Environmental Studies for Modifications to Alternative F1, Section IIIB of Proposed U.S. Route 121

From: Route 614 To: Route 643; Buchanan County
State Project Number: 0121-013-772, P101; 0121-013-902, P101, R201, C501
UPC: 85126; 104094
FHWA FEIS Number: FHWA-VA-EIS-99-01-D
Submitted pursuant to 42 USC 4332(2)(c) and 23 CFR 771.130(c)

Prepared for

Federal Highway Administration

by

Virginia Department of Transportation
Environmental Division
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FEIS Date: September 12, 2001
ROD Date: November 13, 2001

1. INTRODUCTION

The Federal Highway Administration (FHWA), in accordance with provisions of the National Environmental Policy Act (NEPA) and 23 CFR 771, completed a Final Environmental Impact Statement (FEIS) in September 2001 and signed a Record of Decision (ROD) in November 2001 for the proposed Coalfields Expressway (CFX), now designated as U.S. Route 121.[1] The purpose of the project, as described in greater detail in the FEIS, can be categorized into three major themes: satisfy Congressional initiatives to designate and fund the proposed road as a high-priority corridor, improve mobility and safety, and support regional economic development including tourism. The FEIS covered the full 59 miles of the proposed new four-lane divided roadway across Wise, Dickenson, and Buchanan Counties from U.S. Route 23 at the Town of Pound to VA Route 83 at the West Virginia state line. The ROD identified Alternative F1 as the selected alternative. The ROD also noted that the project would be designed and constructed in numerous phases.

Subsequently, in consultation with FHWA, and consistent with the statement in the ROD regarding phased construction, the Virginia Department of Transportation (VDOT) split the corridor into several sections to facilitate incremental implementation of the roadway construction. Each section has independent utility and logical termini. Each section is of sufficient length to address environmental matters on a broad scope and each would provide a serviceable facility regardless of whether other U.S. Route 121 sections are constructed. VDOT also recognized an opportunity to realize substantial cost savings by using a "coal synergy" (see Section 3) approach to implement the project. Accordingly, in January 2006, VDOT entered into a Comprehensive Agreement with private contractors for design and construction of the project. The contractors have coal mining interests and expertise throughout the region. As such, they were tasked by VDOT to develop modifications to the selected Alternative F1 that would best take advantage of the value of the contractors' ownership of mineral rights and their expertise in large-scale earth-moving operations used to recover coal reserves to substantially reduce the estimated cost of the project.

The subject of this Environmental Studies document is Section IIIB, which extends from Route 614 to Route 643 in Buchanan County, as shown in **Figures 1 and 2**. The proposed changes to the selected Alternative F1 are referred to herein as "Alternative F1 Modified." As shown in Figure 2, Alternative F1 Modified in Section IIIB is depicted as a 750-foot-wide corridor to allow for a consistent comparison with the relevant portion of Alternative F1 (build alternatives were depicted in the Environmental Impact Statement as 750-foot-wide corridors). The location of Alternative F1 Modified is similar to the location of Alternative F1 (approximately 30% of the total overlaps and the remainder is generally parallel to and offset by up to 1.5 miles at the farthest point). Alternative F1 Modified is within the study area evaluated in the 2001 FEIS, as shown in Figure 1.

[1] Following a series of location public hearings in April 2000, the Commonwealth Transportation Board (CTB) endorsed Alternative F1 in August 2000 and designated the future CFX as U.S. Route 121 in Virginia.

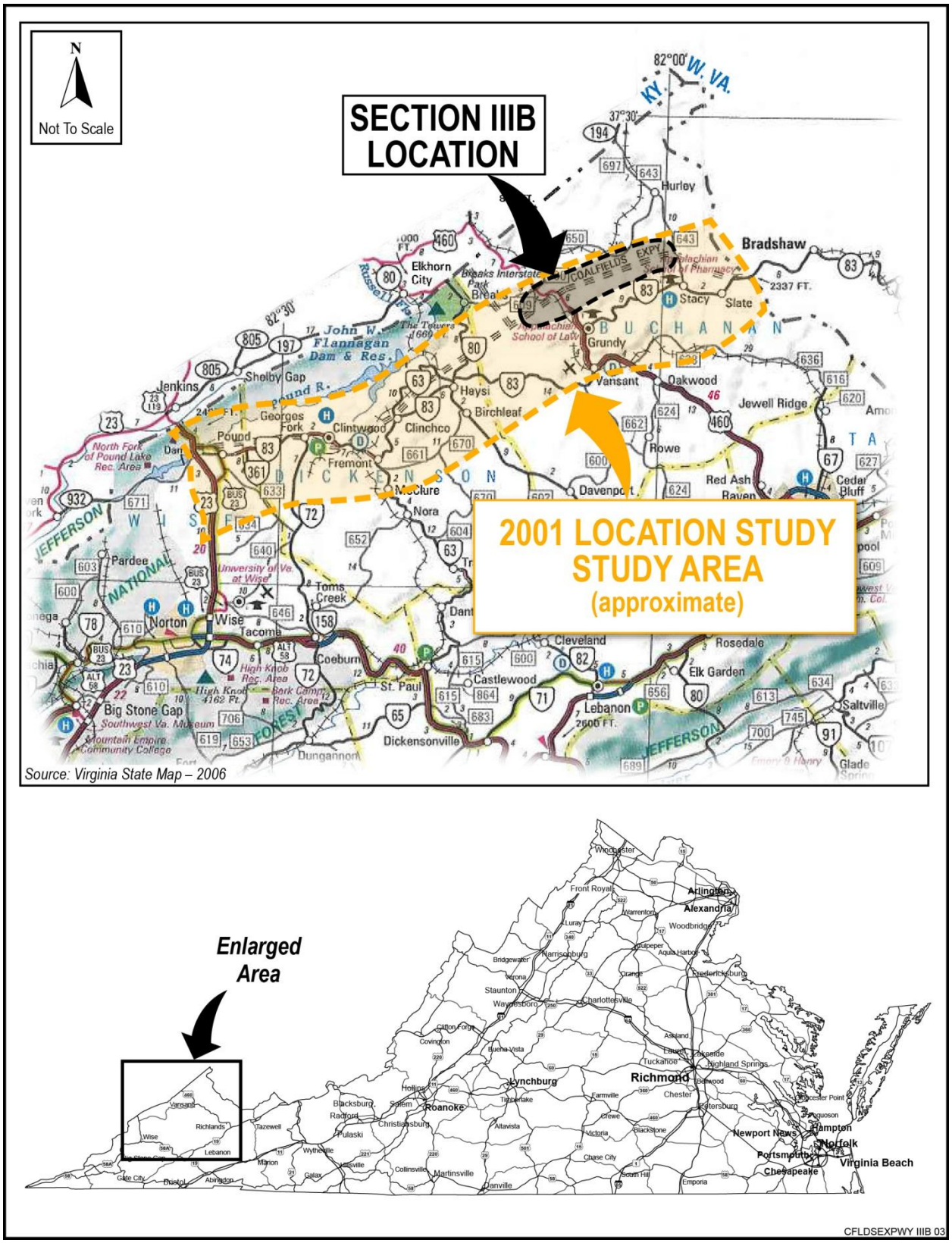


FIGURE 1. SECTION IIIB LOCATION

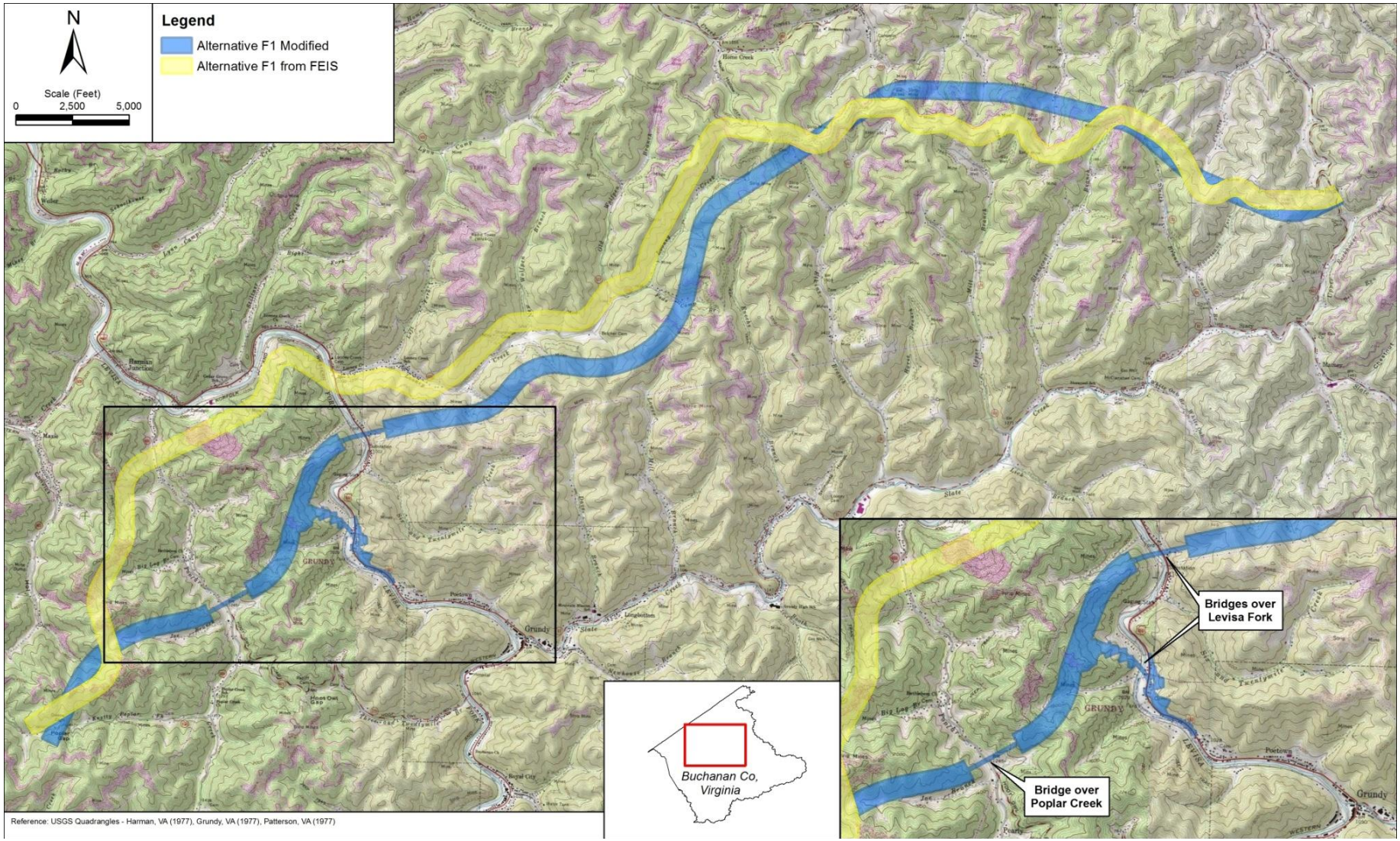


FIGURE 2. ALTERNATIVE F1 & ALTERNATIVE F1 MODIFIED

The proposed changes result in a somewhat straighter alignment and also provide for a connector to existing US Route 460 at the Town of Grundy. [It is noted that a portion of Section IIIB is part of Corridor Q of the Appalachian Development Highway System; Section 2 has more details.] Consequently, the Alternative F1 Modified mainline extends approximately 13.7 miles, compared to the 15.1-mile-long corresponding section of the Alternative F1 corridor. The connector to U.S. Route 460 would be approximately 1.2 miles long. Adding the two together yields a total new roadway length of approximately 14.9 miles for Alternative F1 Modified.

Regulatory Context and Next Steps

The provisions of 23 CFR 771.130 address situations where changes are made to a proposed action that was evaluated in an Environmental Impact Statement. Specifically, 23 CFR 771.130(c) states, "Where the administration [FHWA] is uncertain of the significance of the new impacts, the applicant will develop appropriate environmental studies or, if the Administration deems appropriate, an EA [Environmental Assessment] to assess the impacts of the changes, new information, or new circumstances. If, based upon the studies, the Administration determines that a supplemental EIS is not necessary, the Administration shall so indicate in the project file."

VDOT has reviewed the modifications for Section IIIB of the project and conducted environmental studies to assess the environmental consequences resulting from changes to this section of proposed U.S. Route 121, changes in the affected environment, and changes in regulatory requirements and guidance since the FEIS was issued to help determine if there are any new significant impacts at this point in project development.[2] This Environmental Studies document is being made available for public review and comment on VDOT's project website and at a public hearing to be held in September 2014. The purpose of the hearing will be to present information on proposed changes to the project since it was last presented to the public, present the findings of the environmental studies, provide a discussion forum between the public and project team, and obtain input and comments from the community. All comments received during the public hearing and public comment period will be considered and all substantive comments will be addressed in subsequent documentation. VDOT and FHWA will then assess whether at this point in project development any new significant environmental impacts have been identified that were not evaluated in previous NEPA documentation. If new significant environmental impacts are identified, then a Supplemental Environmental Impact Statement would be prepared. If no new significant environmental impacts are identified, then FHWA would document that determination. Under either scenario, a reevaluation of the NEPA documentation would be prepared prior to FHWA authorizing final design, authorizing the acquisition of right-of-way, or authorizing construction for Section IIIB (see 23 CFR 771.129).

2. APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM

Congress created the Appalachian Regional Commission (ARC) in 1965 to facilitate economic and social development in the Appalachian Region. The Appalachian Development Highway System (ADHS), a 3,090-mile system of modern highways that connects with the Interstate Highway System, is the cornerstone of ARC's transportation efforts. A total of 3,090 miles of ADHS corridors are authorized to be constructed by the Appalachian Regional Development Act

[2] For Section II, FHWA requested that VDOT prepare an Environmental Assessment to assess the project changes. Section IIIB is unlike Section II in that approximately 30% of Alternative F1 Modified overlaps the original selected Alternative F1. In addition, unlike Section II, there are no current or pending mining applications or permits along the proposed Section IIIB alignment.

of 1965, as amended. Now with approximately 85 percent open to traffic, the ADHS has stimulated economic and employment opportunity throughout the Appalachian Region.

Corridor Q of the Appalachian Development Highway System traverses portions of Kentucky, Virginia, and West Virginia, generally following the existing U.S. Route 460 corridor, with some sections on new location off of existing U.S. Route 460. In October 2010, the ARC Board approved the realignment of 13.1 miles of Corridor Q that follows U.S. Route 460 in Buchanan County between the Kentucky-Virginia State Line and the Town of Grundy based on the development of coal synergy partnerships. The Board concluded that by using the coal synergy concept, these sections would be completed sooner than would be possible using traditional highway construction methods. At that time, VDOT estimated the total cost of the revised Corridor Q alignment to be approximately $358 million as compared to the original alignment cost of $851.5 million. As shown on **Figure 3**, a portion of Section IIIB of proposed U.S. Route 121 is part of Corridor Q; this portion is operationally independent and it may be advanced independently of the rest of Section IIIB. Where the two routes overlap, the roadway would be dually designated as U.S. Route 121 and U.S. Route 460.

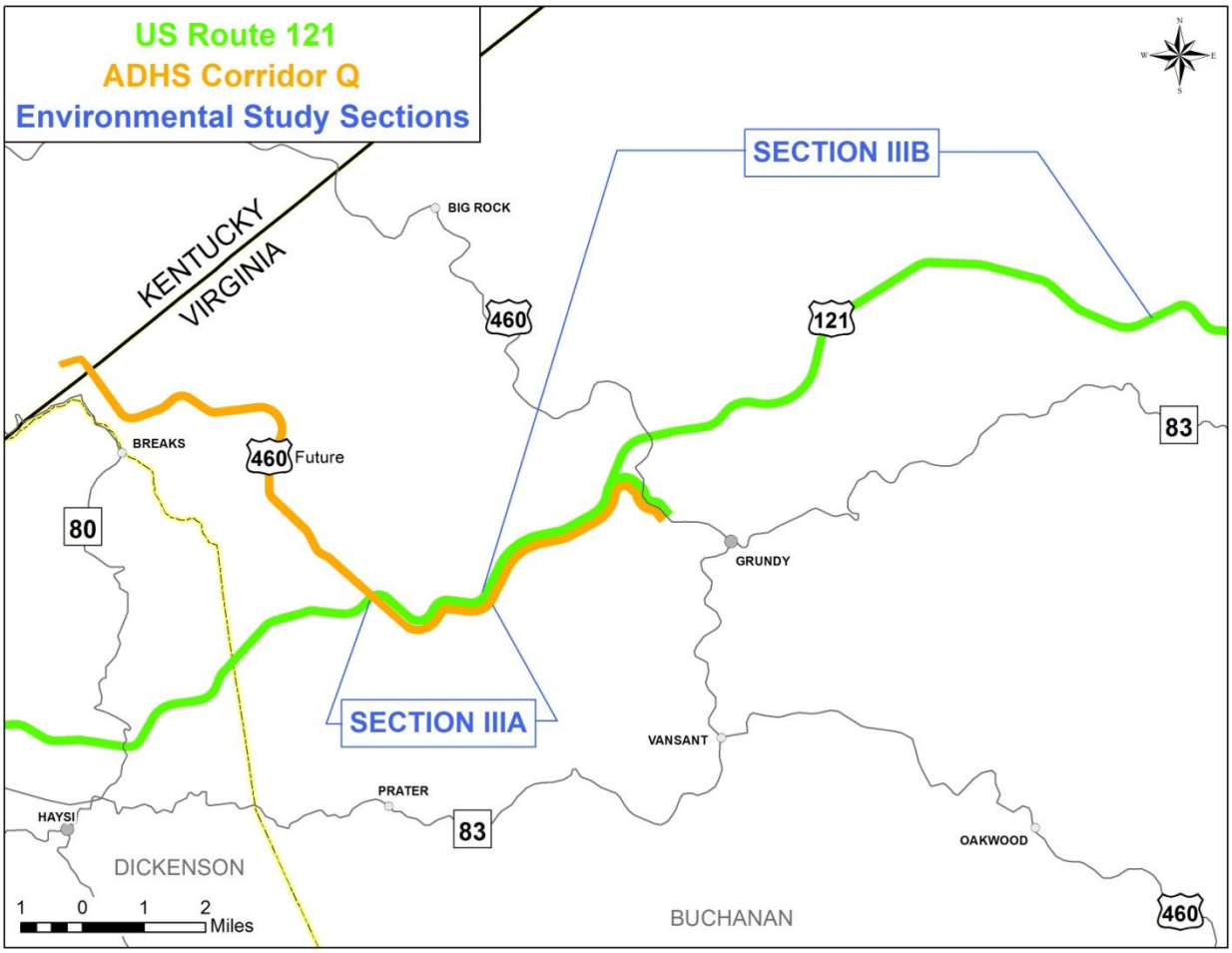


FIGURE 3. RELATIONSHIP BETWEEN ADHS CORRIDOR Q AND U.S. ROUTE 121

3. COAL SYNERGY

Coal synergy is an innovative concept that utilizes large-scale earth moving equipment and techniques common to the mining industry and revenue from coal recovery to offset roadway construction costs, thereby reducing the expenditure of public funds. Coal recovery is not the largest savings factor; it is the economies of scale achieved with the equipment and the techniques that reduces excavation cost, which is the largest cost for construction in the project area's mountainous terrain. The proposed change to Alternative F1 is being made to realize the benefits of the coal synergy approach to project implementation whereby substantial savings in construction costs would be realized.[3]

It should be noted that use of the coal synergy approach does not change the purpose and need for the project; rather, it would facilitate implementation of the proposed project. As summarized in the Introduction, the established purpose and need for the project is:

- To respond to Congressional initiatives to designate and fund the proposed road now designated as U.S. Route 121 as a high-priority corridor and a component of the National Highway System. Utilization of the coal synergy approach would help implement the project sooner than may otherwise be feasible, given competing transportation needs throughout the Commonwealth of Virginia, and implement it using less public funds, thereby furthering the legislative initiative but not changing the impetus for it.
- To improve mobility and safety. Due to the steep terrain within the study area, the current transportation network exists almost exclusively along the narrow valley floors. This network limits system linkage within the study area and limits the road connections to areas outside of the study area. The existing road conditions also raise safety concerns. The typically narrow pavement, narrow or nonexistent shoulders, prevalent curvature, steep grades, and limited sight distance leave little tolerance for driver error. Utilization of the coal synergy approach does not change the mobility and safety concerns that form part of the basis for purpose and need.
- To support regional economic development including tourism. For decades, coal mining has formed the foundation of the regional economy. However, as explained in the FEIS, the long-term viability of coal mining is declining due to depletion of coal deposits, competition from foreign and western U.S. coal producers, and shifts to other energy sources such as oil and gas. Moreover, increasing mechanization of coal mining operations has compounded declines of employment in the industry. Consequently, the study area and the region in general have experienced changes in the economy as the coal industry has evolved. Limited transportation system linkage, poor access, prolonged travel times, lack of multilane high-speed highways, and limited developable land (due to the steep terrain) are all limitations to attracting new employers to the region. Moreover, several tourist and recreational attractions in the region, such as Breaks Interstate Park (site of the longest and deepest gorge east of the Mississippi River), cannot develop to their potential without better transportation linkage and mobility through the region. Local economic development officials cite the lack of safe and efficient access to the region's transportation network as a major impediment to recruitment efforts to attract new industry and tourism. While the coal industry could benefit somewhat from improvements to the local and regional highway system to the extent that such improvements could help facilitate the transport of coal to markets, according to the Virginia

[3] As indicated on the project website, the cost of the entire U.S. Route 121 is estimated at $5.1 billion using traditional construction methods and $2.8 billion using coal synergy (2013 construction estimates are for U.S. Route 121 plus the cost of interchanges and connector roadways).

Center for Coal and Energy Research, "the vast majority of Virginia coal is shipped from mine to market by railroad."[4] **Figure 4**, from the same source, illustrates the rail network serving the mining industry in Wise, Dickenson, and Buchanan Counties. Accordingly, the transport of coal revolves around relatively short hauls to preparation facilities / railheads that are at the mine sites or relatively near the mine sites and off of the project corridor. The economic development aspects of the purpose and need involve expanding and diversifying the economic opportunities within the region to offset ongoing declines in the coal mining industry over time, and the highway facility is not aimed at facilitating the transport of coal.

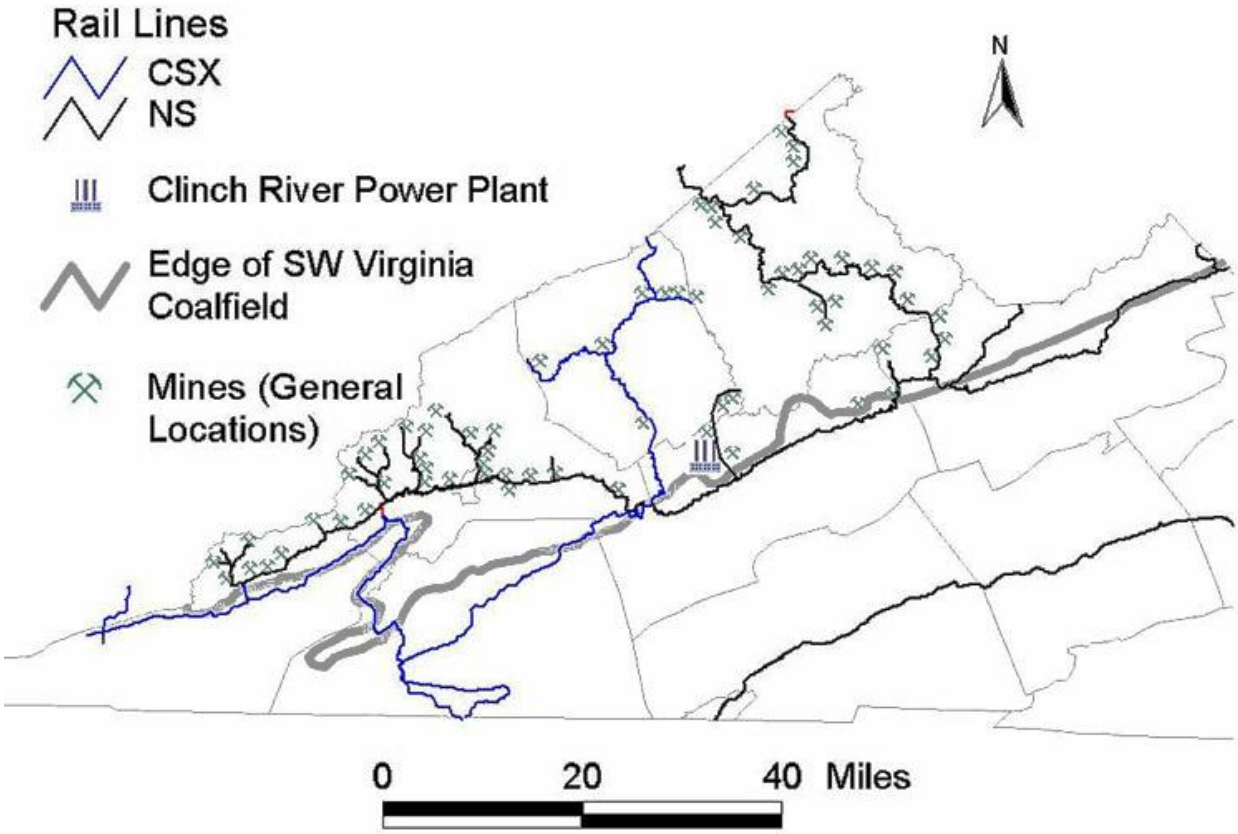


FIGURE 4. RAIL NETWORK SUPPORTING THE COAL INDUSTRY

Coal synergy would not constitute a new element of purpose and need for the proposed project. Coal synergy is a construction method, a tool to deliver a roadway project that would meet the transportation needs identified sooner and using less public funds than would be possible using conventional methods.

The forces influencing the initiation of new mining activities have little connection to the conditions of existing road systems. Instead, they are related to world market conditions and prices for coal. On the other hand, forces increasingly acting against the long term viability of mining and coal production include depletion of economically recoverable coal deposits and increasingly heavy regulations and restrictions imposed by the federal government aimed at curtailing coal-fired power generation. These forces have all contributed to the realization of the need noted previously and discussed in detail in the FEIS to diversify the regional economy and replace coal mining employment over time.

[4] Virginia Energy Patterns and Trends Electronic Database. 2014. Virginia Center for Coal and Energy Research. http://www.energy.vt.edu/vept/index.asp.

Coal Recovery Requirements

All coal recovery is regulated by the Virginia Department of Mines, Minerals, and Energy's Division of Mined Land Reclamation (DMLR) with oversight from the federal Office of Surface Mining (OSM) and can be divided into two categories: first is recovery through a mining permit issued by DMLR; the second is with a government financed exemption (GFE) issued by DMLR. GFEs have their basis in federal law (30 USC 1278(2)) wherein the extraction of coal as an incidental part of construction of government-financed highways is exempt from provisions of the federal Surface Mining Control and Reclamation Act. These activities are exempt because they are not primarily mining activities and reclamation would require unbuilding projects for which the exemption exists. The exemption applies only to coal extracted within the right of way of the highway (30 CFR 707.5). Any mining conducted outside the right of way limits still requires normal mining permits.

At this time, there are no active or permitted mines within the Section IIIB Alternative F1 Modified corridor and there are no current or pending mining applications. Therefore, any coal removed from the corridor as part of the roadway construction project would constitute incidental coal removal, which occurs as a matter of course on most road projects within the coal-producing counties in southwest Virginia (Wise, Dickenson, and Buchanan Counties, as well as parts of Russell and Tazewell) and would therefore not be unique or unusual. At this point in project development, it is unknown if or where coal seams would be encountered by the proposed construction and the potential locations of any applicable GFEs also are not known at this time. Notwithstanding, any incidental coal removal operations within the proposed right of way would be subject to GFE requirements, which still involve extensive DMLR review and approval and do not preclude compliance with other environmental regulations. For example, the road construction still would be subject to applicable stormwater management and erosion and sediment control requirements and other state and federal environmental statutes. DMLR has established procedures and guidelines for reviewing and processing GFE proposals, including the following:

- Coordination with other agencies, such as the State Historic Preservation Office (SHPO) and the federal OSM. Interested parties, including surface and mineral property owners, localities, and planning districts, are notified of the pending GFE request during the review process.
- Inspection requirements for the project are well defined and include monthly inspections to document the site conditions, ensure that any coal removal is performed in accordance with the GFE, respond to any citizen complaints about the project, and report any activity not in accordance with the GFE.
- Key review components include establishment of Engineering Necessity, which is the part of the GFE where the applicant must demonstrate that the coal removal is necessary for sound construction. For example, for a building foundation or road construction, removal of a coal seam that is just below the project excavation limits is often necessary. The reason for this is that coal is not a very strong or durable stratum with a very high bearing strength, and it makes a poor foundation material. This process requires over-excavation or undercutting to remove the coal and replace it with better foundation material, similar to excavation of unsuitable material.
- Finally, the applicant must provide detailed estimations of the value of the coal to be recovered under the GFE, the total project cost, and the percent of project cost that would be provided by government financing.

Construction of the road and the incidental recovery of coal would not constitute mountaintop removal mining. According to Virginia Code (4VAC25-130-785.14(b)), "Mountaintop removal mining means surface mining activities, where the mining operation removes an entire coal seam or seams running throughout the upper fraction of a mountain, ridge, or hill, except as provided for in 4VAC25-130-824.11(a)(6), by removing substantially all of the overburden off the bench and creating a level plateau or a gently rolling contour, with no highwalls remaining, and capable of supporting post mining land use in accordance with the requirements of this section." Excavation for the project would occur only to the extent needed to reach the design elevation and profile of the road and to accommodate cut slopes to either side of the roadbed.

In summary, there is nothing about the coal synergy approach to building Section IIIB that would reduce environmental requirements on the private partners engaged in coal mining activities in the region. Mining is a tightly regulated process and the federal OSM and Virginia DMLR oversee, review, and approve applications to conduct coal recovery operations under GFEs and inspect such operations to ensure that they stay within designated right of way areas. Any mining operations that occur outside the approved parameters are subject to the normal regulatory and permitting processes.

4. ENVIRONMENTAL CONSEQUENCES

Environmental conditions in the relevant portion of the study area have changed little since 2001 when the FEIS was published. The Draft Environmental Impact Statement and FEIS examined a study area approximately 60 miles long and 10 miles wide, as shown in Figure 1. As illustrated in **Figure 5**, the location of Alternative F1 Modified is within the range of trial and concept segments used to develop the build alternatives considered within that study area. Section IIIB corresponds to segments 303, 238, 237, and a portion of segment 302 of the Alternative F1 corridor that was selected in the ROD. Alternative F1 Modified shifts the Alternative F1 corridor by at most approximately 1.5 miles and actually overlaps at several points, and it crosses similar terrain. Alternative F1 and all of the other alternatives considered in the FEIS were found to result in impacts to forests, water quality, and wildlife habitat, so Alternative F1 Modified is not unique in that regard. Most of the area remains primarily forested with limited residential or commercial development occurring in some areas along secondary roads and U.S. Route 460. As indicated in the November 2001 ROD, Alternative F1 was identified as the selected alternative because it satisfies the purpose and need while providing a reasonable balance of the many environmental, social, economic, and engineering issues involved.

Table 1 summarizes the environmental studies conducted and documents the changes that have occurred in the project and its impacts. **Table 2** quantifies and compares impacts reported in the 2001 FEIS for Alternative F1 for Section IIIB with updated values for Alternative F1 and Alternative F1 Modified. Because alternatives in the FEIS were represented as 750-foot-wide corridors, most of the impacts calculations are based on 750-foot-wide corridors. Exceptions include the connector between the mainline of Alternative F1 Modified and existing U.S. Route 460 where conceptual design efforts were undertaken in coordination with the Town of Grundy's Town Manager to address community impact concerns. In this instance, conceptual construction limits were used to calculate impacts. Other exceptions include Alternative F1 Modified's crossings of Poplar Creek and Levisa Fork. In these instances, conceptual bridge configurations have been identified to reduce stream and floodplain impacts and impacts were calculated based on the bridge footprint rather than a 750-foot-wide corridor footprint.

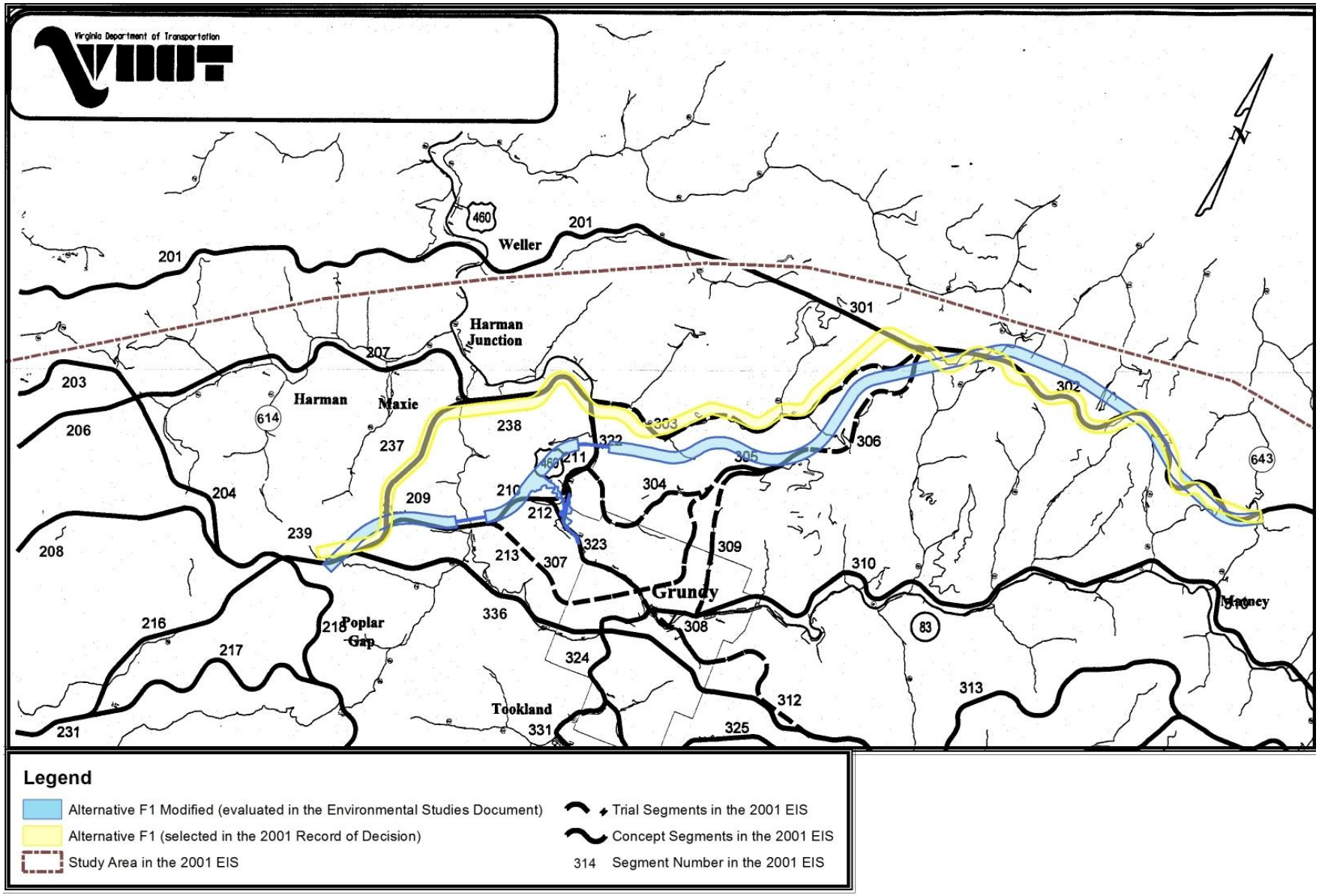


FIGURE 5. ALTERNATIVES F1 & F1 MODIFIED WITH TRIAL AND CONCEPT SEGMENTS

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
TRANSPORTATION			
Traffic Volumes/ Patterns/Time Transportation Plan	Traffic forecast updated from 2020 design year to 2035 design year. Review of FEIS, Alternative F1 Modified and Alternative F1 corridors, ongoing projects and studies in surrounding area; and Buchanan County Comprehensive Plan.	Change in forecasted volumes due to extension of design year to 2035.	Traffic forecasts were updated and show between 17% and 47% increase in average daily traffic volumes, depending on the location, by new design year of 2035 over volume reported in FEIS for 2020 (from 12,500 to 14,600 vehicles per day on the most heavily traveled section west of existing U.S. Route 460; from 3,200 to 4,700 in vicinity of Route 642.) Phase I of the U.S. Route 460 Connector is currently under construction, and its completion would provide access to the U.S. Route 460 reconstruction project in Kentucky, which is currently under construction, and would connect at VA 80 in Buchanan County, Virginia. It would also provide a serviceable connection to Breaks Interstate Park. A Finding of No Significant Impact was issued in 2010 for Phase II, and a Design-Build contract for this portion of the U.S. Route 460 Connector was executed on July 31, 2013. The location of the U.S. Route 460 Connector in relation to U.S. Route 121 is shown in Figure 3. Note that the U.S. Route 460 Connector is a new roadway facility separate from existing U.S. Route 460, which is also shown in Figure 3. The *Economic Impact of the Coalfields Expressway in the CFX Corridor in Virginia and West Virginia* report was completed in January 2013 by Chmura Economics & Analytics. The study found that "The construction and ongoing existence of the Coalfields Expressway (CFX) will inject hundreds of millions of dollars into the CFX Corridor and provide jobs for workers in construction, retail, service, and warehouse industries. The annual economic impact is estimated to be $215.3 million that sustains 1,067 jobs in 2035 after construction is complete." The study also concluded that in Virginia, the heaviest traffic would occur where U.S. Route 121 meets U.S. Route 460 near the town of Grundy, which is the county seat of Buchanan County. The access point in Buchanan County crossing U.S. Route 460 Connector is identified as an economic integration interchange in the study, which is a location close to a town that would have a relatively high volume of traffic. These access points have more gas stations, hotels, and restaurants because they serve motorists as well as local residents.
SOCIOECONOMICS AND LAND USE			
Land Use Conversion	Review of FEIS, aerial photo mapping, field review, and analysis of modified alternative.	Smaller size of project "footprint": approximately 1,369 acres for Alternative F1 corridor compared to approximately 1,220 acres for Alternative F1 Modified, including connection to existing U.S. Route 460.	The Alternative F1 corridor extends approximately 15.1 miles and Alternative F1 Modified extends approximately 14.9 miles (13.7 miles along the mainline and 1.2 miles along the connection to existing U.S. Route 460). Although some of the Alternative F1 Modified corridor is shifted from the original selected Alternative F1 corridor, the land uses to be converted to highway right of way are similar in character to land uses under the original selected corridor.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
Development	Review of aerial photo mapping and field review.	Minor change.	Some new development has occurred along existing U.S. Route 460 and some new homes have been constructed along some secondary roads. However, overall, development in the vicinity of the project has not been substantial.
Consistency with Area's Comprehensive Plan	Comprehensive plan review.	No change.	The project is still consistent with the Buchanan County Comprehensive Plan.
Populations	Review of FEIS and 2010 U.S. Census data. Field review.	Minor change.	While the corridor shifts would impact areas not impacted by the original selected corridor, the character and magnitude of those impacts are not substantially different from those addressed in the FEIS. The general affected population is substantially the same.
Emergency Services	Review of FEIS and field review.	Minor change.	Generally, Alternative F1 Modified is parallel to and offset from the original selected F1 corridor. With the addition of a connection between U.S. Route 121 and existing U.S. Route 460, the benefits to emergency services should be somewhat better.
Potential Residential Relocations	Review of FEIS and aerial mapping. Field review.	FEIS reported 41 residential relocations for Alternative F1 in the segments corresponding to Section IIIB. Alternative F1 Modified would result in approximately 28 residential relocations.	Residential properties that were not previously affected by Alternative F1 would be impacted by Alternative F1 Modified. However, the total number of residences displaced would be 28, which is fewer than the 41 residences that would be displaced by Alternative F1. The impacted residences are concentrated primarily where the proposed corridor crosses or approaches existing secondary roads (Routes 614, 604, 656, 642, 643) and U.S. Route 460. Of particular note is the section of existing U.S. Route 460 at the Town of Grundy. The proposed spur that would connect U.S. Route 121 with existing U.S. Route 460 is located partially along existing U.S. Route 460. VDOT has met with Grundy's Town Manager to review potential preliminary design options at this location and it appears that the road could be designed in a way that would avoid most of the potential displacements at this location. Consequently, while most of the residential relocation impacts would occur at different locations than under the original selected Alternative F1 corridor, the character of those impacts is similar while the magnitude is lower. Any right of way acquired for the roadway would be purchased in accordance with established VDOT procedures and requirements of the federal *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended. Assurance is given that relocation resources will be available to all residential, business, farm, and nonprofit displacees without discrimination. In addition, all displaced families and individuals will be relocated to suitable replacement housing; all replacement housing will be fair housing available to all persons without regard to race, color, religion, sex, or national origin; and all replacement housing will be within the financial means of the displacees. Each person will be given sufficient time to negotiate for and obtain possession of replacement housing. No residential occupants will be required to move from property needed for the project until comparable decent, safe, and sanitary replacement dwellings have been made available to them.
Environmental Justice Populations	Review of FEIS & 2010 U.S. Census data. Field review.	No change.	No new minority or low-income populations have been identified that would experience disproportionately high and adverse impacts.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
Business Relocations	Review of FEIS and aerial mapping. Field review.	The FEIS reported one business relocation in the segments corresponding to Section IIIB. Alternative F1 Modified would not result in any business relocations.	The proposed connector between the mainline of Alternative F1 Modified and existing U.S. Route 460 at the Town of Grundy is located partially along existing U.S. Route 460. At this location, some conceptual engineering was conducted in coordination with the Grundy Town Manager in order to address concerns about potential business displacements, and business relocation impacts were calculated accordingly, i.e., to reflect the estimated construction limits and a bridge across Levisa Fork rather than a 750-foot-wide corridor as was assumed for the mainline calculations. As a result, no existing businesses would be impacted by Alternative F1 Modified. An electrical substation is located adjacent to the Alternative F1 Modified corridor just north of Route 3030 (Six and Twenty Mile Branch Road) off of U.S. Route 460, adjacent to Levisa Fork. A bridge would be constructed at this location to span Levisa Fork, which would also avoid the substation; therefore, the substation is not expected to be impacted.
Visual and Aesthetics	Review of FEIS and aerial mapping. Field review.	Minor change.	While the corridor shifts would impact areas not impacted by Alternative F1, the character and magnitude of those impacts are not substantially different from those addressed in the FEIS. The general effect of Alternative F1 Modified on the viewshed is substantially the same.
Farmlands	Review of FEIS. Update NRCS CPA-106 Form for both Alternative F1 and Alternative F1 Modified.	No change.	Previous NRCS review for the FEIS noted no prime farmland in the vicinity of the project. Updated coordination with NRCS and updates to the CPA 106 Forms for both Alternative F1 and Alternative F1 Modified has confirmed that there is no prime farmland within either alternative.
NOISE			
Noise Criteria	Review of FEIS findings, FHWA's Noise Abatement Criteria, and VDOT guidance.	No substantial change.	FHWA issued new noise regulations effective July 13, 2011 (*Procedures for Abatement of Highway Traffic Noise and Construction Noise*, 23 CFR 772). The new regulations provide clarification on applicability, certain analysis requirements, and the use of Federal funds for noise abatement measures. In addition, two new activity categories were added to the noise abatement criteria (NAC), and the activity descriptions were expanded to better describe the types of facilities that would fall into each category. The numerical values of the criteria, however, have not changed. For example, the NAC for Activity Category B (residential), which is most applicable to Section IIIB, is still 67 dB(A).
Existing Noise Conditions	Review of FEIS and aerial mapping and plans. Field review.	Minor change.	The FEIS analysis predicted noise levels well below the NAC and no receptors located within segments corresponding to Section IIIB were identified as being affected. While forecasted traffic volumes have increased due to extension of the design year farther into the future, the increases are not substantial enough to meaningfully change the noise analysis results from the FEIS. Further, with the shifted location of portions of the corridor, the distance to receptors that could be potentially affected shifted as well. The conclusions of the FEIS regarding noise impacts are also transferrable to the new receptors. The noise analysis will be updated prior to construction.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
AIR QUALITY			
Existing Conditions	Review of FEIS, Virginia Ambient Air Monitoring Data Report for 2012, and VDEQ website.	Minor change.	The project is located in an area that is in attainment of all National Ambient Air Quality Standards (NAAQS). As such, regional air quality conformity requirements do not apply. The results of the previous air quality modeling for the EIS showed that no violations of NAAQS were expected. Since the study area and expected use of the facility have not substantially changed, and since the updated traffic volumes are well below the threshold for consideration of quantitative analyses of carbon monoxide per the VDOT-FHWA Project-Level CO Air Quality Studies Agreement, the project is not expected to interfere with the attainment or maintenance of the NAAQS.
Regional Compliance with the PM Standards	Review of VDEQ website for current attainment status.	No substantial change.	The project is located in Attainment Area for PM_{10} and $PM_{2.5}$ NAAQS. On December 14, 2012, EPA announced a final rule establishing a new small particulate matter ($PM_{2.5}$) NAAQS. The rule was published in the January 15, 2013 Federal Register (FR 78:10, 3086). The rule revises 40 CFR 50.18 with regard to primary (health-based) standards for fine particles (generally referring to particles less than or equal to 2.5 micrometers (µm) in diameter) and lowers the annual $PM_{2.5}$ standard to 12.0 micrograms per cubic meter (µg/m3) (annual arithmetic mean) and retains the 24-hour $PM_{2.5}$ standard at 35 µg/m3 (24-hour average). For initial nonattainment area designations for the primary annual $PM_{2.5}$ NAAQS, EPA will rely exclusively on monitoring data and intends to designate areas on a two-year schedule from signature of the final rule, as prescribed in Clean Air Act Section 107. The latest available air quality monitoring data *Virginia Ambient Air Monitoring 2011 Data Report*. Virginia Department of Environmental Quality, published October 2012) suggest that the region is and will remain in attainment for the new standard.
Regional Compliance with the Ozone Standards	Review of VDEQ website for current attainment status.	No change.	The project is located in Attainment Area for ozone.
Air Toxics Analysis	Review of VDEQ, EPA, and FHWA websites for current guidance.	Not addressed in FEIS.	Mobile source air toxics (MSATs) were not evaluated in the FEIS. On December 6, 2012, FHWA issued updated guidance regarding mobile source air toxics (*Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*). The purpose of the memorandum was to update the September 2009 Interim Guidance that advised FHWA Division offices on when and how to analyze MSAT under the NEPA review process for highway projects. The update reflects recent changes in methodology for conducting emissions analysis and new research in the MSAT arena. EPA released the latest emissions model, the Motor Vehicle Emissions Simulator (MOVES) in 2010 and started a two-year grace period to phase in the requirement of using MOVES for transportation conformity analysis. On February 8, 2011, EPA issued guidance on using the MOVES and EMission FACtors (EMFAC) Models in NEPA evaluation that recommended the same grace period be applied to project-level emissions analysis for NEPA purposes. As such, at the end of the grace period, i.e., beginning December 20, 2012, project sponsors are required to use MOVES to conduct emissions analysis for NEPA

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			purposes. To prepare for the transition, FHWA updated the September 2009 Interim Guidance to incorporate the analysis conducted using MOVES. Based on FHWA's analysis using MOVES2010b, the latest version of MOVES, diesel particulate matter (diesel PM) has become the dominant MSAT of concern. The guidance also provides an update on the status of scientific research on air toxics. The update supersedes the September 2009 Interim Guidance, reflects recent regulatory changes, projects national MSAT emission trends out to 2050 using EPA's MOVES2010b model, and summarizes recent research efforts; however, it does not change any project analysis thresholds, recommendations, or guidelines. The MSAT guidance includes specific criteria for determining which projects are to be considered exempt from mobile source air toxics (MSAT) analysis requirements and which may require a qualitative or quantitative analysis. In accordance with the guidance, FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances: 1) projects with no potential for meaningful MSAT effects, no analysis required; 2) projects with low potential MSAT effects (projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic), qualitative analysis; and 3) projects with higher potential MSAT effects (projects with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000[5] or greater), quantitative analysis. Based on FHWA guidance, the Section IIIB project has low potential for MSAT effects because the forecasted daily traffic for the project is well below the thresholds (i.e., 140,000 to 150,000 ADT) where the potential for MSAT effects increase or MSAT effects from a project become a concern. Furthermore, total MSAT emissions are virtually certain to 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 83 percent from 2010 to 2050. Under either Alternative F1 Modified or Alternative F1, there may be localized areas where MSAT could increase and other areas where MSAT could decrease. Regardless, even if localized increases do occur in some areas, total MSAT emissions will be substantially lower in future years due to fleet turnover and the implementation of EPA's vehicle and fuel regulations.
NATURAL RESOURCES			
Native Wildlife	Review of FEIS and Natural Resources Technical Report and coordination with regulatory agencies.	No substantial change.	The FEIS documented the habitat loss as minor primarily because it constituted less than one half of one percent of the total forested land in Buchanan and Dickinson Counties. A similar amount of habitat would be lost as a result of the change in the corridor along Section IIIB; therefore, habitat loss with Alternative F1 Modified is also considered minor given the existing conditions within the study area and the context of the project.
Existing Vegetation	Review of FEIS and Natural	No substantial change.	See above under Native Wildlife. Also, the two corridors are at most approximately 1.5 miles

[5] Using EPA's MOVES2010b emissions model, FHWA staff determined that this range of AADT would result in emissions significantly lower than the Clean Air Act definition of a major hazardous air pollutant source.

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
	Resources Technical Report and coordination with regulatory agencies.		apart and overlap at several points. The areas of forest habitat through which Alternative F1 Modified pass are similar to the areas already documented as needing to be impacted in the FEIS. However, this amount still is relatively small compared to total forested habitat area in the county.
Threatened & Endangered Species	Review of FEIS, Natural Resources Technical Report, and Biological Assessment; data collection/research; coordination with regulatory agencies; field reconnaissance; USFWS IPaC online project review process.	Possible change.	The FEIS reported studies of three federally listed species: Virginia spiraea, small whorled pogonia, and Indiana Bat. Through extensive coordination with the U.S. Fish and Wildlife Service (USFWS) and Virginia Department of Conservation and Recreation (VDCR) and intensive field surveys of potential habitat areas at four sites in Buchanan County, it was determined that Virginia spiraea and the small whorled pogonia were not present within the study area and would not be impacted. Winter habitat areas for the Indiana bat were surveyed and no threatened or endangered bat species were found. A summer habitat assessment determined that only 3.1% of forested land within a two mile radius of the selected corridor would be impacted, leaving sufficient suitable habitat. Further, it was agreed that clearing trees within the project limits and buffer area would not occur between April 1 and November 15 of each year. A scoping letter was sent to USFWS in September 2008; no reply was received to correspondence specifically for Section IIIB. However, correspondence received in May 2008 for the adjacent construction project, Section IIIC, identified no federally listed threatened or endangered species recorded in Buchanan County that were not addressed in the FEIS. The official species list was updated as part of the environmental studies for Alternative F1 Modified by completing the online project review through USFWS's Information, Planning, and Consultation (IPaC) system. This recent consultation was conducted for both Alternative F1 Modified and Alternative F1. Both lists consisted of the following endangered species, and the resulting conclusions for each (based on the IPaC process, not actual observations or records of actual occurrences) are also provided below: Indiana Bat (*Myotis sodalis*) – species present in the corridor. The project may adversely affect the Indiana Bat. Northern Long-Eared Bat (*Myotis septentrionalis*) – species present in the corridor. The project may adversely affect the Northern Long-Eared Bat. Note that this species is currently <u>proposed</u> for listing as endangered. On October 2, 2013, USFWS announced a 12-month finding on a petition to list the northern long-eared bat as endangered under the Endangered Species Act of 1973, as amended (Act) and to designate critical habitat (Federal Register / Vol. 78, No. 191). After review of the best available scientific and commercial information, USFWS found that listing the northern long-eared bat is warranted. However, while proposed to be listed as an endangered species throughout its range under the Act, its critical habitat was found to be not determinable at this time. Due to substantial disagreement regarding the sufficiency or

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			accuracy of the available data relevant to its determination regarding the proposed listing, USFWS announced on June 30, 2014 an extension of the comment period and the final determination to list the species. A listing determination is now expected on or before April 2, 2015 (Federal Register / Vol. 79, No. 125) This proposed rule, if finalized, would extend the Act's protections to the northern long-eared bat. Virginia Big-Eared bat (*Corynorhinus (plecotus) townsendii virginianus*) – species may be present due to suitable habitat present similar to that of known occurrences. The project may adversely affect the Virginia Big-Eared Bat. Virginia spiraea (*Spiraea virginiana*) - surveys conducted as part of the FEIS in Buchanan County found no Virginia spiraea at survey sites and confirmed lack of suitable habitat in Section IIIB. Based on the survey findings, the project would not affect Virginia spiraea. The two corridors are not a great distance apart (no more than approximately 1.5 miles) and overlap at several points. The areas through which Alternative F1 Modified passes are similar to the areas already documented as needing to be cleared in the FEIS and would not significantly change or increase potential impacts. In previous coordination, USFWS recommended that, because of the possibility that survey protocols may be altered over time, further coordination be undertaken with USFWS in the future closer to construction regarding survey recommendations. VDOT has previously committed that clearing trees within the project limits and buffer area would not occur between April 1 and November 15 of each year to minimize potential effects to Indiana bats during summer foraging and roosting.
Critical Habitat	Review of FEIS and Natural Resources Technical Report; data collection/research; USFWS IPaC online project review process.	No change.	No Critical Habitat currently designated within the project study area.
Wildlife and Waterfowl Refuges	Review of FEIS and Natural Resources Technical Report, data collection/research, coordination with regulatory agencies.	No change.	No wildlife or waterfowl refuges are within or proximate to the study area.
Surface Waters	Review of FEIS, new mapping, 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report, 2013 National	Estimated stream impacts (see **Figure 6**) total approximately 2.6 linear miles for Alternative F1 Modified and 1.8 miles for Alternative F1 using NHD (the	Unavoidable impacts are anticipated; however, minimization measures will be developed in consultation with the permitting agencies to offset those impacts. A decision regarding the approach to stream crossings will be made during final design; it is anticipated that a variety of methods will be utilized, such as culverts, bridges, and fills in combination with french drains. The methods will be coordinated with the appropriate permitting agencies as part of the Section

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
	Hydrography Dataset (NHD).	estimate in the FEIS for applicable segments was approximately 1.6 linear miles of stream impacts). **Table 3** lists the impaired waters within Section IIIB that were identified in the FEIS, and also lists additional waters within the section designated as impaired since completion of the FEIS. **Figure 7** shows the locations of impaired waters in relation to Alternative F1 and Alternative F1 Modified.	404 permitting process and the results of the Section 404 permitting process will be documented in a NEPA reevaluation. At this stage of project development, detailed hydraulic studies have not been completed to conclusively determine the sizes and types of drainage structures that would be needed. Compensation for unavoidable impacts will follow the US Army Corps of Engineer's Final Compensatory Mitigation Rule that standardizes mitigation nationally. This compensation follows a hierarchy of preferred mitigation approaches that include: 1) mitigation banks; 2) in-lieu fees; and 3) permitee-responsible mitigation. Compensation for impacts would be provided as part of the permit conditions for any authorizations issued by the USACOE and VDEQ. Because these agencies determine the compensation requirements for stream impacts on a case-by-case basis, the quantitative requirements for the project would be determined with them as part of the permit application process. Compensation may involve enhancement or restoration to stream and riparian areas, use of credits from an approved stream mitigation bank, or payments to the Virginia Wetlands Restoration Trust Fund.
Public Water Supply	Review of FEIS and project plans.	No substantial change.	No public water supply sources in project vicinity.
Fish	Review of FEIS & Natural Resources Technical Report, coordination with regulatory agencies.	No substantial change.	As indicated in the FEIS, the build alternatives are not expected to substantially further impair the area's water quality, and Alternative F1 Modified generally crosses the same water bodies as those build alternatives. During the design phase, VDOT would consider bridge designs and other measures that would limit impacts. This may include placing piers outside of streams and the use of bottomless or countersunk culverts. Conceptual configurations for bridges already have been identified for crossings of Poplar Creek and Levisa Fork.
Submerged Aquatic Vegetation	Review of FEIS & Natural Resources Technical Report, coordination with regulatory agencies.	No substantial change.	Alternative F1 Modified generally crosses the same water bodies as Alternative F1 would cross. Accordingly, any impacts to submerged aquatic vegetation would not be expected to be materially different. Project construction may result in short-term impacts from sedimentation. To minimize these impacts, appropriate temporary and permanent erosion and sediment control practices would be implemented in accordance with state and federal regulations.
Benthos	Review of FEIS & Natural Resources Technical Report, coordination with regulatory agencies.	No substantial change.	Three of the streams within the study area have impaired water quality due to mining activity and untreated sewage discharges and therefore have limited benthic communities (see Table 3). While streambed impacts have increased, significant impacts to the limited benthic communities are not anticipated.
Floodplains	Review of FEIS, Natural Resource Technical Report, current mapping, and Federal Emergency Management Agency (FEMA) 100-year floodplain mapping (latest update	The FEIS reported that Alternative F1 would have no floodplain impacts because floodplains would be spanned with bridges. Notwithstanding, the bridges still would constitute floodplain "encroachments" as	Both Alternative F1 and Alternative F1 Modified would have two floodplain crossings, which would be accomplished with bridges. Alternative F1 would in addition run adjacent and parallel to the Looney Creek floodplain. Alternative F1 Modified would in addition have a minor encroachment on the Levisa Fork floodplain at a location where the existing U.S. Route 460 is already within the floodplain (see Figure 7). Under either alternative, floodplain crossings would be designed so that potential increases in

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
	1/12/01)]; review of conceptual design sketches for U.S. Route 460 connecting roadway at Town of Grundy.	defined in 23 CFR 650.105(e). The locations of bridge crossings of floodplains would be at Levisa Fork and Looney Creek. Alternative F1 Modified likewise would utilize bridges to span floodplains associated with Levisa Fork at two locations, one on the mainline of the proposed Section IIIB roadway and one on the connecting roadway to existing U.S. Route 460 at Grundy. Additionally, existing U.S. Route 460 traverses approximately 0.4 acres of Levisa Fork floodplain where the new connector road would tie into the existing road. This is not considered a new encroachment and is not counted as a new floodplain impact. Figure 7 shows the relationships of the alternatives to floodplains.	flood levels would be minimal and that no floodplain encroachments would increase the probability of flooding or the potential for property loss and hazard to life during the service lives of any bridges or other drainage structures and their roadway approaches. Therefore, neither of the alternatives would have any effect on flooding risks. Neither of the alternatives would be expected to have substantial effects on fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, groundwater recharge, and other natural and beneficial floodplain values. Neither alternative would encourage, induce, allow, serve, support, or otherwise facilitate additional or incompatible base floodplain development. The floodplain encroachments would not be "significant encroachments" (as defined in 23 CFR 650.105(q)) because: • They would pose no significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or that provides a community's only evacuation route. • They would not pose significant flooding risks. • They would not have significant adverse impacts on natural and beneficial floodplain values. Therefore, the project would be consistent with Executive Order 11988, *Floodplain Management*, which prohibits federal support of incompatible floodplain development unless there is no practicable alternative, and no Floodplain Finding in accordance with Executive Order 11988 is required. Any construction occurring within the 100-year floodplain would be conducted in accordance with all applicable regulations and follow proper permitting procedures and guidelines in accordance with Executive Order 11988, *Floodplain Management.* Further, VDOT's Drainage Manual, Section 12.4.1, states in part, "*Regardless of whether a bridged waterway, culvert, lateral encroachment or stream restoration is being evaluated, in situations where a FEMA or other officially delineated floodplain is being considered, no increase in the established natural 100-year flood level will be permitted either up or downstream."* Sections 107 and 303 of VDOT's specifications require the use of stormwater management practices to address concerns such as post development stormflows and downstream channel capacity, designed to reduce stormwater flows to preconstruction conditions for up to a 10-year storm event. Compliance with any other applicable state or federal stormwater management requirements will be finalized during final design, when a detailed hydraulic survey and study would evaluate specific effects on stormwater discharges; this evaluation would adhere to the aforementioned specifications ensuring that no substantial increases to flooding would occur..

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
Wetlands	Review of FEIS, Natural Resources Technical Report, 2012 USDA NAIP aerial mapping, and 2013 National Wetlands Inventory (NWI).	Wetland impacts were reported to be 0.36 acres for Alternative F1 in the FEIS. However, note that some of the classes reported as "wetlands" (i.e., PUBs) are actually water and not wetland as defined by the Corps in its regulatory definition. Review of the 2013 NWI database indicates that there are no wetlands within either the Alternative F1 Modified or Alternative F1 750-foot corridors.	Wetland delineation surveys would be completed during the design process. If wetlands not identified as part of the NWI review are identified during delineation all available measures will be taken to avoid the impacts. Where wetlands cannot be avoided, impacts will be minimized by measures such as minor shifts in alignment, temporary or permanent stormwater management measures, linear crossings, and best management practices that will be incorporated into the design. Compensation for unavoidable impacts will follow the U.S. Army Corps of Engineers' (COE) Final Compensatory Mitigation Rule that standardizes mitigation nationally. This compensation follows a hierarchy of preferred mitigation approaches that include: 1) mitigation banks; 2) in lieu fees; and 3) permitee-responsible mitigation. Compensation for impacts would be provided as part of the permit conditions for any authorizations issued by the COE and the Virginia Department of Environmental Quality (VDEQ). Because these agencies determine the compensation requirements for wetland impacts on a case-by-case basis, the quantitative requirements for the project would be negotiated with them as part of the permit application process.
Energy	Review of FEIS, new traffic forecast, design changes.	Minor change.	
Hazardous Waste Sites	Review of FEIS and field review.	No change.	No new hazardous waste sites have been identified.
HISTORIC & ARCHAEOLOGICAL RESOURCES			
Architectural Resources	Architectural survey of new Area of Potential Effects (APE). Virginia Cultural Resource Information System (VCRIS) review.	Minor change.	One NRHP-eligible architectural property, Hemlock Farm (VDHR #013-5027), was identified in the APE. The Virginia Department of Historic Resources (VDHR) concurred 3/19/09 that the property is eligible. The corridor has been shifted to avoid the property. VDHR concurred on 2/28/11 that the project would have no effect on historic properties.
Archaeological Resources	Archaeological survey of new APE. Virginia Cultural Resource Information System (VCRIS) review.	No change.	No new NRHP-eligible archaeological sites were identified in the APE. VDHR concurred on 12/4/08 with these findings. Coordination with Native American tribes with potential interest in the study area was undertaken. Tribes that responded requested continuing coordination should cultural resources be discovered during construction. VDHR concurred on 2/28/11 that the project would have no effect on historic properties.
INDIRECT & CUMULATIVE IMPACTS			
Socioeconomic Impacts	FEIS review, field review.	No substantial change.	Part of the project's purpose and need is to improve the ability of local economic development officials to attract new industry and tourism to the area. Although improvements to transportation infrastructure do not guarantee actual attraction of economic development in a given area, adequate transportation facilities can provide improved access and mobility that support efforts of local government and economic development officials to attract new industry and business development. For the EIS, indirect and cumulative impacts were evaluated for

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			the study area. Estimates were developed for potential industrial growth areas, commercial development areas, and residential development areas. In addition to transportation considerations, the locations of such areas were guided by topography (i.e., areas without steep slopes that would limit the ability to develop); existing and potential access to population and employment centers; and proximity to existing or proposed water and sewer services. Within Section IIIB, potential industrial growth areas were in the vicinity of Grundy. The EIS acknowledged the difficulty of predicting exactly where commercial development may occur. However, commercial development traditionally has occurred within communities and along major roadways and this trend is expected to continue. Therefore, in Section IIIB, the principal commercial development areas would consist largely of areas within and around the Town of Grundy, although such development would also be expected in the vicinity of industrial development areas. Predicting locations of residential development areas is also difficult, given that residences can be built almost anywhere with proper engineering. However, based on past trends across the study area, residential growth would generally be expected to occur along secondary roads, within or near existing communities, such as Grundy, and near potential industrial development areas. The general assumptions and conclusions in the FEIS regarding indirect and cumulative socioeconomic impacts remain valid.
Natural Resource Impacts	FEIS review, field review, review of coal mining data sources and TMDL reports.	No substantial change.	The EIS contained estimates for wetlands, waters, and forested land impacts associated with potential industrial development sites. For industrial development sites in the Section IIIB area and in the vicinity of Alternative F1, the estimates were 0.8 acres of wetland, 155 linear feet of stream, and 131 acres of forestland. Because of the uncertainty associated with potential locations of commercial and residential development, no reasonably reliable estimates of indirect and cumulative impacts associated with such developments were possible. There is no new information available that would provide any basis for meaningful changes to the previous analysis with respect to future development. Mining activities constitute another source of cumulative impacts to natural resources. According to available data, in 1933 approximately 279,000 tons of coal were mined in Buchanan County. Peak production reached approximately 20.8 million tons in 1990. Production has been declining ever since and stood at approximately 8.1 million tons in 2008. Approximately 837 million tons of coal have been produced in Buchanan County from 1933 to 2008 (the date range included in the data set). The same data set indicated that in 2008 there were 23 active surface mines and 21 active underground mines in Buchanan County (*Energy Patterns and Trends*). The impacts of mining include land disturbance, displacement of vegetation and wildlife habitat, displacement of streams (primarily ephemeral streams and some intermittent streams, rarely perennial streams under current permitting regimes), and degradation of water quality (acidification, elevated levels of dissolved and suspended solids, and increased conductivity).

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			Because no information is available with respect to the natural resources conditions existing at the time of mining activities over the last several decades, it is not possible to reliably estimate the resulting impacts of those activities. However, it can be assumed that the current impaired conditions of some streams across the study area do reflect in part the accumulated consequences of long-term mining in Buchanan County. Under current mine permitting requirements, adverse impacts are offset by mitigation measures, which include reclamation of mined lands (restoration to approximate original contours and reestablishment of vegetation), sediment controls, and stream and wetland mitigation. Mining activities, especially pre-SMCRA activities on now-abandoned mine lands, are blamed in part for the stream impairments in Levisa Fork (see Table 3) that have led to development of total maximum daily load (TMDL) requirements. Most (approximately 938 acres or 77%) of the project corridor crosses the Levisa Fork watershed. The Buchanan County portion of the Levisa Fork watershed encompasses approximately 196,297 acres. So the project would convert less than 0.5% of the watershed to highway use. In contrast, approximately 3,873 acres within the watershed are under active mining and approximately 9,973 acres are abandoned mine lands according to the Virginia Department of Environmental Quality's 2011 report, *E. coli, Phased Benthic, and Phased Total PCB TMDL Development for Levisa Fork, Slate Creek, and Garden Creek*. The elimination or reduction of pollution loads from abandoned coal mined lands is typically necessary for the state to meet the allocations prescribed in Virginia's resource extraction TMDLs. The DMLR's efforts to eliminate and reduce pollution from abandoned mine lands will continue in the TMDL watershed. These efforts will include utilization of abandoned mine land program funding, including the U. S. Office of Surface Mining's annual grants, Clean Streams Initiative, and Acid Mine Drainage set-aside provisions, to remediate abandoned mine land problems within the watershed. DMLR also recognizes that assistance is needed with abandoned mine land reclamation and will encourage assistance from Virginia's active coal mining industry. Several approaches, consistent with this recognition, will be implemented including re-mining and reclamation, Rahall permits, abandoned mine land enhancements, and TMDL offsets. Because the coal synergy concept would be used to implement the project, consideration of the linkage, if any, between the project and future coal mining is in order. While the proposed Alternative F1 Modified corridor would cross lands on which mineral rights are controlled by coal companies, there are no current or pending mining applications on those lands. Moreover, it is not 100% certain that coal would actually be encountered on those lands crossed by Alternative F1 Modified. Accordingly, based on currently available information, it is not expected that the project would indirectly cause the development of future coal mines in the vicinity of the corridor. If any mines are developed outside the corridor limits in the future, they would be

TABLE 1. EVALUATION OF SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

Issue or Area of Concern	Method of Review	Impact Change	Comments
			subject to normal permitting and environmental review processes of the regulatory agencies. If coal is encountered within the corridor, any recovery of it would be subject to the GFE process described earlier in Section 3. Given the size of the land disturbing and natural resource impacts of the project in comparison to those of mining over the last several decades, and given the environmental control and mitigation measures to be implemented in concert with construction of the project, the incremental consequences of the project when added to other past and reasonably foreseeable future actions (i.e., cumulative impacts) are not expected to be substantially different from those reported in the FEIS.
CONSTRUCTION IMPACTS			
Air Quality	FEIS review.	Minor change.	
Noise	FEIS review.	Minor change.	
Water Quality	FEIS review.	Minor change.	
Pollution Control	FEIS review.	No substantial change.	
MITIGATION MEASURES			
Relocations		No substantial change.	
Farmlands		N/A	
Noise	FEIS review.	N/A	No impacts.
Threatened & Endangered Species	FEIS review; information from USFWS, VDCR, and VDGIF.	No change.	To protect potential populations of Indiana bats, clearing trees within the project limits and buffer area would not occur between April 1 and November 15 of each year.
Floodplains	FEIS review.	No change.	Floodplains will be bridged to the extent practicable.
Wetlands	FEIS review.	No change.	
Water Quality	FEIS review.	No change.	
Hazardous Waste Sites	FEIS review	No change.	
Construction Impacts	FEIS review	No change.	
Air Quality	FEIS review.	No change.	
Maintenance & Control of Traffic	FEIS review.	No change.	
Health & Safety	FEIS review.	No change.	
Pollution Control	FEIS review.	No change.	

TABLE 2. SUMMARY OF IMPACTS

Category	Alternative F1 2001 FEIS Values	Alternative F1 Updated Values	Alternative F1 Modified [9]
Total Area within Alternative (acres within 750-foot corridor)	1,369	1,369	1,220
Homes[1]	41	40	28
Businesses[1]	1	1	0
Schools[1]	0	0	0
Churches[1]	1*	0	0
Cemeteries[1]	0	0	0
Other Community Facilities (rescue squads, fire stations, etc.) [1]	0	0	0
Prime and Unique Farmland (acres) [2]	0	0	0
Forest (acres) [3]	444.8**	1,264	1,091
Section 4(f) Property (acres)[1,4]	0	0	0
Parks and Recreational Resources[1]	0	0	0
Historic Properties affected[4]	0	0	0
Length of Streams (miles)[5]	1.6	1.8	2.6
Wetlands (acres)[6]	0.36	0	0
Floodplains filled (acres) [7]	0***	0***	0***
Noise Impacts (Number of Receptors Impacted)	0	0	0
Hazardous Material Sites Impacted (number of sites) [8]	4	1	0

NOTE: The Alternative F1 2001 FEIS Values reported in this table were calculated by summing the impacts for Segments 303, 238, 237, and 302, as presented in Chapter 4, Environmental Consequences, of the 2001 FEIS. The numbered footnotes below are applicable to the Alternative F1 Updated Values and Alternative F1 Modified only:

[1] Google Earth, accessed April 2014.
[2] Natural Resources Conservation Service, United States Department of Agriculture Web Soil Survey, accessed April 2014.
[3] National Landcover Dataset, 2006.
[4] Virginia Cultural Resource Information System, accessed April 2014.
[5] National Hydrography Dataset, 2013.
[6] National Wetlands Inventory, 2013
[7] National Flood Hazard Layer, Buchanan County (2001), Federal Emergency Management Agency.
[8] Google Earth, accessed April 2014; Environmental Protection Agency, Virginia Department of Environmental Quality, and USDOT Pipeline and Hazardous Materials Safety Administration on-line datasets.
[9] NOTE: For the connector between mainline Alternative F1 Modified and existing U.S. Route 460 at the Town of Grundy, some conceptual engineering was conducted in coordination with the Grundy Town Manager in order to address concerns about potential business and residential displacements. Accordingly, the impacts calculations for the U.S. Route 460 connecting road and transition to existing U.S. Route 460 portions of Alternative F1 Modified reflect estimated construction limits rather than a 750-foot-wide corridor as was assumed for the mainline calculations. Additionally, given the sensitivity of stream and floodplain impacts, preliminary bridge concepts have been identified for crossings of Poplar Creek and Levisa Fork and these also are reflected in the calculations.

* FEIS reported that Segment 237 would impact the Poplar Creek Pentecostal Church of God; however, this church could not be found on recent aerial mapping or through online research.
** FEIS reported forest impacts for an estimated impact width of 300 feet.
*** No floodplain impacts were reported in the FEIS because it was assumed that floodplains, such as the one at Levisa Fork, would be bridged. Likewise, floodplain crossings for Alternative F1 Modified would also be on bridges.

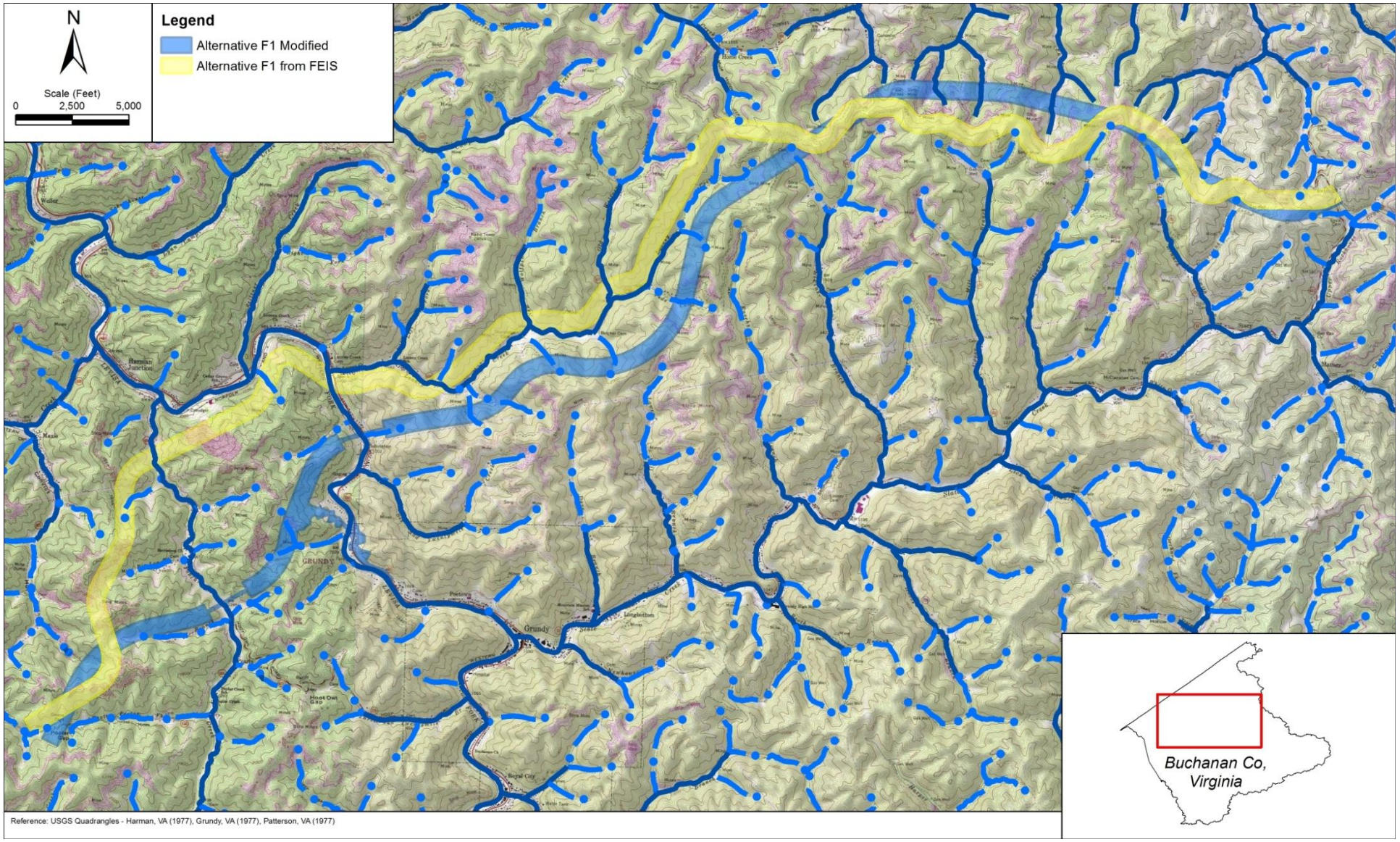
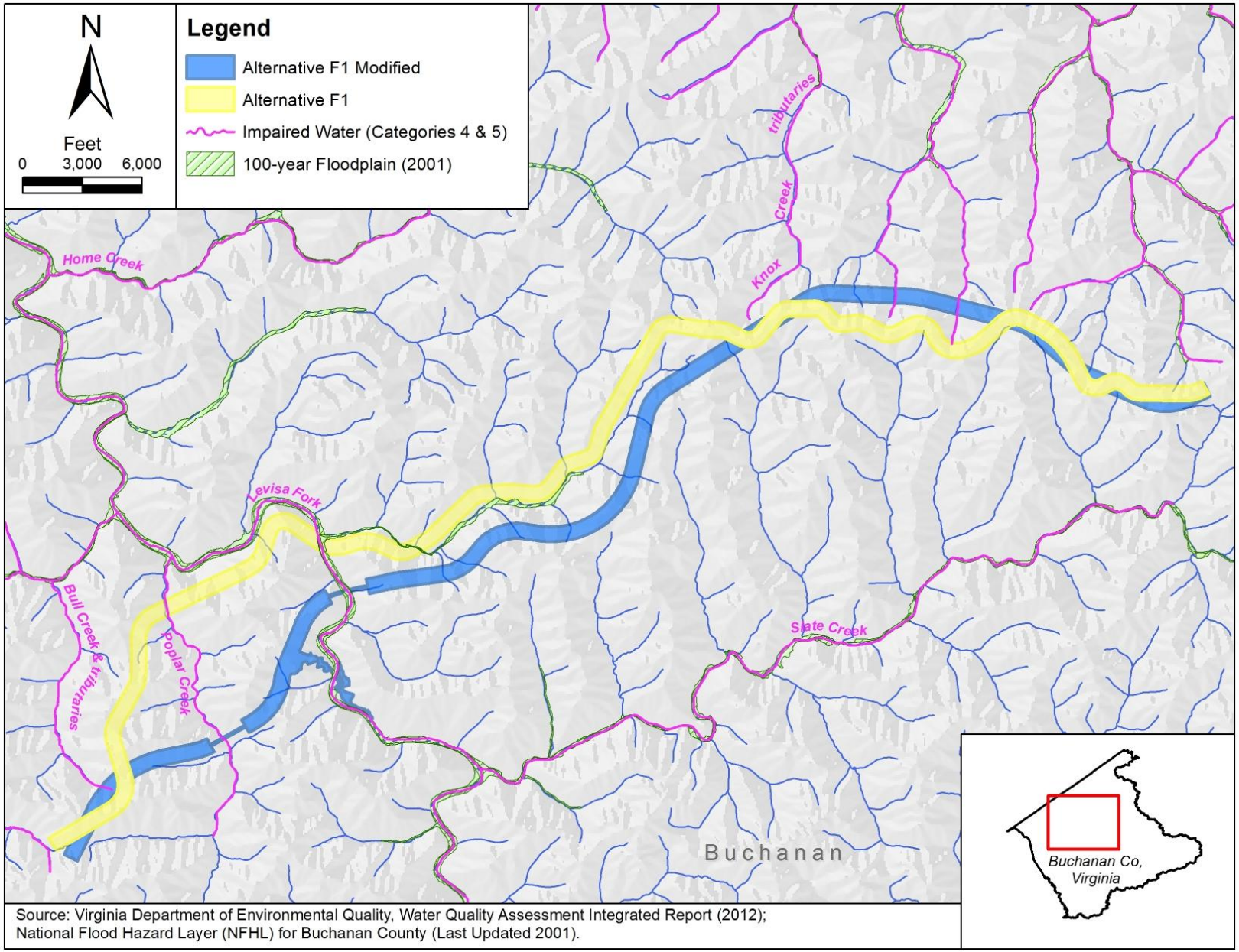


FIGURE 6. STREAM IMPACTS WITHIN ALTERNATIVE F1 AND ALTERNATIVE F1 MODIFIED

TABLE 3. IMPAIRED WATERS (CATEGORIES 4 AND 5)

Stream Segment	Applicable Use	Impairment Cause	Impairment Source	Comments
Impaired Waters Listed in FEIS				
Bull Creek and its tributaries TMDL? Yes	Aquatic Life – not supporting Recreation – not supporting Wildlife – fully supporting	Fecal Coliform (Escherichia coli) Benthic macroinvertebrates	Sewage Discharge in Unsewered Areas Resource extraction	Alternative F1 Modified crosses one tributary; Alternative F1 does not.
Slate Creek TMDL? Yes	Aquatic Life	Fecal Coliform (Escherichia coli) Benthic macroinvertebrates	Residential Residential	Neither alternative crosses this stream.
Impaired Waters Listed Since Completion of FEIS				
Poplar Creek TMDL? No	Aquatic Life – fully supporting Recreation – not supporting Wildlife – fully supporting	Fecal Coliform (Escherichia coli)	Sewage Discharge in Unsewered Areas	Both alternatives cross the impaired section of Poplar Creek.
Levisa Fork TMDL? Yes	Aquatic Life – not supporting Fish Consumption – not supporting	Benthic macroinvertebrates PCB in fish tissue	Resource Extraction Source Unknown	Both alternatives cross the impaired section of Levisa Fork.
Knox Creek and its tributaries TMDL? Yes	Fish Consumption – not supporting	PCB in fish tissue	Source Unknown	Alternative F1 Modified crosses two tributaries and Alternative F1 crosses one tributary of Knox Creek.

Sources: Table 3.9 from FEIS; *Virginia Water Quality Assessment 305(b) / 303(d) Integrated Report*, Virginia Department of Environmental Quality, March 2012.
Note: Other impaired waters listed in the FEIS (South Fork Pound River, North Fork Pound River, McClure River, and Russell Prater Creek) are beyond the limits of Section IIIB (i.e., no portions of Section IIIB drain into those waters).



Source: Virginia Department of Environmental Quality, Water Quality Assessment Integrated Report (2012); National Flood Hazard Layer (NFHL) for Buchanan County (Last Updated 2001).

FIGURE 7. IMPAIRED WATERS AND FLOODPLAINS