I-64 in the project area is congested today and delay is anticipated to increase in the future, the region is one of the fastest growing areas in the state. The 2014-2018 Comprehensive Economic Development Strategy (CEDS) Plan notes, “Putnam County is the fastest growing county in the region and the most affluent ... [it] has the advantage of being located between Charleston and Huntington and is connected by interstate highway to both cities. It is also endowed with a relatively large amount of flat developable land, both in the Teays Valley area and in the Kanawha River Valley. The recent 4-laning of US 35 from I-64 to Buffalo (including a new I-64 interchange) has boosted economic development potential... Putnam County rates in the top 20 percent of best communities to locate a company, according to Southern Business & Development Magazine.” The plan identifies six existing business and industrial parks within the county, plus plans for expansion. However, the plan also notes that a lack of developable business sites and lack of infrastructure are regional weaknesses to further development.

Nitro’s 2013 A Plan for Moving the City Forward Strategic Plan identifies infrastructure improvements – particularly along I-64 and its interchange – as a key recommendation. The plan also examines employment indices; with the number of jobs more than tripling during 1970-2010, the county exhibits substantial employment growth compared to state or national trends.

The 2013 CEDS Plan identifies numerous economic development initiatives for the region:

- Promote continued development and utilization of the WV Regional Technology Park as a research and business park (Kanawha County)
- Determine a location and develop the Kanawha County Industrial Park
- Develop a spec building at the Putnam County Park
- Develop a dinner theater/shopping tourist destination at St. Albans
- Develop the Charleston Riverfront into business and retail locations
- Inland riverport facility at Eleanor (Putnam County)
- Create a medical/mixed use business incubator annex near the current location of the Upper Kanawha Valley Enterprise Community
- Redevelop and expand Slack Plaza into a green use park with amenities that will be a community destination park and add to the livability of downtown Charleston
- Provide technical assistance and tracking of small innovative businesses that may locate in the High Tech – Energy Corridor (statewide initiative)
- Identify potential brownfield redevelopment sites in Nitro
- Feasibility study for economic development around proposed new entrance to Coonskin (Kanawha County)

Metro Mobility 2040 also defines future, fiscally constrained transportation improvement projects within Putnam County:

- Construct a new four lane divided highway from Buffalo Bridge to Mason County
- Widen SR 817 to three lanes from Winfield Bridge to Winfield High School
- Widen I-64 to six lanes from Cow Creek Road to SR 34
- Improvements (turn lanes, new connector) in Hurricane area
- Improvements (turn lanes, widening) in Teays Valley area
- Improvements (turn lanes, widening) in Scott Depot area
- Widen SR 25 to three lanes from I-64 to SR 62
- Widen SR 62 to three lanes from SR 25 to Dairy Road
- Widen SR 62 to three lanes from Poca limits to Heizer Creek Road

### *Cumulative Impact Analysis*

The widening project will lead to minor additional right-of-way acquisition and conversion of undeveloped lands to a transportation use. Any growth will occur at the interchanges, since I-64 is a controlled access facility. Improvements may be made at interchanges, but new access is not being proposed, thus limiting potential indirect and/or cumulative effects related to land use.

The preferred alternative is expected to contribute to incremental impacts when considered alongside overall cumulative effects of past and future actions. While it may result in conversion of land use, particularly at the interchanges, the preferred alternative is anticipated to have an overall positive impact on the regional economy by improving mobility. Considered alongside other planned developments and transportation projects, impacts should be limited. The preferred alternative is consistent with the MPO's long range transportation plan for the area.

As with any project that involves change, the proposed I-64 widening project will have the potential to contribute to positive and negative environmental effects within the study corridor. However, this project will provide benefits in terms of regional mobility, which in turn will help support economic growth.

## 3.19 Temporary Construction Impacts

Any of the build alternatives may result in short term construction impacts. This may include increased noise levels, lane or shoulder closures that impact commute times, vibratory or emissions impacts, increased runoff from disturbed areas, and more. WVDOT construction standards and best management practices help reduce these short term impacts for highway construction projects. Construction closures will be scheduled to minimize traffic disruptions to the extent possible. Appropriate signage and public notices will be provided to minimize impacts by disseminating information regarding construction. Coordination with utility companies will be undertaken as needed to minimize impacts to utilities.

As a benefit, construction of the project will create additional construction jobs in the area.

## 3.20 Impact Summary

**Table 3-6** provides a summary of anticipated impacts, which apply to the preferred alternative.

**Table 3-6: Summary of Preferred Alternative Impacts**

| Environmental Feature                 | Preferred Alt<br>(Downstream Alt<br>#4 |
|---------------------------------------|--|
| Displaced Structures                  | 0                                      |
| Environmental Justice Populations     | No                                     |
| Community Facilities                  | No                                     |
| Historic Structures*                  | NAE                                    |
| Archaeological Sites*                 | No                                     |
| Section 4(f)/6(f) Properties          | No                                     |
| Statewide Important Farmlands (acres) | 0.33                                   |
| Stream Impacts (linear feet)**        | 2,365                                  |
| Wetland Impacts (acres)**             | 0.08                                   |
| Floodplain Impacts                    | Yes                                    |
| Forested Habitat (acres)**            | 18                                     |
| T&E Species Habitats                  | No                                     |
| Contaminated Sites                    | No                                     |
| Air Quality <sup>+</sup>              | No                                     |
| Noise <sup>++</sup>                   | Yes                                    |
| Soils & Geology                       | No                                     |
| Groundwater                           | No                                     |

Notes: \*NAE = No Adverse Effect on Historic Resources; \*\* Results are based on desktop analysis; +No additional air quality analysis required; ++Impacted receptors but barrier wall does not meet DOH threshold for reasonableness.

As with any project that involves change, the Preferred Alternative will have the potential to contribute to positive and negative environmental effects within the study area. However, impacts will be appropriately mitigated and are outweighed by the benefits to mobility, safety and traffic operations. These benefits would not be realized by the No Build Alternative.

A public meeting was held at the start of the project to provide an opportunity for comment. A public workshop was held at Rock Branch Elementary School on May 20, 2013. The purpose of the meeting was to provide an update on the study and to solicit public feedback on the alternatives including Downstream Alternate #4, which is the Preferred Alternate. In total, 40 people attended the workshop.

Four public comments were received during the workshop, all in favor of the proposed project and the Preferred Alternative. One commenter also asked for consideration of ramp metering on the St. Albans eastbound on ramp and the Nitro westbound on ramp for peak hours as a short-

term fix prior to construction of the proposed project. Other than the favorable comments on the Preferred Alternative, none of the statements applied to the development of the alternatives.

Meeting handouts, the sign-in sheet, and comments received from the public are included as **Appendix B**.

The project also maintained a website to provide information and collect comments. Five comments were submitted via the website and represented a variety of opinions. One respondent fully supports the proposed project, another would like to see other projects take a higher priority to this one, another supports the proposed project but requests mitigation for sightline concerns to be incorporated, another expressed worry over potential property value impacts, and lastly a respondent cautioned that coordination is required with State and Federal environmental agencies.

The comments are included in full in **Appendix B**.

A public meeting will be held following the approval of this Environmental Assessment.

# Chapter 4

## References

The following Technical Reports were prepared for this project and have been used in the development of this EA:

- I-64 Widening Design Study Crooked Creek to Nitro (40th Street), January 2006
- Addendum 1 to I-64 Widening Design Study Crooked Creek to Nitro (40th Street), December 2012
- Interchange Modification Report, May 2014
- Phase I Archaeological Survey for the Proposed Improvements to the I-64/US 35 Interchange from Crooked Creek to 40th Street within the town of Nitro in Putnam County, WV, March 2014
- Historic Resource Survey for the Proposed Improvements to the I-64/US 35 Interchange from Crooked Creek to 40th Street within the town of Nitro in Putnam County, WV, March 2014
- Traffic Noise Report, April 2014
- Final Report: I64 Bridge Unionid Survey, Kanawha River, RM 42, July 2014
- Preliminary Jurisdictional Determination Stream and Wetland Assessment Report for the I-64 Widening Project, March 2015

Other sources and databases used in the development of this document include:

- Transportation Improvement Programs for Fiscal Years 2012-2015. Regional Intergovernmental Council, March 2012.
- Metro Mobility 2040. Regional Intergovernmental Council, September 2013.
- Statewide Transportation Improvement Program FY 2014-2019. WVDOT, Amendment 23, June 2015.
- US Census Bureau data. Available online through American Fact Finder (<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>), accessed April 2014.
- Comprehensive Economic Development Strategy FY 2014-2018. Region III Planning and Development Council.
- Nitro: A Plan for Moving the City Forward. Nitro Ad Hoc Strategic Planning Group, November 2013.



- NRCS Web Soil Survey. Available online at <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>, accessed April 2014.
- Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS-79/31, U.S. Fish and Wildlife Service, Office of Biological Services, Washington, DC. Reprinted: 1992.
- U.S. Army Corps of Engineers (USACE). 2010. Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky. Final Report – July 2010. ERDC/EL TR-10-11, Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- US Geological Survey. 2000. Ground-Water Quality in the Appalachian Plateaus, Kanawha River Basin, West Virginia.
- US Geological Survey. 1997. Ground-Water Hydrology of the Area Bordering the Kanawha River in West Virginia.
- 23 CFR 772. Procedures for Abatement of Highway Traffic Noise and Construction Noise.
- Arizona Department of Transportation. 2005. Atmospheric Effects Associated with Highway Noise Propagation. October.
- Federal Highway Administration (FHWA). 1980. Noise Fundamentals Training Document: Highway Noise Fundamentals. September.
- Federal Highway Administration (FHWA). 2010. Highway Traffic Noise Website. Accessed on March 23, 2010 at: <http://www.fhwa.dot.gov/environment/htnoise.htm>.
- Federal Highway Administration (FHWA). 2011. Highway Traffic Noise Analysis and Abatement Guidance. December. Available at: [http://www.fhwa.dot.gov/environment/noise/regulations\\_and\\_guidance/analysis\\_and\\_abatement\\_guidance/revguidance.pdf](http://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf). Accessed on: December 24, 2012.
- Penn, Elwood. 2013. Memorandum to Dirar Ahmad on I-64 Design Study/Crooked Creek to Nitro, Putnam County. June 5.
- United States Environmental Protection Agency (USEPA). 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.
- 40 CFR 1500 Council on Environmental Quality (CEQ) Regulations For Implementing The Procedural Provisions Of The National Environmental Policy Act
- 23 CFR 771 Federal Highway Administration (FHWA) Environmental Impact And Related Procedures
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. 1994

- Putnam County Planning Commission 2014 Annual Report. 2014
- 7 USC Chapter 73 Section 4201. Farmland Protection Policy Act
- National Resources Conservation Service. [nrcs.usda.org](http://nrcs.usda.org)
- National Historic Preservation Act (NHPA) of 1966 Section 106
- 36 CFR 800. Regulations of the Advisory Council on Historic Preservation (ACHP)
- West Virginia Division of Culture and History. Guidelines for Phase I, II, and III Archaeological Investigations and Technical Report Preparation. Date unknown.
- US Department of Transportation Act Section 4(f)
- Land and Water Conservation Fund Act (LWCFA) Section 6(f)
- Clean Air Act of 1970
- West Virginia Department Of Transportation. 2011/2016 Statewide Transportation Improvement Plan. 2011
- U.S. EPA CERCLIS facility information 2013.  
<http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm>
- West Virginia Department of Environmental Protection. Guidance for Delineation of Ephemeral/Intermittent Streams, dated October 26, 1999
- USACE Regulatory Guidance Letter 05-05. December 7, 2005
- North Carolina's Division of Water Quality (NCDWQ) Identification Methods for the Origins of Intermittent and Perennial Streams (NCDWQ, 2005)
- USEPA Rapid Bioassessment Protocols For Use in Streams and Wadeable Rivers (Barbour et al., 1999)
- "Field Data Sheet and Calculator," USACE (<http://www.lrh.usace.army.mil/permits>)
- WVDEP Watershed Branch Standard Operating Procedures (2014)
- (GERRITSEN, J., BARBOUR, M. T. & KING, K. (2000): Apples, oranges, and ecoregions: on determining pattern in aquatic assemblages. J. N. Am. Benthol. Soc. 19 (3): 487-496.  
([http://www.dep.wv.gov/wwe/watershed/bio\\_fish/pages/bio\\_fish.aspx](http://www.dep.wv.gov/wwe/watershed/bio_fish/pages/bio_fish.aspx), last accessed September 9, 2012).
- USACE Wetland Delineation Manual (1987 Manual) (Environmental Laboratory, 1987
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (USACE, 2010).

- USFWS (Clayton et al.) West Virginia Mussel Survey Protocol 2014
- USEPA 2013. Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database. Accessed on July 28, 2015. Available online at: [http://iaspub.epa.gov/enviro/efsystemquery.cerclis?fac\\_search=primary\\_name&fac\\_value=&fac\\_search\\_type=Beginning+With&postal\\_code=&location\\_address=&add\\_search\\_type=Beginning+With&city\\_name=Nitro&county\\_name=Putnam&state\\_code=WV&program\\_search=2&report=1&page\\_no=1&output\\_sql\\_switch=TRUE&database\\_type=CERCLIS](http://iaspub.epa.gov/enviro/efsystemquery.cerclis?fac_search=primary_name&fac_value=&fac_search_type=Beginning+With&postal_code=&location_address=&add_search_type=Beginning+With&city_name=Nitro&county_name=Putnam&state_code=WV&program_search=2&report=1&page_no=1&output_sql_switch=TRUE&database_type=CERCLIS)
- USEPA 2010. 2010 Waterbody Report for Kanawha River (Lower Part). Accessed on July 29, 2015. Available online at: [http://ofmpub.epa.gov/waters10/attains\\_waterbody.control?p\\_list\\_id=WVK-LO\\_03&p\\_report\\_type=T&p\\_cycle=2010](http://ofmpub.epa.gov/waters10/attains_waterbody.control?p_list_id=WVK-LO_03&p_report_type=T&p_cycle=2010).
- USEPA/USACE 2008. Compensatory Mitigation for Losses of Aquatic Resources; Final Rule.
- Lyons, K. 2015. Personal Communication between Keith Lyons, Putnam County Board of Health and Alexandra Kleyman, CDM Smith. July 28, 2015.
- Putnam County 2014. Final Draft Community Plan: Bridging to the Future.
- Review Meeting on Solutia Mitigation, Potesta Engineering Office, Kanawhy City, WV, February 26, 2014
- American Transportation Research Institute, FPM Congestion Monitoring at 250 Freight Significant Locations. Accessed on December 4, 2015. Available online at: <http://atri-online.org/2011/10/01/fpm-congestion-monitoring-at-250-freight-significant-highway-locations/>
- West Virginia Department of Environmental Protection 2009. List of Underground Storage Tank Issued Certificates. Accessed on July 28, 2015. Available online at: [https://apps.dep.wv.gov/WebApp/Dep/Search/Permits/City\\_CertificatesQuery.cfm?office=OWMS](https://apps.dep.wv.gov/WebApp/Dep/Search/Permits/City_CertificatesQuery.cfm?office=OWMS).

## Chapter 5

### List of Preparers and Reviewers

#### *FHWA*

- Alison M. Rogers, M.S. Biological Sciences, B.S. Biology, 14 years of experience, NEPA Review
- Jason E. Workman, M.S. Environmental Science, B.S. Parks and Conservation, 12 years of experience, FHWA Document Review

#### *WVDOH*

- Lovell R. Facemire, PE, PS, B.S. Civil Engineering 21 years of experience, WVDOH Document Review
- Ben L. Hark, M.A. Guidance Counseling, B.A. Sociology, 39 years of experience, WVDOH Document Review
- Sondra L. Mullins , B.A. History, 18 years of experience, WVDOH Document Review

#### *CDM Smith*

- Larry Clegg, PE, B.S. Civil Engineering, B.S. Mining Engineering, 29 years of experience, Project Oversight
- Reason Martin, B.S. Civil Engineering Technology, 14 years of experience, GIS Mapping
- Rebecca Jablon, B.A. Urban Studies, M.C.R.P. City and Regional Planning, 12 years of experience, Primary EA Author
- Jane Wheeler, M.E.M. Environmental Management, B.A. Botany, 30 years of experience, Document Review
- Kevin Cole, PE, Education M.S. Transportation Engineering, B.S. Civil Engineering, University of Tennessee, 14 years of experience, Traffic Analysis, IMR
- Hollis Loveday, PE, M.S. Civil Engineering, B.S. Civil Engineering, 35 years of experience, IMR Oversight
- Rajit Ramkumar, PE M.C.E. Civil Engineering B.T.E.C. Civil Engineering, 11 years of experience, Noise Analyst
- Robert Ball, RPA, M.H.P. Historic Preservation, B.A. Anthropology, 18 years of experience, Cultural Historian
- Howard Beverly, B.A. Anthropology, M.A. Anthropology, M.A.A. Applied Anthropology, 19 years of experience, Archaeological Investigations

- David McBride, M.A. Anthropology, M.S. Mass Communications, B.A. Anthropology, 24 years of experience, Archaeological Investigations
- Dona Daugherty, B.A. Anthropology, 12 years of experience, Archaeological Investigations
- Ann Wilkinson, B.A. Anthropology, 11 years of experience, Archaeological Investigations
- Matthew Petty, B.A. Environmental Science, B.A. Zoology, M.S. Environmental Science 9 years of experience, Streams/Wetlands Analyst
- Murray Wade, M.S. Environmental Science, B.S. Wildlife Biology 31 years of experience, Streams/Wetlands Analyst

*TRC*

- David Clevenger, PE,PS, BS Civil Engineering 29 years of experience, Project Oversight
- Tim Shoemaker, PE, BS Civil Engineering, 21 years of experience, Project Manager

# Chapter 6

## Distribution List

### **FEDERAL AGENCIES**

William C. Wentworth  
Remedial Project Manager  
U.S. Environmental Protection Agency  
Region 3 Mail Code: 3LC20  
1650 Arch Street  
Philadelphia, PA 19103-2029

Lisa Humphreys  
Project Technician Coordinator  
U.S. Army Corps of Engineers  
Huntington District  
CELRH-EC-CE  
502 8th Street  
Huntington, WV 25701-2070

Ginger Mullins  
Chief Regulatory Division  
U.S. Army Corps of Engineers  
Huntington District  
CELRH-RD  
502 Eighth Street  
Huntington, WV 25701-2070

John Schmidt  
Supervisor  
U.S. Fish and Wildlife Service  
West Virginia Field Office  
694 Beverly Pike  
Elkins, WV 26241

Ron Wigal  
Environmental Specialist  
Natural Resources Conservation Service  
U.S. Department of Agriculture  
1550 Earl Core Road, Suite 200  
Morgantown, WV 26505

Jessica Martinsen  
U.S. Environmental Protection Agency  
Region 3- Environmental Services Division  
Office of Environmental Programs  
Mail Code: 3EA30  
1650 Arch Street  
Philadelphia, PA 19103-2029

Norm Bailey  
Resource Conservationist  
Natural Resources Conservation Service  
U.S. Department of Agriculture  
1550 Earl Core Road, Suite 200  
Morgantown, WV 26505

Mary Ann Tierney  
Regional Administrator  
Federal Emergency Management Agency  
Region III  
615 Chestnut Street  
Philadelphia, PA 19106

#### **TRIBAL CONSULTATION**

Tribal Historic Preservation Officer  
Seneca- Cayuga Tribe of Oklahoma  
23701 South 655 Road  
Grove, OK 74344

Tribal Historic Preservation Officer  
Eastern Shawnee Tribe of Oklahoma  
10080 S. Bluejacket Road  
Wyandotte, OK 74370

Tribal Historic Preservation Officer  
The Delaware Nation  
P.O. Box 825  
Anadarko, OK 73005-0825

Tribal Historic Preservation Officer  
Seneca Nation of Indians  
90 Ohi:yo' Way  
Salamanca, NY 14779

Tribal Historic Preservation Officer  
Eastern Band of Cherokee Indians  
P.O. Box 455  
Cherokee, NC 28719

### **WEST VIRGINIA AGENCIES**

Charlie Armstead  
West Virginia Department of Environmental Protection  
Division of Land Restoration  
Office of Environmental Remediation  
601 57th St, Room 1072  
Charleston, WV 25304-2345

Aaron Gillespie  
District Engineer, District 1  
West Virginia Department of Highways  
1332 Smith Street  
Charleston, WV 25301

Danny Bennett  
West Virginia Division of Natural Resources  
P.O. Box 67  
Elkins, WV 26241

Susan Pierce  
Deputy State Historic Preservation Officer  
Division of Culture and History  
1900 Kanawha Blvd East  
Charleston, WV 25305

Robert A. Fala  
Director, West Virginia Division of Natural Resources  
Building 74  
324 Fourth Avenue  
South Charleston, WV 25303

William F. Durham  
Director, Office of Air Quality  
West Virginia Department of Environmental Protection  
601 57th Street, SE  
Charleston, WV 25304-2345



Randy Huffman  
Director  
West Virginia Department of Environmental Protection  
601 57th Street, SE  
Charleston, WV 25304

Scott G. Mandirola  
Director, Division of Water and Waste Management  
Permitting and Engineering Branch  
West Virginia Department of Environmental Protection  
601 57th Street, SE  
Charleston, WV 253041-2345

Putnam County Planning Commission  
12093 Winfield Road  
Winfield, WV 25213

Jan Vineyard, President  
WV TRUCKING Association (WVTA)  
2006 Kanawha Boulevard, East  
Charleston, WV 25311

**REGIONAL AGENCIES**

Colt Sandoro  
Executive Director  
Regional Intergovernmental Council  
315 D Street  
South Charleston, WV 25303  
This page intentionally left blank.

# Appendix A

## Agency Coordination



RECEIVED

JUN 07 2013

ENGINEERING DIVISION  
WV DOH

AP

**DIVISION OF NATURAL RESOURCES**

Wildlife Resources Section  
Operations Center  
P.O. Box 67  
Elkins, West Virginia 26241-3235  
Telephone (304) 637-0245  
Fax (304) 637-0250

Earl Ray Tomblin  
Governor

Frank Jezioro  
Director

June 5, 2013

Mr. Ben Hark  
Division of Highways  
1900 Kanawha Boulevard, East  
Building Five, Room 110  
Charleston, WV 25305-0430

Dear Mr. Hark:

We have reviewed our files for information on rare, threatened and endangered (RTE) species and natural trout streams for the area of the proposed highway project:

State Project U240-64/41.37  
Federal Project NH-0641(318)  
I-64 Six Lane Widening  
East of I-64/US 35 Interchange to east of Nitro Interchange  
Putnam County

We have no known records of any RTE species or natural trout streams within the project area; however, surveys for freshwater mussels will be required in the Kanawha River prior to any in-stream disturbance. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review.

Thank you for your inquiry, and should you have any questions please feel free to contact me at the above number, extension 2048.

Sincerely,

Barbara Sargent  
Environmental Resources Specialist  
Wildlife Diversity Unit

## Payne, Amanda N


---

**From:** Martin, Donald W  
**Sent:** Monday, June 10, 2013 10:22 AM  
**To:** Hark, Ben L; Payne, Amanda N  
**Cc:** Armstead, Charles W  
**Subject:** State Project U240-64/41.37, I-64 widening, Nitro  
**Attachments:** WVDOH Nitro 6 Lane project notification 5-30-13.pdf

Dear Mr. Hark,

Thank you for your May 30 correspondence regarding the I-64 widening project. There are potential environmental and construction concerns associated with the additional Kanawha River bridge span and east approach, and I have forwarded your communication to Charlie Armstead, our Program Manager overseeing the RCRA Corrective Action and Superfund programs.

I am retiring at the end of June and request that you include Charlie on future communications regarding the project, and his contact information is:



**Charles W Armstead**  
WV Dept. of Environmental Protection  
Division of Land Restoration  
Environmental Resources Program M...  
601 57th Street, SE  
Charleston, WV 25301  
(304) 926-0499 , ext 1130  
Charles.W.Armstead@wv.gov

Thanks and best wishes on the project.

Don Martin, Assistant Director  
WVDEP, Division of Land Restoration  
304-926-0499, ext. 1275



**DIVISION OF NATURAL RESOURCES**  
Wildlife Resources Section  
324 4th Avenue  
South Charleston, West Virginia 25303-1228  
Telephone (304) 558-2771  
Fax (304) 558-3147  
TDD 1-800-354-6087

Earl Ray Tomblin  
Governor

RECEIVED  
JUN 28 2013  
ENGINEERING DIVISION  
WV DOH

Frank Jezioro  
Director

June 14, 2013

Mr. Gregory Bailey, PE  
Director, Engineering Division  
West Virginia Division of Highways  
State Capitol Complex, Building 5  
1900 Kanawha Blvd. East  
Charleston, WV 25305-0430

RE: East of I 64/US 35 Interchange to east of Nitro Interchange, Putnam County

Dear Mr. Bailey:

The West Virginia Division of Natural Resources (WVDNR), Wildlife Resources Section (WRS), has reviewed the West Virginia Department of Transportation Division of Highways (WVDOH) National Environmental Policy (NEPA) Interstate 64 state project U240-64/41.37; federal project NH-0641(318). The project proposes widening 3.79 miles of I-64 in Putnam County from east of the US 35 Winfield/ Point Pleasant Interchange (Exit 40) to east of the WV 25 interchange at Nitro (Exit 45). Also, seven bridges will be replaced or widened and one culvert will be extended. This project is necessary to accommodate the increased traffic in the region.

The WVDNR WRS offers the following comments. The document does not contain sufficient detail to fully evaluate the project's potential impacts to aquatic and terrestrial environments. The Kanawha River is the most significant aquatic resource within the project's boundary. The Kanawha River is a high quality warm water fishery. It supports state protected freshwater mussels. There is also a high probability that the Kanawha River contains federally protected mussel species and is therefore classified as a type four mussel stream according to the 2013 West Virginia Mussel Survey Protocol Manual. Because endangered mussel species are expected to occur within this river system, consultation with the United States Fish and Wildlife Service (USFWS), additional consultation with the WVDNR, and a mussel survey would be required if there are any direct impacts to the stream bed.

If there are any questions regarding mussel issues, please contact Anne Wakeford at the Elkins Operation Center 304-637-0245 ext 2035 or [Anne.M.Wakeford@wv.gov](mailto:Anne.M.Wakeford@wv.gov)

Sincerely,

Curtis I. Taylor, Chief  
Wildlife Resources Section

CIT/AW/dc



---

west virginia department of environmental protection

---

Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone: 304 926 0475 • FAX: 304 926 0479

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.wvdep.gov

June 18, 2013

Ben L. Hark, Environmental Section Head  
WVDOH-Engineering Division  
1900 Kanawha Blvd East  
Building Five- Room 110  
Charleston, WV 25305-0430



RE: State Project: U240-64/41.37  
Federal Project: NH-0641(318)  
I-64 Six Lane Widening East of  
1-64/ US 35 Interchange to East of  
Nitro Interchange (Putnam County)

Dear Mr. Hark:

This letter responds to your correspondence of May 30, 2013, concerning the project referenced above. The Division of Air Quality will only provide feedback on issues relating to air quality. If you determine that your project activity may have other environmental impacts, then you should consult with the appropriate environmental agency for that issue (e.g. the Division of Water and Waste Management should be consulted on potential water quality issues).

Putnam County is designated as part of the Charleston, WV maintenance area under the 1997 8-hour ozone standard and as a part of the Charleston, WV nonattainment area under the 1997 PM<sub>2.5</sub> annual standard. It is considered attainment/unclassifiable for all other criteria pollutants. Therefore, transportation conformity requirements are applicable. The information packet received along with your letter correctly notes that the project has previously been included in the 2040 Long Range Transportation Plan (LRTP). In the past, a positive conformity determination has been approved by the Federal Highways Administration. However, the responsible Metropolitan Planning Organization, the Regional Intergovernmental Council (RIC) is in the process of updating the LRTP and a new positive conformity determination will be needed. You may wish to contact RIC (303.744.4258) to confirm the LRTP status as the NEPA documentation is developed.

Based upon current regulatory requirements, the project referenced above as outlined in your letter does not appear to require any pre-construction permits, authorizations, or air quality analyses by WVDAQ except to the extent any of the following apply:

1. It is necessary to burn land clearing debris in order to complete the project; in which case, approval by the WVDEP Secretary or his or her authorized representative is required to conduct such burning (see 45CSR6) or;
2. The project entails the renovation, remodeling, or demolition, either partially or totally, of a structure, building, or installation, irrespective of the presence or absence of asbestos-containing materials, and is subject to 45CSR34 (the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) at 40CFR61, Subpart M). If such is the case, a formal Notification of Abatement, Demolition, or Renovation must be completed and timely filed with the WVDEP Secretary's authorized representative and approval received before commencement of the activities addressed in the Notification.
3. Backup or emergency electrical generators may be subject to federal and state requirements and require an air permit in accordance with 45CSR13.

If the project involves demolition, and/or excavation and transportation of soil/aggregates or the handling of materials that can cause problems such as nuisance dust emissions or entrainment or creation of objectionable odors, adequate air pollution control measures must be applied to prevent statutory air pollution problems as addressed by 45CSR4 and 45CSR17. Copies of all of the WVDAQ rules cited in this letter may be reviewed on the agency's website at <http://www.dep.wv.gov/daq>. To review the rules click on "Summary of Rules" after accessing the website.

You may obtain the latest published air quality data summaries and statistics for the WV Division of Air Quality's ambient air monitoring sites on our website (shown above). Simply click on the image for the Air Quality Annual Report. You may also find a document summarizing, in some detail, the attainment status of the 55 counties in West Virginia relative to National Ambient Air Quality Standards (NAAQS) on our website by clicking on the link for "Publications".

If you have any questions or need further assistance or information, please contact me at (304) 926-0499 x1242.

Sincerely,



William F. Durham, Deputy Director  
Division of Air Quality



RECEIVED

JUL 05 2013

ENGINEERING DIVISION  
WV DOH

*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562  
EEO/AA Employer

July 1, 2013

Mr. Ben Hark  
WVDOH  
1900 Kanawha Blvd., E  
Building Five, Room 110  
Charleston, WV 25305

Re: I-64 Six Lane Widening; East of I-64/US 35 Interchange to East of Nitro Interchange  
State Project U240-64/41.37; Federal Project NH-0641(318)  
FR#: 13-711-PU

Dear Mr. Hark:

We have reviewed the above referenced project to determine potential effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Based on the submitted materials, NEPA studies have been initiated for the above referenced project, which involves the widening of I-64 from the I-64/US 35 Interchange to east of the Nitro Interchange, Putnam County, WV. The proposed project includes widening or construction at a number of bridges along this stretch interstate as well as modification to the Nitro and St. Albans interchanges. We note that Downstream Alternative #4 has already been selected as preferred. Per your request, we are providing you with preliminary input. Submitted information only notes the completion of NEPA documents. At this time, we ask that you clarify how you will ensure that the Section 106 process is completed as well.

Architectural Resources:

There are previously surveyed resources in close proximity to the proposed preferred alternative. In addition, USGS topographic maps indicate that there are numerous buildings and/or structures within close proximity to the proposed project. An assessment of eligibility of all resources within the direct and indirect area of potential effect (APE) must occur before we can provide additional comments. An assessment of effects also would need to be completed once the assessment of eligibility occurs and once you have received feedback from this office regarding that document. We will provide additional comments upon receipt of the assessment of eligibility report. Please note that this report must be completed by an individual meeting the professional qualification standards for an architectural historian as defined in 36 CFR 61.



July 1, 2013  
Mr. Hark  
FR#: 13-711-U  
Page 2

Archaeological Resources:

Our records indicate that archaeological resources have been documented along Scary Creek within the immediate vicinity of the proposed project. As well, proposed widening or construction at the Donald Legg Bridge, which spans the Kanawha River, has the potential to impact significant archaeological resources. We will provide further comment upon initiation of the Section 106 Process and/or receipt of information pertaining to archaeological studies proposed for the project.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the review process, please contact Shirley Stewart Burns, Structural Historian, or Lora A Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,



Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/SSB/LLD

## Payne, Amanda N

---

**From:** Hark, Ben L  
**Sent:** Thursday, July 11, 2013 11:16 AM  
**To:** Clevenger, David (Charleston,WV-US)  
**Cc:** Tabassum, Rubina; Payne, Amanda N  
**Subject:** FW: I-64 Widening NEPA  
**Attachments:** I-64widen-NEPA.pdf

---

**From:** Durham, William F  
**Sent:** Tuesday, June 18, 2013 10:07 AM  
**To:** Sedosky, Timothy B  
**Cc:** Hark, Ben L; 'Scott Ferry (scottferry@wvregion3.org)'; 'Allison.Fluit@kimley-horn.com'; 'Becoat.Gregory@epamail.epa.gov'; 'Khadr, Asrah (Khadr.Asrah@epa.gov)'  
**Subject:** I-64 Widening NEPA

Dear Folks:

I have been sent the preliminary NEPA inquiry for the 6-lane widening of I-64.

I went back to the closest transportation conformity document that I could find (2009) and it was unclear whether this specific scenario was modeled. The NEPA text says the project was included (pg.4) but I'm not sure that the descriptions match sufficiently. This is another topic we should discuss on our call tomorrow at 9:00a.m.

We would want to ensure that the upcoming planning analysis is consistent with the NEPA document.

Fred



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

West Virginia Field Office  
694 Beverly Pike  
Elkins, West Virginia 26241

April 25, 2014

Mr. Ben Hark  
West Virginia Department of Transportation  
Division of Highways  
1900 Kanawha Boulevard East  
Charleston, West Virginia 25305

Re: West Virginia Division of Highways, I-64 Widening Project, Putnam County, WV

Dear Mr. Hark:

This responds to your request of February 25, 2014, for information regarding the potential occurrence of federally listed endangered or threatened, candidate or proposed species or their designated critical habitats in the vicinity of the referenced project. The West Virginia Division of Highways proposes to widen I-64 from four lanes to six lanes from east of the new US-35 Interchange at Crooked Creek to east of the Nitro interchange near 40<sup>th</sup> Street in Putnam County, West Virginia. These comments are provided pursuant to the Endangered Species Act (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

### Listed bats

The project area is within the range of the federally listed endangered Indiana bat (*Myotis sodalis*) and the proposed northern long-eared bat (*Myotis septentrionalis*) and may provide summer foraging and roosting habitats, as well as winter habitat, for these mammals. Indiana bats and northern long-eared bats use caves or mine portals for winter hibernation habitat between November 15 and March 31. These bats may use the proposed site for foraging and roosting between April 1 and November 14. Foraging habitat is generally defined as riparian, bottomland, or upland forest, as well as old fields or pastures with scattered trees. Roosting and maternity habitats consist primarily of live or dead hardwood trees which have exfoliating bark that provides space for bats to roost between the bark and the bole of the tree. Tree cavities, crevices, splits, or hollow portions of tree boles and limbs also provide roost sites. In West Virginia, the Service considers all forest habitats containing trees greater than or equal to 5 inches in diameter at breast height to be potentially suitable as summer roosting and foraging habitat for the Indiana bat and trees greater than or equal to 3 inches in diameter at breast height for northern long-eared bats.

Based on radio-telemetry data, the Service presumes that Indiana bats are present in areas within 5 miles of hibernacula, 5 miles of summer capture sites with no known maternity roosts, and 2.5 miles of maternity roosts. Northern long-eared bats are presumed to be present within 3 miles of summer capture sites, 1.5 miles of maternity roosts, and 5 miles of hibernacula. The proposed project is not within any of these buffer zones.

The project proponent has stated that project-related timber will be cleared when bats are in hibernation (November 15 through March 31) to avoid direct impacts to Indiana bats. No more than 32 acres of forest area would be cleared for the project, which would leave approximately 598 acres or 46.9 percent of

Mr. Ben Hark  
April 25, 2014

2

forested habitat within the ¼-mile buffer area after project clearing has been completed. The total number of acres in the buffer area is 1,275. The results of this analysis show that the proposed action will not appreciably affect the availability of suitable summer habitat in the action area.

The project proponent has stated that the area was surveyed for caves and abandoned mine portals and none were found on the property, therefore no Indiana bat winter hibernation habitat will be affected.

As a result of this information, the Service has concluded that the project may affect, but is not likely to adversely affect the Indiana bat and the northern long-eared bat.

#### Freshwater mussels

The project involves modifications to a bridge that crosses the Kanawha River. The Kanawha River is known to support five federally listed mussel species. These include: the spectaclecase (*Cumberlandia monodonta*), fanshell (*Cyprogenia stegaria*), pink mucket (*Lapsilis abrupta*), , tubercled blossom (*Epioblasma torulosa torulosa*), and sheepnose (*Plethobasus cyphus*). To determine if any mussel populations will be affected, the Service recommends that a mussel survey be conducted at and adjacent to the proposed project in accordance with the West Virginia mussel survey protocols.

The survey should be conducted by a malacologist with qualifications acceptable to the Service and the West Virginia Division of Natural Resources (WVDNR). The malacologist should submit a survey plan to the Service and the WVDNR for review and concurrence prior to conducting the survey, and must have a valid scientific collecting permit from the WVDNR. A list of potential surveyors is attached for your convenience. If any federally listed species or high quality mussel populations are found, further coordination with this office will be required to develop measures that will avoid and minimize any potential impacts to these wildlife resources.

If you have any questions regarding this letter, please contact Liz Stout of my staff at (304) 636-6586 Ext. 15, Elizabeth\_Stout@fws.gov, or at the letterhead address.

Sincerely,



John E. Schmidt  
Field Supervisor



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

West Virginia Field Office  
694 Beverly Pike  
Elkins, West Virginia 26241

### Concurrence Form for Freshwater Mussel Survey Report

Contact Name: TRACI CUMMINGS

Email Address or Fax Number: TRACI.L.CUMMINGS@DOW.GOV

Project: 1-604 Bridge KANAWHA Co

This responds to your letter dated JAN 2015 regarding the results of a mussel survey on the KANAWHA RIVER in conjunction with the above referenced project. These comments are provided pursuant to the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.)

A mussel survey within the project area was conducted from July 9 to 14, 2014. A total of 261 individuals of 10 species were located. Although the KANAWHA is known to support the federally endangered clubshell, fanshell, pinr mucket, snuffbox, sheepsnose, spottoclean no live freshwater mussels of this species were observed during the survey effort. Therefore, no federally listed endangered and threatened species are expected to be impacted by the project, and no biological assessment or further section 7 consultation under the Endangered Species Act is required with the U.S. Fish and Wildlife Service. Should project plans change, or if additional information on listed and proposed species becomes available, or new species are listed or critical habitat designated, this determination may be reconsidered. These survey results are considered valid for five years from the date of completion. If the project is not completed before that time, additional survey efforts may be required. Please note that if any federally listed species are found during any future survey or relocation efforts for native freshwater mussels, this determination will no longer be considered valid. You should immediately contact the Service and reinitiate consultation before to proceeding with any further project efforts.

If you have any questions regarding this letter, please contact LIZ STANT of my staff, at (304) 636-6586, or at the letterhead address.

[Signature] Date: 6/4/15  
Biologist

[Signature] Date: 6/16/15  
John E. Schmidt, Field Supervisor



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

West Virginia Field Office  
694 Beverly Pike  
Elkins, West Virginia 26241

April 25, 2014

Mr. Ben Hark  
West Virginia Department of Transportation  
Division of Highways  
1900 Kanawha Boulevard East  
Charleston, West Virginia 25305

Re: West Virginia Division of Highways, I-64 Widening Project, Putnam County, WV

Dear Mr. Hark:

This responds to your request of February 25, 2014, for information regarding the potential occurrence of federally listed endangered or threatened, candidate or proposed species or their designated critical habitats in the vicinity of the referenced project. The West Virginia Division of Highways proposes to widen I-64 from four lanes to six lanes from east of the new US-35 Interchange at Crooked Creek to east of the Nitro interchange near 40<sup>th</sup> Street in Putnam County, West Virginia. These comments are provided pursuant to the Endangered Species Act (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

### Listed bats

The project area is within the range of the federally listed endangered Indiana bat (*Myotis sodalis*) and the proposed northern long-eared bat (*Myotis septentrionalis*) and may provide summer foraging and roosting habitats, as well as winter habitat, for these mammals. Indiana bats and northern long-eared bats use caves or mine portals for winter hibernation habitat between November 15 and March 31. These bats may use the proposed site for foraging and roosting between April 1 and November 14. Foraging habitat is generally defined as riparian, bottomland, or upland forest, as well as old fields or pastures with scattered trees. Roosting and maternity habitats consist primarily of live or dead hardwood trees which have exfoliating bark that provides space for bats to roost between the bark and the bole of the tree. Tree cavities, crevices, splits, or hollow portions of tree boles and limbs also provide roost sites. In West Virginia, the Service considers all forest habitats containing trees greater than or equal to 5 inches in diameter at breast height to be potentially suitable as summer roosting and foraging habitat for the Indiana bat and trees greater than or equal to 3 inches in diameter at breast height for northern long-eared bats.

Based on radio-telemetry data, the Service presumes that Indiana bats are present in areas within 5 miles of hibernacula, 5 miles of summer capture sites with no known maternity roosts, and 2.5 miles of maternity roosts. Northern long-eared bats are presumed to be present within 3 miles of summer capture sites, 1.5 miles of maternity roosts, and 5 miles of hibernacula. The proposed project is not within any of these buffer zones.

The project proponent has stated that project-related timber will be cleared when bats are in hibernation (November 15 through March 31) to avoid direct impacts to Indiana bats. No more than 32 acres of forest area would be cleared for the project, which would leave approximately 598 acres or 46.9 percent of

Mr. Ben Hark  
April 25, 2014

2

forested habitat within the ¼-mile buffer area after project clearing has been completed. The total number of acres in the buffer area is 1,275. The results of this analysis show that the proposed action will not appreciably affect the availability of suitable summer habitat in the action area.

The project proponent has stated that the area was surveyed for caves and abandoned mine portals and none were found on the property, therefore no Indiana bat winter hibernation habitat will be affected.

As a result of this information, the Service has concluded that the project may affect, but is not likely to adversely affect the Indiana bat and the northern long-eared bat.

#### Freshwater mussels

The project involves modifications to a bridge that crosses the Kanawha River. The Kanawha River is known to support five federally listed mussel species. These include: the spectaclecase (*Cumberlandia monodonta*), fanshell (*Cyprogenia stegaria*), pink mucket (*Lapsilis abrupta*), , tubercled blossom (*Epioblasma torulosa torulosa*), and sheepnose (*Plethobasus cyphus*). To determine if any mussel populations will be affected, the Service recommends that a mussel survey be conducted at and adjacent to the proposed project in accordance with the West Virginia mussel survey protocols.

The survey should be conducted by a malacologist with qualifications acceptable to the Service and the West Virginia Division of Natural Resources (WVDNR). The malacologist should submit a survey plan to the Service and the WVDNR for review and concurrence prior to conducting the survey, and must have a valid scientific collecting permit from the WVDNR. A list of potential surveyors is attached for your convenience. If any federally listed species or high quality mussel populations are found, further coordination with this office will be required to develop measures that will avoid and minimize any potential impacts to these wildlife resources.

If you have any questions regarding this letter, please contact Liz Stout of my staff at (304) 636-6586 Ext. 15, Elizabeth\_Stout@fws.gov, or at the letterhead address.

Sincerely,



John E. Schmidt  
Field Supervisor

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
Eighth Coast Guard District

1222 Spruce Street  
St. Louis, MO 63103-2832  
Staff Symbol: dwb  
Phone: (314)269-2381  
Fax: (314)269-2737  
Email: rob.e.mccaskey@uscg.mil  
www.uscg.mil/d8/westerriversbridges

RECEIVED  
NOV 12 2013

ENGINEERING DIVISION  
WV DOH

16591.1/41.7/KAN  
07NOV13

Mr. Ahmed N. K. Mongi, P.E.  
WV DOT Division of Highways  
Engineering Division  
1900 Kanawha Boulevard, East  
Building 5, Room A-431  
Charleston, West Virginia 25305-0430

Subj: DONALD LEGG MEMORIAL BRIDGE (I64), STATE PROJECT:  
U340-64-41.37, MILE 41.7, KANAWHA RIVER

Dear Mr. Mongi,

This is in reply to an inquiry received November 1, 2013, concerning the proposed bridge project at Mile 41.7, Kanawha River.

The Coast Guard requires that any new bridge construction meets or exceeds the clearances provided by the existing structure. The vertical clearance of the existing bridge is 65.0 feet above pool stage and the horizontal clearance is 548.5 feet. Future pier placement will require review by this office as the project planning continues as some responses from the marine industry indicate a desire to move the right descending navigation pier closer to the river bank and away from the middle of the river. Please inform us of any future decisions so that we may comment.

Sincerely,

A handwritten signature in blue ink, appearing to read "Eric A. Washburn".

ERIC A. WASHBURN  
Bridge Administrator Western Rivers  
By direction of the District Commander



U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
Eighth Coast Guard District

1222 Spruce Street  
St. Louis, MO 63103-2832  
Staff Symbol: dwb  
Phone: (314)269-2381  
Fax: (314)269-2737  
Email: rob.e.mccaskey@uscg.mil  
www.uscg.mil/d8/westerriversbridges

16591.1/41.7 KAN  
22 Oct 13

Mr. Gregory Bailey, P.E.  
Director, Engineering Division  
West Virginia Division of Highways  
State Capital Complex, building 5  
1900 Kanawha Boulevard East  
Charleston, WV 25305-0430

RECEIVED

OCT 30 2013

ENGINEERING DIVISION  
WV DOH

Subj: DONALD LEGG MEMORIAL BRIDGE (I64), MILE 41.7, KANAWHA RIVER

Dear Mr. Bailey,

This is in reply to your letter received September 20, 2013, concerning the proposed bridge project at Mile 41.7, Kanawha River.

The General Bridge Act of 1946 requires that the location and plans for bridges over navigable waters of the United States be approved by the Commandant, U.S. Coast Guard prior to commencing construction. The Kanawha River is considered to be a navigable waterway of the United States for bridge administration purposes at the bridge site.

Applications for bridge permits should be addressed to Commander (dwb), Eighth Coast Guard District, 1222 Spruce Street, St. Louis, Missouri 63103-2832, Attention: Bridge Branch. The application must be supported by sufficient information to permit a thorough assessment of the impact of the bridge and its immediate approaches on the environment. We recommend that the impacts of procedures for constructing cofferdams, sand islands, and falsework bents, etc., that will be employed to build the bridge and demolish the old bridge be discussed. The Environmental Assessment (EA) should also contain data on the number, size and types of vessels currently using the waterway. This information should be compared with past and projected future trends on the use of the waterway.

We agree to serve as a Cooperating Agency for the project from a navigation standpoint. We should be given the opportunity to review any environmental documents and be consulted before a decision is made on how to proceed. Our review and recommendations on the vertical and horizontal clearance requirements for river traffic will be coordinated with the West Virginia Division of Highways office.

Subj: DONALD LEGG MEMORIAL BRIDGE, MILE 41.7,  
KANAWHA RIVER

16591.1/41.7 KAN  
22 Oct 13

We appreciate the opportunity to comment on the project in this early stage. You can contact Rob McCaskey at the above telephone number if you have questions regarding our comments or requirements.

Sincerely,



ERIC A. WASHBURN  
Bridge Administrator, Western Rivers  
By direction of the District Commander

Copy: Yuvonne Smith, FHWA Representative



**The Culture Center**  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • [www.wvculture.org](http://www.wvculture.org)  
Fax 304.558.2779 • TDD 304.558.3562

EEO/AA Employer

October 21, 2014

Mr. Ben Hark  
WVDOH  
1900 Kanawha Blvd., E  
Building Five, Room 110  
Charleston, WV 25305

Re: I-64 Six Lane Widening; East of I-64/US 35 Interchange to East of Nitro Interchange  
State Project U240-64/41.37; Federal Project NH-0641(318)  
FR#: 13-711-PU-3

Dear Mr. Hark:

We received additional justification for the assessment of effects for the above reference project. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Four resources were determined to be individually eligible for listing in the National Register: they were PU-0120, PU-0136, PU-0140 and PU-0148 (Building #1). An eligible historic district was identified associated with the Town of Nitro. The letter addendum addressed our request for further explanation regarding the character defining features and the characteristics of the viewshed. The response addresses these issues more specifically than previously.

PU-0120 (frame residence) is considered eligible according to Criterion C. There are no proposed direct impacts to this resource. The existing setting includes residences and Teays Valley Road. We agree that the historic character defining features that contribute to the eligibility of PU-0120 will not be adversely affected by the limited change in the character of the setting.

PU-0136 (UPS Freight Service buildings) is also considered eligible according to Criterion C. There are no proposed direct impacts to this resource. The existing setting is partially industrial; the consultant indicates that there is an area of trees between the resource and the project. We agree that the historic character defining features that contribute to the significance of this resource will not be adversely affected by the change in setting by the proposed project.

October 21, 2014  
Mr. Hark  
FR#: 13-711-PU-3  
Page 2

PU-0140 (train depot) is located approximately .46 miles from the project. It is eligible according to Criterion C. It will not be directly impacted by the project. The additional justification states that the depot is within a setting composed of residences, commercial buildings, and an industrial complex. We agree that the historic character defining features that contribute to the significance of this resource will not be adversely affected by the change in setting by the proposed project.

PU-0148 (Building 1- Viscose Company) is considered eligible according to Criterion C. Similar to the previous resource, the additional justification states that the depot is within a setting composed of residences, commercial buildings, and an industrial complex. We agree that the historic character defining features that contribute to the significance of this resource will not be adversely affected by the change in setting by the proposed project.

Nitro Historic District- A portion of the town of Nitro is located within the Area of Potential Effect (APE.) The area within the APE is considered eligible as a potential historic district. It will not be directly impacted by the project. Much of the district is approximately .5 miles from the project. The additional justification states that the district is within a setting composed of residences, commercial buildings, and industrial buildings. We agree that the historic character defining features that contribute to the significance of this resource will not be adversely affected by the change in setting by the proposed project.

In conclusion, we concur that the proposed I-64 Widening/ East of I-64/US 35 Interchange to East of Nitro Interchange Project as currently proposed will not adversely affect the historic resources which are potentially eligible for listing in the National Register of Historic Places. No further consultation is required. Please notify our office should the project be changed or amended.

We appreciate the additional information provided by your consultant and agency. *If you have questions regarding our comments or the review process, please contact me at (304) 558-0240.*

Sincerely,



Susan M. Pierce  
Deputy State Historic Preservation Officer



U.S. Department  
of Transportation

Federal Highway  
Administration

West Virginia Division

Geary Plaza, Suite 200  
700 Washington Street, East  
Charleston, West Virginia 25301  
Phone (304) 347-5928  
Fax (304) 347-5103

April 13, 2016

**IN REPLY REFER TO:**

Federal Project NH-0641(318)  
State Project S340-64-41.37 00  
I-64 Six Lane Widening, Crooked  
Creek to Nitro  
Putnam County

R.J. Scites, P.E.  
Director – Engineering Division  
West Virginia Division of Highways  
Charleston, West Virginia 25305

Dear Mr. Scites:

Enclosed please find a copy of the approved Environmental Assessment (EA) signature page and the executed Memorandum of Agreement (MOA) for the above referenced project. Should you have any questions regarding the enclosed information, please contact me at (304) 347-5436 or via email at [alison.rogers@dot.gov](mailto:alison.rogers@dot.gov).

Sincerely yours,

Alison M. Rogers  
Environmental Protection Specialist

Enclosure

**MEMORANDUM OF AGREEMENT  
BY AND AMONG  
THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER  
THE WEST VIRGINIA DIVISION OF HIGHWAYS  
AND THE FEDERAL HIGHWAY ADMINISTRATION**

**REGARDING IMPLEMENTATION OF THE PROPOSED INTERSTATE 64  
UPGRADING TO SIX LANES FROM US35/I-64 INTERCHANGE TO NITRO  
STATE PROJECT #U340-64-41.37 00  
FEDERAL PROJECT #NH-0641(318)  
PUTNAM COUNTY, WEST VIRGINIA  
DECEMBER 2015**

**WHEREAS**, the Federal Highway Administration (FHWA), in cooperation with the West Virginia Division of Highways (WVDOH) proposes to widen Interstate 64 from four to six lanes east of the recently constructed US 35 interchange at Crooked Creek to east of the Nitro interchange in Putnam County, hereinafter referred to as the "Project"; and

**WHEREAS**, FHWA has identified four structural resources which are individually eligible for listing in the National Register as well as an eligible historic district within the Town of Nitro; and

**WHEREAS**, FHWA has determined that the Project will not have an adverse effect to the eligible structural resources identified within the project area; and

**WHEREAS**, FHWA has determined that identification of deeply buried archaeological resources is not feasible within the Kanawha River terrace/floodplain area due to the presence of a hazardous waste location and the fact that testing for deeply buried cultural deposits would likely affect the roadway adjacent to the bridge; and

**WHEREAS**, FHWA has determined that the Project could have an adverse effect on unknown and deeply buried archaeology sites; and

**WHEREAS**, FHWA has consulted with the West Virginia State Historic Preservation Officer (WVSHPO) pursuant to 36 CFR Part 800 Implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

**WHEREAS**, FHWA has consulted with the Eastern Band of Cherokee Indians of North Carolina, Eastern Shawnee Tribe of Oklahoma, Seneca Nation of New York, Seneca-Cayuga Tribe of Oklahoma, The Delaware Nation, and the Nitro Historical Society regarding the effects of the undertaking on historic properties; and

**WHEREAS**, in accordance with 36 CFR 800.6(a)(1), FHWA has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect determination and provided the specified documentation, and the ACHP has chosen not to participate in the consultation pursuant to 36 CFR 800.6(a)(1)(iii);

**NOW, THEREFORE**, FHWA, WVSHPO, and WVDOH agree that the Project will be implemented in accordance with the following stipulations in order to take into account the effects of the Project on historic properties.

**STIPULATIONS**

The FHWA shall ensure that the following stipulations are carried out:

**I.** The WVDOH agrees to perform archaeological monitoring of the project area during excavation activities. Also, the WVDOH will submit a technical report for review by the SHPO of the monitoring once it is complete.

**II.** WVDOH will provide \$25,000 to be used for off-site mitigation of archaeological resources. This mitigation may be in the form of data recovery, site acquisition, site preservation, education or academic research activities. The mitigation action must be context sensitive in that it contributes to our understanding of indigenous lifeways in the Kanawha River drainage and related area. Mitigation projects receiving funds must be approved by both the WVDOH and WVSHPO and must conform to guidelines set forth by the WVSHPO and the Secretary of the Interior.

### **III. Duration**

This MOA will expire if its stipulations are not carried out within five (5) years from the date of its execution. At such time, and prior to work continuing on the Project, the FHWA shall either (a) execute a MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. Prior to such time, FHWA may consult with other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VII below. The FHWA shall notify the signatories as to the course of action it will pursue.

### **IV. Post-Review Discoveries**

If any unanticipated discoveries of historic properties or archaeological sites, including human burial sites and/or skeletal remains, are encountered during the implementation of this Project, work shall be suspended in the area of the discovery until the WVDOH has developed and implemented an appropriate treatment plan in consultation with the WVSHPO pursuant to 36 CFR 800.13(b).

### **V. Monitoring and Reporting**

Each year following the execution of this MOA until it expires or is terminated, the FHWA shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in the FHWA's efforts to carry out the terms of this MOA.

### **VI. Dispute Resolution**

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, the FHWA shall consult with such party to resolve the objection. If the FHWA determines that such objection cannot be resolved, the FHWA will:

**A.** Forward all documentation relevant to the dispute, including the FHWA's proposed resolution, to the ACHP. The ACHP shall provide FHWA with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the FHWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring

parties, and provide them with a copy of this written response. The FHWA will then proceed according to its final decision.

B. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, the FHWA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the FHWA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

C. The FHWA's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

#### **VII. Amendments**

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

#### **VIII. Termination**

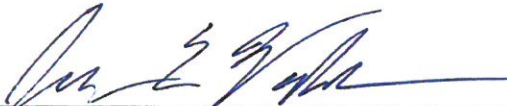
If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation VII, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the Project, the FHWA must either (a) execute a MOA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. The FHWA shall notify the signatories as to the course of action it will pursue.

**EXECUTION** of this Memorandum of Agreement by the FHWA, the WVSHPO, the WVDOH and the ACHP, and implementation of its terms evidence that the FHWA has afforded the ACHP an opportunity to comment on the I-64 Widening project and its effects on historic properties, and that the FHWA has taken into account the effects of the Project on the historic property.

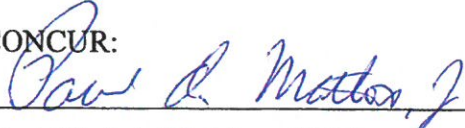


**APPROVED**

  
Federal Highway Administration 4/13/16  
Date

  
West Virginia State Historic Preservation Office 12/1/15  
Division of Culture and History Date

\_\_\_\_\_  
Advisory Council on Historic Preservation Date

CONCUR:  
  
West Virginia Division of Highways 12/3/15  
Date



DEPARTMENT OF THE ARMY  
HUNTINGTON DISTRICT, CORPS OF ENGINEERS  
502 EIGHTH STREET  
HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO  
ATTENTION OF:

July 31, 2013

Engineering and Construction Division  
Construction Branch  
Environmental and Remediation Section

Subject: Submission of Review Comments for the I-64 Widening and Improvements Efforts, WV Department of Transportation, Division of Highways, State Project U340-64-41.37, Federal Project NH-0641(318)

Mr. Gregory Bailey, PE  
Director, Engineering Division, WV DOH  
State Capitol Complex, Building 5  
1900 Kanawha Boulevard East  
Charleston, WV 25305-0430

Dear Mr. Bailey:

USACE currently performs technical reviews and conducts construction oversight for USEPA on the remedial efforts currently underway at the Solutia Inc. site. We understand this project is in the very early stages of design and just wanted to offer these comments now as a help during your design efforts. I'm submitting the first comment on behalf of Bill Wentworth, USEPA RPM for the Solutia project located in Nitro, WV. Bill and I would like to be kept in the loop on the design and construction aspects and have a meeting with USEPA, Solutia and DOH if possible to ensure all parties involved understand what is planned. The second comment is offered because of my knowledge / limited involvement working with WVDEP on the Monsanto project. The third comment is offered because of USACE requirements for navigation along the Kanawha River. Here are the comments:

1. Remedial efforts on the Solutia site consists of installation of a slurry wall, embankment armoring as well as placement of a cap. DOH should talk with USEPA and Solutia to ensure the Donald M. Legg Bridge (Bridge #2134) construction features would not breach these features to allow migration of site contaminants.
2. The stretch of the Kanawha River from the Solutia Site extending past the Donald M. Legg Memorial Bridge (Bridge #2134) contains sediment contamination left over from Monsanto Corp. Disturbance of this sediment during construction should be avoided. It would be in DOH's best interest to talk with Monsanto Corp. representatives during design efforts to understand the situation and how best to deal with containment and avoid future liability issues.
3. Construction for Bridge #2134 expansion could have a potential effect on navigation along the Kanawha River as well as dredging efforts. Please keep Mr. Kent Browning, Chief of the Waterways Section (CELRH-OR-TW) in the review loop on future submittals. He can be reached at 304-399-5239 and [Kent.W.Browning@usace.army.mil](mailto:Kent.W.Browning@usace.army.mil).

Should you have any questions or require additional information regarding these comments, please feel free to call me at 304-399-5953 (office) or 304-617-1461 (cell) or

[lisa.a.humphreys@usace.army.mil](mailto:lisa.a.humphreys@usace.army.mil). You may contact Bill Wentworth at 215-814-3184 or [Wentworth.william@epa.gov](mailto:Wentworth.william@epa.gov).

Sincerely,

A handwritten signature in blue ink that reads "Lisa A. Humphreys". The signature is written in a cursive style with a large initial "L".

LISA A. HUMPHREYS  
USACE Huntington District EPA PM

CF:  
Wentworth (USEPA)  
Browning (CELRH-OR-TW)

**From:** [Stout, Elizabeth](#)  
**To:** [Cummings, Traci L](#)  
**Cc:** [Burke, Sydney T](#); [Mullins, Sondra L](#)  
**Subject:** Re: I-64 Widening, Putnam County U240-64-41.37 00  
**Date:** Thursday, November 19, 2015 9:21:24 AM

---

Because you addressed the NLEB (as opposed to not addressing it in any fashion) in your original work, yes, this concurrence still stands.

Thank you for being pro-active during the time that the bat was proposed for listing.

On Thu, Nov 19, 2015 at 9:09 AM, Cummings, Traci L <[Traci.L.Cummings@wv.gov](mailto:Traci.L.Cummings@wv.gov)> wrote:

Liz,

Attached is a clearance letter for I-64 Widening (4-25-14). I was wanting to make sure that this letter is still valid. We had stated that up to 32 acres of forested area could be impacted, and therefore we committed to winter time clearing (November 15-March 31). The Service concurred that this project would not likely adversely affect the Indiana or Northern long eared bat.

Does the service clearance of 4-25-14 still stand??

Thanks,

Traci Cummings

WVDOH-Environmental Section

Natural Resources Unit Leader

304-558-9678 Work

304-541-7509 Cell

--

Liz Stout  
Fish and Wildlife Biologist; GIS Technician  
U.S. Fish and Wildlife Service

West Virginia Field Office

694 Beverly Pike

Elkins, WV 26241

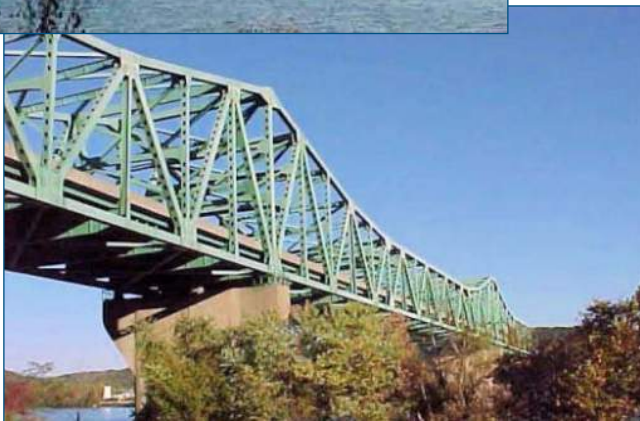
(304) 636 6586 x15

<http://www.fws.gov/westvirginiafieldoffice/index.html>

## Appendix B

# May 2013 Public Workshop Information and Comments

# INFORMATIONAL PUBLIC WORKSHOP



## I-64 Widening and Improvements

West Virginia Department of Transportation, Division of Highways

State Project: U340-64-41.37

Federal Project: NH-0641(318)

Location: Rock Branch Elementary School

Monday, May 20, 2013

4:00pm to 7:00pm



## WORKSHOP PURPOSE

The purpose of this Informational Public Workshop is to provide an update on the progress of the Interstate 64 widening and improvement study. This Public Workshop is intended to provide information about how the alternatives were developed and how you can provide your comments. In addition, this workshop will provide information about the history of the project and the current study.



We encourage you to examine the project maps and displays, discuss the project with the members of our study team who are here today, and complete the enclosed comment sheet. A box is provided at the registration table to deposit the comment sheets. Or, if you prefer, completed comment sheets may be mailed to us at the address on the form.

<http://go.wv.gov/dotcomment>

## PROJECT DESCRIPTION

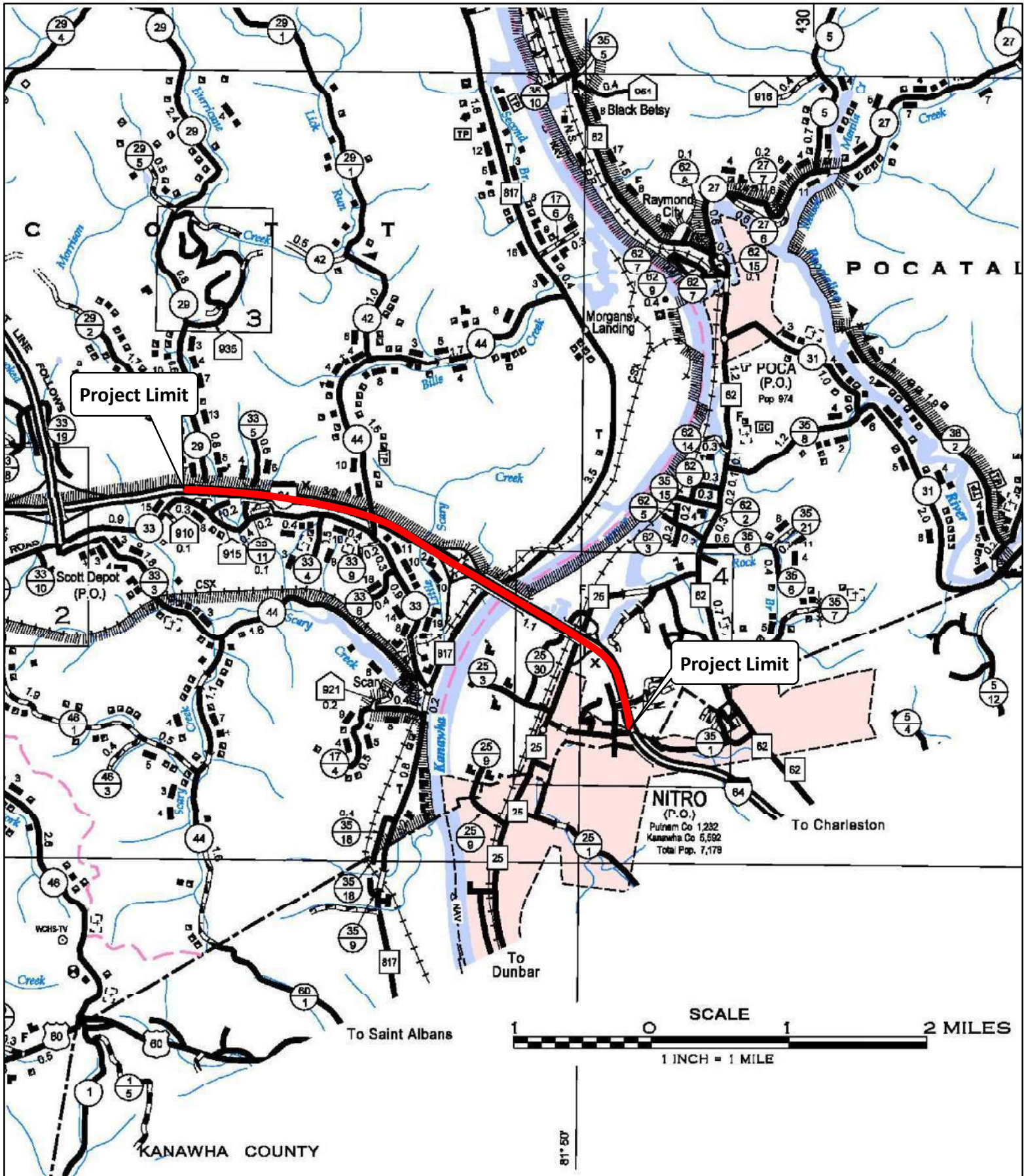
The West Virginia Department of Transportation, Division of Highways (WVDOH), in cooperation with the Federal Highway Administration (FHWA) are developing an environmental study in compliance with the National Environmental Policy Act (NEPA) and determining how to best minimize potential impacts to the project area. The proposed project is to widen Interstate 64 from four to six lanes east of the new I-64/US 35 interchange (Exit 40) at Crooked Creek to east of the Nitro interchange (Exit 45) in Putnam County. This 3.79-mile stretch of interstate lies between two existing six-lane sections of Interstate 64 and includes a truss bridge over the Kanawha River. There are three interchanges within the project Exit 40 to US 35 area: Exit 44 to WV 817 (formerly US 35) at St Albans and Exit 45 to WV 25 in Nitro (1<sup>st</sup> Avenue). Interstate 64 annual average daily traffic volumes are estimated at 69,500 vehicles per day, based on 2013 traffic volumes. Projected annual average daily traffic volumes using Interstate 64 for 2033 are estimated at 101,400 vehicles under the build or no build alternative.

This project is part of the WVDOT Statewide Transportation Improvement Program 2012/2017. Once completed, an increase in the number of lanes, and thus capacity will have occurred from Charleston to the unincorporated community of Scott Depot at Interstate 64/WV 34 Exit 39.

This project includes the rehabilitation/widening and/or construction of the following bridges (West to East):

- Parallel Interstate 64 structures over CR 29 (Rocky Step Road) and Rocky Step Run Creek (Bridge # 2130)
- Parallel Interstate 64 structures over CR 33/5 (McCloud Road) (Bridge # 2131)
- CR 44 (Bills Creek Road) overpass of Interstate 64 (Bridge # 2132)
- Overpass at St. Albans Interchange (Bridge # 2133)





# I-64 Widening Putnam County

**Figure 1**  
Project Limits  
May 20, 2013

- Interstate 64 Kanawha River Crossing (Donald Legg Bridge) (Bridge # 2134)
- Parallel I-64 structures over WV 25, CR 25, and railroad tracks at Nitro Interchange (Bridge # 2135)
- Double Barrel reinforced concrete box culvert that conveys Armour Creek under Interstate 64 Bridge # 5537)

This project includes modifications to the following interchanges (West to East):

- Exit 44 at St. Albans is a diamond interchange that provides a connection to WV 817. WV 817 runs parallel to the Kanawha River and provides a link to US 60 in St. Albans. This route was designated as US 35 until US 35 was rerouted further west, creating a new interchange with I-64 immediately east of the study area. WV 817 carries approximately 7,250 to 14,550 vehicles per day in 2013. An estimated 10,500 to 21,150 vehicles per day are projected to use WV 817 for the year 2033.



- Exit 45 (the Nitro Interchange) is a diamond interchange that provides a connection to WV 25 in Nitro. WV 25 (40th Street) is the main thoroughfare through Nitro, carrying an estimated 17,950 to 18,250 vehicles per day in 2013. An estimated 25,800 to 26,600 vehicles per day are projected to use WV 25 in the year 2033.

## WORKSHOP FORMAT

The WVDOH procedures for public workshops are established to ensure meaningful citizen input in the development of proposed projects, in compliance with all applicable regulations and requirements. This informational public workshop is being held in an informal format.

### Registration

If you have not already printed your name and address on the registration sheet, please remember to do so before you leave. Additional copies of this handout and the comment sheet are available at the registration table. The WVDOH welcomes your comments on the project; therefore, please feel free to write comments as you visit other displays around the room. You can drop the completed sheet in the Comment Box; return it to any I-64 Widening and Improvements Study representative at the meeting, or mail it to the WVDOH at the address printed on the comment sheet. You may also comment on the project at <http://go.wv.gov/dotcomment>.

## Environmental Studies

Representatives from the WVDOH and the consulting firms of TRC and CDM Smith are here today to discuss the environmental study process, including an estimate of impacts the proposed alternates will have on the natural, economic, and social environments as of the date of this meeting. Maps depicting the proposed alternatives are available for viewing.

## Engineering

Representatives from the WVDOH and the consulting firm of TRC are available to discuss the location and preliminary design of the project area. These representatives also have information regarding the build alternates studied for the project and can help you find landmarks throughout the study area.

## Right-of-Way and Relocation

WVDOH Right-of-Way representatives are available to answer your questions regarding right-of-way acquisition and relocation. Right-of-Way brochures are available upon request.

## DESCRIPTION OF ALTERNATIVES CONSIDERED

The proposed project widens I-64 from four to six lanes starting east of the US 35 – Winfield, Point Pleasant Interchange (Exit 40) to east of the WV 25 Interchange at Nitro (Exit 45) in Putnam County, a distance of approximately 3.79 miles.

Further, the proposed project is consistent with state and local transportation plans, including:

- The project is included in the *2040 Long Range Transportation Plan*, approved by the Regional Intergovernmental Council (Putnam and Kanawha Counties) in December 2009. The I-64 Widening Project is identified as a long range action item, intended to provide a high level of congestion relief on a high volume roadway and to promote economic and regional connectivity.
- The project is consistent with the capacity improvements goal identified for highway projects in the WVDOT 2010 *Multi-Modal Statewide Transportation Plan*.
- Funding for design, right-of-way, and construction is included in the WVDOT Statewide Transportation Improvement Program (STIP) 2013-2018 published March 2013.

Once completed, an increase in the number of lanes, and thus capacity will have occurred from Charleston to the unincorporated community of Scott Depot and WV 34 located at Interstate 64 Exit 39.

## WIDENING OF INTERSTATE 64



The widening of Interstate 64 from the beginning of the project to just west of Bills Creek Road (CR 44) will be to the inside of the existing lanes in a manner consistent with adjacent projects that have already been constructed. From just west of Bills Creek Road to 40<sup>th</sup> Street in Nitro there are two alternates presented. Due to the narrow existing median in this section, the widening is shifted outside of the existing lanes. The Downstream Alternate places a new Kanawha River Crossing downstream of the current I-64 Donald Legg Memorial Bridge. The Upstream Alternate places a new Kanawha River Crossing upstream of the current Donald Legg Memorial Bridge. Both alternates retain the existing Donald Legg Memorial Bridge, modifying it to carry four lanes of one-way traffic.

For each of the two mainline alternates, upstream and downstream, alternates are presented for the St. Albans Interchange and for the Nitro Interchange.

There are three separate sites where twin structures carry Interstate 64 over other roadways. These three sites are at Putnam County Route 29 (Bridge # 2130), Putnam County Route 33/5 (Bridge # 2131), and at WV 25 (Bridge # 2135). At two other locations existing roadways cross over Interstate 64. These sites are Putnam County Route 44 (Bridge # 2132) and at the St. Albans Interchange, Exit 44 (Bridge # 2133). The alternatives for these structures are as follows:

- For Bridge #2130 there are four Alternates – widen with deck overlay, widen with deck replacement, widen with new superstructure, and widen with deck replacement/partial superstructure replacement.
- For Bridge #2131 there are three Alternates – widen with deck overlay, widen with deck replacement, and widen with new superstructure.
- For Bridge #2132 there are four Alternates each for upstream and downstream– Replace with single span in current location, replace with two span in current location, replace with single span on new alignment, and replace with two span on new alignment.
- For Bridge #2133 there are two Alternates for interchange Alternates 1, 2 and 3 – Replace with single span and replace with two span. Alternate 4 is a down stream only alternate that will require a single span and a multiple span structure.
- For Bridge #2135 there are three Alternates each for upstream and downstream – Widening with deck overlay, widening deck replacement, and widening with superstructure replacement.

There is one double barrel reinforced concrete box (Bridge # 5537) culvert that conveys Armour Creek under Interstate 64 near the Nitro Interchange. This culvert will require lengthening to accommodate the interstate widening.

## KANAWHA RIVER CROSSING

The Donald M. Legg Memorial Bridge (Bridge # 2134) which carries Interstate 64 over the Kanawha River, WV 817 and the CSX Railroad, is a three-span through cantilever truss bridge built in 1962. The overall length of the bridge from paving notch to paving notch is 1400'. The center span is 562.5', with anchor spans on either side of 375'. A 78' span is at the east approach. The out to out width of the bridge deck is 67'-9" and currently accommodates four (4) lanes of traffic.



At approximately 0.1 mile past the west end of the bridge there is an exit with an overpass bridge. At approximately 0.4 mile past the east end there is a small bridge crossing WV Route 25 and the Conrail Railroad that is tied into the Nitro interchange (Exit 45).

Only truss alternatives for a new Kanawha River crossing that are similar to the existing truss are considered for this Design Study. Each alternate will utilize the existing truss in the Final Design.

The design study for the widening and improvements to Interstate 64 was originally developed December 2005 then revised in January 2006. Subsequently a report was produced that studies the feasibility of widening the existing Kanawha River crossing at the Donald Legg Memorial Bridge on Interstate 64 under live interstate traffic. The report to widen the river crossing was completed in June 2012.

### SUMMARY OF IMPACTS

This study is currently in its inception with data collection ongoing. Detailed impacts by alternative have not yet been quantified.

### RIGHT-OF-WAY GENERAL INFORMATION

The WVDOH will comply with the federal *Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended*. The Act, passed by congress in 1970, is a federal law that establishes minimum standards for federally funded programs and projects that require the acquisition of real property (real estate) or displace persons from their homes, business, or farms. The Act's protections and assistance apply to the acquisition, rehabilitation, or demolition of real property for federal or federally funded projects. In addition, the WVDOH right-of-way guidelines, activities, procedures, and services are outlined in the brochure *A guide*

for *Property Owners and Tenants*, which is available at this workshop. Right-of-Way acquisition and relocation activities usually take place immediately prior to construction. Persons directly affected by the project will be contacted by the WVDOH. If you have any questions regarding the right-of-way acquisition process, please see one of the WVDOH right-of-way representatives or contact the WVDOH at the address given at the end of this handout.

- Information on the WVDOH right-of-way procedures is also available at:
  - <http://www.transportation.wv.gov/highways/right-of-way/Pages/default.aspx>
- Information on the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended is also available online at:
  - <http://www.hud.gov/offices/cpd/affordablehousing/training/web/relocation/overview.cfm>

**NEXT STEPS IN THE STUDY PROCESS**

|   |                   |
|---|-------------------|
| Public Information Workshop .....                         | May 20, 2013      |
| Workshop Comments Due .....                               | June 20, 2013     |
| Approval of Environmental Assessment .....                | 2014              |
| Public Information Workshop.....                          | Winter 2014       |
| Approval of Finding of No Significant Impact (FONSI)..... | 2015              |
| Begin Final Design .....                                  | 2015              |
| Current Right of Way STIP Date.....                       | November 28, 2015 |
| Construction STIP Date .....                              | November 28, 2016 |

(STIP—State Transportation Improvement Plan)

**COMMENTS**

**Please send written comments on or before Wednesday, June 20, 2013 to:**

**Mr. Gregory Bailey, PE  
 Director, Engineering Division  
 West Virginia Division of Highways  
 State Capitol Complex, Building 5  
 1900 Kanawha Boulevard East  
 Charleston, West Virginia 25305-0430**

**Project Information and Comment Sheets can be found online at our web page:**

**<http://go.wv.gov/dotcomment>**

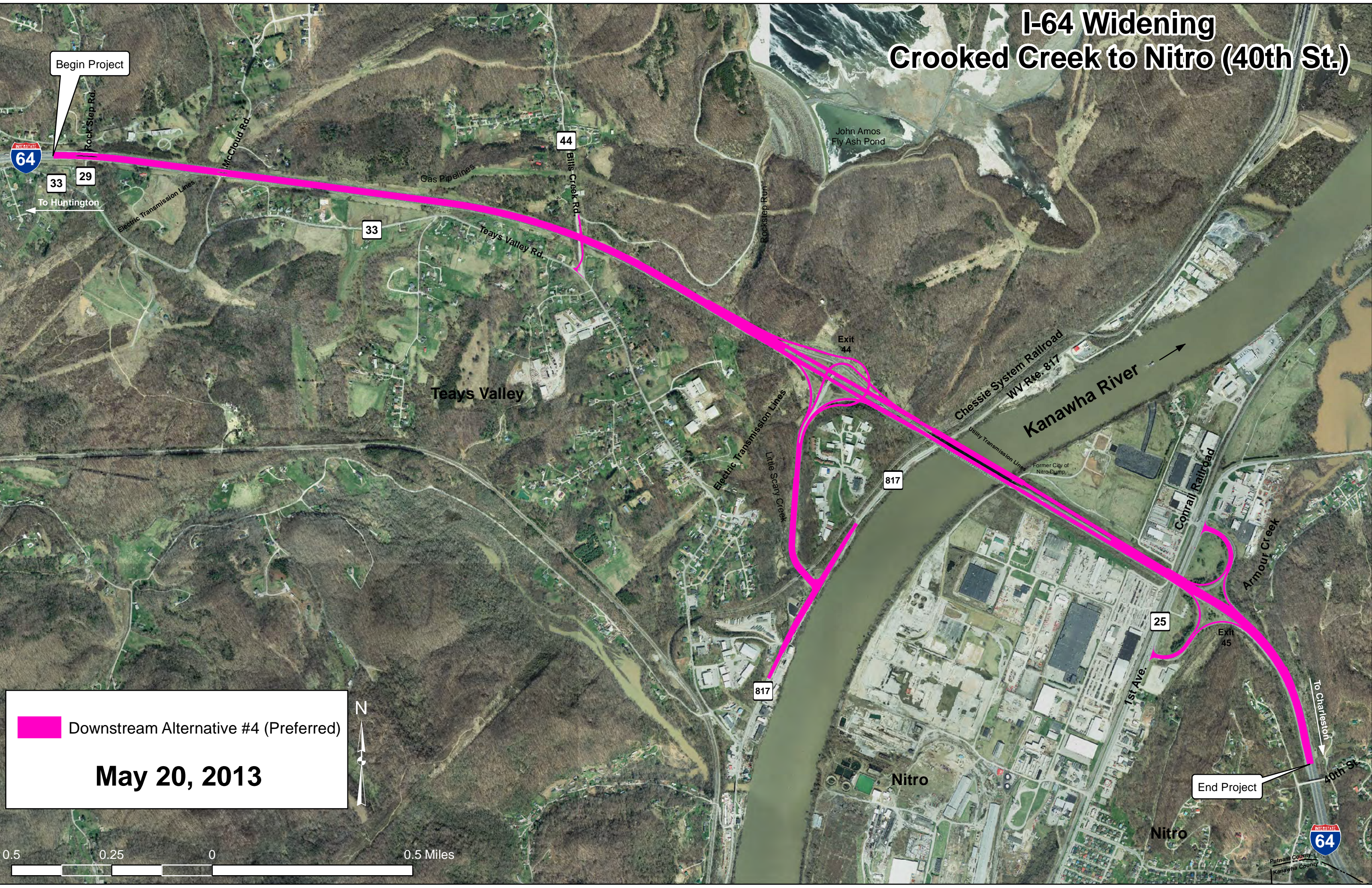
**Click on “Comment on Engineering Projects”, then “Open”,  
 and then click on “Interstate 64 Widening and Improvements”**

**I-64 Widening - Crooked Creek to Nitro (40th Street) Alignment Alternative Evaluation Cost Matrix**

| <b>Impact Category</b>                                  | <b>Upstream Alternate 1</b><br>Widening upstream (to the south) of I-64 with a trumpet interchange | <b>Upstream Alternate 2</b><br>Widening upstream (to the south) of I-64 with a diamond interchange | <b>Upstream Alternate 3</b><br>Widening upstream (to the south) of I-64 with a trumpet interchange west of the existing | <b>Downstream Alternate 1</b><br>Widening downstream (to the north) of I-64 with a trumpet interchange | <b>Downstream Alternate 2</b><br>Widening downstream (to the north) of I-64 with a diamond interchange | <b>Downstream Alternate 3</b><br>Widening downstream (to the north) of I-64 with a trumpet interchange west of the existing | <b>Preferred Downstream Alternate 4</b> Widening downstream (to the north) of I-64 with a flyover interchange |
|---|--|--|---|--|--|---|---|
| <b>Engineering</b>                                      |  |  |   |  |  |   |   |
| <b>Mainline Configuration</b>                           | Utilizes existing horizontal and vertical alignment  | Utilizes existing horizontal and vertical alignment  | Utilizes existing horizontal and vertical alignment   | Utilizes existing horizontal and vertical alignment  | Utilizes existing horizontal and vertical alignment  | Utilizes existing horizontal and vertical alignment   | Utilizes existing horizontal and vertical alignment   |
| <b>Saint Albans Interchange</b>                         |  |  |   |  |  |   |   |
| <b>Westbound Exit</b>                                   | R=180' - 25 MPH  | K=112 - 50 MPH   | R=200' - 25 MPH   | R=180' - 25 MPH  | K=109 - 50 MPH   | R=200' - 25 MPH   | R=214' - 30 MPH   |
| <b>Westbound Entrance</b>                               | R=170' - 25 MPH  | K=117 - 55 MPH   | R=210' - 25 MPH   | R=170' - 25 MPH  | 55 MPH   | R=210' - 25 MPH   | R=300' - 30 MPH   |
| <b>Eastbound Exit</b>                                   | Dc=9°30' - 45 MPH  | K=34 - 35 MPH  | K=62 - 45 MPH   | Dc=9°30' - 45 MPH  | K=43 - 35 MPH  | K=63 - 45 MPH   | Dc=9°30' - 45 MPH   |
| <b>Eastbound Entrance</b>                               | K=29 - 35 MPH  | K =43 - 35 MPH   | Dc=10°30' & K=45 - 45 MPH   | K=39 - 35 MPH  | K=39 - 35 MPH  | K=57 - 40 MPH   | K=39 - 35 MPH   |
| <b>Westbound Entrance Ramp Acceleration Lane Length</b> | 1420'  | 800'   | 820'  | 1420'  | 800'   | 820'  | 1497'   |
| <b>Eastbound Exit Ramp Deceleration Lane Length</b>     | 700'   | 700'   | 700'  | 700'   | 700'   | 700'  | 700'  |
| <b>Nitro Interchange</b>                                | Radius and width improvements - 35 MPH   | Radius and width improvements - 35 MPH   | Radius and width improvements - 35 MPH  | Radius and width improvements - 35 MPH   | Radius and width improvements - 35 MPH   | Radius and width improvements - 35 MPH  | Radius and width improvements - 35 MPH  |
| <b>Financial / Costs</b>                                |  |  |   |  |  |   |   |
| <b>Estimated Construction Cost</b>                      | \$124,079,351  | \$123,166,232  | \$126,018,971   | \$123,787,699  | \$121,674,822  | \$125,396,134   | \$125,468,333   |
| <b>Right of Way Impacts</b>                             |  |  |   |  |  |   |   |
| <b>Controlled Access R/W</b>                            | 341,741 SF   | 259,749 SF   | 347,551 SF  | 411,661 SF   | 274,456 SF   | 626,538 SF  | 312,601 SF  |
| <b>Non-Controlled Access R/W</b>                        | 9,279 SF   | 9,279 SF   | 9,279 SF  | 8,991 SF   | 8,991 SF   | 8,991 SF  | 8,991 SF  |
| <b>Temporary Construction Eastments</b>                 | 37,037 SF  | 37,037 SF  | 37,037 SF   | 11,515 SF  | 11,515 SF  | 11,515 SF   | 11,515 SF   |
| <b>Environmental / Physical Impacts</b>                 |  |  |   |  |  |   |   |
| <b>Potential Hazardous Waste Sites</b>                  | 1  | 1  | 1   | Sites have been mitigated  | Sites have been mitigated  | Sites have been mitigated   | Sites have been mitigated   |
| <b>Wetland and Streams Impacts</b>                      | Kanawha River  | Kanawha River  | Kanawha River   | Kanawha River & Armour Creek   | Kanawha River & Armour Creek   | Kanawha River & Armour Creek  | Kanawha River & Armour Creek  |

\*This study is currently in its inception with data collection ongoing. Detailed impacts by alternative have not yet been qualified.

# I-64 Widening Crooked Creek to Nitro (40th St.)



Begin Project



33 29

To Huntington

44

Bills Creek Rd

33

Teays Valley Rd

Teays Valley

Exit 44

Chessie System Railroad  
WV Rte. 817

Kanawha River

817

Conrail Railroad

Armour Creek

25

Exit 45

1st Ave

Nitro

Nitro


To Charleston

40th St

End Project



Putnam County  
Kanawha County

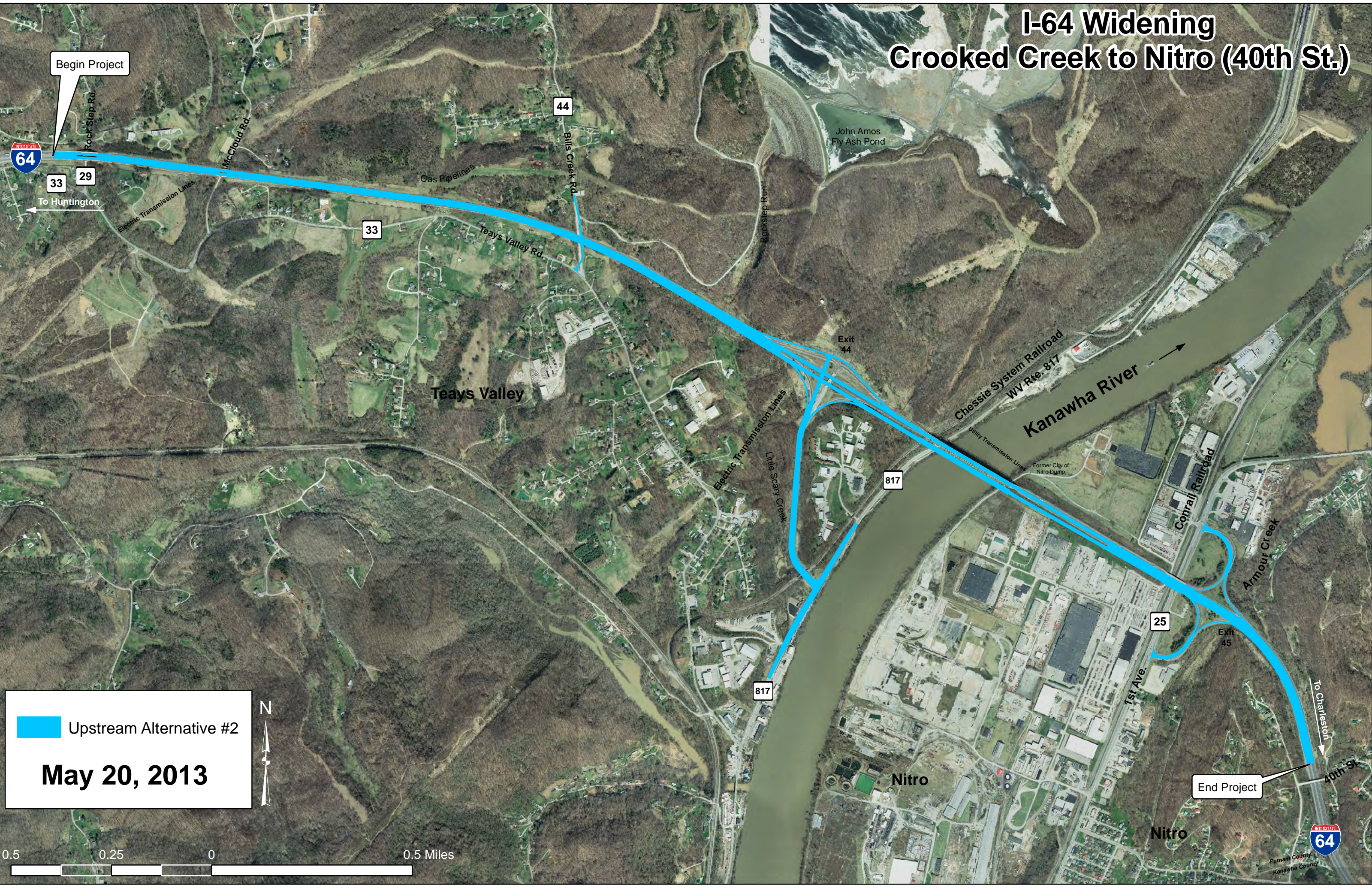
 Downstream Alternative #4 (Preferred)

**May 20, 2013**





# I-64 Widening Crooked Creek to Nitro (40th St.)

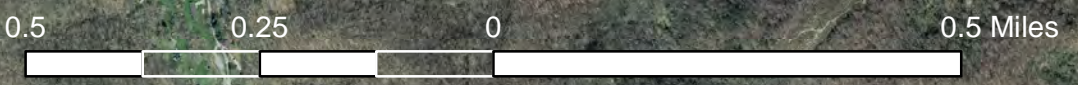


Begin Project

End Project

Upstream Alternative #2

**May 20, 2013**



33 29

44

33

817

817

25

40th St

Exit 44

Exit 45

Teays Valley

Nitro

Nitro

Kanawha River

Chessie System Railroad  
WV Rte. 817

Conrail Railroad

Putnam County  
Kanawha County

Rock Step Rd

McCloud Rd

Bills Creek Rd

Teays Valley Rd

Rockstep Run

Electric Transmission Lines

Little Sycamore Creek

Armour Creek

1st Ave

To Charleston

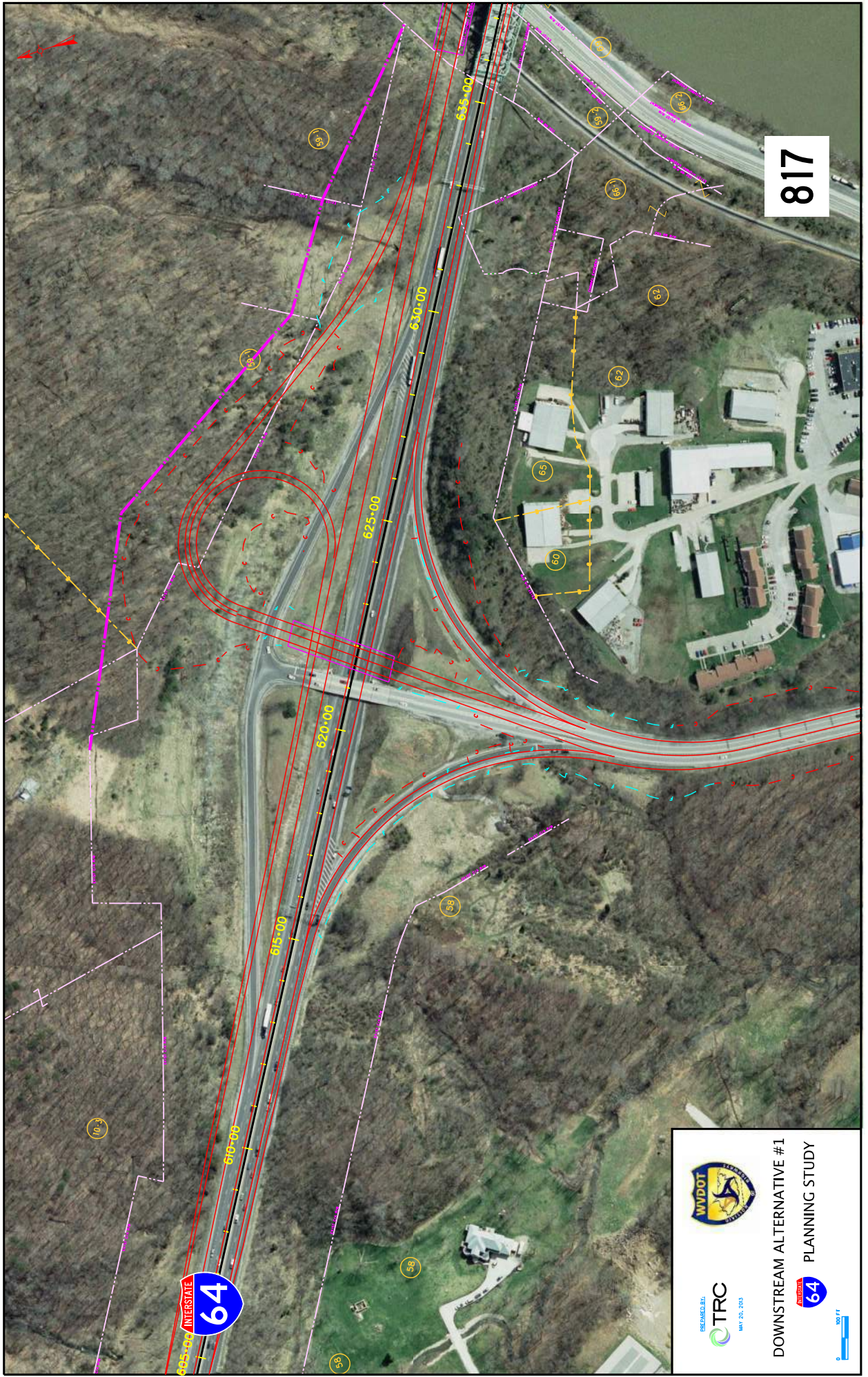
To Huntington

Electric Transmission Lines

Gas Pipelines

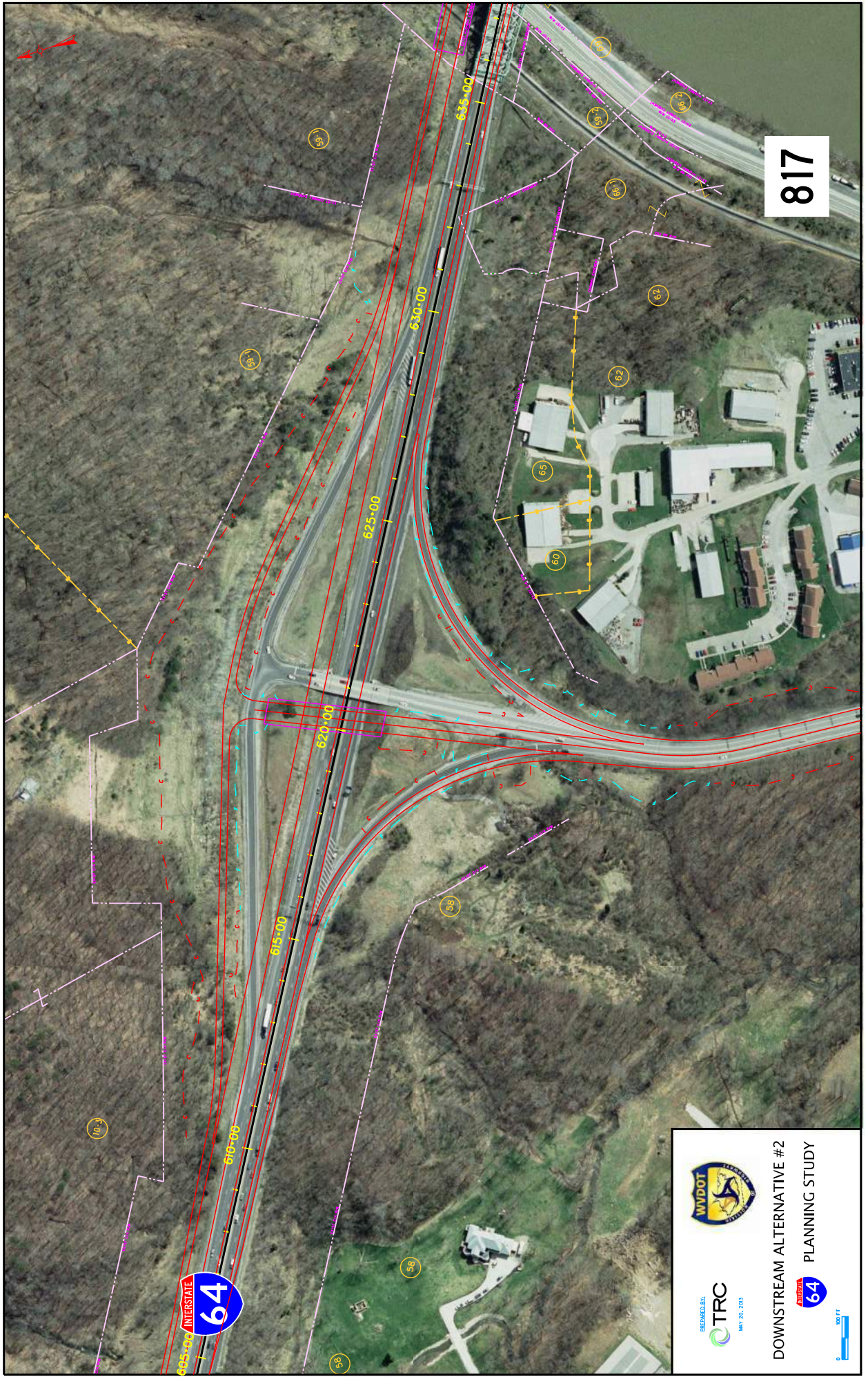
John Amos  
Fly Ash Pond

Former City of  
Nitro Dump



817

WV DOT  
 TRANSPORTATION RESEARCH CENTER  
 TRC  
 MAY 20, 2018  
 DOWNSTREAM ALTERNATIVE #1  
 64  
 PLANNING STUDY  
 100 FT

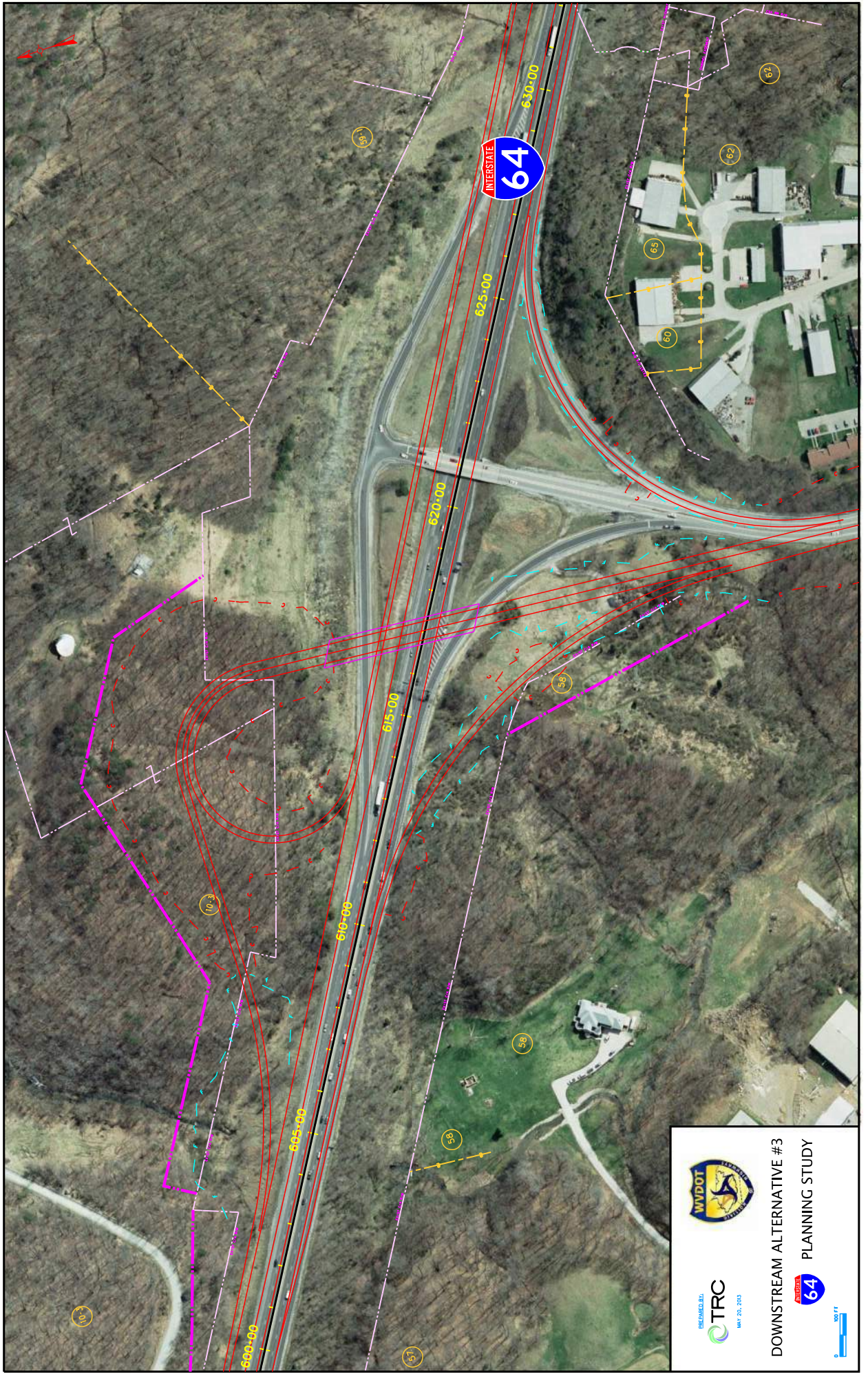


817



DOWNSTREAM ALTERNATIVE #2  
 PLANNING STUDY

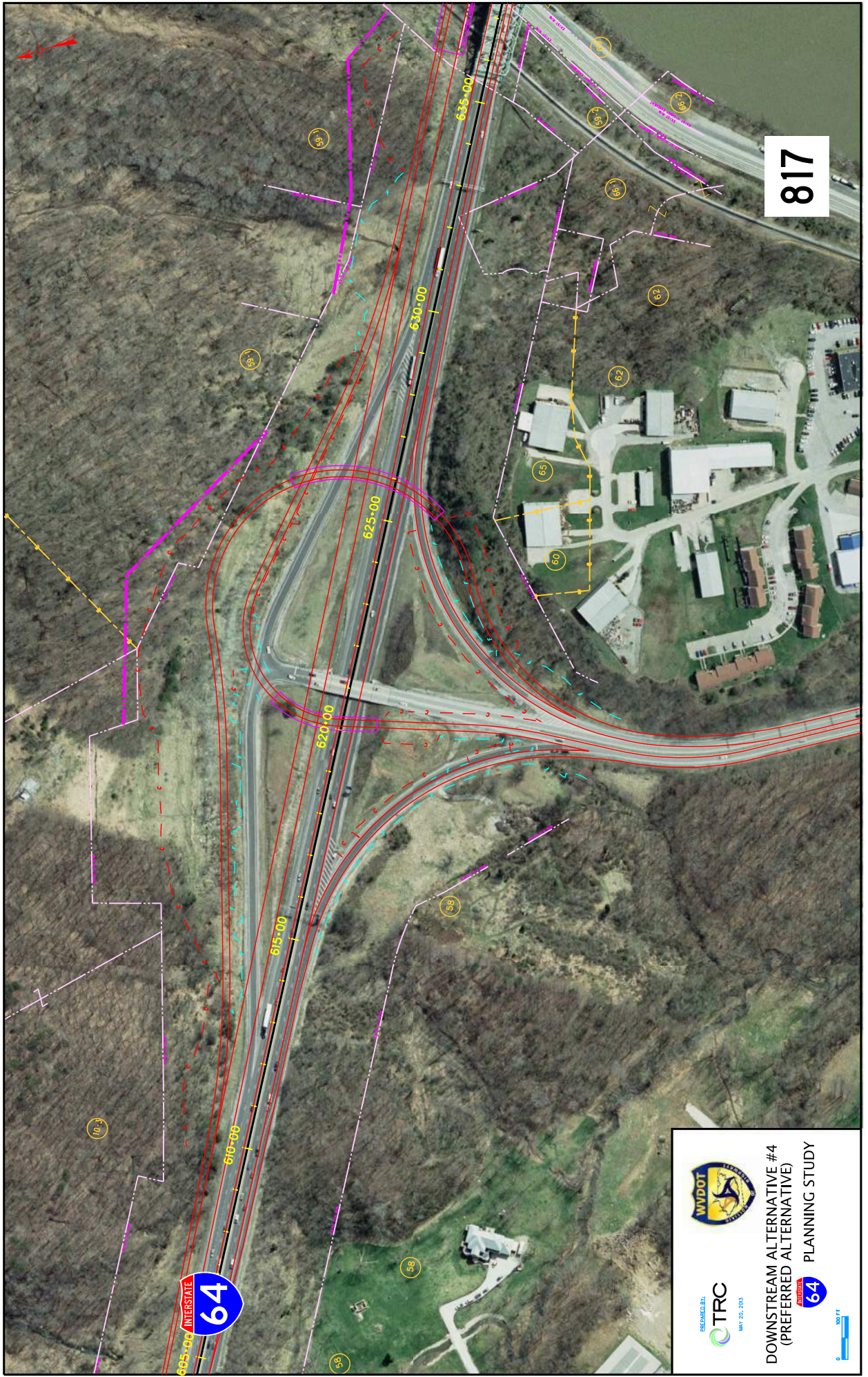




DOWNSTREAM ALTERNATIVE #3

PLANNING STUDY





817

64 INTERSTATE



DOWNSTREAM ALTERNATIVE #4  
(PREFERRED ALTERNATIVE)

64 PLANNING STUDY

MAY 20, 2018



**WEST VIRGINIA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS**

**INFORMATIONAL WORKSHOP PUBLIC MEETING  
ATTENDANCE SHEET**

PROJECT: I-64 Widening and Improvements  
Federal Project: NH-0641(318)  
State Project: U340-64-41.37

DATE: Monday, May 20, 2013 LOCATION: Rock Branch Elementary  
4616 1<sup>st</sup> Avenue  
Nitro, WV  
Putnam County

**PLEASE PRINT**

| <u>NAME</u>                  | <u>ORGANIZATION/ADDRESS/EMAIL</u>                       |
|------------------------------|---|
| 1. Justin W. Putnam Standard | Putnam Standard Justin@theputnamstandard.com            |
| 2. Jim + Jill Wells          | Jay Wells 015@comcast.net                               |
| 3. Rick Johnson              | W.V. Paving rjohnsonwvpaving                            |
| 4. ROY SEXTON                | TURNPIKE CHEVROLET TPCHERYROYPAUMGR@AOL.COM             |
| 5. ELLEN MILLS-PAULEY        | SCOTT DEPOT epauley1@yahoo.com                          |
| 6. RON KING                  | CITY OF NITRO Ron.King.nitro@GMAIL                      |
| 7. MARK FELTON               | REG. INTERGOV. COUNCIL markfelton@wvregion3.org         |
| 8. DAVE CARBOLT              | DCARBOLT@CITYOFNITRO.ORG                                |
| 9. Craig Slaton              |   |
| 10. GREG WILLIAMSON          | WINFIELD WV gwilliamson2101@gmail.com                   |
| 11. Anita Anderson           | 129 Mesa Dr Jays Pointe Condos anita-anderson2007@yahoo |
| 12. Scott Ferry              | RIC scottferry@wvregion3.org                            |
| 13. Kim Rock                 | WCLTS, TV   |
| 14. RUSH CASTO               | Nitro WV  |

NAME

ORGANIZATION/ADDRESS/EMAIL

- 15. *Jim Cal*
- 16. *Michael Harvey*
- 17. *Brenda West*
- 18. *David Harris*
- 19. *David Alvis*
- 20. *John R. Noyk*
- 21. *Andy Skidmore*
- 22. *BRUCE BOSLEY*
- 23. *Shaun Long*
- 24. *JACK JUSTICE*
- 25. *Randy McDavid*
- 26. *BOB PENNINGTON*
- 27. *KEVIN BURGESS*
- 28. *Jim Caruthers*
- 29. *Ken Blair*
- 30. *Lawrence R. Jones*
- 31. *William Vanich*
- 32. *John McKinin*
- 33. *Tom Hunsfield*
- 34. *Geoffrey Vest*
- 35. *Raymond Boss*      *120 Oak Tree Lane Nites WV 25143*
- 36. *DAVID MOWINS*
- 37. *Jared Mullins*
- 38. *Raymond "Tom" Carroll*

NAME

ORGANIZATION/ADDRESS/EMAIL

39. Roger Golf

40. Travis Brinks 58 WCHS Radio

41. \_\_\_\_\_

42. \_\_\_\_\_

43. \_\_\_\_\_

44. \_\_\_\_\_

45. \_\_\_\_\_

46. \_\_\_\_\_

47. \_\_\_\_\_

48. \_\_\_\_\_

49. \_\_\_\_\_

50. \_\_\_\_\_

51. \_\_\_\_\_

52. \_\_\_\_\_

53. \_\_\_\_\_

54. \_\_\_\_\_

55. \_\_\_\_\_

56. \_\_\_\_\_

57. \_\_\_\_\_

58. \_\_\_\_\_

59. \_\_\_\_\_

60. \_\_\_\_\_

61. \_\_\_\_\_



Comments due by June 20, 2013

West Virginia Division of Highways  
Informational Workshop Public Meeting  
Comment Sheet

MAIL COMMENT FORM TO:

Mr. Dave Bodnar  
Acting Director Engineering Division  
1900 Kanawha Blvd. Capitol Complex Building 5 Room 350  
Charleston, WV 25305

I-64 Widening and Improvements  
State Project #U340-64-41.37  
Federal Project #NH-0641(318)  
Putnam County

START this Project immediately.  
Please Build as soon as possible - Just look at the  
traffic Jam currently ongoing at the Nitro EXIT  
towards Rt 75 EXIT. The construction JOBS will  
boost the economy of the area and the state.  
Finish RT. 10 Between MAN AND Keyser WV.  
It's the most dangerous section of Roadway in WV.  
Save Lives and finish rt 10.  
Thanks for giving us a look at the project.

Please go to our website at <http://go.wv.gov/dotcomment>

For additional information

Raymond Bias  
704-755-7800  
120 OAK Tree Lane  
Nitro WV 25143

Comments due by June 20, 2013

West Virginia Division of Highways  
Informational Workshop Public Meeting  
Comment Sheet

MAIL COMMENT FORM TO:

Mr. Dave Bodnar  
Acting Director Engineering Division  
1900 Kanawha Blvd. Capitol Complex Building 5 Room 350  
Charleston, WV 25305

I-64 Widening and Improvements  
State Project #U340-64-41.37  
Federal Project #NH-0641(318)  
Putnam County

I agree with the proposed alternative #4.

This project will benefit many many people that commute daily through this section of I-64.

Raymond T. Cawell, P.E.

Please go to our website at <http://go.wv.gov/dotcomment>

For additional information

Comments due by June 20, 2013

West Virginia Division of Highways  
Informational Workshop Public Meeting  
Comment Sheet

MAIL COMMENT FORM TO:

Mr. Dave Bodnar  
Acting Director Engineering Division  
1900 Kanawha Blvd. Capitol Complex Building 5 Room 350  
Charleston, WV 25305

I-64 Widening and Improvements  
State Project #U340-64-41.37  
Federal Project #NH-0641(318)  
Putnam County

We like project #4 as it would exit  
the north of St Johns east front and  
into west front.

Please go to our website at <http://go.wv.gov/dotcomment>

For additional information

West Virginia Division of Highways  
Informational Workshop Public Meeting

Comment Sheet

MAIL COMMENT FORM TO:

Mr. Dave Bodnar  
Acting Director Engineering Division  
1900 Kanawha Blvd. Capitol Complex Building 5 Room 350  
Charleston, WV 25305

RECEIVED

MAY 24 2013

ENGINEERING DIVISION  
WV DOH

I-64 Widening and Improvements  
State Project #U340-64-41.37  
Federal Project #NH-0641(318)  
Putnam County

See attached

Please go to our website at <http://go.wv.gov/dotcomment>

For additional information

I-64 Widening and Improvements  
State Project #U340-64-41.37  
Federal Project #NH-0641(318)  
Putnam County

For the record, I am 100% in favor of the project.

According to the study packet handed out at the public meeting, construction is estimated to commence on the I-64 widening project in approximately late 2016. Assuming 2-3 years to construct this project means that relief for the (already occurring) congestion is not likely until 2018-2020. Has there been any consideration to installing ramp metering (traffic signal located somewhere on the ramp - one car per green light) for the St. Albans eastbound on-ramp and the Nitro westbound on-ramp for peak hours? I believe that spreading out this traffic entering I-64 would make a difference in the current levels of congestion. This metering could then be removed upon completion of the widening project. I have seen this sort of device used routinely in other urban interstate highways around the country.

Thanks

Gregory A. Williamson  
Winfield WV  
304-546-4409

| FirstName | LastName   | Email                        | MailingAddress           | City         | State | ZipCode | Comments  | CommentType | Organization |
|-----------|------------|------------------------------|--------------------------|--------------|-------|---------|---|-------------|--------------|
|           |            |                              |                          |              |       |         | <p>I am glad to see the widening of I-64 continuing -- the improvements already made in Kanawha County have greatly improved traffic conditions.</p> <p>I know that the Nitro/St. Albans bridge will continue to be 4 lane for some time, and will in itself be a major project to widen.</p> <p>One suggestion I would make to alleviate some of the bottleneck on the western side of the bridge for east bound traffic would be to improve mainline sight to the entrance ramp, so that cars on I-64 can see traffic seeking to enter I-64 going eastbound. As it is, the view of oncoming traffic is blocked until the lanes must merge. This sudden and unexpected merging causes two traffic issues:</p> <p>1) cars that know that this is a hidden entrance ramp move to the left lane, "just in case" - which slows traffic and reduces capacity.</p> <p>2) cars that do NOT know that this is a hidden entrance are surprised by a car suddenly appearing needing to enter the highway, and either slam on their brakes or make an unexpected move to the left lane to avoid the merging vehicle.</p> <p>If the cut for the entrance ramp and the cut for the mainline east bound lanes could be connected by removing additional material in between the ramp and the mainline, and thus cars on the mainline could see whether or not cars were on the entrance ramp and adjust their speed or lane based on actual traffic, rather than preemptively or unexpectedly, I know that traffic would flow more smoothly and efficiently at this bottleneck. I hope this project gets approved and is taken on the fast track. The traffic at the Nitro exit that bottlenecks every evening is very conducive to traffic accidents. Any traffic that tries to get on I-64 west at the Nitro exit or I-64 east at the St Albans exit are seemingly taking their lives in hand. I feel like the widening from exit 45 to exit 40 would make a tremendous cut in any lost time due to letting the traffic flow in an easier manner. The majority of traffic, I feel either gets off at the exits mentioned as well as the Teays Valley exit. I fully support this project.</p> |             |              |
| Alan      | Williams   | galanwilliams@gmail.com      | 1008 HOLLEY BROOK DR     | CULLODEN     | WV    | 25510   |   | Online      |              |
| Rob       | Johnson    | rejohnson59@hotmail.com      | 114 Heather Court        | Scott Depot  | WV    | 25560   |   | Online      |              |
| Robert    | Pennington | bpennington@concorpgroup.com | 3151 Hurricane Creek Ro. | Winfield     | WV    | 25213   |   | Online      |              |
| ANITA     | ANDERSON   | anita_anderson2007@yahoo.com | 129 MESA DR              | SAINT ALBANS | WV    | 25177   | <p>Although I agree with the widening of I-64 (which I travel every day, I do not believe it should (for safety reasons) have a higher priority than completing Rt. 35 from Buffalo Bridge into Mason County (which I rarely travel).</p> <p>First of all you held your meeting at an elementary school with road construction going on in front of the school that made the road one lane. You did this during rush hour. Not very smart. Was this your way of keeping people away who might oppose your project? Everyone I saw at the meeting was a contractor or government official. I live at the Teays Pointe Condos your project will ruin my property values, diminish my health and inconvenience me during the construction. Our homes sit in a triangle bordered by I-64, the I-64 exit ramp and 817 (which is part of the project). All your proposals move the exit ramp closer to my back door which will lower my property values. Noise from large trucks already wakes me if I sleep with the my windows open. Sometimes the noise can even be heard with the windows closed. How bad will it be with the road closer to my house?</p> <p>When I spoke with your consultant at the meeting he said no compensation is given. He also said that no property is being purchased. But what I noticed is you are constructing right up to people's property which will lower property values.</p>   | Online      |              |
| Charlie   | Armstead   | charles.w.armstead@wv.gov    | 601 57th Street SE       | Charleston   | WV    | 25304   | <p>I received a notice to provide comments from Don Martin, WVDEP OER, Associate Director. He was provided the bridge widening package for review and comment. Please be aware that WVDEP and EPA has multiple active remedial sites (CERCLA Superfund and RCRA Corrective Action) on the east side of the Nitro bridge. The WVDEP and likely the EPA will need to be involved with any activities that may affect the east side of the Kanawha River as well as the east bank of the Kanawha River.</p> <p>My contact information is:<br/> Charlie Armstead<br/> Program Manager for RCRA CA and Superfund<br/> 304-926-0499 x 1130<br/> charles.w.armstead@wv.gov</p>   | Online      | WVDEP        |

# Appendix C

## Air Quality Report

# Table of Contents

## Section 1 Introduction

|  |     |
|--|-----|
| 1.1 Project Description .....              | 1-1 |
| 1.2 Traffic Volumes in the Study Area..... | 1-1 |

## Section 2 Regulatory Framework

|   |     |
|---|-----|
| 2.1 Criteria Pollutants .....                   | 2-1 |
| 2.2 National Ambient Air Quality Standards..... | 2-3 |
| 2.3 Attainment Status.....                      | 2-4 |
| 2.4 Transportation Conformity.....              | 2-5 |
| 2.5 Air Toxics.....                             | 2-6 |

## Section 3 Impact Analysis

|                                     |     |
|-------------------------------------|-----|
| 3.1 Vehicle Emissions.....          | 3-1 |
| 3.1.1 Criteria Pollutants.....      | 3-1 |
| 3.1.2 Mobile Source Air Toxics..... | 3-2 |
| 3.2 Construction Emissions.....     | 3-4 |

## Section 4 Conclusions

## Section 5 References

## List of Figures

|  |     |
|--|-----|
| Figure 1-1 Study Area and Proposed Alignments..... | 1-2 |
|--|-----|

## List of Tables

|  |     |
|--|-----|
| Table 1-1 Annual Average Daily Traffic in the Study Area ..... | 1-1 |
| Table 2-1 National Ambient Air Quality Standards .....         | 2-3 |
| Table 2-2 Ambient (Background) Air Quality Data.....           | 2-5 |
| Table 3-1 Estimated Daily Vehicle Miles Traveled.....          | 3-3 |



## Acronyms and Abbreviations

|                          |   |
|--------------------------|---|
| $\mu\text{g}/\text{m}^3$ | micrograms per cubic meter                    |
| AADT                     | annual average daily traffic                  |
| CAA                      | Clean Air Act                                 |
| CFR                      | Code of Federal Regulations                   |
| CO                       | carbon monoxide                               |
| EIS                      | environmental impact statement                |
| EPA                      | United States Environmental Protection Agency |
| FHWA                     | Federal Highway Administration                |
| FR                       | Federal Register                              |
| FTA                      | Federal Transit Administration                |
| LOS                      | Level of Service                              |
| $\text{mg}/\text{m}^3$   | milligrams per cubic meter                    |
| MPO                      | Metropolitan Planning Organization            |
| MSAT                     | mobile source air toxics                      |
| N/A                      | not applicable                                |
| NAAQS                    | National Ambient Air Quality Standard         |
| NEPA                     | National Environmental Policy Act             |
| $\text{NO}_2$            | nitrogen dioxide                              |
| $\text{NO}_x$            | nitrogen oxides                               |
| $\text{O}_3$             | ozone   |
| Pb                       | lead  |
| PM                       | particulate matter                            |
| $\text{PM}_{10}$         | inhalable particulate matter                  |
| $\text{PM}_{2.5}$        | fine particulate matter                       |
| ppb                      | parts per billion                             |
| ppm                      | parts per million                             |

---

|                 |   |
|-----------------|---|
| RIC             | Boon-Clay-Kanawha-Putnam Regional Intergovernmental Council |
| SIP             | State Implementation Plan                                   |
| SO <sub>2</sub> | sulfur dioxide  |
| STIP            | Statewide Transportation Improvement Plan                   |
| TIP             | Transportation Improvement Plan                             |
| USC             | United States Code  |
| VMT             | vehicle miles traveled                                      |
| VOC             | volatile organic compound                                   |
| WVDEP           | West Virginia Department of Environmental Protection        |
| WVDOT           | West Virginia Department of Transportation                  |



# Section 1

## Introduction

The proposed I-64 widening and improvement project between Crooked Creek and Nitro and traffic volumes are discussed below. Subsequent sections will discuss the applicable regulations and air quality impact analysis for the proposed project.

### 1.1 Project Description

The project proposes to widen and improve a 3.79 mile stretch of I-64 between the US 35 interchange at Crooked Creek and east of the Nitro interchange in Putnam County, West Virginia. Currently this stretch of I-64 is four lanes, and the project proposes to widen it to six lanes. The project also proposes to modify interchanges at St. Albans and Nitro. The project is part of the 2013-2018 West Virginia Department of Transportation (WVDOT) Statewide Transportation Improvement Program (STIP).

### 1.2 Traffic Volumes in the Study Area

The existing (2013) and projected design year 2033 annual average daily traffic (AADT) volumes in the study area are shown in **Table 1-1**. Traffic volumes are expected to grow approximately 146 percent from existing levels to 2033.

**Table 1-1 Annual Average Daily Traffic in the Study Area**

| Roadway Segment | Existing (2013) AADT | Design Year (2033) |                        |
|-----------------|----------------------|--------------------|------------------------|
|                 |                      | AADT               | % Change from No Build |
|                 | 69,500               | 101,400            | 146%                   |

Source: Penn 2013.

**Figure 1-1 Study Area and Proposed Alignments**

## Section 2

# Regulatory Framework

Air quality management and protection responsibilities exist in federal, state, and local levels of government. The federal Clean Air Act (CAA) is the primary statute that establishes ambient air quality standards and establishes regulatory authorities to enforce regulations designed to attain those standards. The United States Environmental Protection Agency (EPA) is responsible for implementation of the CAA. The CAA was enacted in 1955 and was amended in 1963, 1965, 1967, 1970, 1977, 1990, and 1997. West Virginia Department of Environmental Protection's (WVDEP's) Division of Air Quality operates the air quality monitoring program, implements the permit program, and works with Metropolitan Planning Organizations (MPOs) and WVDOT during transportation planning.

## 2.1 Criteria Pollutants

EPA regulates seven common pollutants called criteria pollutants. They include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), inhalable particulate matter (PM<sub>10</sub>), fine particulate matter (PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>). Each pollutant is described below.

### **Carbon Monoxide**

CO is a colorless, odorless gas that is highly toxic. It is formed by the incomplete combustion of fuels. In Putnam County, the majority of CO emissions occur from mobile sources (75 percent) (EPA 2011). Exposure to CO can reduce the body's ability to carry oxygen. CO exposure can cause people with several types of heart disease to experience chest pain (angina) when exercising or under increased stress. Extremely high levels of CO can cause death (EPA 2012a).

### **Lead**

Lead is a soft and chemically resistant metal that is naturally found in the environment. It has historically been found in motor vehicles and industrial sources, which lead to the EPA's efforts to remove Pb from gasoline in 1980 and beyond. The aviation sector continues to be a major source of Pb emissions from piston aircraft, as are certain industrial sectors like ore and metals processing (EPA 2012b). Emissions of Pb from the study area are minimal (EPA 2011).

In addition to Pb exposure through air, Pb can also accumulate in soils and other sediments, especially in urban environments where it would have accumulated from years of exposure from leaded gasoline. Lead exposure can adversely affect the nervous system, kidney function, immune system, reproductive and development systems, and the cardiovascular system. Lead exposure may also contribute to behavioral problems, learning deficits, and lowered IQ in infants and young children (EPA 2012c).

### **Nitrogen Dioxide**

NO<sub>2</sub> is a reddish-brown to dark brown reactive gas that is formed during high-temperature combustion processes, such as those occurring in trucks, cars, and power plants. The sum of nitric oxide and NO<sub>2</sub> is commonly called nitrogen oxides (NO<sub>x</sub>), but other oxides like nitrous oxide and nitric

acid are also classified as NO<sub>x</sub>. Fuel combustion (78 percent) is the main sources of NO<sub>x</sub> in Putnam County (EPA 2011).

Exposure to NO<sub>2</sub> can cause adverse respiratory effects including airway inflammation. NO<sub>x</sub> can react with ammonia, moisture, and other compounds to form small particles that can lodge deeply into sensitive parts of the lungs. This action can cause or worsen respiratory disease like emphysema and bronchitis, or can aggravate existing heart disease (EPA 2013a).

### **Ozone**

O<sub>3</sub> is a highly reactive and unstable gas that is formed in the atmosphere through complex reactions with sunlight, NO<sub>x</sub>, and volatile organic compounds (VOCs). Hot, sunny, and calm days promote O<sub>3</sub> formation. The EPA regulates ground-level O<sub>3</sub>, which is not to be confused with stratospheric O<sub>3</sub>. Ground-level O<sub>3</sub> is close to where people live, breathe, and exercise and can cause adverse health effects; stratospheric O<sub>3</sub> is high in the atmosphere and reduces the amount of ultraviolet light entering the earth's atmosphere, which actually helps protect animal and plant life.

Certain people are particularly sensitive to the effects of O<sub>3</sub> including people with lung disease, children, older adults, and active people. Generally, as O<sub>3</sub> concentrations increase, both the number of people affected and the seriousness of the health effects increase. The effects of exposure to ground-level O<sub>3</sub> include cough, chest tightness, and pain upon taking a deep breath; worsening of wheezing and other asthma symptoms; reduced lung function; and increase hospitalizations for respiratory causes.

O<sub>3</sub> also has detrimental effects on the environment. O<sub>3</sub> exposure can damage cells and leaf tissue, reducing plants' ability to photosynthesize and produce food. Plants will grow more leaves in an attempt to produce more food, but this response has the net effect of making plants more susceptible for disease, pests, cold, and drought. O<sub>3</sub> can also damage materials like rubber, plastics, fabrics, paint and metals (EPA 2003; EPA 2009). About half of Putnam County's VOC emissions come from mobile sources (EPA 2011).

### **Particulate Matter**

Particulate matter (PM) consists of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. PM is divided into two size classes of particles: particles up to 10 microns<sup>1</sup> (PM<sub>10</sub>) and particles up to 2.5 microns (PM<sub>2.5</sub>). To place the sizes in perspective, a human hair is approximately 60 microns in diameter, which makes it six times larger than the largest coarse particle and over 20 times larger than the largest fine particle.

Primary particles are those that are directly emitted from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Burning fuels primarily produces PM<sub>2.5</sub>, while other sources like windblown dust contribute to PM<sub>10</sub> emissions. Secondary formation of PM<sub>2.5</sub> can occur from complex reactions in the atmosphere of pollutants like NO<sub>x</sub>, sulfur oxides, VOCs, and ammonia. Most of the PM<sub>2.5</sub> pollution in the United States occurs from these secondary reactions as opposed to direct (primary) emissions. Main sources of PM<sub>10</sub> and PM<sub>2.5</sub> in Putnam County are fugitive dust and fuel combustion (EPA 2011).

---

<sup>1</sup> A micron is a unit of measurement that is one-millionth of a meter. A meter is slightly larger than 3 feet.

Particles smaller than 10 microns (i.e., PM<sub>10</sub> and PM<sub>2.5</sub>) represent that portion of PM thought to represent the greatest hazard to public health because they can become deeply embedded in someone's lungs. This can lead to adverse health effects including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Aside from adverse health effects, PM<sub>2.5</sub> is primarily responsible for reduced visibility (haze) in the United States. PM can also cause aesthetic damage by staining or damaging stone and other materials (EPA 2013b; EPA 2013c).

### Sulfur Dioxide

SO<sub>2</sub> is formed when locomotives, ships, and nonroad diesel equipment burn sulfur-containing fuel. Certain industrial processes, such as petroleum refining and metal processing, also contribute to SO<sub>2</sub> emissions. Fuel combustion accounts for almost all emissions of SO<sub>2</sub> in Putnam County (EPA 2011). Health effects of SO<sub>2</sub> exposure including bronchoconstriction and increased asthma symptoms. SO<sub>2</sub> can also react with other compounds in the atmosphere to form small particles. Exposure to the resulting particles can aggravate existing heart disease, leading to increased hospital admissions and premature death (EPA 2012d).

## 2.2 National Ambient Air Quality Standards

Under authority of the CAA, EPA established National Ambient Air Quality Standards (NAAQS) for CO, Pb, NO<sub>2</sub>, O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>. **Table 2-1** presents the current NAAQS for the criteria pollutants. The federal CAA requires states to classify air quality control regions (or portions thereof) as either attainment or nonattainment with respect to criteria air pollutants, based on whether the NAAQS have been achieved.

**Table 2-1 National Ambient Air Quality Standards**

| Pollutant         | Averaging Time          | NAAQS Primary                         | NAAQS Secondary                       | Violation Criteria  |
|-------------------|-------------------------|---------------------------------------|---------------------------------------|---|
| CO                | 1 Hour                  | 35 ppm<br>(40 mg/m <sup>3</sup> )     | N/A                                   | Not to be exceeded more than once per year  |
|                   | 8 Hour                  | 9 ppm<br>(10 mg/m <sup>3</sup> )      |                                       |   |
| NO <sub>2</sub>   | 1 Hour                  | 100 ppb<br>(188 µg/m <sup>3</sup> )   | N/A                                   | 98th percentile of 1-hour daily maximum concentrations, averaged over three years   |
|                   | Annual                  | 53 ppb<br>(100 µg/m <sup>3</sup> )    | Same as Primary Standard              | Annual mean   |
| O <sub>3</sub>    | 8 Hour                  | 0.075 ppm<br>(147 µg/m <sup>3</sup> ) | Same as Primary Standard              | Annual fourth-highest daily maximum 8-hour concentration, averaged over three years |
| Pb                | Rolling 3-Month Average | 0.15 µg/m <sup>3</sup>                | Same as Primary Standard              | Not to be exceeded  |
| PM <sub>10</sub>  | 24 Hour                 | 150 µg/m <sup>3</sup>                 | Same as Primary Standard              | Not to be exceeded more than once per year on average over three years              |
| PM <sub>2.5</sub> | 24 Hour                 | 35 µg/m <sup>3</sup>                  | Same as Primary Standard              | 98th percentile, averaged over three years  |
|                   | Annual                  | 12 µg/m <sup>3</sup>                  | 12 µg/m <sup>3</sup>                  | Annual mean, averaged over three years  |
| SO <sub>2</sub>   | 1 Hour                  | 75 ppb<br>(196 µg/m <sup>3</sup> )    | N/A                                   | 99th percentile of 1-hour daily maximum concentrations, averaged over three years   |
|                   | 3 Hour                  | N/A                                   | 0.5 ppm<br>(1,300 µg/m <sup>3</sup> ) | Not to be exceeded more than once per year  |



| Pollutant | Averaging Time | NAAQS Primary                                       | NAAQS Secondary | Violation Criteria                         |
|-----------|----------------|---|-----------------|--|
|           | 24 Hour        | 0.14 ppm<br>(366 µg/m <sup>3</sup> ) <sup>(1)</sup> | N/A             | Not to be exceeded more than once per year |
|           | Annual         | 0.030 ppm<br>(79 µg/m <sup>3</sup> ) <sup>(1)</sup> |                 | Annual mean                                |

Source: EPA 2012e; 40 CFR 50.

Notes:

<sup>(1)</sup> On June 22, 2010, the 24-hour and annual primary SO<sub>2</sub> NAAQS were revoked (75 Federal Register [FR] 35520). The 1971 SO<sub>2</sub> NAAQS (0.14 parts per million [ppm] and 0.030 ppm for 24-hour and annual averaging periods) remain in effect until one year after an area is designated for the 2010 1-hour primary standard. EPA has designated parts of 16 states as nonattainment, effective October 4, 2013 (78 FR 47191). Other areas, including Putnam County, will be designated in the future. WVDEP recommended to EPA on May 23, 2011 that Putnam County be designated as unclassifiable (WVDEP 2011).

Key:

µg/m<sup>3</sup> = micrograms per cubic meter; CO = carbon monoxide; mg/m<sup>3</sup> = milligrams per cubic meter; N/A = not applicable; NAAQS = National Ambient Air Quality Standard; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; Pb = lead ; PM<sub>10</sub> = inhalable particulate matter; PM<sub>2.5</sub> = fine particulate matter; ppb = parts per billion; ppm = parts per million; SO<sub>2</sub> = sulfur dioxide

## 2.3 Attainment Status

Areas that exceed the NAAQS are designated as nonattainment. Areas that previously exceeded the NAAQS, but have since attained the standard, are called maintenance areas. States are also required to prepare State Implementation Plans (SIPs) containing emission reduction strategies to maintain the NAAQS for those areas designated as maintenance and to attain the NAAQS for those areas designated as nonattainment.

Certain pollutants, namely O<sub>3</sub> and PM<sub>10</sub>, are further subdivided based on how close an area is to achieving the NAAQS. The possible classifications for the O<sub>3</sub> NAAQS are marginal, moderate, serious, severe, or extreme. Areas with worse classifications are given more time to attain the NAAQS than areas with better air quality. For example, an area classified as an extreme nonattainment area has an attainment date of December 31, 2032 (20 years from the date of designation), while an area classified as a marginal nonattainment area has until December 31, 2015 to attain the NAAQS (77 Federal Register [FR] 30160). The possible classifications for the PM<sub>10</sub> NAAQS are moderate and serious. Section 188 of the CAA (42 United States Code [USC] 7513) states that all areas designated nonattainment for the PM<sub>10</sub> NAAQS are to be initially classified as moderate; however, an area can be reclassified as serious if the EPA determines that the area cannot practicably attain the standard by the attainment date.

The study area is within Putnam County, which is in attainment of CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and 2008 8-hour O<sub>3</sub> (EPA 2012f). The county is within the Charleston nonattainment area for 1997 and 2006 PM<sub>2.5</sub> NAAQS. On August 10, 2006, the Charleston area, including Putnam County, was redesignated as in attainment of the 1997 8-hour O<sub>3</sub> standard and the area has an EPA approved maintenance plan. On December 7, 2012, West Virginia requested the redesignation of the Charleston PM<sub>2.5</sub> nonattainment area. EPA has not redesignated the Charleston PM<sub>2.5</sub> nonattainment area.

Criteria air pollutants are monitored at 22 stations in West Virginia. The closest monitoring stations to the study area are located in the cities of Charleston (Site ID 540390010) and South Charleston (Site ID 540391005) but only monitor O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>. CO and Pb are monitored at stations in Weirton (Site ID 540090011) and Huntington (Site ID 540110006). The most recent three years of available data (2010-2012) are summarized in **Table 2-2**.

**Table 2-2 Ambient (Background) Air Quality Data**

| Pollutant <sup>(1)</sup>   | NAAQS | 2010  | 2011  | 2012  | Design Value (2010-2012) |
|--|-------|-------|-------|-------|--------------------------|
| <b>CO <sup>(2)</sup></b>   |       |       |       |       |                          |
| Maximum 1-hour concentration (ppm)                                 | 35    | 1.8   | 1.7   | 1     | N/A                      |
| Maximum 8-hour concentration (ppm)                                 | 9     | 0.8   | 1.1   | 0.8   | N/A                      |
| Number of days exceeding 1-hour standard                           |       | 0     | 0     | 0     |                          |
| Number of days exceeding 8-hour standard                           |       | 0     | 0     | 0     |                          |
| <b>Pb <sup>(3)</sup></b>   |       |       |       |       |                          |
| Maximum 24-hour concentration ( $\mu\text{g}/\text{m}^3$ )         | 0.15  | --    | --    | 0.024 | --                       |
| <b>NO<sub>2</sub> <sup>(4)</sup></b>                               |       |       |       |       |                          |
| 98th percentile 1-hour concentration (ppb)                         | 100   | --    | --    | --    | --                       |
| <b>O<sub>3</sub> <sup>(5)</sup></b>                                |       |       |       |       |                          |
| 4th high 8-hour concentration (ppm)                                | 0.075 | 0.070 | 0.080 | 0.073 | 0.074                    |
| Number of days exceeding 8-hour standard                           |       | 1     | 7     | 2     |                          |
| <b>PM<sub>10</sub> <sup>(5)</sup></b>                              |       |       |       |       |                          |
| Maximum 24-hour concentration ( $\mu\text{g}/\text{m}^3$ )         | 150   | 51    | 51    | 33    | N/A                      |
| Number of days exceeding 24-hour standard                          |       | 0     | 0     | 0     |                          |
| <b>PM<sub>2.5</sub> <sup>(6)</sup></b>                             |       |       |       |       |                          |
| 98th percentile 24-hour concentration ( $\mu\text{g}/\text{m}^3$ ) | 35    | 25    | 26    | 21    | 24                       |
| Annual mean ( $\mu\text{g}/\text{m}^3$ )                           | 15    | 13    | 12    | 10.8  | 12                       |
| <b>SO<sub>2</sub> <sup>(5)</sup></b>                               |       |       |       |       |                          |
| 99th Percentile 1-Hour concentration (ppb)                         | 75    | 51    | 45    | 38    | 45                       |
| Number of days exceeding 1-hour standard                           |       | 0     | 0     | 0     |                          |

Source: EPA 2013d.

Notes:

(1) An exceedance is not necessarily a violation. Violations are defined in 40 Code of Federal Regulations (CFR) 50.

(2) Data from Marland Heights Elementary (Site ID 540090011), Weirton, Brooke County.

(3) Data from Marshall University (Site ID 540110006) Huntington, Cabell County. Only data for 2012 was available. 3-month average statistics were not available from the EPA.

(4) No NO<sub>2</sub> data was available from EPA.

(5) Data from 209 Morris Street (Site ID 540390010) Charleston, Kanawha County. 3-hour, 24-hour, and annual average SO<sub>2</sub> concentrations were not available from EPA.

(6) Data from 312 4<sup>th</sup> Avenue (Site ID 540391005), South Charleston, Kanawha County.

Key:

-- = There was insufficient (or no) data available to determine this value;  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; CO = carbon monoxide; N/A = not applicable; NAAQS = National Ambient Air Quality Standard; NO<sub>2</sub> = nitrogen dioxide; O<sub>3</sub> = ozone; Pb = lead; PM<sub>10</sub> = inhalable particulate matter; PM<sub>2.5</sub> = fine particulate matter; ppm = parts per million; SO<sub>2</sub> = sulfur dioxide

## 2.4 Transportation Conformity

Approval, funding, or implementation of Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) projects is subject to the transportation conformity regulations under the CAA (40 Code of Federal Regulations [CFR] 93 Subpart A). Each metropolitan planning area is required to develop an official metropolitan transportation plan pursuant to 23 CFR Part 450. If a potential project

is included in a transportation plan and transportation improvement program (TIP) that conform to the SIP and the CAA Amendments, then the project is already included in the emission budgets developed for the region. Thus, a unique, regional analysis of project emissions would not be required; however, analysis regarding possible localized impacts is still required. The MPO, or the Boon-Clay-Kanawha-Putnam Regional Intergovernmental Council (RIC) in the study area, is responsible for transportation planning and determining regional conformity.

In order for a FHWA/FTA project to be found to conform, regardless of whether it is in a conforming transportation plan or TIP or not, the following criteria and procedures must be followed:

- §93.110 – The conformity determination must be based upon the most recent planning assumptions in force at the time the conformity analysis begins.
- §93.111 – The conformity determination must be based on the latest emission estimation model available.
- §93.112 – Conformity must be determined according to the consultation procedures in 40 CFR 93 Subpart A.
- §93.114 – There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval.
- §93.116 – The project must not cause or contribute to any new localized CO, PM<sub>10</sub>, and/or PM<sub>2.5</sub> violations or increase the frequency or severity of any existing CO, PM<sub>10</sub>, and PM<sub>2.5</sub> violations.
- §93.117 – The project must comply with any PM<sub>10</sub> and PM<sub>2.5</sub> control measures in the applicable SIP.

Transportation conformity applies to nonattainment and maintenance areas. Since the study area is in maintenance for the 1997 8-hour O<sub>3</sub> standard and is designated as nonattainment of the PM<sub>2.5</sub> standards, transportation conformity regulations apply. However, the 1997 O<sub>3</sub> NAAQS was revoked for transportation conformity purposes a year after the effective date of designations for the 2008 O<sub>3</sub> NAAQS. As of July 20, 2013, transportation conformity requirements do not apply to the 1997 O<sub>3</sub> NAAQS (77 FR 30160).

This project is part of the 2013-2018 WVDOT STIPs. It is also part of RIC's 2012-2015 TIP and the air quality conformity analysis for the 2040 RIC Long Range Transportation Plan.

## 2.5 Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources (e.g., cars, trucks, and construction equipment), non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories, refineries, and power plants). EPA has also recognized emissions of air toxics from mobile sources as a potential environmental and health concern. The interim guidance released by FHWA dated February 2007 requires discussion of Mobile Source Air Toxics (MSATs) in National Environmental Policy Act (NEPA) documents. The guidance was updated in September 2009 and December 2012.

The current guidance on MSATs is FHWA's *Interim Guidance Update on Air Toxic Analysis in NEPA Documents*, released on December 6, 2012. This guidance advises on when and how to analyze MSATs

in the NEPA process for highway projects. This guidance is interim because MSAT science is still evolving. Currently, there are limitations on tools and techniques for evaluating potential project-level health risks from MSAT exposure. FHWA regularly updates the guidance based on new scientific data.



## Section 3

# Impact Analysis

Impacts of the proposed project to the air quality in the study area are discussed in this section.

### 3.1 Vehicle Emissions

The impact resulting from a new transportation project ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new roadway or an existing highway facility.

#### 3.1.1 Criteria Pollutants

Motor vehicles emit CO, NO<sub>x</sub>, VOC, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, and Pb (listed in order of decreasing emission rate). Emissions of criteria pollutants as a result of the implementation of the project are discussed below.

##### **Carbon Monoxide**

Motor vehicles are considered a main source of CO in the project area (EPA 2011). CO levels measured in West Virginia are well below the NAAQS and, this project is not expected to produce a projected violation of the CO NAAQS.

Projects in attainment areas would still be required to conduct a CO hotspot analysis if the project is expected to affect intersections that are at Level of Service (LOS) D, E, or F or those that would change the LOS of an intersection to D, E, or F due to increased traffic volumes related to the project (40 CFR 93.123). The proposed action is not anticipated to cause adverse impacts on intersections and local air quality, therefore, no additional project-level analysis is required.

##### **Ozone & Nitrogen Dioxide**

Motor vehicles are regarded as sources of VOC and NO<sub>x</sub>. VOC and NO<sub>x</sub> emitted from vehicles are carried into the atmosphere where they react with sunlight to form O<sub>3</sub> and NO<sub>2</sub>. Automotive emissions of VOC and NO<sub>x</sub> are expected to decrease in the future due to the continued installation and maintenance of pollution control devices on new cars. However, regarding area-wide emissions, these technological improvements may be offset by the increasing number of cars in the area.

The photochemical reactions that form O<sub>3</sub> and NO<sub>2</sub> require several hours to occur. For this reason, the peak levels of O<sub>3</sub> generally occur ten to twenty kilometers (approximately 6 to 12 miles) downwind of the source of VOC emissions. Urban areas as a whole are regarded as sources of VOC, not individual streets and highways. The emissions of all sources in an urban area mix in the atmosphere, and, in the presence of sunlight, this mixture reacts to form O<sub>3</sub>, NO<sub>2</sub>, and other photochemical oxidants. This project is not expected to cause adverse impact on O<sub>3</sub> or NO<sub>2</sub> concentrations.

Although the project is in a maintenance area for the 1997 8-hour O<sub>3</sub> standard, the 1997 O<sub>3</sub> NAAQS was revoked for transportation conformity purposes as of July 20, 2013. Therefore, the transportation conformity requirements do not apply to the 1997 O<sub>3</sub> NAAQS.

## Particulate Matter & Sulfur Dioxide

Motor vehicles are not regarded as significant sources of PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>. Nationwide, highway sources account for less than seven percent of PM emissions and less than two percent of SO<sub>2</sub> emissions. PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub> emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Because emissions of PM<sub>10</sub> and SO<sub>2</sub> from automobiles are very low and current monitored levels are well below the NAAQS, the traffic on the project will not cause air quality standards for PM<sub>10</sub> and SO<sub>2</sub> to exceed the NAAQS. However, the study area is in a nonattainment area for PM<sub>2.5</sub>, therefore transportation conformity regulations must be considered.

Projects in PM<sub>2.5</sub> nonattainment areas that has a significant number of diesel vehicles, is anticipated to significantly increase the number of diesel vehicles, is anticipated to affect intersections that are LOS D, E, or F, or is anticipated to change the LOS of an intersection to D, E, or F are required to conduct a hotspot analysis (40 CFR 93.123). Projects that involve bus and rail terminals are often subject to this requirement due to increase in diesel use. Facilities with AADT greater than 125,000 with 8 percent or more of that AADT as diesel trucks is considered to be significant (71 FR 12468). The AADT of this project is less than 125,000. The project is also not expected to cause a significant increase in the number of diesel vehicles. Therefore, a PM<sub>2.5</sub> hotspot analysis is not required.

## Lead

Automobiles without catalytic converters can burn regular gasoline. The burning of regular gasoline emits lead as a result of regular gasoline containing tetraethyl lead, which is added by refineries to increase the octane rating of the fuel. Newer cars with catalytic converters burn unleaded gasoline, thereby eliminating lead emissions. Also, the EPA has required the reduction in the lead content of leaded gasoline. The overall average lead content of gasoline in 1974 was approximately 0.53 gram per liter. By 1989, this composite average had dropped to 0.003 gram per liter. The CAA Amendments of 1990 made the sale, supply, or transport of leaded gasoline or lead additives unlawful after December 31, 1995. Because of these reasons, it is not expected that traffic on the proposed project will cause the NAAQS for lead to be exceeded.

### 3.1.2 Mobile Source Air Toxics

Motor vehicles contribute significantly to emissions of acrolein, benzene, 1,3-butadiene, diesel PM (including diesel exhaust organic gases), formaldehyde, naphthalene and polycyclic organic matter. Of these compounds, FHWA considers diesel PM as the dominant MSAT of concern.

The FHWA has developed a tiered approach for analyzing MSATs in NEPA documents, depending on the specific project circumstances:

- No analysis for projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The proposed project involves widening of a highway and modifications to interchanges. As shown in **Table 1-1**, the design year AADT for the proposed connection is projected to be less than 140,000 to 150,000 vehicles per day, which is the FHWA criterion for a qualitative analysis; the project is expected to have low potential MSAT effects.

Vehicle mix is not anticipated to change due to this project; therefore, MSATs emitted would be proportional to the vehicle miles traveled (VMT). **Table 3-1** shows the estimated daily VMT for this project. Also, speed may increase due to additional capacity increasing the efficiency of the transportation network.

**Table 3-1 Estimated Daily Vehicle Miles Traveled**

|                     | Existing (2013) | Design Year (2033) |
|---------------------|-----------------|--------------------|
| Project VMT (miles) | 263,405         | 384,306            |

Note: VMT calculated based on corridor length and AADT from the WVDOT Design Study (Penn 2013).

Emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turn over, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great, even after accounting for VMT growth, that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

MSAT science is still evolving and the available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternative evaluated in the Environmental Impact Statement (EIS). Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22) regarding incomplete or unavailable information.

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation, rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts -- each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that timeframe, since such information is unavailable. It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.



There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds and, in particular, for diesel PM.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities, plus improved access for emergency response, that are better suited for quantitative analysis.

## 3.2 Construction Emissions

Heavy construction equipment, including excavators, scrapers, graders, rollers, compactors, and pavers, may be used to clear and grub, excavate, grade, and pave for construction of new roadways. Contractors will be responsible for maintaining, repairing, and adjusting all construction equipment to keep them in full satisfactory condition to minimize pollutant emissions. Equipment emissions may be reduced by using newer, lower-emitting equipment, retrofitting older equipment engines, and controlling activity.

Measures should be taken to reduce any fugitive dust generated by construction activities. A dust control plan may be prepared to outline control methods specific to the construction site. Dust control methods may include watering areas of disturbance, covering haul trucks, stabilizing or covering stockpile areas, washing equipment to minimize track out, and reducing speeds on unpaved roads.

## Section 4

### Conclusions

The study area is located in Putnam County. Putnam County is in attainment of CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, and 2008 8-hour O<sub>3</sub> (EPA 2012f). The county is within the Charleston nonattainment area for 1997 and 2006 PM<sub>2.5</sub> NAAQS. On August 10, 2006, the Charleston area, including Putnam County, was redesignated as in attainment of the 1997 8-hour O<sub>3</sub> standard and the area has an EPA approved maintenance plan. On December 7, 2012, West Virginia requested the redesignation of the Charleston PM<sub>2.5</sub> nonattainment area. EPA has not redesignated the Charleston PM<sub>2.5</sub> nonattainment area.

Transportation conformity applies to nonattainment and maintenance areas. However, the 1997 O<sub>3</sub> NAAQS was revoked for transportation conformity purposes as of July 20, 2013, therefore transportation conformity requirements do not apply to the 1997 O<sub>3</sub> NAAQS. This project is part of the 2013-2018 WVDOT STIPs, RIC's 2012-2015 TIP, and the air quality conformity analysis for the 2040 RIC Long Range Transportation Plan.

The project does not involve a significant number of diesel vehicles and is not anticipated to significantly increase the number of diesel vehicles, affect intersections that are LOS D, E, or F, or change the LOS of an intersection to D, E, or F. Therefore, the project would not be required to conduct a project-level hotspot analysis for CO or PM<sub>2.5</sub>.

No significant MSAT impacts are anticipated from this project. Air toxics analysis is a continuing area of research. At this time, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited.



## Section 5

### References

“Air Quality Designations for the 2010 Sulfur Dioxide (SO<sub>2</sub>) Primary National Ambient Air Quality Standard.” Federal Register 78 (5 August 2013): 47191-47205.

Boon-Clay-Kanawha-Putnam Regional Intergovernmental Council. 2012. Final Transportation Improvement Program FY 2012-2015. March.

Federal Highway Administration (FHWA). 2012. Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA. December. Available online at: [http://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/policy\\_and\\_guidance/aqintguidmem.cfm](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm) [Accessed on August 5, 2013].

“Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach, Attainment Deadlines and Revocation of the 1997 Ozone Standards for Transportation Conformity Purposes.” Federal Register 77 (21 May 2012): 30160-30171.

Penn, Elwood. 2013. *Memorandum to Dirar Ahmad on I-64 Design Study/Crooked Creek to Nitro, Putnam County*. June 5.

“PM<sub>2.5</sub> and PM<sub>10</sub> Hot-Spot Analyses in Project-Level Transportation Conformity Determinations for the New PM<sub>2.5</sub> and PM<sub>10</sub> National Ambient Air Quality Standards.” Federal Register 71 (10 March 2006): 12468-12511.

“Primary National Ambient Air Quality Standard for Sulfur Dioxide.” Federal Register 75 (22 June 2010): 35520-35603.

United States Environmental Protection Agency (EPA). 2003. Ozone: Good Up High, Bad Nearby Brochure. EPA-451/K-03-001. Available online at: <http://epa.gov/airquality/ozonepollution/pdfs/ozonegb.pdf> [Accessed on August 5, 2013].

EPA. 2009. Ozone and Your Health Brochure. EPA-456/F-09-001. Available online at: <http://www.epa.gov/airnow/ozone-c.pdf> [Accessed on August 5, 2013].

EPA, 2011. Air Emission Sources Homepage. September 7. Available online at: [www.epa.gov/air/emissions/index.htm](http://www.epa.gov/air/emissions/index.htm). [Accessed on August 5, 2013].

EPA. 2012a. Carbon Monoxide Health Effects Homepage. December 10. Available online at: <http://www.epa.gov/airquality/carbonmonoxide/health.html> [Accessed on August 5, 2013].

EPA. 2012b. Lead in Air Homepage. April 12. Available online at: <http://www.epa.gov/airquality/lead/> [Accessed on August 5, 2013].

EPA. 2012c. Lead Health Effects Homepage. March 13. Available online at: <http://www.epa.gov/airquality/lead/health.html> [Accessed on August 5, 2013].

EPA. 2012d. Sulfur Dioxide Health Effects. July 12. Available online at: <http://www.epa.gov/airquality/sulfurdioxide/health.html> [Accessed on August 5, 2013].

EPA. 2012e. National Ambient Air Quality Standards (NAAQS) Homepage. December 14. Available online at: <http://www.epa.gov/air/criteria.html> [Accessed on August 5, 2013].

EPA. 2012f. The Green Book Nonattainment Areas for Criteria Pollutants. December 14. Available online at: <http://www.epa.gov/oaqps001/greenbk/index.html> [Accessed on August 5, 2013].

EPA. 2013a. NO<sub>2</sub> Health Effects Homepage. February 14. Available online at: <http://www.epa.gov/airquality/nitrogenoxides/health.html> [Accessed on August 5, 2013].

EPA. 2013b. Particulate Matter (PM) Basic Information Homepage. March 18. Available online at: <http://www.epa.gov/airquality/particlepollution/basic.html> [Accessed on August 5, 2013].

EPA. 2013c. Particulate Matter (PM) Health. March 18. Available online at: <http://www.epa.gov/airquality/particlepollution/health.html> [Accessed on August 5, 2013].

EPA. 2013d. AirData Monitor Values Report. May 3. Available online at: [http://www.epa.gov/airdata/ad\\_rep\\_mon.html](http://www.epa.gov/airdata/ad_rep_mon.html) [Accessed on August 5, 2013].

West Virginia Department of Environmental Protection (WVDEP). 2011. Letter to US EPA Region 3 Regarding West Virginia Area Designations Under the June 2010 Sulfur Dioxide NAAQS. May 23.

WVDEP. 2012. Redesignation Requests and Maintenance Plans for the Charleston, WV Nonattainment Area with Respect to the 1997 and 2006 PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS). October.

West Virginia Department of Transportation (WVDOT). 2013. Statewide Transportation Improvement Program 2013-2018. April 24.

WVDOT. 2013. I-64 Widening and Improvements Informational Workshop Public Meeting Handout. For meeting at Rock Branch Elementary School on May 20, 2013.

