

South Valley Parkway Project

**S.R. 3046, Section 301
City of Nanticoke, Hanover and Newport Townships
Luzerne County, Pennsylvania**



**U.S. Department
of Transportation
Federal Highway
Administration**

and



pennsylvania

DEPARTMENT OF TRANSPORTATION

Engineering District 4-0

Environmental Assessment



January 2013

**South Valley Parkway Project
S.R. 3046, Section 301
County: Luzerne District: 04 State: Pennsylvania**

U.S. Department of Transportation

Federal Highway Administration

and

Pennsylvania Department of Transportation

Environmental Assessment

Pursuant of 42 U.S.C. 4332(2)(c)

**As Applicable: Executive Order 11990, Protection of Wetlands
Executive Order 11988, Floodplain Management
Executive Order 12898, Environmental Justice
49 U.S.C. Section 303(c)-Section 4(f)**

**Date the Division Administrator Approved
the Environmental Assessment:**

January 2013

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**SOUTH VALLEY PARKWAY PROJECT
ENVIRONMENTAL ASSESSMENT
S.R. 3046, SECTION 301
CITY OF NANTICOKE, HANOVER AND NEWPORT TOWNSHIPS
LUZERNE COUNTY, PENNSYLVANIA**

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LIST OF ACRONYMS

ACM	Asbestos Containing Material
ADT	Average Daily Traffic
ALPP	Agricultural Land Preservation Policy
APE	Area of Potential Effect
BA	Biological Assessment
BMP	Best Management Practice
BO	Biological Opinion
CAAA	Clean Air Act Amendments of 1990
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWF	Cold Water Fishes
dBA	Decibel (A-weighted)
EB	East Bound
EC	Earth Conservancy
ECMTS	Environmental Commitment and Mitigation Tracking System
EBL	East Bound Lane
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map

LIST OF ACRONYMS (CONTINUED)

FIS	Flood Insurance Study
FPPA	Federal Farmland Protection Policy Act of 1981
GPS	Global Positioning System
LCCC	Luzerne County Community College
LOS	Level of Service
LUST	Leaking Underground Storage Tank
MF	Migratory Fishes
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
NAC	Noise Abatement Criteria
NB	North Bound
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PA	Pennsylvania
PAC	Project Advisory Committee
PA DCNR	Pennsylvania Department of Conservation of Natural Resources
PA DEP	Pennsylvania Department of Environmental Protection
PAGWIS	Pennsylvania Ground Water Information System
P.A.S.S.	Pennsylvania Archaeological Site Survey
PennDOT	Pennsylvania Department of Transportation

LIST OF ACRONYMS (CONTINUED)

PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
PHMC	Pennsylvania Historical and Museum Commission
PM25	Particulate Matter less than 2.5 microns in diameter
PNDI	Pennsylvania Natural Diversity Inventory
PS&E	Plans, Specifications, and Estimates
SAMI	Safety and Mobility Improvements
SB	South Bound
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
S.R.	State Route
SVP	South Valley Parkway
T&E Species	Threatened and Endangered Species
TIP	Transportation Improvement Program
TSM	Transportation System Management
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMT	Vehicle Miles Traveled
WB	West Bound

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

A. PROJECT IDENTIFICATION:

Originating Office: District 4-0

Date: December 2011

County: Luzerne

Township/Municipality: Hanover and Newport Townships and City of Nanticoke

S.R.: 3046

Section: 301

Project Name: South Valley Parkway (SVP)

STATE ROUTE	SECTION	LIMITS OF WORK (SEGMENT/OFFSET)		CONSTRUCTION SECTIONS		TOTAL LENGTH
		START	END	START	END	FEET
3046 (SVP)	301	---	---	1020+00.00	119+59.78	9,956.78
0029 (PA 29)		0040/1103	0071/2882	700+00.00	774+99.19	
2008 (Middle Rd)	301	0030/1382	0090/00758	970+00.00	1134+00.00	7,944.38
2010 (Espy St)		0010/0000	0010/0168	200+57.00	---	
8023 (PA 29 Ramp C)		0010/0000	0250/0839	6500+00.00	6108+80.00	
Total						17,904.16

STATE ROUTE	SECTION	PROGRAM	FUNDING	CONSTRUCTION COSTS
3046	301	Surface Transportation Program Funds (STP)	80% federal	\$15,650,000 (construction)
3046	301	Special Federal Funds (SXF)		\$3,193,260 (final design) \$2,400,000 (right-of-way) \$160,000 (utilities) \$12,047,000 (construction)
3046	301	STP Urban Set-Aside Funds (STU)		\$6,863,000 (construction)
3046	301	Highway Capital Construction Funds (581)	20% state	\$798,315 (final design) \$600,000 (right-of-way) \$40,000 (utilities) \$7,640,000 (construction)
3046	301	---	0% local	---
TOTAL				\$3,991,575 (final design) \$3,000,000 (right-of-way) \$200,000 (utilities) \$42,200,000 (construction)

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

Are the estimated construction costs reflected on a current fiscally constrained transportation plan?

Yes ☒ No ☐

Remarks: The project is listed in the region's "Federal Fiscal Year (FFY) 2013-2016 Scranton/Wilkes-Barre Transportation Improvement Program (TIP)" (draft May 22, 2012), the Commonwealth's "2013 Twelve-Year Program" (approved August 9, 2012 and effective October 1, 2012), and" the Final Draft Lackawanna/Luzerne Regional Plan 2011-2035" – Appendix D (May 2011).

Have context sensitive solutions and/or smart transportation strategies been integrated into the project?

Yes ☒ No ☐

Remarks: A total of six (6) roundabouts are proposed at select intersections of the new SVP and Middle Road to more easily accommodate traffic. Sidewalks are also included in the proposed design for the three (3) roundabouts proposed along Middle Road (S.R. 2008). In addition, the proposed typical section was optimized (the proposed ten-foot shoulder was reduced to an eight-foot shoulder) for the mainline as described in Section II.A, Design Criteria for Project.

Date of first Federal Authorization for Preliminary Engineering: 09/03/1999

Date of Federal Authorization Time Extension(s) for Preliminary Engineering (if applicable):
10/2/2015

MPMS NUMBER	FEDERAL AID PROJECT NUMBER
9234	X043147 Q920

Is a Congestion Management System Analysis (CMS) Needed?

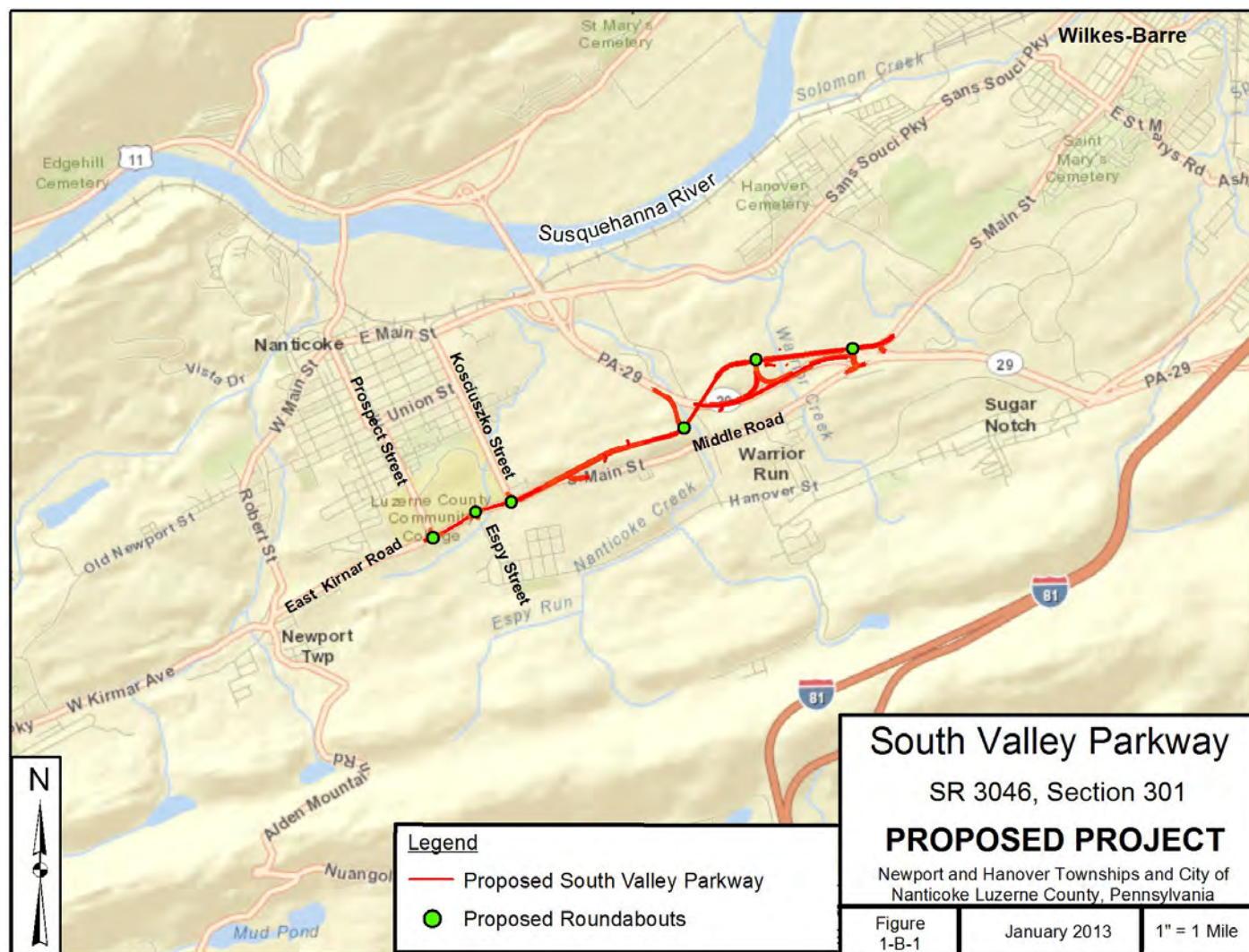
Yes ☐ No ☒

Remarks: In July 1995, Lackawanna and Luzerne Counties completed a Phase I Report to establish CMS goals and objectives. The Phase I Report listed areas of congestion within each county. In Luzerne County, the Hanover Area/PA Route 29 Corridor was identified as one of the county's eight congested corridors. The Sans Souci Parkway/Middle Road/PA Route 29 Corridor was identified as one of seven "high growth" areas pinpointed for close monitoring to enable the Lackawanna/Luzerne Metropolitan Planning Organization (MPO) to manage congestion proactively. Phase II CMS Reports were completed in 1996 and updated in 2002 for each county. These reports used the criteria adopted in the Phase I Report to rank congested corridors and intersections. The MPO maintains the counties' Congestion Management Program report as required by the FHWA and reports are updated every two years. The reports identify corridors that are currently facing congestion. The newest listings are provided in the Final Draft Lackawanna-Luzerne Regional Plan (May 2011). The Luzerne County Planning Commission is specifically responsible for updating/maintaining the county's Congestion Management Process (CMP), to ensure that current information is available for project development and prioritization. The current Congested Corridors identified in the Luzerne County CMP report include four routes, none of which are in the SVP project area

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

B. PROJECT DESCRIPTION

Middle Road (S.R. 2008) is a two-lane, free-access rural road that extends for approximately 3.5 miles over rolling terrain from the northeast in the City of Wilkes-Barre (where the road becomes South Main Street) to the southwest in Newport Township (where the road becomes East Kirmar Road before it terminates at Robert Street to connect to Kirmar Parkway). As shown in Figure 1-B-1, the proposed South Valley Parkway (SVP) project includes the construction of a new parkway road on new alignment and upgrades to the existing Middle Road. The proposed SVP on new alignment begins at the Middle Road/Prospect Street intersection and travels in the east direction to S.R. 0029 Exit 2 resulting in a total mainline length of 3.8 miles (6.1 total roadway miles). Roundabouts are proposed at the Middle Road intersections with Prospect Street, Espy Street and Kosciuszko Street (other roundabouts are proposed for the intersections of the interchange with S.R. 0029). The new alignment portion of SVP (S.R. 3046) will be primarily one lane in each direction (with a climbing lane and center turn lane where applicable). There will be one new split diamond interchange with S.R. 0029 and it will consist of three (3) ramps. There will be three (3) structures (2 bridges and 1 culvert).



C. PROJECT PURPOSE AND NEED

Project Purpose

The existing primary access route to the Luzerne County Community College (LCCC) in the southeastern corner of the City of Nanticoke is Middle Road (S.R. 2008). Middle Road is a two-lane, rural road that extends for approximately 3.5 miles from the City of Wilkes-Barre to Newport Township. Approximately midway between the two termini of Middle Road, the roadway interchanges with S.R. 0029 at Exit 2. S.R. 0029 is a four-lane, limited access highway that connects I-81 in the southeast to U.S. Route 11 in the northwest. Between Exit 2 and the LCCC, Middle Road travels through the villages of Askam and Lower Askam of Hanover Township. There is very little frontage for most homes and little to no shoulders along this stretch of roadway. In addition, passing opportunities are very limited. Many side roads and driveways have direct access to Middle Road in these areas. Sight distance at these access points is limited. The land that is encompassed by S.R. 0029, Middle Road, the City of Nanticoke, and the Sans Souci Parkway/River Road includes large parcels of “abandoned land” formerly owned by the Blue Coal Corporation. Over 50% of the study area has been disturbed from past mining activities and many of those areas have been identified as land to be reclaimed and redeveloped in accordance with various long-term land use plans. In light of these congestion concerns, safety issues, and potential future developments, PennDOT undertook this project to examine the region’s roadway network for possible improvements.

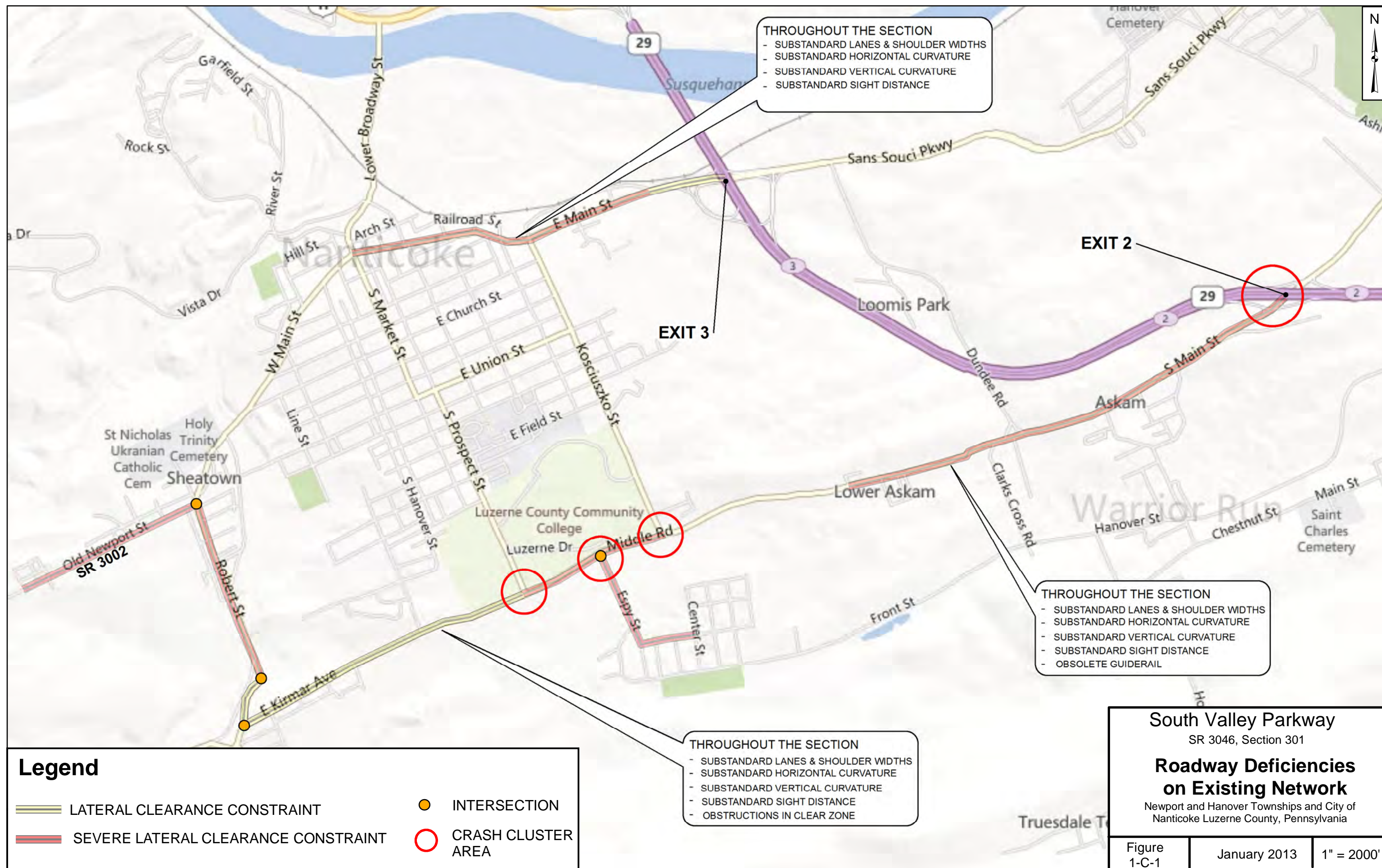
The purpose of this project is to improve the region’s roadway network that will provide a safe and efficient route to access the Luzerne County Community College campus and other destinations including the Greater Nanticoke Area School District campus. The project purpose is to also help comply with the planning initiatives set forth in the Lackawanna/Luzerne Regional Plan (May 2011) that identifies large portions of the project area as a “Mixed Density Infill Areas” that are intended to provide opportunities for new development and redevelopment on properties that are vacant or underutilized.

Project Need

A “Project Needs Report” (January 2005) was prepared to document the evaluation of the existing roadway network servicing the LCCC and surrounding areas in the vicinity of Middle Road (S.R. 2008) and the South Cross Valley Expressway (S.R. 0029) in Hanover Township, Newport Township, and the City of Nanticoke.

Roadway Geometrics and Traffic Flow

Figure 1-C-1 identifies the general location of roadway deficiencies in the project area’s existing network. In the project area, Middle Road is a two-lane road characterized by narrow travel lanes and narrow to no shoulders through heavily populated residential areas. Many homes along Middle Road, particularly in the villages of Askam (Main Street) and Lower Askam (South Main Street), have very little or no setback between the structures and the edge of road. Sidewalks and curbed areas are present along Middle Road in the areas of the residential homes located in the villages. Areas outside of the villages also have obstructions close to the road, including trees in heavily wooded areas. The travel lane and shoulder widths are substandard and vary from 18 to 24 feet and 0 to 3 feet, respectively. There is minimal to no clear zone available.



EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

In addition, passing opportunities are limited and there are no separate left or right turn lanes provided at intersections in the corridor with the exception of the intersections at the S.R. 0029 Exit 2 ramps where a center lane is included along Middle Road to accommodate left turns. Posted speed limits range from 25 to 35 mph. Multiple side roads and driveways have direct access to Middle Road and sight distance at these access points is limited because of vertical and horizontal geometric deficiencies. There are other various locations along Middle Road with substandard horizontal and vertical curvatures that adversely affect sight distance and overall driving safety. Specific geometry deficiencies information is provided in the inventory compiled for the "Project Needs Report."

Traffic flow conditions and associated safety concerns also need to be addressed throughout the study area. The roadways used to access the LCCC, located in the southeastern corner of Nanticoke City, include Middle Road, Main Street (in the City of Nanticoke), Prospect Street, and Kosciuszko Street, all of which have narrow lanes and shoulder widths. An Origin-Destination Study was performed in May 2002. The results of this study and traffic count data were presented in the "Summary of South Valley Parkway Traffic Data Collection Studies" (July 2003) and are the basis of traffic projections used to assess traffic flow and levels of service for the project. The study indicated that the majority of A.M. and P.M. peak hour trips traveling between S.R. 0029 and Sans Souci Parkway to the north and Luzerne County Community College and Middle Road to the south are traveling S.R. 0029 in the northbound direction, i.e., from the direction of I-81. During the morning peak hour, 46 % of the captured trips exited S.R. 0029 at Exit 2 (Middle Road), and 14 % exited S.R. 0029 at Exit 3 (Sans Souci parkway), and headed southbound. In the afternoon peak hour, 69 % of the captured trips exited S.R. 0029 at Exit 2, and 5 % exited S.R. 0029 at Exit 3, and headed southbound. Based on this information, Middle Road is the primary route for traffic headed from S.R. 0029 (and I-81) to LCCC and other locations further south. This non-local through traffic consists of trucks and college commuters that, according to local residents and municipal officials, typically travel at speeds exceeding posted speed limits. The volume and excessive speeds of the traffic restrict the ability of local residents to safely access Middle Road, particularly for those motorists wishing to make left turns. In addition, the traffic creates periodic backups at side roads, particularly during morning and afternoon peak hour times.

The main entrance to the LCCC is from Kosciuszko Street, which has a T-intersection with Middle Road. This intersection is of particular concern because travelers use this intersection to not only access the LCCC but also the Greater Nanticoke Area School District campus, which includes three schools for grades K through 12 and is located further north along Kosciuszko Street. Across from this intersection is the entrance to the Birchwood Nursing Center. This intersection frequently backs-up with traffic on Kosciuszko Street with many college commuters attempting to make left turns onto Middle Road on their commute home. In addition, the access road to the College Hill residential development connects to Kosciuszko Street approximately 300 feet from the intersection, compounding the problem at this intersection.

Crash Information

Traffic crash data for the study area were compiled by the Pennsylvania Department of Transportation (PennDOT) Highway Safety Division and evaluated to identify the types and rates of crashes in the project area and the locations of "hotspots." The crash data used for this project represents reportable crashes for the time period from January 1, 2005, to December 31, 2009. Figure 1-C-1 illustrates the locations of the crash cluster areas that make up the "hotspots." These four areas include the Prospect Street/Middle Road intersec-

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

tion, the Espy Street/Middle Road intersection, the Kosciuszko Street/Middle Road intersection, and the S.R. 0029 NB Ramps/Middle Road intersections at Exit 2.

Generally, the most predominant form of crash throughout the project area network is a collision with a fixed object. Rear end collisions and angle type collisions also comprise a large percentage of the total reportable crashes within the project area. The high rate of fixed object and angle collisions are indicative of roadways with substandard geometrics, particularly narrow lanes, substandard shoulders and objects within the clear zone. Based on the calculated crash rates per million vehicle miles traveled, it was determined that the crash rates for the study area roadways, including Middle Road (S.R. 2008) and S.R. 0029 are above the statewide averages for similar roadways and increase significantly at major intersections, particularly in the vicinity of the LCCC and Exit 2 of S.R. 0029.

An evaluation of historical crash data from PennDOT's crash information system for Middle Road indicates that college commuter traffic is most likely the largest contributor because 85% of all incidents in the corridor occurred during the fall and spring semesters (September to November and February to April, respectively) when the school is most active. Cross-referencing the college's operational hours (7:00 A.M. to 6:00 P.M.) and academic semesters, suggests that 54% of crashes may be attributed both directly and indirectly to this community of drivers. The majority of crashes occurred between 3:00 and 4:00 P.M. with 15% of the crashes, followed by clusters between 7:00 and 8:00 A.M. and 9:00 to 10:00 A.M, each with 12% of the crashes. These timeframes correspond to the peak volume periods; however, the double A.M. peaks are believed to be attributed to normal workforce commuter traffic (early peak) followed by college traffic (later morning peak). Furthermore, the crashes at the Kosciuszko Street and Prospect Street intersections used to access the LCCC make up to 36% of all incidents in the corridor.

Level of Service

Traffic data were collected and assessed to identify existing traffic volumes and levels of service (LOS). This data indicated that heavy trucks make up approximately 5% of the traffic volume. Based on the existing traffic volumes and the existing roadway geometry, sections of Middle Road in the project area were found to operate at a LOS E during the A.M. peak hour and a LOS D during the P.M. peak hour. Traffic projections were also estimated to assess future volumes and LOS. Traffic counts and the results of an Origin and Destination Study were presented in the "Summary of South Valley Parkway Traffic Data Collection Studies," July 2003, and were the basis of these projections. In September 2012, an updated assessment of future traffic volumes was conducted for the design year 2034. Figure 3-C-1.1 (No-Build Peak Hour Volumes, Design Year 2034) illustrates the existing peak hour volumes projected for the Design Year 2034. Using these volumes, it was determined that existing Middle Road intersections with Prospect Street, Espy Street (S.R. 2010), and Kosciuszko Street would all operate at LOS F during the P.M. peak without signalization. Other intersections in the corridor, including those in the vicinity of Exit 2 would operate with a LOS F on the ramps, unsignalized, and overall LOS B to E with signalization in place. Signalized LOS for the ramp approaches would range from LOS D to F. (Form 3C1 provides additional information on existing and projected LOS in the project corridor along with a description of the Level of Service categories.)

The traffic studies indicate that the A.M. Peak along Middle Road extends from 7:00 A.M. to 8:00 A.M. and the P.M. Peak extends from 4:00 P.M. to 5:00 P.M. While these peak hour volume periods correspond with the start and end times for the LCCC class schedules (the school day typically starts at 8:00 A.M and extends to 4:30 P.M., but classes are slightly later on Tuesdays and Thursdays, extending to 6:30 P.M. and weekend

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

classes are held only in the mornings), LCCC officials have stated that student traffic is stretched out during the entire school day as students come and go to attend specific classes.

Figure 3-C-5.1 indicates the locations of community resources in the project area, including the local hospital, police station, and fire stations, which are responsible for providing emergency services. Existing and future levels of service and congestion in the roadway network have the potential to impact the response times for emergency service providers.

Land Use and Transportation Planning

The Lackawanna-Luzerne Study Area (LLTS) serves as the Metropolitan Planning Organization (MPO) for Lackawanna and Luzerne Counties. The counties recently completed a combined Comprehensive Plan, Long-Range Transportation Plan, and Hazardous Mitigation Plan, referred to as the “Lackawanna-Luzerne Regional Plan” (Final Draft, May 2011). This document was prepared to serve as a “guide for integrating land use, transportation, economic development and sustainability in the region” for the next 20+ years (to 2035). The transportation plan portion of the document will also assist the counties in the development, maintenance, and management of adequate, safe, accessible, and environmentally sound transportation system. The SVP project is listed in the region’s 2011-2014 TIP (June 19, 2010) and in the Commonwealth’s “2011 Twelve-Year Program” (December 8, 2011). The previous Long Range Transportation Plan (2003-2025) included an earlier version of the SVP (previously known as the LCCC/Sans Souci Connector) as a project of “regional significance” for Luzerne County.

The SVP project is considered to be an important component of the regional infrastructure to improve access to existing residential areas and the LCCC, in addition to accommodating additional access to old abandoned mine lands. These abandoned lands include large parcels of undeveloped land encompassed by Middle Road, Kosciusko Street, Sans Souci Parkway, and S.R. 0029, and other parcels immediately north of S.R. 0029 in the project study area. The bulk of the vacant lands are owned by the Earth Conservancy (EC) and the Greater Wilkes-Barre Chamber of Business and Industry, which collectively own over 1,000 acres within the project study area. The entire study area is within the area identified as Mixed Density Infill Area in the new Regional Plan. The EC and Chamber have continuously prepared and reassessed long-term development concepts and plans for their property in the study area independent of the development of the SVP project. Both entities have also undertaken projects to reclaim old mining areas on their properties and prepare them for development. There are no other large parcels targeted for development by others in the project area and no other major developments proposed at this time.

The EC has conducted multiple land use planning efforts for their large properties in the southern Wyoming Valley of Luzerne County dating back to the 1990s; thereby establishing their own development initiatives prior to the SVP project. Their planning efforts in the vicinity of the project area are documented in various plans since the original long-term Land Use Plan, developed in 1996. Other plans that address EC properties in the project area include the “Route 29 Mixed-Use Development Master Plan” (1999 Master Plan), the “Lower Wyoming Valley Open Space Plan” (prepared in 1999 in conjunction with Luzerne County and the PA Department of Conservation and Natural Resources [DCNR]), and the “Reuse Analysis and Sustainable Redevelopment Framework” (prepared in 2008 with support from the U.S. Environmental Protection Agency [EPA]). Planning efforts are again underway by the EC and the Chamber to address potential development opportunities for their parcels in the project area. The timetable for the development of EC lands is unpredictable because it is highly dependent on local economic conditions for both the short-term and long-

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term (next 20 to 50 years) planning periods. However, it is reasonable and prudent for PennDOT to develop the SVP to be consistent with local planning initiatives and support economic development that is consistent with adopted Land Use Plans.

Project Need Statement

Four project needs are identified based on the existing and projected conditions of the Middle Road/South Main Street corridor and other local roadways in the study area, including Prospect Street, Espy Street, Kosciuszko Street, Dundee Road, South Street, and Clarks Crossroad:

- Safety - To improve the safety conditions at select intersections and roadway sections that currently exhibit high crash rates in the Middle Road/South Main Street corridor and the other local roadways in the study area.
- Accessibility - To provide better access to the regional expressway system (I-81 and S.R. 0029) and better mobility within the project area municipalities to major destinations, including the LCCC.
- Congestion - To improve traffic operations and provide relief of traffic congestion for Middle Road/South Main Street corridor and the other local roadways in the project area.
- Economic Development - To support Luzerne County economic development that is consistent with adopted Land Use Plans.

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

D. DESCRIPTION OF PROJECT AREA

The project's study area defined for the assessment of a full range of transportation improvement alternatives encompasses an area of approximately 2,240 acres that includes parts of Hanover Township, the City of Nanticoke, and, to a lesser extent, Newport Township (the project's study area boundary is illustrated on Figure 1-E-2). The project area is in the Wyoming Valley region of Luzerne County. This region also includes the Scranton/Wilkes-Barre metropolitan area to the north. Over 50% of the land within the study area has been disturbed by past coal mining activities. The Earth Conservancy (EC) and the Greater Wilkes-Barre Chamber of Business and Industry own large areas of the undeveloped land and have proposed various development scenarios for the land since the 1990s. The project area also includes many small village communities along its southern boundary, including Askam, Lower Askam, Hanover (section of Nanticoke), and Alden. (See photographs at the end of this section.) A major institute in the study area is the Luzerne County Community College (LCCC) that has been expanding over the years and has become the major traffic generator in the study area. During the fall 2010 semester, enrollment totaled 7,249 credit students and 5,680 noncredit students. Most recently, the LCCC has expanded west of Prospect Street to develop its Public Safety Institute. The Community College also recently opened a Culinary Art Center and a Health and Science Center in the downtown section of Nanticoke City.

During the early stages of project scoping and subsequent investigations, various environmental features were identified in the project area as potential key issues to be considered during the development of the project. These features, including important and regulated resources, are described below. They are further discussed in more detail in Section II.C, Summary of Impacts.

Natural resources in the project area include wetlands, streams, and wildlife habitat. Several regulated watercourses are present in the area, including Warrior Creek, Nanticoke Creek, Espy Run, South Branch of Newport Creek, and various unnamed tributaries. Only Espy Run and the South Branch of Newport Creek, have been identified as having 100-year floodplains (per Federal Emergency Management Agency [(FEMA) mapping) within the study area. Wetlands occur in the area and the wetland delineation study conducted for the project identified and delineated 124 wetlands, totaling approximately 39 acres. Five vernal pools were also identified. A majority of the wetlands are associated with the riparian buffers along Nanticoke Creek, Espy Run, and Warrior Creek and adjacent to the old race railroad grade that crosses S.R. 0029.

Initial Threatened and Endangered (T&E) Species coordination conducted for the project identified two potential conflicts of concern: the Indiana Bat (*Myotis sodalis*), a federally listed endangered species by the U.S. Fish and Wildlife Service (USFWS), and the Virginia Rail (*Rallus limicola*), a Pennsylvania species of concern listed in the PA National Diversity Inventory (PNDI) maintained by PA DCNR. The habitat associated with these species was considered potential critical habitat. It was determined that there is no Virginia Rail population or habitat within the project area. Two Indiana bat mist netting surveys were conducted for the project – one from August 11 to 15, 2008, and another from August 8 to 14, 2010. No Indiana bat was captured but a small-footed myotis (*Myotis leibii*) was captured during the 2008 survey and again during the 2010 survey. During the 2010 survey, the captured small-footed myotis was released with a radio-transmitter and monitored. One of the day roosts identified during this effort is a crevice in the rock outcrop created from the S.R 0029 highway cut, along the northbound land just north of existing Exit 2.

Agricultural resources in the study area are limited and include horticultural operations (greenhouses/nurseries) as well as some farmland soils in the few areas undisturbed by mining activities. No traditional

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

farms (i.e., dairy farms, crop producers, etc.) exist in the project area; however, three potential agricultural operations were identified. These operations include greenhouses/marketing facilities located at the northern end of the study area along San Souci Parkway. Prime and statewide important soils occur in the project area according to mapped soil types in the *Soil Survey of Luzerne County* and soils listings provided by the US Department of Agriculture (USDA). No farmland soil of local importance or unique farmland was identified in the project area. In addition, no Agricultural Security Areas or conservation easements occur within the project area.

Community resources were evaluated and include facilities such as publicly owned parks and recreational areas, privately owned parks and recreational areas, churches, libraries, post offices, public school districts and their associated facilities, public transportation services, and emergency service providers that service or are located in the project area. The study area is along the eastern and southern edge of the City of Nanticoke and primarily includes undeveloped land. However, there are multiple small communities along Middle Road and in Loomis Park.

Cultural resources include historic properties, in addition to both historic and prehistoric archaeological sites. A "Section 106 Historic Resource Survey and Determination of Eligibility Report" (September 2003) was prepared and identified several resources to be listed or eligible for listing on the National Register of Historic Places (NRHP). Further correspondence with the Pennsylvania Historical and Museum Commission (PHMC) that serves as the State Historic Preservation Office (SHPO), determined a total of four resources in the project area are eligible for listing on the NHRP: the Loomis Colliery, Loomis Park, the Loomis Colliery Superintendent Duplexes, and Concrete City. A "Phase I Archaeological Survey Report" (November 2010) was completed and submitted to the PHMC. It is anticipated that all archaeological sites will be avoided. The SHPO concurred with the findings in the survey report on January 6, 2011.

The identification of resources protected under Section 4(f) of the Department of Transportation Act was accomplished through local coordination, map analysis, and field reconnaissance. Potential Section 4(f) resources include historic properties and public recreation areas (parks). In addition to the previously mentioned historic properties, there are three publicly owned parks in the study area, including two Hanover Township municipal playgrounds (Upper Askam and Lower Askam Parks) and one Newport Township municipal playground (Alden Park). The Delaware and Lehigh Canal National Heritage Corridor and State Heritage Park, that stretch over 150 miles, extend into the study area. National Heritage Corridors are part of the National Heritage Area (NHA) program overseen by the National Park Service and are large regions (areas) where natural, cultural, historic and scenic resources combine to form a cohesive, nationally distinctive landscape arising from patterns of human activity shaped by geography. This particular NHA is also designated a Pennsylvania State Heritage Area (SHA) under the state's program and overseen by the PA Department of Natural Resources. These large areas are not in and of themselves public park units. Therefore, they are not subject to the provisions of Section 4(f) unless such land or sites within the area are deemed eligible for listing on the NRHP or are designated public recreation lands. It is anticipated that all NRHP properties and public recreation lands in this NHA/SHA will be avoided.

Multiple mining features and waste sites also exist throughout the study area and these features could affect the design and construction costs of a proposed improvement. The project area, being located within Pennsylvania's Northern Anthracite Coal Field, has been extensively surface and underground mined since the late 1800s. The land surface is riddled with coal refuse piles and abandoned strippings, as well as evidence of mine subsidence and acid mine drainage. Past mining activities have altered the area's landscape. Mine

EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Sections A-E)

shafts, abandoned coal mine areas, subsidence-prone areas, and refuse piles exist throughout the investigation area for the proposed project. The project area includes several areas of reclamation, including the construction of wetlands for the treatment of acid mine drainage.



The community of Askam looking east along Middle Road

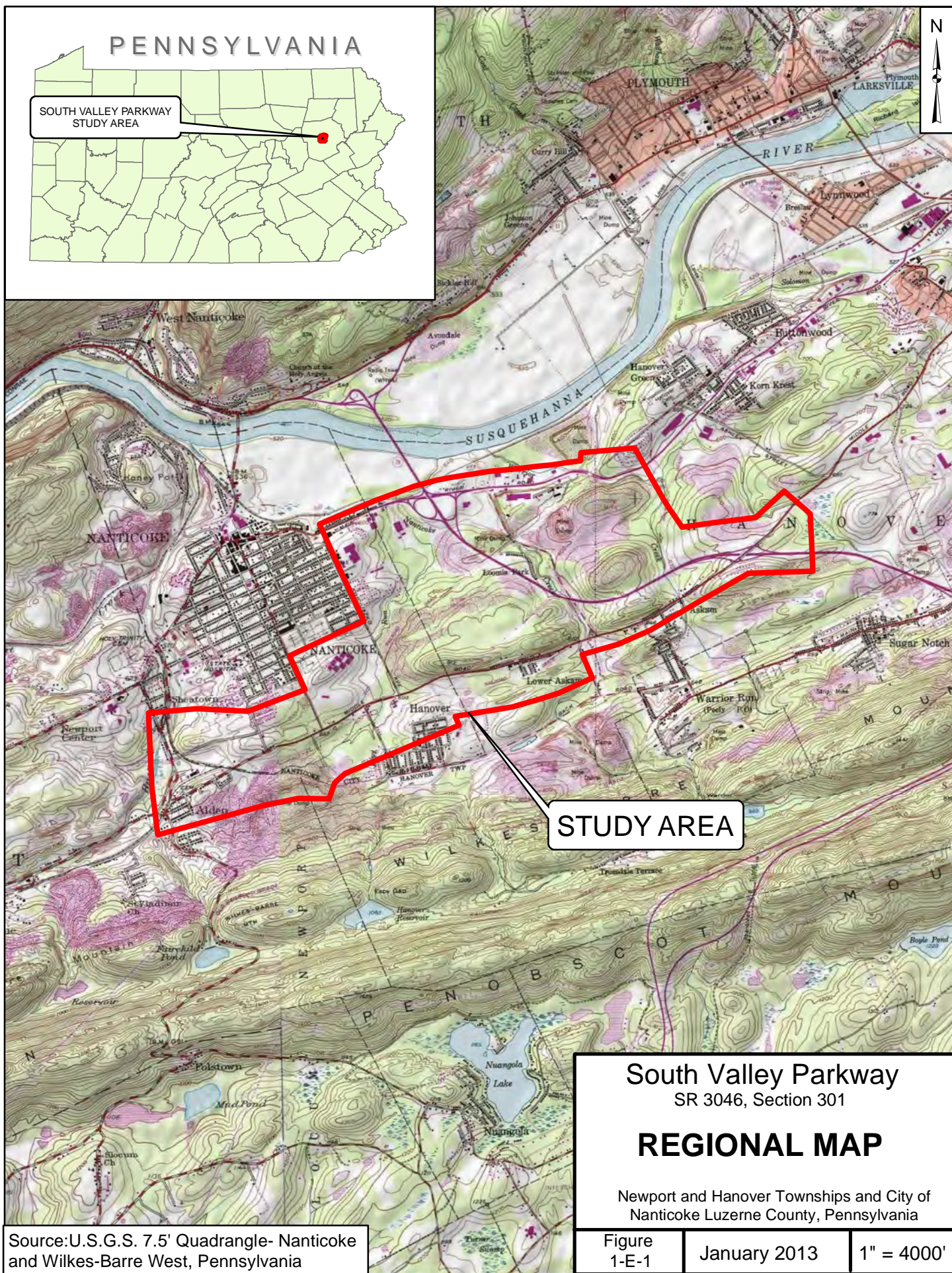


The community of Lower Askam looking east along Middle Road

***EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement
(Sections A-E)***

E. MAP OF PROJECT AREA

See Figure 1-E-1 (Regional Map) and Figure 1-E-2 (Study Area).



EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement (Section F)

F. SCOPING SUMMARY (Refer to Scoping Form in Attachment F5)

NATURAL RESOURCES	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
Wetlands	<input type="checkbox"/>	<input checked="" type="checkbox"/>	GPS I&D survey, professional judgment field reconnaissance with select GPS points, and USFWS NWI mapping
Streams, Rivers, & Watercourses	<input type="checkbox"/>	<input checked="" type="checkbox"/>	GPS I&D survey, professional judgment field reconnaissance with select GPS points, and USGS (Wilkes-Barre West)
HQ/EV Streams/Watersheds	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PA DEP Chapter 93 PA Water Resources
Wild or Stocked Trout Streams	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PFBC list of approved Trout Waters
Coastal Zones	<input checked="" type="checkbox"/>	<input type="checkbox"/>	USGS (Wilkes-Barre West)
Groundwater Resources (i.e., wells, water supply)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PA DEP Env. Resources, PAGWIS
Floodplains/Floodways	<input type="checkbox"/>	<input checked="" type="checkbox"/>	FEMA
Navigable Waterways	<input checked="" type="checkbox"/>	<input type="checkbox"/>	USACE
Other Surface Waters (i.e., lakes, ponds, reservoirs, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Field surveys
Federal/State Wild & Scenic Rivers and Streams	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PA DCNR
Invasive Non-Native Plants	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field reconnaissance
Threatened or Endangered Species	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PFBC, PGC, PNDI, USFWS letters
Unique Geologic Resources (i.e., sinkholes, caves, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field Surveys
Wildlife & Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field surveys and agency coordination
Sanctuaries/Refuges	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Field surveys and agency coordination
Agricultural Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field surveys
National Natural Landmarks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	National Registry of National Landmarks
State Game Lands, Forest, or Parks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	USGS (Wilkes-Barre West)/field surveys
AIR, NOISE, AND VIBRATION	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
Sensitive Air Quality Receptors	<input type="checkbox"/>	<input checked="" type="checkbox"/> # 31	Field surveys
Sensitive Noise Receptors	<input type="checkbox"/>	<input checked="" type="checkbox"/> # 31	Field surveys
Sensitive Vibration Receptors	<input checked="" type="checkbox"/>	<input type="checkbox"/> #	Field surveys
WASTE SITES	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
Known Waste Sites	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PA DEP file review and field surveys
Potential Waste Sites	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field surveys
Brownfield Sites	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Field surveys

* Based on preliminary information obtained during engineering and environmental scoping, file research, and agency correspondence.

***EA STEPS 1 & 2: Administrative Activities, Internal Scoping, Agency Scoping, and Public Involvement
(Section F)***

<i>COMMUNITY RESOURCES</i>	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
Residences, Businesses, or Farms	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey
Public Facilities and Services	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey and coordination with municipal officials
Visually Sensitive Areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey
Low-income or Minority Population Areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	U.S. Bureau of Census
Major Utilities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey
<i>CULTURAL RESOURCES</i>	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
National Historic Landmarks	<input checked="" type="checkbox"/>	<input type="checkbox"/>	National Register of Historic Places
National Register Listed or Eligible Sites/Districts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	National Register of Historic Places and Agency Correspondence with PHMC
Potentially Eligible Sites/Districts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey and Agency Correspondence with PHMC
Known Archaeological Sites	<input checked="" type="checkbox"/>	<input type="checkbox"/>	P.A.S.S. Files and Phase I field survey
High Probability Archaeological Areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Phase I field survey
<i>SAFETY & MOBILITY</i>	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
Signalized Intersections	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey (there were no signals at the start of the project; however a signal was added later at S.R. 0029 Exit 3 ramp)
Pedestrian Crosswalks/Overpasses	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey
Railroad Facilities (lines, crossings, bridges, signals, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey (degraded rail bed only)
Access Issues	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey
Mass Transit Facilities/Operations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Coordination with municipal and county officials
Hiking Trails/Scenic Walkways	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey (no official/designated trails)
Bikeways	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey
<i>SECTION 4(f) RESOURCES</i>	NOT PRESENT*	PRESENT*	METHOD OF IDENTIFICATION
Potential 4(f) Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Field survey (historic resources and parkland)

* Based on preliminary information obtained during engineering and environmental scoping, file research, and agency correspondence.

EA STEP 3: Alternative Development and Impact Analysis (Sections A-B)

A. DESIGN CRITERIA FOR PROJECT

(Design Criteria for the South Valley Parkway/S.R. 3046 Mainline)

Functional Classification: Principal Arterial ☒ Urban ☐ Rural

Current ADT: 6,533 vehicles per day (Year 2012, for Middle Road)

NOTE: Design Year No-Build/Build ADT, as well as Current/Future Build LOS, is only necessary when PM2.5 hot spot analysis is required. If PM2.5 hot spot analysis is not needed (see the exempt project list in Air Quality Handbook, Pub #321), "N/A" can be entered for these values.

Design Year No-Build ADT: 16,200 vehicles per day (Design Year 2034) **Current LOS:** Ranges from “A” to “E”

Design Year Build ADT:	14,300 vehicles per day (Design Year 2034)	Future Build LOS:	Ranges from “A” to “E” (2034)
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DESIGN SCENARIO FOR DY 2034	MIDDLE ROAD	SOUTH VALLEY PARKWAY
No-Build Alternative	16,200 vpd	----
Build Alternative	4,900 vpd	14,300 vpd (includes 2,500 vpd diverting from the Sans Souci Parkway at S.R. 0029 Exit 3 and 11,800 vpd either diverting from Middle Road or generated by future development)

DHV: 1,458 vehicles per hour **Truck %:** 5% **D (Directional Distribution)%:** 55%

Design Speed: 45 mph **Posted Speed:** 45 mph

Pavement Width: (see Table 3-A-1) **Shoulder Width:** 8 feet

Clear Zone: 4:1 Cut & Fill Slopes
14 feet Backslope
24 feet Foreslope

Median Width: (see Table 3-A-1)

Design Exception Required? Yes ☐ No ☒
If “Yes,” explain.

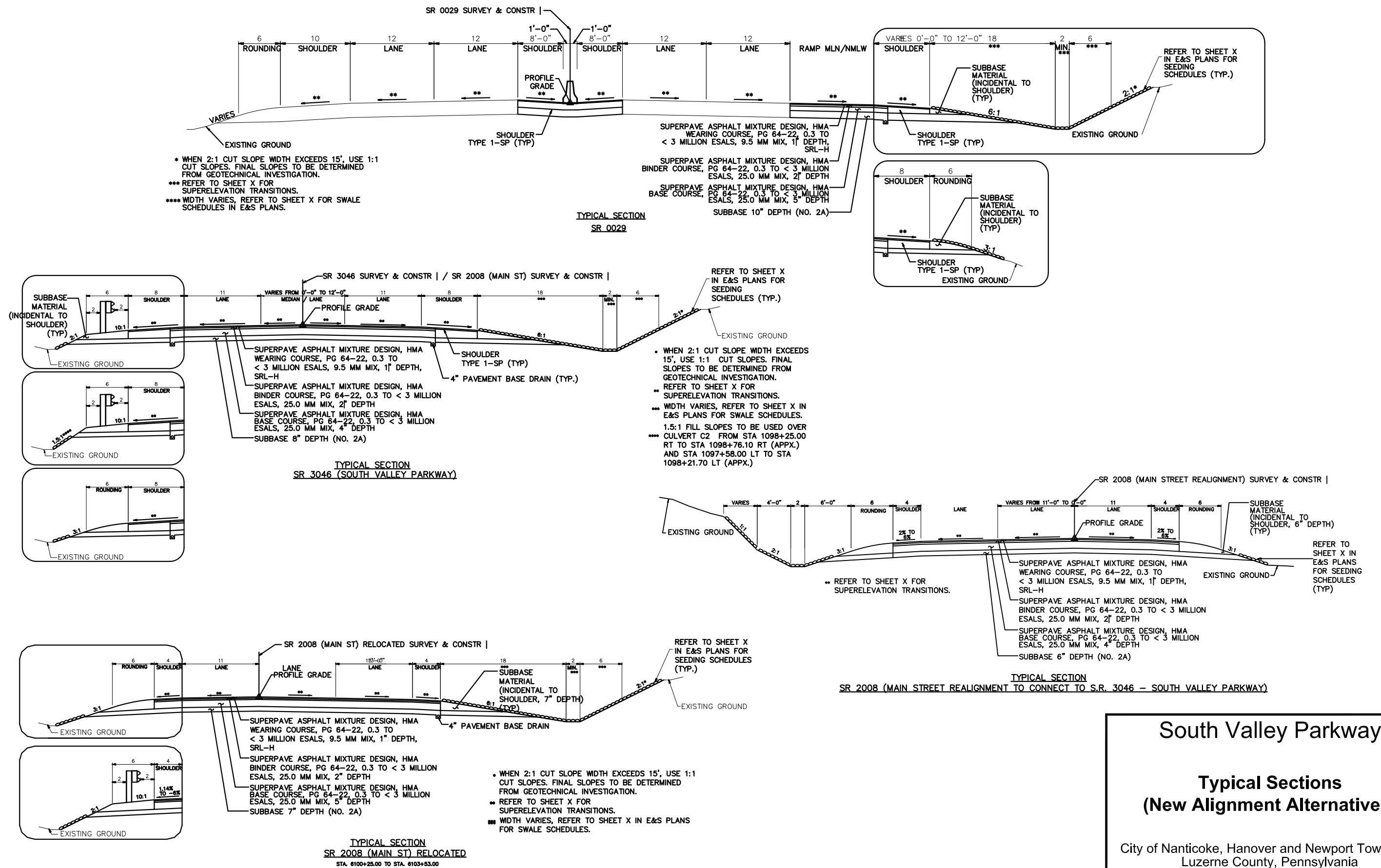
Proposed Number of Lanes: 2 with truck climbing lanes at select locations (see Table 3-A-1 and Figures 3-A-1.1 and 3-A-1.2 and refer to Figure 3-C-1.3 to cross-reference the locations of the various streets, routes, ramps)

Setting: ☐ Urban ☒ Suburban ☐ Rural

Topography: ☐ Level ☒ Rolling ☐ Mountainous

TABLE 3-A-1
DESIGN CRITERIA – LANE AND MEDIAN WIDTHS
(SOUTH VALLEY PARKWAY)

ITEM	CRITERIA
Lane Width	
Four 11-foot Lanes	Station 1020+00 to Station 1031+75 Station 1085+01 to Station 1086+23 Station 1114+86 to Station 1118+88
Three 11-foot Lanes	Station 1087+50 to Station 1090+80 Station 1112+64 to Station 1114+86 Station 1118+88 to Station 1124+84
Two 11-foot Lanes	Station 1042+80 to Station 1080+07 Station 1097+98 to Station 1109+95 Station 1126+65 to Station 1132+75
Median Width	
12-foot	Station 1112+64 to Station 1118+86
4-foot (concrete mountable curb)	Station 1126+65 to Station 1130+29



B. ALTERNATIVES CONSIDERED

The alternative development and evaluation process was a two-stage process that involved an extensive public involvement outreach effort and a staged environmental assessment. In all, twelve (12) alternatives, in addition to the No-Build Alternative, were considered. These alternatives are summarized below and illustrated on Figure 3-B-1 (more detailed information is provided in the project files). This section describes the two-stage alternative development and evaluation process and why alternatives were dismissed from further study. Table 3-B-1 summarizes how each alternative meets or does not meet the various components of the project need, along with additional issues considered when evaluating the alternatives. Figure 3-B-2 provides a bar chart that summarizes the development and evolution of the alternatives and identifies when various alternatives were dismissed from additional study.

No-Build Alternative: This alternative includes only routine maintenance procedures to maintain continuous operation of the existing roadways, including Middle Road. No capital improvements to the existing road network is considered under this alternative and no appreciable changes in the current traffic operations would occur. This alternative was carried forward into Stage 2 and included in the assessment of the Build Alternative for comparison purposes.

Traffic Calming Measures Alternative: This alternative includes potential traffic-calming measures that include measures to discourage through traffic from using Middle Road and to curtail the excessive vehicular speeds between Exit 2 of S.R. 0029 and Robert Street (S.R. 3001). A complete severance of Middle Road at the SVP crossing is also proposed to eliminate through traffic, however this approach raised concerns over accessibility for emergency services and for the residents living in the village of Askam. The traffic-calming measures explored for Middle Road also included speed humps, raised crosswalks, semi-diverter, radar speed display units, one-way streets, multiway stop sign installation (4-way stop), and speed limit reduction. This alternative was dismissed during Stage 1.

Safety and Mobility Improvements (SAMI) Alternative: This alternative includes a combination of safety improvements to enhance safety at various intersections and roadway sections in the study area. The improvements focus on the Sans Souci Parkway (widen to 5 lanes to provide a center turn lane from S.R. 0029 NB off ramp to bifurcated section and remove bifurcated section and flatten S-curve) and Middle Road (install traffic signals at intersections with Espy Street and Prospect Street, widen road at the Kosciuszko Street intersection to provide left turn lanes, raise roadway between Espy Street and Kosciuszko Street to reduce flooding, and revise Exit 2 ramp intersections using concrete islands to channelize vehicles one-way). This alternative was dismissed during Stage 1.

Transportation System Management (TSM) Alternative: This alternative includes installing Variable Message Signs (VMS) in the S.R. 0029 corridor, installing traffic signals and turning lanes at S.R. 0029 Exit 2 and Exit 3 ramps, expanding Luzerne County Transportation Authority (LCTA) Bus Service, constructing park and ride lots, implementing a county-wide ridesharing program, promoting flex work schedules for area businesses, signalizing/widening Middle Road intersections to at Prospect Street, Espy Street, and Kosciuszko Street, and widening the Middle Road Bridge over S.R. 0029. This alternative was dismissed during Stage 1.

Middle Road (S.R. 2008) Upgrade Alternative: This alternative includes improvements to the S.R. 0029/Middle Road interchange ramps (Exit 2), widening of Middle Road (S.R. 2008) from Exit 2 through Askam and Lower Askam to the intersection of Prospect Street, and a new connection to Robert Street (S.R.

EA STEP 3: Alternative Development and Impact Analysis (Section A-B)

3001). The widening includes new shoulders, two new travel lanes for a total of four lanes, intersection improvements, and stream crossing upgrades. The “stream crossing upgrades” include expanding/replacing the existing culverts at Epsy Run and Warrior Run, along with a new small bridge at Nanticoke Creek. This alternative was dismissed during Stage 1.

Alternative 1A: This alternative connects to the Sans Souci Parkway (S.R. 2002) at the existing at-grade Dundee Road intersection and includes an at-grade intersection with a relocated Dundee Road. From there the alignment follows the abandoned railroad bed that extends under S.R. 0029. The proposed S.R. 0029 interchange replaces the existing Exit 3 (Sans Souci Parkway exit). The SVP then extends west through the EC lands, following the abandoned railroad bed before turning south to cross Middle Road (S.R. 2008). After crossing Middle Road east of Kosciuszko Street the alignment turns west and south of the Birchwood Nursing Home, towards Prospect Street. Prospect Street is extended south from its existing terminus to connect to SVP with a new interchange. The alignment then crosses Middle Road again, northeast of Alden, and terminates with a T-intersection at Robert Street (S.R. 3001). This alternative was dismissed during Stage 2.

Alternative 1B: This alternative connects at the bifurcated area of the Sans Souci Parkway (S.R. 2002). The bifurcation would be removed and replaced with an intersection at S.R. 2002. The alignment then follows the abandoned railroad bed to S.R. 0029. The proposed interchange at S.R. 0029 is similar to that of Alternative 1A. The alignment then traverses the EC land and crosses Kosciuszko Street north of the Birchwood Nursing Home and the College Hill Residential Development before crossing Middle Road and turning west toward Prospect Street. The proposed diamond interchange at Prospect Street and the terminus at Robert Street (S.R. 3001), north of the K.M. Smith Elementary School, are similar to Alternative 1A. This alternative was dismissed during Stage 1.

Alternative 1AB: This alternative is a combination of Alternatives 1A and 1B. From the Sans Souci Parkway (S.R. 2002) terminus west to the S.R. 0029 interchange, the Alternative 1B configuration is used. The remainder of this alternative is similar to Alternative 1A. However, the mainline of Alternative 1AB is revised by shifting it further east to avoid potential noise and visual impacts to the College Hill subdivision. In addition, the southwestern terminus is shifted to connect to Robert Street, south of the K.M. Smith Elementary School. This alternative was dismissed during Stage 2.

Alternative 1C: From the Sans Souci Parkway (S.R. 2002) connection to the S.R. 0029 interchange, this alternative is similar to Alternative 1B. The 1C alignment crosses the EC lands with less of a curve than Alternative 1B and has a more northerly Kosciuszko Street crossing. The alignment passes directly over the existing LCCC campus athletic fields. Rather than an interchange, an at-grade intersection is proposed at Prospect Street. Alternative 1C then parallels the existing Middle Road (S.R. 2008) alignment to the south before turning north near the Alden Manor and ending at Robert Street (S.R. 3001). This alternative was dismissed during Stage 1.

Alternative 1D: This alternative begins similar to Alternatives 1B and 1C, with a through movement for westbound Sans Souci Parkway (S.R. 2002) traffic to the SVP. The primary difference is the proposed T-intersection is shifted to the east of the bifurcation. The interchange with S.R. 0029 is similar to the interchange proposed for Alternative 1C except for the southbound S.R. 0029 exit to the SVP. Rather than ramps and loops, there is a simple at-grade intersection. Beyond this interchange, Alternative 1D is similar to Alternative 1C. This alternative was dismissed during Stage 1.

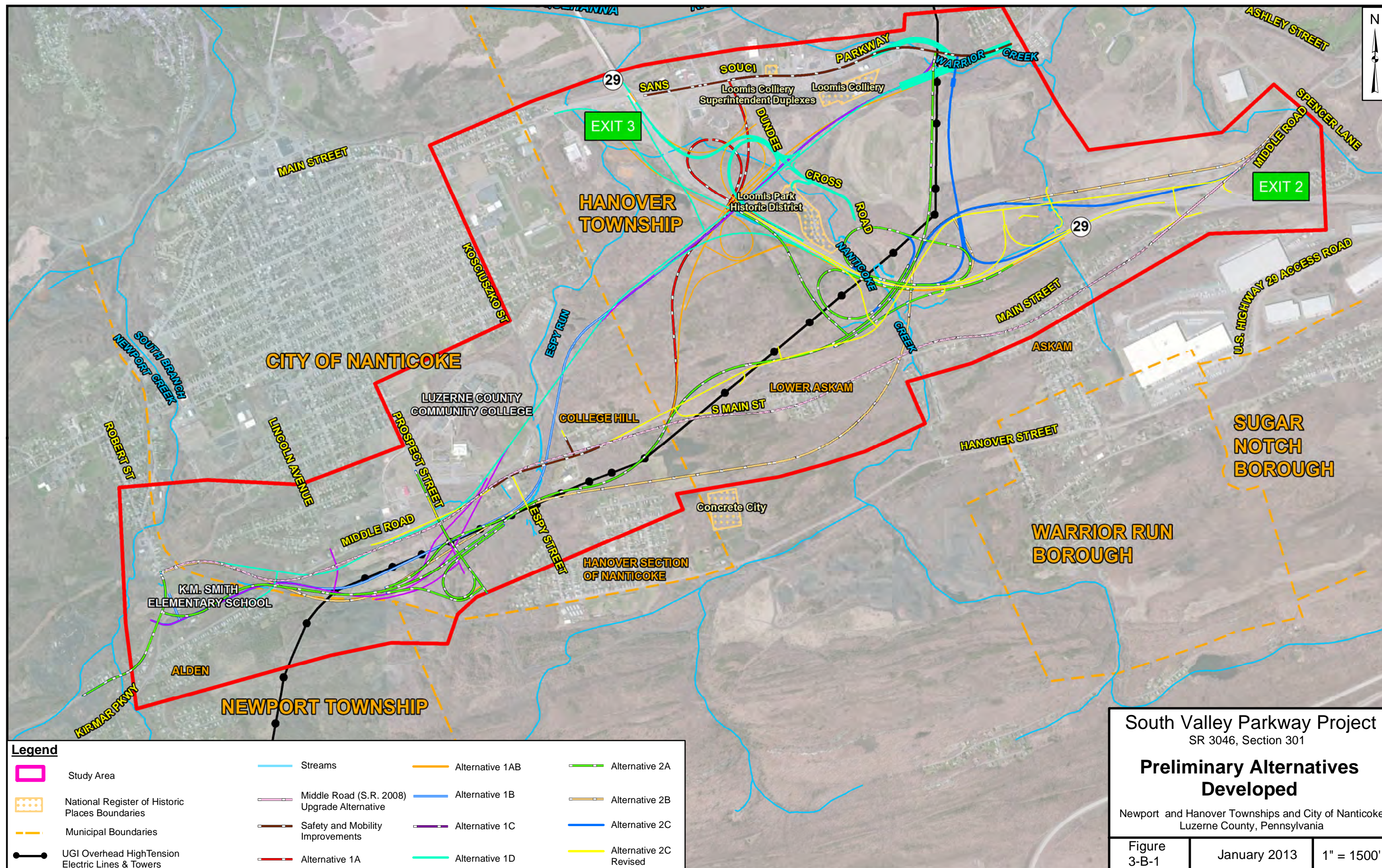


TABLE 3-B-1
PRELIMINARY ALTERNATIVES AND PROJECT NEED

ALTERNATIVE	PROJECT NEEDS				COMMENTS
	SAFETY	ACCESSIBILITY	CONGESTION	ECONOMIC DEVELOPMENT	
No-Build	No	No	No	No	<ul style="list-style-type: none">• Safety – Multiple geometric problem areas and high crash areas in the road network would not be corrected nor would higher speed through traffic in the Middle Road corridor be separated from slower moving local traffic.• Accessibility – The development of the large EC properties located along Middle Road or nearby connecting roads would require the developers to include improvements at the existing private access points to accommodate traffic generated by the new developments. However, the additional traffic would in turn exacerbate traffic flow and safety problems in the Middle Road corridor that would in turn degrade access to/from LCCC, the Greater Nanticoke Area Educational Center, Mercy Special Care Hospital, Nanticoke Police Station, Nanticoke Fire Station, Warrior Run Fire Station, Sugar Notch Fire and Hose Company, and Askam Hose Company.• Congestion- Problems at 5 key intersections along Middle Road would increase resulting in LOS F/F during A.M./P.M. peaks in the 2034 design year. In addition, Middle Road would operate at a LOS E (see Tables 3-C-1.2 and 3-C-1.3).• Economic Development – Existing access points to the large EC properties planned for economic development would remain along Middle Road and connecting roads; however the new traffic from these properties would not be adequately accommodated and the additional traffic would eventually exacerbate the traffic flow and safety problems in the Middle Road corridor.
Traffic Calming Measures	No	No	No	No	<ul style="list-style-type: none">• Safety – Measures would be a short term solution to alleviate safety problems associated with speeding. They would not be beneficial for the long term due to increasing traffic volumes. In addition, radar speed display devices have already been installed in the project area with limited success. Long term use of these devices without frequent police enforcement of speed limits diminishes their effectiveness.• Accessibility – Similar to No-Build Alternative.• Congestion – Similar to No-Build Alternative, traffic congestion would not be reduced along Middle Road and other connecting roadways within the project area. No additional capacity would be provided.• Economic Development – Similar to No-Build Alternative.
SAMI	No	No	No	No	<ul style="list-style-type: none">• Safety – Although safety would be improved at select locations, these localized improvements would do little to improve safety along the S.R. 2008 Middle Road/Main Street Corridor• Accessibility – Similar to No-Build Alternative.• Congestion – Similar to No-Build Alternative, traffic congestion would not be reduced along Middle Road and other connecting roadways within the project area. No additional capacity would be provided.• Economic Development – Similar to No-Build Alternative.
TSM	No	No	No	No	<ul style="list-style-type: none">• Safety – The enhancements would provide minimal reductions of traffic volumes. Although the spot improvements would result in short term benefits to the transportation system as a whole, the long-term project needs would not be met. Widening and signalization are proposed for the S.R. 2008 intersections, but this would do nothing to alleviate the rising traffic volumes, including truck and commuter traffic, that are causing increasingly unsafe conditions.• Accessibility – Similar to No-Build Alternative.• Congestion – The narrow Middle Road corridor provides minimal room for roadway widening, curve flattening, etc. Spot improvements would result in short term benefits to the transportation system as a whole; however these improvements would not overcome the roadway deficiencies nor reduce traffic volumes on Middle Road needed to maintain a level of service acceptable for the projected increase in traffic volume. The proposed traffic signals and widening for turning lanes at select intersections would provide storage bays and keep the through traffic moving. While the operational performance at the various intersections would improve, the overall safety and congestion on Middle Road would not improve.• Economic Development – Similar to No-Build Alternative.
Middle Road Upgrade Alternative	No	No	Yes	No	<ul style="list-style-type: none">• Safety – The upgrade improvements would provide some safety improvements by correcting geometric deficiencies but this alternative would not reduce through traffic volumes on Middle Road, which contribute to safety problems, particularly related to higher speed through traffic mixing with slower moving local traffic in the small villages of Askam and Lower Askam. The corridor would remain as a free access roadway to accommodate the multiple existing residential roads and driveway access points (though many of the driveways would be removed as part of the large number of residential displacements). These access points would continue to be areas of conflict and could result in higher impact crashes since through traffic would continue to drive at high speeds (if not higher) because the geometric deficiencies would be corrected under this alternative.• Accessibility – Similar to No-Build Alternative.• Congestion – The upgrade design would include widening and intersection improvements at major intersections to increase the level of service to acceptable levels.• Economic Development – Similar to No-Build Alternative.
					<p><u>Other Issues Considered:</u></p> <ul style="list-style-type: none">• The alternative received the most opposition of all alternatives developed.• Highest residential displacements (105 displacements) that would effectively displace one-half of the residences in the Askam and Lower Askam communities. These communities have a large number of low-income households (percentage of low-income households exceeds both the state and Luzerne County averages), which could result in a disproportionately high adverse effect and an unacceptable environmental justice effect as per Executive Order (EO) 12898.

TABLE 3-B-1
(CONTINUED)

ALTERNATIVE	PROJECT NEEDS				COMMENTS
	SAFETY	ACCESSIBILITY	CONGESTION	ECONOMIC DEVELOPMENT	
1A	Yes	Yes	Yes	Yes	<ul style="list-style-type: none">• Safety – Would provide a new and safe facility to attract through traffic, particularly traffic traveling between the Sans Souci Parkway (Exit 3) and the LCCC and other areas further south. However, given that most through traffic is using Exit 2, the volume of traffic diverted from Middle Road would not be maximized.• Accessibility – Would provide additional access to the large EC properties located between S.R. 0029, Middle Road, and Kosciuszko Street and to/from LCCC, the Greater Nanticoke Area Educational Center, Mercy Special Care Hospital, Nanticoke Police Station, Nanticoke Fire Station.• Congestion – Would accommodate through traffic volumes and remove it from local roads with slower traffic. However, given that most through traffic is using Exit 2, the volume of traffic diverted from Middle Road would not be maximized.• Economic Development – Existing access points to the large EC properties planned for economic development would remain along Middle Road and connecting roads; and the proposed SVP would provide new access points to accommodate future traffic from the undeveloped land targeted for Mixed Density Infill development while ensuring the efficient and safe operations of the new SVP roadway.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC Members and public expressed minimal support because there would be no improvements or alterations to Exit 2 and there was concern that through traffic would not be diverted from Middle Road. Residents of College Hill Development opposed this alternative.• Large impacts to wetlands (14.2 acres) and floodplains (15.9 acres).
1B	Yes	Yes	Yes	Yes	<ul style="list-style-type: none">• Safety – Similar to Alternative 1A.• Accessibility – Similar to Alternative 1A.• Congestion – Similar to Alternative 1A.• Economic Development – Similar to Alternative 1A.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC Members and public expressed minimal support because there would be no improvements or alterations to Exit 2 and there was concern that through traffic would not be diverted from Middle Road. Residents of College Hill Development opposed this alternative. In addition, PAC cited concern for the high costs associated with of spanning (or filling in) the wetlands.• Largest impacts to wetlands (17.2 acres).
1AB	Yes	Yes	Yes	Yes	<ul style="list-style-type: none">• Safety – Similar to Alternative 1A.• Accessibility – Similar to Alternative 1A.• Congestion – Similar to Alternative 1A.• Economic Development – Similar to Alternative 1A.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC Members and public expressed minimal support because there would be no improvements or alterations to Exit 2 and there was concern that through traffic would not be diverted from Middle Road. Residents of College Hill Development opposed this alternative.• Large impacts to wetlands (11.6 acres) and floodplains (14.8 acres).
1C	Yes	Yes	Yes	Yes	<ul style="list-style-type: none">• Safety – Similar to Alternative 1A.• Accessibility – Similar to Alternative 1A.• Congestion – Similar to Alternative 1A.• Economic Development – Similar to Alternative 1A.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC Members and public expressed minimal support because there would be no improvements or alterations to Exit 2 and there was concern that through traffic would not be diverted from Middle Road. PAC also expressed concern over the direct and fragmentation impacts to the LCCC main campus.• Significant impacts to Luzerne County Community College property (would cross through the campus athletic fields).

TABLE 3-B-1
(CONTINUED)

ALTERNATIVE	PROJECT NEEDS				COMMENTS
	SAFETY	ACCESSIBILITY	CONGESTION	ECONOMIC DEVELOPMENT	
1D	Yes	Yes	No	Yes	<ul style="list-style-type: none">• Safety – Similar to Alternative 1A.• Accessibility – Similar to Alternative 1A.• Congestion – Alternative would not provide adequate levels of service at intersections, including the Prospect Intersection leading to the LCCC campus.• Economic Development – Similar to Alternative 1A.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC Members and public expressed minimal support because there would be no improvements or alterations to Exit 2 and there was concern that through traffic would not be diverted from Middle Road.
2A	Yes	Yes	Yes	Yes	<ul style="list-style-type: none">• Safety – Similar to Alternatives 1A.• Accessibility – Similar to Alternative 1A.• Congestion – Similar to Alternative 1A.• Economic Development – Similar to Alternative 1A.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC Members and public expressed minimal support because there would be no improvements or alterations to either Exit 2 or Exit 3 and there was concern that through traffic would not be diverted from Middle Road.• High impacts to forested lands (179 acres) and wetlands (12.6 acres).
2B	No	Yes	Yes	No	<ul style="list-style-type: none">• Safety – While this alignment would provide a new and safe facility, Exits 2 and 3 would remain and traffic traveling to/from LCCC and other areas further south would still be allowed to use these exits, thereby reducing the volume of traffic diverted from the narrow local roads (in particular Middle Road and Kosciuszko Street). Through traffic on these local roads will continue to conflict with slower moving local traffic and not improve the overall safety of the local network.• Accessibility – Similar to Alternative 1A.• Congestion – Similar to Alternative 1A.• Economic Development – Existing access points to the large EC properties planned for economic development would remain along Middle Road and connecting roads. However, since this alignment extends outside of the areas identified for future infill development and undergoing current site planning; the new traffic from these properties may not be adequately accommodated by the local roads and this alignment would offer no new access points to accommodate additional traffic from EC lands identified as potential infill areas.
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• PAC members and public expressed the greatest opposition to this new alignment alternative.• High number of residential displacements (approximately 11).• High impacts to wetlands (14 acres).
2C	Yes	Yes	Yes	Yes	Alternative 2C – Revision 2 is carried forward as the Build Alternative <ul style="list-style-type: none">• Safety – Would provide a new and safe facility to attract through traffic, particularly traffic traveling between new relocated S.R. 0029 Exit 2 and the LCCC and other areas further west and south and would maximize the diversion of through traffic from Middle Road.• Accessibility – Would provide additional access to the large EC properties located between S.R. 0029, Middle Road, and Kosciuszko Street and to/from LCCC, the Greater Nanticoke Area Educational Center, Mercy Special Care Hospital, Nanticoke Police Station, Nanticoke Fire Station.• Congestion – Would accommodate through traffic volumes and remove it from local roads with slower traffic.• Economic Development – Existing access points to the large EC properties planned for economic development would remain along Middle Road and connecting roads; and the proposed SVP would provide new access points to accommodate future traffic from the undeveloped land targeted for Mixed Density Infill development while ensuring the efficient and safe operations of the new
					<u>Other Issues Considered:</u> <ul style="list-style-type: none">• Majority of PAC members and public expressed support for the Revision 2 of this new alignment alternative.• Lowest number of displacements (1 vacant commercial structure that includes an apartment).• Lowest impacts to wetlands (2.5 acres) and forested lands (93 acres).

**FIGURE 3-B-2
DEVELOPMENT AND EVOLUTION OF ALTERNATIVES**

PUBLIC MEETING #1 02/21/2002	PROJECT NEEDS DEVELOPED	PRELIMINARY ALTERNATIVES DEVELOPED	PUBLIC MEETING #2 06/26/2003	AGENCY FIELD VIEW MEETING 07/15/2003	PAC MEETING #1 12/15/2003	PAC MEETING #2 01/05/2004	PAC MEETING #3 02/18/2004	RESCHEDULED PAC MEETING #3 03/02/2004	PAC MEETING #4 03/30/2004	PAC MEETING #5 05/11/2004	PUBLIC MEETING #3 08/25/2005	PUBLIC MEETING #4 08/03/2006	VE/ACTT MEETING 05/07-09/2007	AGENCY FIELD VIEW MEETING 10/06/2009	PUBLIC MEETING #5 03/03/11
Introduced the project and Penn-DOT's Project Development Process	Following Public Meeting #1 and assessment of traffic data, project needs were defined. Safety - improve safety conditions at select intersections & roadway sections that currently have high crash rates in the Middle Road & South Main Street corridor and other local roadways. Functional Classification - provide better access to the regional expressway system (I-80 and S.R. 0029) and better mobility to major destinations, including the LCCC. Congestion - improve traffic operations and provide relief of traffic congestion for Middle Road & South Main Street corridor and other local roadways. Economic Development - accommodate economic recovery & redevelopment.	1st DRAFT			2nd DRAFT	3rd DRAFT	4th DRAFT	Central Section Refinements	Eastern Section Refinements	Western Section Refinements	Combination of Refinements	Preferred Alternative	Right-sized Preferred Alternative		
		Alternative 1A													
		Alternative 1B													
		Alternative 1AB													
		Alternative 1C													
		Alternative 1D													
		Alternative 2A													
		Alternative 2B													
		Alternative 2C													
		Revised Alt 2C w/closed Exit 2													
		Revised Alt 2C w/partially closed Exit 2													
		Middle Road Upgrade													
		Transportation System Management System													
		No-Build Alternative – carried forward for comparison purposes													
		Alts 1D & 2B dropped and Alt 2C introduced. Suggestion made to shorten new road by moving terminus from Kirmar Parkway to Prospect St. but this raised concerns about not moving traffic from Middle Rd.													
		Noise level concerns raised, along with concerns about the ability to remove traffic from Middle Rd, therefore evaluated ways to deter and calm traffic.													
		Ability to deter traffic from using Middle Rd continues to be an issue.													
		Revised Alt 2C identified as being preferred by the attendees.													
		Public expressed general support of Revised 2C; however, some residents & business owners expressed concern and opposition over the proposed full closure of Exit 2/ Middle Rd.													
		No major issues raised.													
		Reduced lane & shoulder widths, eliminated 50-ft grass median, modified profile to reduce earth-work & structure length/width, and refined alignment. Post-VE/ACTT – terminated new road east of Kosciusko St. and added roundabouts													
		Re-evaluated Warrior Creek structure.													
		Roundabouts were presented at the 3 western intersections. Three additional roundabouts were proposed following Public Meeting #5. The mainline centerline was shifted 30 west of Intersection I14 to avoid high tension lines.													

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Alternative 2A: This alternative extends from the Sans Souci Parkway (S.R. 2002) bifurcation section similar to the Alternative 1 series. It then proceeds in a southwest direction across the EC's land toward the S.R. 0029 crossing of Dundee Road. The SVP mainline then passes over S.R. 0029 and Dundee Road, providing a new interchange between Exits 2 and 3. The proposed interchange is located to the southeast of Loomis Park and Exit 3 would remain in place as is. After crossing S.R. 0029, the alignment parallels Middle Road (S.R. 2008) on the northern side and crosses the road near the Birchwood Nursing Home. From this point to its western terminus, the alternative is similar to Alternative 1A. This alternative was dismissed during Stage 2.

Alternative 2B: This alternative includes an eastern terminus just east of Exit 2 on Middle Road (S.R. 2008) and the existing Exit 2 ramps on the north side of Middle Road (S.R. 2008) are removed. The alignment travels west through the Hanover Crossings area before turning south towards S.R. 0029. The proposed interchange is similar to Alternative 2A, however, the SVP mainline crosses over Middle Road (S.R. 2008) near the Clarks Cross Road intersection and then turns west along the southern edge of the Lower Askam community. The alignment parallels Middle Road (S.R. 2008), crossing Espy Street (S.R. 2010) and intersecting with an extended Prospect Street, before turning north to cross Middle Road (S.R. 2008). The alignment crosses Middle Road (S.R. 2008) again, northeast of Alden, and terminates with a T-intersection at Robert Street (S.R. 3001), north of the K.M. Smith Elementary School. This alternative was dismissed during Stage 1.

Alternative 2C: The original Alternative 2C connects Kirmar Parkway (S.R. 3003) in the west to S.R. 0029, Exit 2 in the east totaling 4.19 miles in length. Two new interchanges are proposed – a Prospect Street Interchange and a new S.R. 0029 Interchange to replace Exit 2. This alternative is proposed as a 4-lane principal arterial roadway with a 50-foot median. Revision 1 reduces the length of the SVP with a connection at Kosciuszko Street/Middle Road intersection instead of the Kirmar Parkway. In addition, the mainline of Alternative 2C does not include the 50-foot median and the width of the roadway shoulders and lanes are reduced. The proposed Prospect Street Interchange is eliminated and the Revision 1 alternative incorporates the Middle Road Upgrade Alternative between Prospect Street and Kosciuszko Street. This alternative was revised and carried forward into Stage 2 as Revision 2.

Alternative 2C – Revision 2 (Build Alternative): This alternative includes replacing the two loop ramps and the slip ramp at the proposed S.R. 0029 with a northbound S.R. 0029 off-ramp. Revision 2 begins at the Middle Road-Prospect Street intersection and continues east to a new Exit 2 resulting in a total mainline length of 3.8 miles. Middle Road would be upgraded from the Prospect Street Intersection to the Kosciuszko Street Intersection west of the intersection connection with the new SVP. Roundabouts are proposed at Prospect Street, Espy Street, and Kosciuszko Street. This alternative is proposed as one lane in each direction with a climbing lane and center turn lane where applicable. This alternative was carried forward as the Build Alternative.

Stage 1 – Alternative Development and Evaluation

A series of general public meetings (five), Project Advisory Committee (PAC) meetings (six), special purpose meetings (thirteen), and resource agency field views/meetings (eight) were conducted to assist the project team in the development and assessment of alternatives for the SVP project, while meeting the project's defined purpose and needs. Attachment B.1 – Summary of Coordination Activities, includes a list that summarizes the various public meetings (general public and PAC meetings) and agency meetings conducted. This attachment also includes copies of public comments/survey results and meeting minutes for

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the PAC and agency meetings. Attachment B.2 – Summary of Special Purpose Meetings includes a list that summarizes the meetings conducted along with copies of meeting minutes. All PAC meetings and general public meetings were held at the LCCC. The PAC included 45 members and alternates (27 men and 19 women), representing each of the project area municipalities, defined neighborhoods, and other stakeholders, including representatives for the following:

- Alden Village, Newport Township
- (Upper) Askam Village, Hanover Township
- College Hill Neighborhood, City of Nanticoke
- City of Nanticoke
- City of Wilkes-Barre
- Dundee Plaza Businesses, Hanover Township
- Earth Conservancy
- Greater Wilkes-Barre Chamber of Commerce
- Hanover Section of Nanticoke, City of Nanticoke
- Hanover Township
- Loomis Park Neighborhood, Hanover Township
- Lower Askam Neighborhood, Hanover Township
- Luzerne County Community College
- Sans Souci Businesses, Sans Souci Parkway, Hanover Township
- Sheatown Village, Newport Township
- United Methodist Church, Askam, Hanover Township
- Village of Sheatown, Newport Township
- Warrior Run Borough

Public Meeting #1 was held on February 21, 2002, to introduce the SVP project and PennDOT's Transportation Project Development Process. Following the meeting and after traffic information was evaluated, the project team formulated the project need statement that served as the basis for the development of improvement alternatives to be evaluated. Input received from the first public meeting lead to the development of eight alternatives that were presented at Public Meeting #2 on June 26, 2003. The eight alternatives included new alignment alternatives (Alternatives 1 and 2) with options (Alternatives 1A, 1B, 1C, 1D, 2A, and 2B), a Transportation System Management (TSM) alternative and a Middle Road Upgrade Alternative. Surveys collected at the meeting indicated opposition to the Middle Road Upgrade Alternative due to the high number of residential displacements. Meeting attendees expressed a preference for Alternatives 2A and 2B and a new Alternative 2C was developed. Figure 3-B-1 illustrates the alignments of the various preliminary alternatives.

It was after the first two general public meetings, when residents and local business people expressed a desire to be more involved in the alternative development and evaluation process, that the PAC was formed. The PAC was intended to provide the project team with a means to conduct more focused public outreach that in turn gave the public the opportunity to provide more timely feedback, including in-depth reviews of the alternatives and recommendations for specific design improvements. The first PAC meeting was held on December 15, 2003, to initiate dialog between the project team and the community. The second PAC meeting held January 5, 2004, revealed a concern that the SVP as proposed may not attract traffic volumes away from Middle Road (S.R. 2008). PAC meeting #3 held February 18, 2004, included the presentation of various adjustments to the proposed improvements designs, including a new combined alignment, Alternative 1AB. In addition, the PAC requested several traffic calming measures to be considered to discourage through traffic from using and speeding along Middle Road (S.R. 2008) between Exit 2 of S.R. 0029 and Robert Street (S.R. 3001), including the complete severance of Middle Road (S.R. 2008) near the proposed reconstructed Exit 2 interchange. It was at this point that the full range of preliminary alternatives was developed and more detailed environmental assessments and design refinements were initiated for the second stage of the alternative development and evaluation process

Stage 2 – Alternative Development and Evaluation

The fourth PAC meeting (referred to as a rescheduled Meeting #3 and held on March 2, 2004) was conducted to provide an opportunity for more members of the general public to review the newest versions of the alternatives being assessed in more detail. This meeting and the fifth PAC meeting (Meeting #4, March 30, 2004) allowed the PAC members to comment on revised versions of Alternatives 1A, 1AB, 2A and 2C. This design refinement and evaluation process included more detailed information on potential impacts as described in the following Form 3B – Alternative Description Forms and in Section C – Summary of Impacts. At the two PAC meetings, the majority of attendees indicated a preference for Alternative 2C because of the belief that it would provide the best opportunity to reduce traffic on Middle Road. The sixth and last PAC meeting (Meeting #5, May 11, 2004), discussed various western alignment options for Alternative 2C (Alignments 1, 2.1, and 2.2).

Following the series of PAC meetings, the project team identified the Recommended Preferred Alternative as Alternative 2C, which was presented to the general public at Public Meeting #3 on August 25, 2005. Of the 179 attendees at the meeting, the majority of survey respondents indicated a preference for Alternative 2C; however, several attendees were concerned that closing of Exit 2, as proposed, would result in a loss of direct access to the Hanover Industrial Park. As a result, the project team revised Alternative 2C to maintain more direct access from S.R. 0029 at Exit 2. Public meeting #4, held August 3, 2006, had approximately 75 attendees and the majority of attendees agreed the revised alignment for Alternative 2C would reduce traffic on Middle Road and therefore improve safety and provide a satisfactory alternative for accessing the Luzerne County Community College.

During the public outreach effort, the project team also met with local business owners, developers and property owners in smaller meetings referred to as special purpose meetings. These meetings were intended to focus on special situations and concerns often related to access issues. The project team engineers evaluated design change requests to address concerns and incorporated those changes that would improve the use and safety of the proposed improvements. These changes were included in the alternative designs shown to the public to receive the public's response to the changes. The project team also coordinated with the federal and state resource and permitting agencies throughout the alternative development process, including conducting two field views to receive the agencies' input on the proposed project alternatives and to discuss potential impacts and mitigation measures for the project.

Following Public Meeting No. 4, PennDOT conducted an internal "Value Engineering/Accelerated Construction Technology Transfer" (VE/ACTT) meeting in May 2007 to identify opportunities to further reduce the construction costs of the proposed improvements given the increasing fiscal constraints experienced by the Commonwealth. Following this meeting, the Preferred Alternative was refined to incorporate revisions to avoid and minimize environmental impacts and to reduce project construction costs while still meeting the project needs as defined in Section I.C. As noted previously, the portion of the proposed project on new alignment will end at the Middle Road connection, just east of the Kosciuszko Street intersection and the new parkway concept will not extend west of the Kosciuszko Street intersection. These revisions reduce the total length of the Alternative 2C. In addition, the proposed roadway's typical section was reduced and the proposed road profile was modified to reduce the amount of earthwork and the size of bridge and culvert structures. The number of travel lanes was reduced from four to two lanes with additional lanes at select locations for truck-climbing lanes. The 50-foot wide grass median was also eliminated and replaced with a more narrow median of varying width. Therefore, to improve traffic flow at the Middle Road intersections west of the new connection, PennDOT proposes the construction of three single-lane roundabouts at the

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intersections of Kosciusko Street, Espy Street, and Prospect Street. Some roadway improvements will be made along the approach road sections of Middle Road and the connecting roads to accommodate the design requirements of the proposed roundabouts. The revised Preferred Alternative was evaluated and it was determined that the revised version would continue to fulfill the Project Need to improve safety conditions, to provide better access and mobility in the regional road network, to improve operations and provide congestion relief, and to support economic development consistent with adopted Land Use Plans.

The last public meeting, Public Meeting #5 held on March 3, 2011, was conducted to present the revised and downsized design for Alternative 2C, including the proposed roundabouts. The overall public reaction to the revisions, including the roundabouts, was positive. However, concerns were expressed over the ability of local residents, in particular older residents, to maneuver through roundabouts given that most people are not familiar with roundabouts not only in the region but also the Commonwealth. In response to these concerns, the design team discussed the benefits of roundabouts with residents. In particular, the design team noted that roundabouts improve safety and provide more capacity when compared to traditional signalized intersections. Of the 23 surveys returned from the March 2011 Public Meeting, eight (8) people expressed support for the proposed roundabouts and 11 people expressed concern and opposition. However, in response to the question if they would consider roundabouts at all of the project intersections, three (3) indicated yes, six (6) indicated no, and 12 indicated possibly. These survey results illustrate mixed feedback concerning roundabouts, which is common for those Pennsylvania communities being introduced to the roundabout concept and having no or minimal prior experience. Therefore, the District will conduct additional informational meetings (during the final design process and/or immediately prior to opening the new roadway) to educate local motorists on how to travel through roundabouts. Overall, the general public consensus at the meeting was the project is needed because traffic volumes and conditions on Middle Road are worsening.

Following Public Meeting #5, Alternative 2C was designed to include three additional roundabouts. The three (3) locations are along the SVP mainline: Intersection I4 (S.R. 3046 Mainline & Ramp SMLW) and Intersection I1 (S.R. 3046 Mainline & S.R. 2008 Main Street) as a single lane roundabouts, and Intersection I2 (S.R. 3046 Mainline, Ramp MLN and Ramp NML) as double lane roundabout. These roundabouts were incorporated into the design due to right-of-way constraints, geometric constraints, improved operations, improved safety and the easy accommodation of further expansion.

Ongoing coordination with the Pennsylvania Game Commission and the findings of mist netting bat surveys identified the presence of the Eastern Small-footed Bat (a state threatened species) in the existing rock outcrop area along the north side of S.R. 0029 (refer to Form 3C4 – Impact Form for Threatened and Endangered Species). Therefore, the design of Ramps MLN and NML that connect S.R. 0029 to the proposed SVP mainline was reevaluated to determine if impacts to the rock outcrop could be reduced. Various options were considered. The first option would slide both ramps 300 feet eastward towards Exit 2. This option reduced impacts to the rock cut, did not increase wetland or stream impacts and slightly reduced construction costs. A second option would slide both ramps 600 feet eastward towards Exit 2. This option further reduced rock impacts, but resulted in additional stream and wetland impacts and would increase construction costs due to requiring an extension of the existing box culvert on the downstream side of Warrior Creek or a retaining wall. The first option was incorporated into the design.

Separately, approximately 2,200 feet of the proposed mainline centerline was shifted in the area where the new roadway would cross under the High Tension Power Line (see Figure 3-B-1). The shift was approximately 30 feet to the west and was required to avoid impacts to the foundation of one of the towers.

Form 3B – Alternative Description Form

ALTERNATIVE: No-Build Alternative

Description: The No-Build Alternative includes only routine maintenance procedures to maintain continuous operation of the existing roadway. No capital improvements to the existing road network are considered under this alternative and no appreciable changes in the current traffic operations would occur. Congestion conditions and safety problem areas would continue without relief. The primary roadways within the project area network include: Middle Road (S.R. 2008), South Cross Valley Expressway (S.R. 0029), Sans Souci Parkway/Main Street (S.R. 2002), Espy Street (S.R. 2010), Robert Street (S.R. 3001), and Kosciuszko Street (local road). Figure 1-E-2 identifies the roadways that make up the primary routes in the local road network and Table 3-B-2 lists the existing roadway conditions.

Middle Road (S.R. 2008), from S.R. 0029 Exit 2 to S.R. 3001, is the primary focus of the proposed improvements. It serves as the regional access route for the Luzerne County Community College (LCCC), Hanover Crossings Business Park, and Hanover Estates, in addition to serving the local residents of Askam, Lower Askam, Alden, and Nanticoke. In addition, it is adjacent to large parcels of EC property proposed for development. Middle Road connects to the South Cross Valley Expressway (S.R. 0029) at Exit 2. The South Cross Valley Expressway is part of the National Highway System and provides high-speed access to I-81. Sans Souci Parkway/Main Street (S.R. 2002) is the primary access to commercial business in the Dundee area and the Nanticoke business district. It also supports a significant amount of the traffic in route to the west side of the Susquehanna River by way of S.R. 0029, Exit 3 and traffic headed to LCCC by way of Kosciuszko Street. Espy Street (S.R. 2010) links Warrior Run and Ashley to South Cross Valley Expressway (S.R. 0029), by way of Middle Road. Espy Street intersects Middle Road between the Kosciuszko Street and Prospect Street intersections with Middle Road. Robert Street (S.R. 3001) connects Middle Road in Newport Township to Market Street in Nanticoke and follows the residential outskirts of Nanticoke. Kosciuszko Street is a local road that intersects with Middle Road and Main Street in Nanticoke. It provides access to Kennedy Elementary, Lincoln Elementary, Greater Nanticoke Educational Center, John S. Fine Senior High School, and LCCC.

Meet Project Needs? ☐ Yes ☒ No

Section I.C (Purpose and Need) summarizes the existing geometric deficiencies, unacceptable levels of service, and safety issues in the Middle Road corridor that would continue to worsen under the No-Build Alternative. The function of the project area roadways is divided between travel mobility and access to adjacent lands. However, these roadways do not currently provide an acceptable level of mobility for through traffic and large tracts of land (including the EC land) have no direct access to the existing network. Specifically, the No-Build Alternative does not meet the defined project needs for Safety, Accessibility, Congestion, and Economic Development. In addition, the No-Build Alternative will not meet the planning initiatives established by the Lackawanna-Luzerne Regional Plan (2011).

Safety – There are multiple geometric problem areas and high crash areas in the road network. The No-Build would not include any improvements to the areas of concern, nor would it separate higher speed through traffic in the Middle Road corridor from slower moving local traffic.

**TABLE 3-B-2
EXISTING ROADWAY NETWORK**

ROADWAY	CLASSIFICATION	DESCRIPTION OF EXISTING CONDITIONS
Middle Road (S.R. 2008, from S.R. 0029 Exit 2 to S.R. 3001)	Urban Minor Arterial	<ul style="list-style-type: none"> • Two, 10-foot lanes with little to no shoulder • Posted 25 to 35 miles/hour speed limit • Front face of residential dwellings, located immediately behind the roadside curb, restricts clear zone through the residential areas of Askam and Lower Askam – actual clear zone width varies from 1 to 5 feet in the project area corridor • Poor vertical and horizontal geometry exists throughout due to rolling terrain • At intersection with S.R. 0029 Exit 2 ramps, road widens to provide a center lane for left turns (with the exception of the exit area, no separate left or right turn lanes are provided in the study area at the two-way stop-controlled intersections in the corridor)
South Cross Valley Express- way (S.R. 0029)	Freeway	<ul style="list-style-type: none"> • Four, 11-foot travel lanes, and 10-foot shoulders • Posted 55 miles/hour speed limit • Divided limited access expressway facility that is part of the National Highway System • Includes two travel lanes in each direction separated by box beam barrier placed in the median • Full access interchanges at junctions with S.R. 2010 (Exit 1), S.R. 2008 (Exit 2), S.R. 2002 (Exit 3), and terminates at T-intersection with S.R. 0011.
Sans Souci Parkway/Main Street (S.R. 2002)	Sans Souci Parkway - Urban Principal Arterial	<ul style="list-style-type: none"> • Four, 11-foot travel lanes, 9-foot shoulders, and 10-foot clear zone • Posted 45 miles/hour speed limit • At intersection with S.R. 0029 Exit 3, road provides two lanes of travel in each direction and acceleration/deceleration lanes at the ramp junctions • One substandard horizontal curve • High crash rate (120% of state average for similar road types)
	Main Street - Urban Minor Arterial	<ul style="list-style-type: none"> • Two, 11 to 12-foot lanes, curbing, limited clear zone, and parking (in 5-foot wide shoulder) within Nanticoke city limits • Posted 25 miles/hour speed limit • Separate left turn lanes provided at signalized intersections with Kosciuszko Street and S.R. 3001 • Two substandard horizontal curves
Espy Street (S.R. 2010)	Urban Collector	<ul style="list-style-type: none"> • Two, 10 to 12-foot lanes, 0 to 6-foot shoulder with some curbing and parking in residential areas • Posted 35 miles/hour speed limit, generally, with reduced speed zones ranging from 15-25 miles/hour • Intersection with Middle Road is substandard for truck traffic and has limited sight distance
Robert Street (S.R. 3001)	Urban Collector	<ul style="list-style-type: none"> • Two, 10-foot lanes and one 2-foot shoulder • Poor vertical geometry due to steep vertical grades (approx. 12% to 14%)
Kosciuszko Street	Local Road	<ul style="list-style-type: none"> • Poor geometric configuration of the Main Street signalized intersection (makes turning movements for school buses difficult) • Heavy school and pedestrian traffic

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Accessibility – Existing access points to the large EC properties planned for economic development are located along Middle Road or nearby along connecting roads. Under the No-Build scenario, the development of these properties would include improvements to these private access points to accommodate traffic generated by the new developments. The additional traffic would in turn exacerbate the traffic flow and safety problems in the Middle Road corridor. In addition, the access to/from LCCC, the Greater Nanticoke Area Educational Center, Mercy Special Care Hospital, Nanticoke Police Station, Nanticoke Fire Station, Warrior Run Fire Station, Sugar Notch Fire and Hose Company, and Askam Hose Company by way of Middle Road would degrade under the No-Build Alternative.

Congestion – Congestion at five key intersections along Middle Road, including both the Espy Street and Kosciuszko intersections, would increase resulting in LOS F/F during A.M./P.M. peaks in the 2034 design year. In addition, Middle Road would operate at a LOS E (see Tables 3-C-1.2 and 3-C-1.3).

Economic Development – Existing access points to the large EC properties planned for economic development are located along Middle Road or nearby along connecting road and would remain; however the new traffic from these properties would not be adequately accommodated and the additional traffic would exacerbate the traffic flow and safety problems in the Middle Road corridor.

Conforms with Local and Regional Land Use Planning and Zoning? ☐ Yes ☒ No

Considered for Further Study? ☒ Yes ☐ No

The No-Build Alternative will not meet the project need and had no public support; however, it is being carried forward for comparison purposes.

Estimated Costs

Engineering:	Right-of-Way:	Construction:	Utilities:
\$0	\$0	\$0	\$0

EA STEP 3: Alternative Development and Impact Analysis (Sections A-B)

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Form 3B – Alternative Description Form

ALTERNATIVE: 1A

Description: The northeastern terminus of the alignment would connect to the Sans Souci Parkway (S.R. 2002) at the existing at-grade Dundee Road intersection and would include an at-grade intersection with a relocated Dundee Road. The relocated Dundee Road would terminate at the SVP at this location (old sections of the road would be abandoned, including the section with the Dundee Tunnel, which is a structure for the railroad crossing). From there the alignment would follow the abandoned railroad bed that extends under S.R. 0029.

The proposed interchange at S.R. 0029 would replace the existing Exit 3 (Sans Souci Parkway exit, at the southeastern end of the Susquehanna River Bridge). The old interchange would be abandoned, except for the southbound S.R. 0029 exit ramp toward Nanticoke. The SVP would then extend west through the EC lands, following the abandoned railroad bed before turning south to cross Middle Road (S.R. 2008).

After crossing Middle Road east of Kosciuszko Street (and the College Hills subdivision), the alignment would turn west and south of the Birchwood Nursing Home, towards Prospect Street. Prospect Street would be extended from its existing terminus at Middle Road to meet the SVP to the south. The proposed diamond interchange at this location would serve as the main access point for the LCCC from the SVP. The alignment would then cross Middle Road again, northeast of Alden, and terminate with a T-intersection at Robert Street (S.R. 3001), north of the K.M. Smith Elementary School.

Figure 3-B-3 illustrates the alignment of Alternative 1A.

Meet Project Needs? ☒ Yes ☐ No

Safety – Alternative 1A would provide a new and safe facility to attract through traffic, particularly traffic traveling between the Sans Souci Parkway (Exit 3) and the LCCC and other areas further south. However, given that most through traffic is using Exit 2, the volume of traffic diverted from Middle Road would not be maximized.

Accessibility – Alternative 1A would provide additional access to the large EC properties located between S.R. 0029, Middle Road, and Kosciuszko Street and to/from LCCC, the Greater Nanticoke Area Educational Center, Mercy Special Care Hospital, Nanticoke Police Station, Nanticoke Fire Station.

Congestion – Alternative 1A would accommodate through traffic volumes and remove it from local roads with slower traffic. However, given that most through traffic is using Exit 2, the volume of traffic diverted from Middle Road would not be maximized.

Economic Development – The existing access points to the large EC properties planned for economic development would remain along Middle Road and connecting roads under this alternative; and the proposed SVP would provide new access points to accommodate future traffic from the undeveloped land targeted for Mixed Density Infill development while ensuring the efficient and safe operations of the new SVP roadway.

Conforms with Local and Regional Land Use Planning and Zoning? ☒ Yes ☐ No

EA STEP 3: *Alternative Development and Impact Analysis (Sections A-B)*

Considered for Further Study? ☐ Yes ☒ No

Public Support:

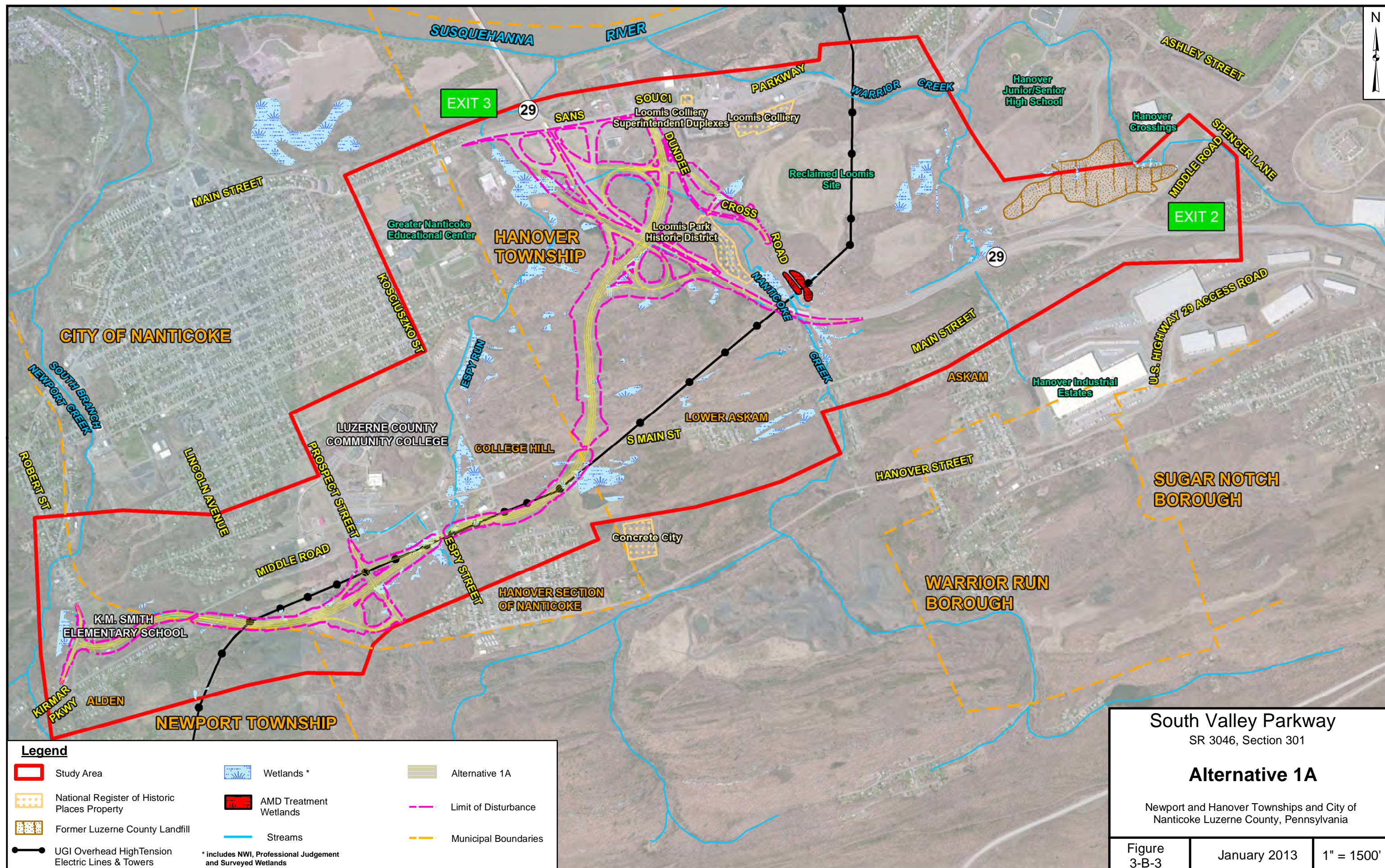
Alternative 1A received minimal support from the PAC representatives at the fourth PAC meeting (March 30, 2004) and was dismissed from further study. PAC and members of the public expressed a preference for improvements and alterations at S.R. 0029 Exit 2, rather than Exit 3, to maximize the diversion of traffic from Middle Road. The general public did not indicate major support of or opposition to Alternative 1A at Public Meeting No. 2 (June 26, 2003) when all alternatives were presented for public feedback. However, residents of the College Hills subdivision expressed opposition to this alternative because it would approach the development as it extends south to cross Middle Road.

Environmental Impacts:

The impact to wetlands and floodplains associated with Alternative 1A would be over 14 acres and 15 acres, respectively, which are some of the highest impacts associated with the new alignment alternatives. These high impacts are primarily a result of encroachments into the large wetland system and floodplain area west of Exit 3. Table 3-C-1.1 summarizes the potential impacts associated with the Alternatives presented to the public at the fourth PAC meeting (March 30, 2004).

Estimated Costs

Engineering:	Right-of-Way:	Construction:	Utilities:
\$--	\$1,500,000	\$67,062,000 (YR 2011)	\$--



EA STEP 3: *Alternative Development and Impact Analysis (Sections A-B)*

Form 3B – Alternative Description Form

ALTERNATIVE: 1AB

Description: Alternative 1AB would be a combination of Alternatives 1A and 1B. From the Sans Souci Parkway (S.R. 2002) terminus (at the bifurcation section) west to the S.R. 0029 interchange, the Alternative 1B configuration would be used. The remainder of this alternative would be similar to Alternative 1A, which would involve crossing Middle Road east of the College Hill, subdivision. However, the mainline of Alternative 1AB was revised by shifting it further east to avoid potential noise and visual impacts to the College Hill subdivision in the central section of the alignment. In addition, the southwestern terminus was shifted to connect to Robert Street, south of the K.M. Smith Elementary School.

See Figure 3-B-4 that highlights Alternative 1 AB.

Meet Project Needs? ☒ Yes ☐ No

Safety – Similar to Alternative 1A.

Accessibility – Similar to Alternative 1A.

Congestion – Similar to Alternative 1A.

Economic Development – Similar to Alternative 1A.

Conforms with Local and Regional Land Use Planning and Zoning? ☒ Yes ☐ No

Considered for Further Study? ☐ Yes ☒ No

Public Support:

Similar to Alternatives 1A and Alternative 1B, Alternative 1AB received minimal support from the PAC representatives at the fourth PAC meeting (March 30, 2004), in particular, the residents of the College Hill development were concerned about noise impacts. This alternative was then dismissed from further study. Similar to Alternative 1A, the PAC representatives and members of the public expressed a preference for improvements at Exit 2, rather than Exit 3, to maximize the diversion of traffic from Middle Road.

Environmental Impacts:

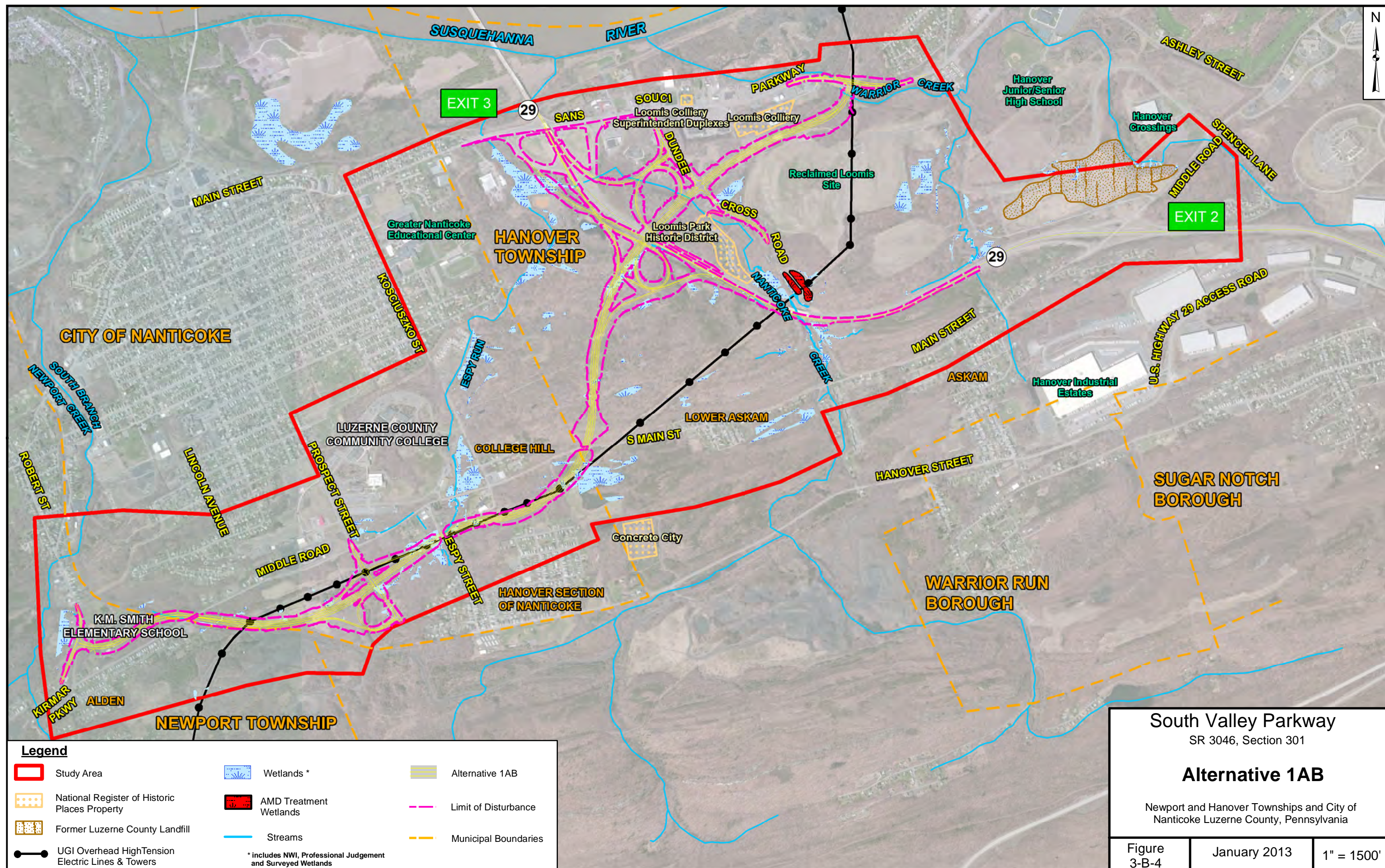
PAC members also cited the costs of spanning or the adverse impact of filling wetlands in the central section of the alignment as a disadvantage of this alternative. These impacts include over 11 acres of wetland impacts and over 14 acres of floodplain impacts. Table 3-C-1.1 summarizes the potential impacts associated with the Alternatives presented to the public at the fourth PAC meeting (March 30, 2004).

Estimated Costs

Engineering:	Right-of-Way:	Construction:	Utilities:
\$--	\$1,800,000	\$74,022,000 (YR 2011)	\$--

EA STEP 3: Alternative Development and Impact Analysis (Sections A-B)

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EA STEP 3: *Alternative Development and Impact Analysis (Sections A-B)*

Form 3B – Alternative Description Form

ALTERNATIVE: 2A

Description: Alignment 2A would extend from the Sans Souci Parkway (S.R. 2002) bifurcation section similar to the terminus proposed for the Alternative 1 series. It would proceed in a southwest direction across the EC's land toward the S.R. 0029 crossing of Dundee Road.

The SVP mainline would pass over S.R. 0029 and Dundee Road, providing a new interchange between Exits 2 and 3. The interchange would be located to the southeast of Loomis Park where S.R. 0029 crosses Dundee Road. By shifting the interchange to this location, Exit 3 would not be affected and would remain in place as is. The key feature of the proposed new interchange with S.R. 0029 would be the direct access ramp from SVP westbound to S.R. 0029 southbound. The exit from southbound S.R. 0029 would be an at-grade intersection while the remaining movements would be handled with loops. After crossing S.R. 0029, the alignment would parallel Middle Road (S.R. 2008) on the northern side and would cross the road near the Birchwood Nursing Home, similar to Alternative 1A.

After crossing Middle Road (S.R. 2008) east of Kosciuszko Street (and the College Hills subdivision), the alignment would be similar to Alternative 1A and 1B and would involve extending Prospect Street past its existing terminus at Middle Road (S.R. 2008) to meet the SVP to the south. The interchange at this location would serve as the main access point for LCCC from the SVP. Finally, the alignment would cross Middle Road (S.R. 2008) again, northeast of Alden, and terminate with a T-intersection at Robert Street (S.R. 3001), south of the K.M. Smith Elementary School.

See Figure 3-B-5 that illustrates Alternative 2A.

Meet Project Needs? ☒ Yes ☐ No

Safety – Similar to Alternatives 1A.

Accessibility – Similar to Alternative 1A.

Congestion – Similar to Alternative 1A.

Economic Development – Similar to Alternative 1A.

Conforms with Local and Regional Land Use Planning and Zoning? ☒ Yes ☐ No

Considered for Further Study? ☐ Yes ☒ No

Public Support:

PAC members at the fourth PAC Meeting on March 30, 2004, disliked how the eastern section of Alternative 2A did not include improvements to Exits 2 or Exit 3 of S.R. 0029. PAC members expressed a preference for improvements at Exit 2 to maximize the diversion of traffic from Middle Road.

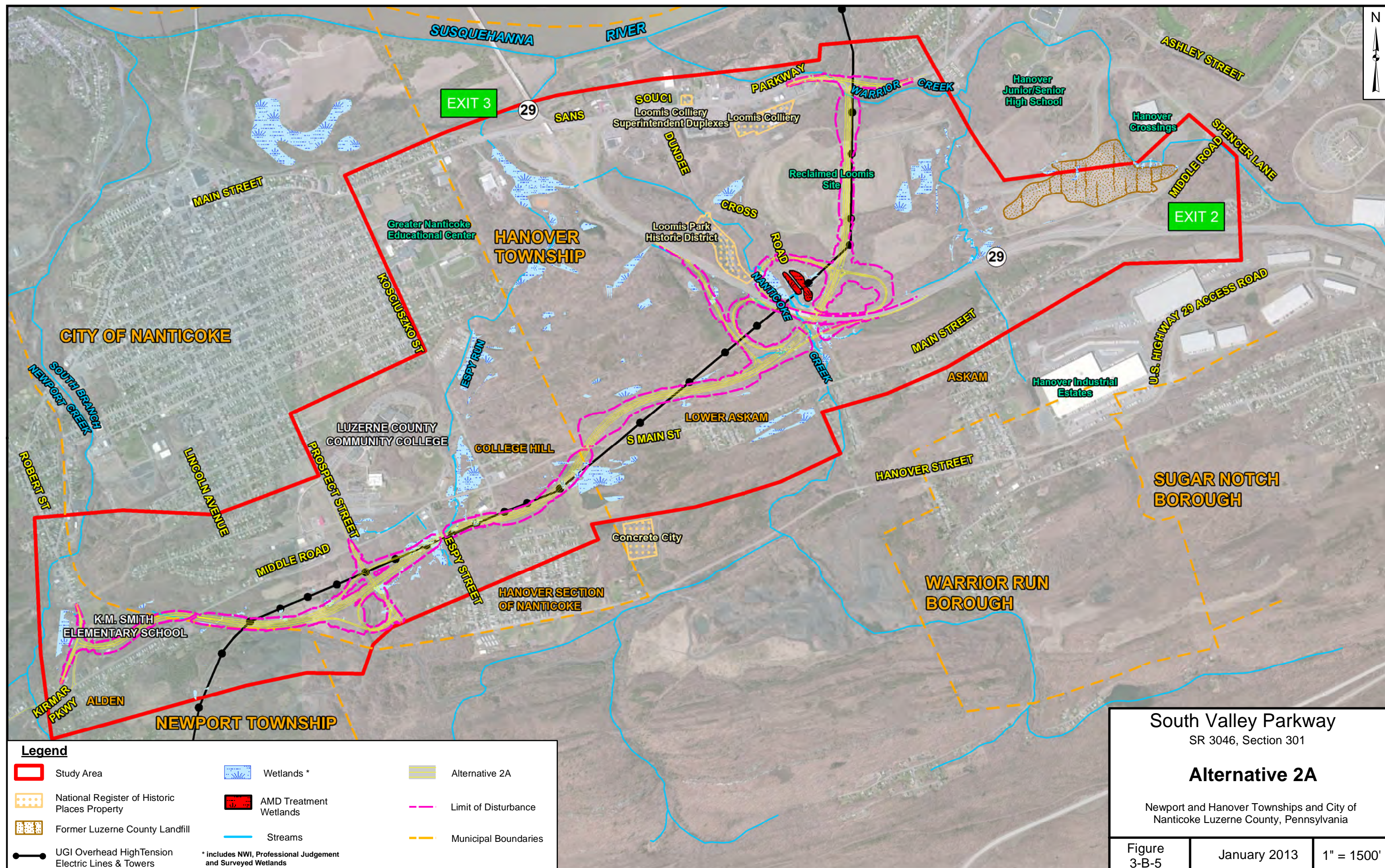
EA STEP 3: Alternative Development and Impact Analysis (Sections A-B)

Environmental Impacts:

Table 3-C-1.1 summarizes the potential impacts associated with the Alternatives presented to the public at the fourth PAC meeting (March 30, 2004). Alternative 2A would result in high impacts to forested lands (179 acres) and wetlands (12.6 acres).

Estimated Costs

Engineering:	Right-of-Way:	Construction:	Utilities:
\$--	\$1,320,000	\$88,699,000 (YR 2011)	\$--



Form 3B – Alternative Description Form

ALTERNATIVE: 2C, Alternative 2C – Revision 1 and Alternative 2C – Revision 2 (Build Alternative)

Description:

Original Alternative 2C

Alternative 2C as originally proposed would connect Kirmar Parkway (S.R. 3003) in the west with S.R. 0029, Exit 2 in the east totaling 4.19 miles in length. Two new interchanges were proposed which included the Prospect Street Interchange and the S.R. 0029 Interchange. See Figure 3-B-6. A total of 22 structures were included with this alignment which was proposed as a 4-lane principal arterial roadway that included a 50-foot median.

Alternative 2C – Revision 1

A Value Engineering/Accelerated Construction Technology Transfer (VE/ACCTT) Meeting held in May 2007 identified various cost saving measures for Alternative 2C. These measures included lane/shoulder width reductions, elimination of 50-foot grass median, profile enhancements, and roadway alignment refinement (to economize structures). At the Post-VE/ACCTT follow-up meeting held in December 2007, it was proposed that the NEPA environmental review be completed for the entire project but the project's construction be "staged," or programmed for shorter sections or discrete construction elements as funding permits. The initial construction effort would complete the portion of SVP on new alignment (includes the East and Central Sections) to its connection at the Kosciuszko Street/Middle Road intersection. This adjustment would postpone the construction of the West Section of Alternative 2C that continues to the Kirmar Parkway. This option would still meet the project need since the major traffic generator in the project area is the Community College at the Kosciuszko Street/Middle Road intersection. In addition, there are no development plans (conceptual or otherwise) at this time for the EC lands within and south of this portion of the project area (see Figure 3-C-6.1). The final West Section of the project would be constructed when funding becomes available and the traffic in the West Section reaches unacceptable LOS.

After the Post –VE/ACCTT meeting a West Section Line and Grade Work Session was held in January 2008. At this meeting, upgrade options were evaluated for Middle Road from the Kirmar Parkway to Kosciuszko Street as an alternate to the Prospect Street Interchange. This work session resulted in the elimination of multiple structures and a reduction of new roadway while still meeting the project purpose and need. Under this alternate, the West Section would be economized by only upgrading existing Middle Road between Prospect Street and Kosciuszko Street. As a result, Alternative 2C – Revision 1 would incorporate the Middle Road Upgrade Alternative between Prospect Street and Kosciuszko Street. No improvements were proposed from Prospect Street westward to the Kirmar Parkway. See Figure 3-B-7.

Alternative 2C – Revision 2 (Build Alternative)

Further review of Alternative 2C – Revision 1 resulted in the removal of the two loop ramps and the slip ramp at the S.R. 0029 interchange. Traffic analysis concluded the Alternative 2C – Revision 2 would operate at acceptable levels of service by replacing the two loop ramps and one slip ramp with a northbound S.R. 0029 off-ramp. As such, Alternative 2C – Revision 2 was proposed to begin at the Middle Road-Prospect Street intersection and continue east to Exit 2 resulting in a total mainline length of 3.8 miles (6.1

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total roadway miles). As part of Alternative 2C – Revision 2, Middle Road would be upgraded from the Prospect Street Intersection to the Kosciusko Street Intersection before entering the newly constructed section of the South Valley Parkway. Roundabouts are proposed at Prospect Street, Espy Street, and Kosciusko Street. Three other roundabouts were later proposed along the new alignment portion of the SVP. Intersection I4 (S.R. 3046 Mainline & Ramp SMLW) and Intersection I1 (S.R. 3046 Mainline & S.R. 2008 Main Street) were proposed as single lane roundabouts and Intersection I2 (S.R. 3046 Mainline, Ramp MLN and Ramp NML) was proposed as a double lane roundabout. The SVP would primarily be one lane in each direction with a climbing lane and center turn lane where applicable. There will be one new interchange with S.R. 0029 Interchange consisting of 3 ramps and will require 3 structures (2 bridges and 1 culvert).

The section of Middle Road paralleling Alternative 2C, Revision 2 will be maintained for local traffic, primarily for the villages of Askam and Lower Askam. The proposed improvements will help deter non-residents from using Middle Road. These improvements include the following:

- The installation of concrete mountable curb at Ramp D to prohibit drivers from using this ramp to access Middle Road.
- Proposed Ramps SMLW (S.R. 0029 SB Off-Ramp) and NML (S.R. 0029 NB Off-Ramp) will provide direct access to S.R. 3046 from S.R. 0029.
- Existing Exit 2 Ramps A and B which currently provide direct access to Middle Road will be removed as these movements will be replaced by Ramps SMLW and NML.

It is also noted that the cause of the crashes along Middle Road is a combination of the large/increasing traffic volumes (that is a mix of higher speed through traffic and local traffic) and the geometric limitations. Therefore removing one of the components of the cause (high speed through traffic to be directed to the new SVP) will help improve safety for local traffic continuing on Middle Road and the through traffic that will use the new SVP. In addition, this alternative will include banning heavy trucks from using Middle Road and directing this traffic to the SVP. There will be signage present at the Middle Road (S.R. 2008) realignment intersection (where the western end of the new SVP mainline ties into Middle Road) and the new roundabout intersection of Middle Road and SVP at the eastern end of the project that will ban tractor trailers from Middle Road. The signage will state, “No Tractor Trailers on Main Street, Use South Valley Parkway” with the “Except Local Deliveries” mounted beneath. No geometric improvements/upgrades planned are currently planned for the existing Middle Road.

The revised Exit 2 would allow traffic to exit off of northbound S.R. 0029 and access Middle Road to travel east towards Hanover Crossings Business Park. The Exit 2 revisions would also allow eastbound Middle Road traffic to access southbound S.R. 0029 or access the eastern section of the proposed SVP to head west towards the community college. This alternative would include four proposed access points for future planned development.

Table 3-C-1.1 summarizes the potential impacts associated with the Alternatives presented to the public at the fourth PAC meeting (March 30, 2004), including this alternative. The final version of Alternative 2C was also presented to the general public at public meeting #5 on March 3, 2011. This alternative avoids and minimizes many of the potential impacts to key resources in the project area while meeting the project needs. More detailed impact information for this alternative is provided in the 3C Forms (Impact Forms) of Section II.C (Summary of Impacts). See Figure 3-B-8.

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Meet Project Needs? ☒ Yes ☐ No

Conforms with Local and Regional Land Use Planning and Zoning? ☒ Yes ☐ No

Considered for Further Study? ☒ Yes ☐ No

Estimated Costs:

Original Alternative 2C

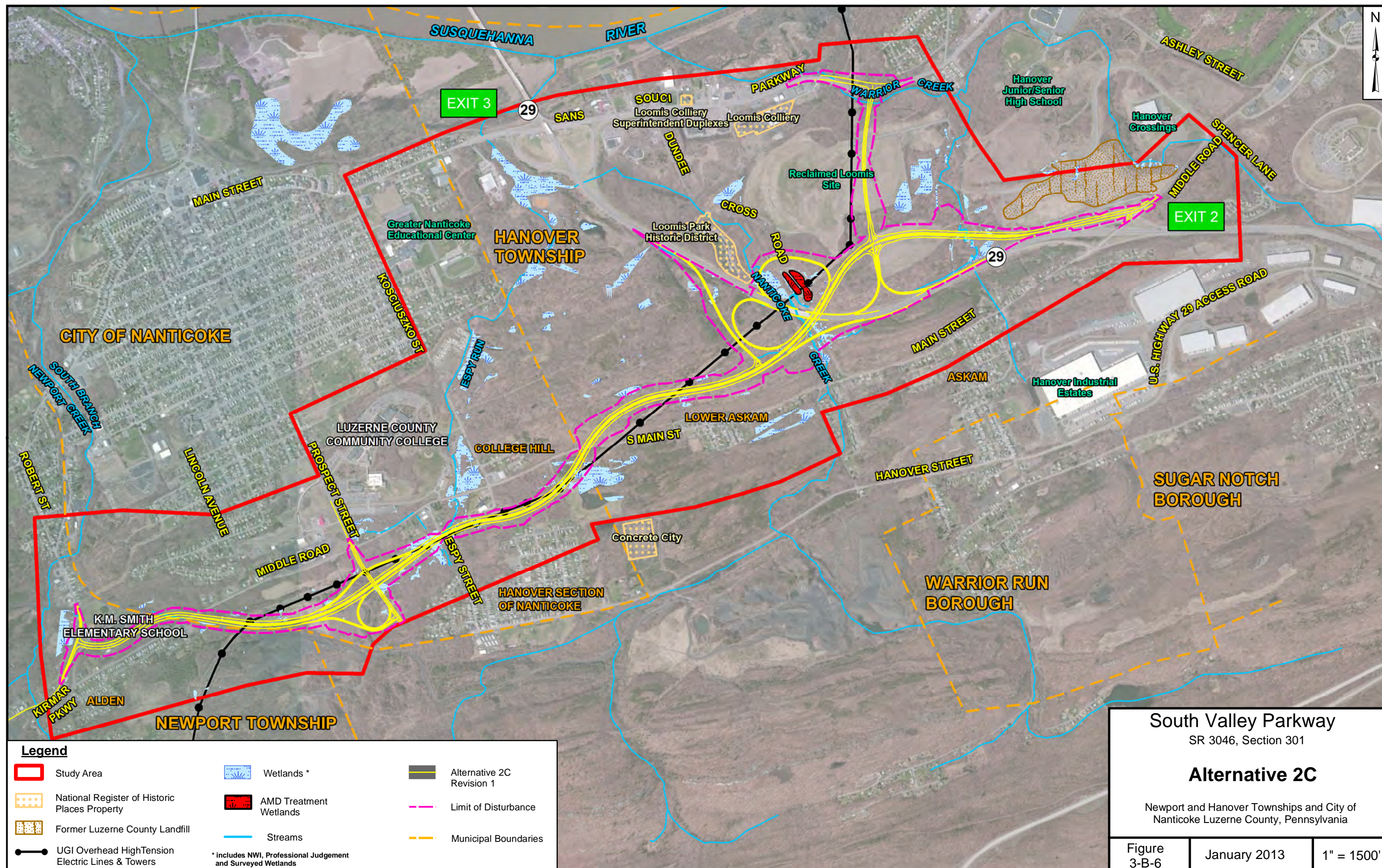
Engineering:	Right-of-Way:	Construction:	Utilities:
\$--	\$1,552,000	\$89,348,000 (YR 2011)	\$--

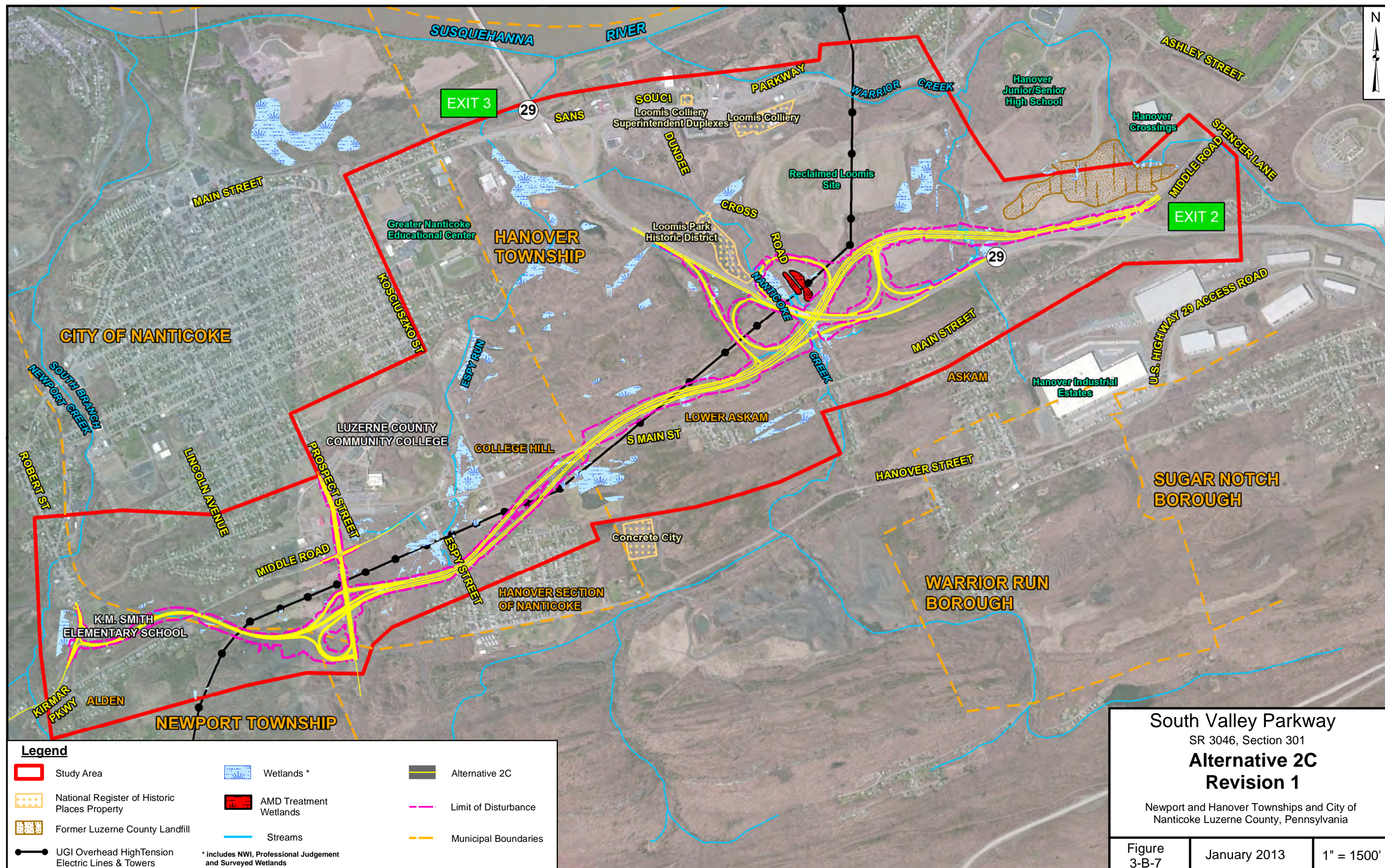
Right-Sized/VE Alternative 2C – Revision 2 (Build Alternative)

Engineering:	Right-of-Way:	Construction:	Utilities:
\$3,500,000	\$3,048,000	\$37,532,000 (YR 2011)	\$180,000

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C. SUMMARY OF IMPACTS

TABLE 3-C-1.1
PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT FOR KEY FEATURES

	NO-BUILD ALTERNATIVE	ALTERNATIVE 1A	ALTERNATIVE 1AB	ALTERNATIVE 2A	ALTERNATIVE 2C – REVISION 2 DIRECT IMPACTS
NATURAL RESOURCES					
No. of Wetlands	0	41	40	47	45
Wetland Area	0	14.2 acres	11.6 acres	12.6 acres	2.5 Acres (2.159 Acres permanent impacts)
EV Wetlands	0	0	0	0	0
No. of Stream Crossings	0	2	3	3	6
HQ/EV Streams/Watersheds	0	0	0	0	0
No. of Wild or Stocked Trout Streams	0	0	0	0	0
Coastal Zone Involvement	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Navigable Waterways	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Invasive Non-Native Plants	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sensitive Aquifers	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
No. of Public/Private Wells	0	0	0	0	0
100-yr. Floodplains	0	15.9 acres	14.8 acres	0.9 acres	0
100-yr. Floodways	0	3,736 LF of streams impacted	3,777 LF of streams impacted	2,861 LF of streams impacted	3,073 LF of streams impacted
Erosion-prone Areas Exposed (acres)	0	0	0	0	0
No. of Unique Geologic Resources	0	1 mining air shaft	1 mining airshaft	2 mining air shafts	0
Threatened or Endangered Species	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Forestland (acres)	0	148 acres	155 acres	179 acres	93 acres
Rangeland (acres)	0	0	0	0	0
Sanctuaries/Refuges (acres)	0	0	0	0	0
Productive Agricultural Land (acres)	0	0	0	0	0
Prime Agricultural Land (acres) -ALPP	0	0	0	0	0
Farmland Soils – FPPA	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
No. of Farm Operations Affected	0	0	0	0	0
State Game Lands, Forest, or Parks (acres)	0	0	0	0	0
No. of National Natural Landmarks	0	0	0	0	0
No. of Natural and Wild Areas	0	0	0	0	0

TABLE 3-C-1.1
(CONTINUED)

	NO-BUILD ALTERNATIVE	ALTERNATIVE 1A	ALTERNATIVE 1AB	ALTERNATIVE 2A	ALTERNATIVE 2C – REVISION 2 DIRECT IMPACTS
COMMUNITY RESOURCES					
No. of Residential Structures/Units	0	5	5	5	1
No. of Commercial Structures/Units	0	2	3	2	1 vacant unit that is part of the residential structure
No. of Community Facilities	0	2 LCCC (0.14 acres) and KM Smith Elementary (2.25 acres)	2 LCCC (0.13 acres) and KM Smith Elementary (2.25 acres)	2 LCCC (0.14 acres) and KM Smith Elementary (2.25 acres)	1 LCCC (2.39 acres)
No. of Parks & Recreation Facilities	0	School Playground (0.02 acres)	School Playground (0.02 acres)	School Playground (0.02 acres)	0
Involves Public Controversy	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Impacts to Community Cohesion	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
No. of Cemeteries	0	0	0	0	0
Intrusions on Visually Sensitive Areas	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Impacts to Low-income or Minority Populations	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
No. of Impacts to Major Utilities	0	0	0	0	0
Impacts to Proposed Development Areas	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Conformance with Local and Regional Land Use Planning & Zoning	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Indirect and Cumulative Impacts	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Impacts to Civil Defense	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
CULTURAL RESOURCES					
No. of Eligible or Listed National Register Sites/Districts Adversely Affected	0	0	0	0	0
No. of Known Archaeological Sites	0	0	0	0	0
High Probability Archaeological Areas (acres)	0	5.2 acres	17.2 acres	11.0 acres	0
No. of National Register Sites of State/National Significance	0	0	0	0	0
No. of National Historic Landmarks	0	0	0	0	0
No. of Archaeological Sites that Warrant Preservation in Place	0	0	0	0	0

TABLE 3-C-1.1
(CONTINUED)

	NO-BUILD ALTERNATIVE	ALTERNATIVE 1A	ALTERNATIVE 1AB	ALTERNATIVE 2A	ALTERNATIVE 2C - REVISION 2 DIRECT IMPACTS
SAFETY AND MOBILITY					
Level of Service Achieved	Ranges from “B” to “F” (2034)	Ranges from “A” to “E” (2034)	Ranges from “A” to “E” (2034)	Ranges from “A” to “E” (2034)	Ranges from “A” to “E” (2034)
Projected Traffic Volumes (Design Year)	18,410 vpd (2034)	17,050 vpd (2034)	17,050 vpd (2034)	17,050 vpd (2034)	17,050 vpd (2034)
No. of New Signalized Intersections or Interchanges	0	2 intersections and 2 interchanges	3 intersections and 2 interchanges	2 intersections and 2 interchanges	1 interchange (also includes 6 roundabouts)
No. of Pedestrian Crosswalks/Overpasses Affected	0	0	0	0	Pedestrian sidewalks located at each of the 6 roundabouts.
No. of Railroad Facilities Affected/Type	0	0	0	0	0
Opportunities for Multimodal Connectivity	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Negatively Affects Local Access	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Negatively Affects Regional Access	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
No. of Hiking Trails/Scenic Walkways Affected	0	0	0	0	0
No. of Bikeways Affected	0	0	0	0	0
AIR, NOISE, AND VIBRATION					
Air Quality*	0	0	0	0	0
Conforms with MPO’s SIP **	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Noise***	0	2	2	2	0
Potential Vibration Impacts	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
WASTE SITES					
No. of Waste Sites	0	2 (Exxon Service Station, PG&E Operating Services)	4 (Exxon Service, Waste Reduction/Recycling, Wilkes-Barre Dodge, PG&E Operating Services)	1 (Wilkes-Barre Dodge)	0
Area of Waste Sites	0	0.23 acres	2.20 acres	0.01 acres	0
No. of Brownfield Sites	0	0	0	0	0
Area of Brownfield Sites	0	0	0	0	0
SECTION 4(f) & SECTION 6(f)					
No. of Section 4(f) Properties Used	0	1	1	1	0
No. of Section 6(f) Properties Impacted	0	0	0	0	0
COST					
Estimated Construction Cost (Year 2011) Note – the costs for utility relocations and for design engineering were only developed for the Preferred Alternative.	\$0	\$67,062,000 – Construction \$1,500, 000 – Right-of-Way	\$74,022,000 – Construction \$1,800,000 – Right-of-Way	\$88,699,000 – Construction \$1,320,000 – Right-of-Way	\$37,532,000 – Construction \$3,048,000 – Right-of-Way \$3,500,000 – Engineering \$180,000 – Utilities

* Number of sensitive receptor sites which exceed state and/or federal guidelines for CO and PM2.5/PM10 level.
** A no-build alternative is not a project and would not be on the MPO’s SIP.
**** Number of sensitive receptor sites which exceed state and/or federal guidelines for noise abatement.

Form 3C1 – Impact Form**Identification of Resource:** Safety and Mobility

Methodology & Existing Conditions: Level of Service (LOS) is a method of rating used to determine a roadway's ability to provide adequate capacity for the volume of traffic. Capacity of a roadway is generally based upon operational characteristics that provide an indication of the ability for motorists to pass slower vehicles and drive at the posted speed limit. The LOS rating system for roadway sections is defined below.

LOS	TRAFFIC FLOW CONDITIONS
A	Free Flow
B	Desired speeds can be selected freely; maneuverability is occasionally impeded
C	Stable flow, but selection of speed is influenced by others and maneuverability is obtained through careful decisions
D	High density but generally stable flow; speed and freedom to maneuver are restricted
E	Unstable flow; operating conditions are at or near full capacity; speeds are typically reduced and passing opportunities are infrequent
F	Unstable flow; traffic flow is normally forced or broken down; long queues form; stop and go waves also form within queues

LOS for signalized and unsignalized intersections is defined as a function of the average vehicle control delay, as listed below. LOS may be calculated per-movement or per-approach for any intersection configuration; however, LOS for an intersection as a whole is only defined for signalized and all-way stop configurations.

LOS	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION
A	≤10 sec	≤10 sec
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	≥80 sec	≥50 sec

Intersections designed as roundabouts are unsignalized circulatory roadway around a central island with all entering vehicles yielding to circulating traffic. The metric used to measure the operations of roundabouts is the ratio of traffic flow rate (volume) to capacity, referred to as the Volume to Capacity (v/c) ratio. An intersection with a v/c ratio of less than 0.85 is considered under-saturated and typically has sufficient capacity and stable operations. For v/c ratios of 0.85 to 1.00, traffic flow becomes less stable and a v/c ratio that exceeds 1.00 (demand exceeding capacity), queues of vehicles accumulate and either affect adjacent intersections or cause shifts in demand patterns.

For the assessment of alternative designs for the SVP project, an overall LOS D was used as the minimum threshold to achieve for signalized and unsignalized intersections in the design year (2034). A v/c ratio of

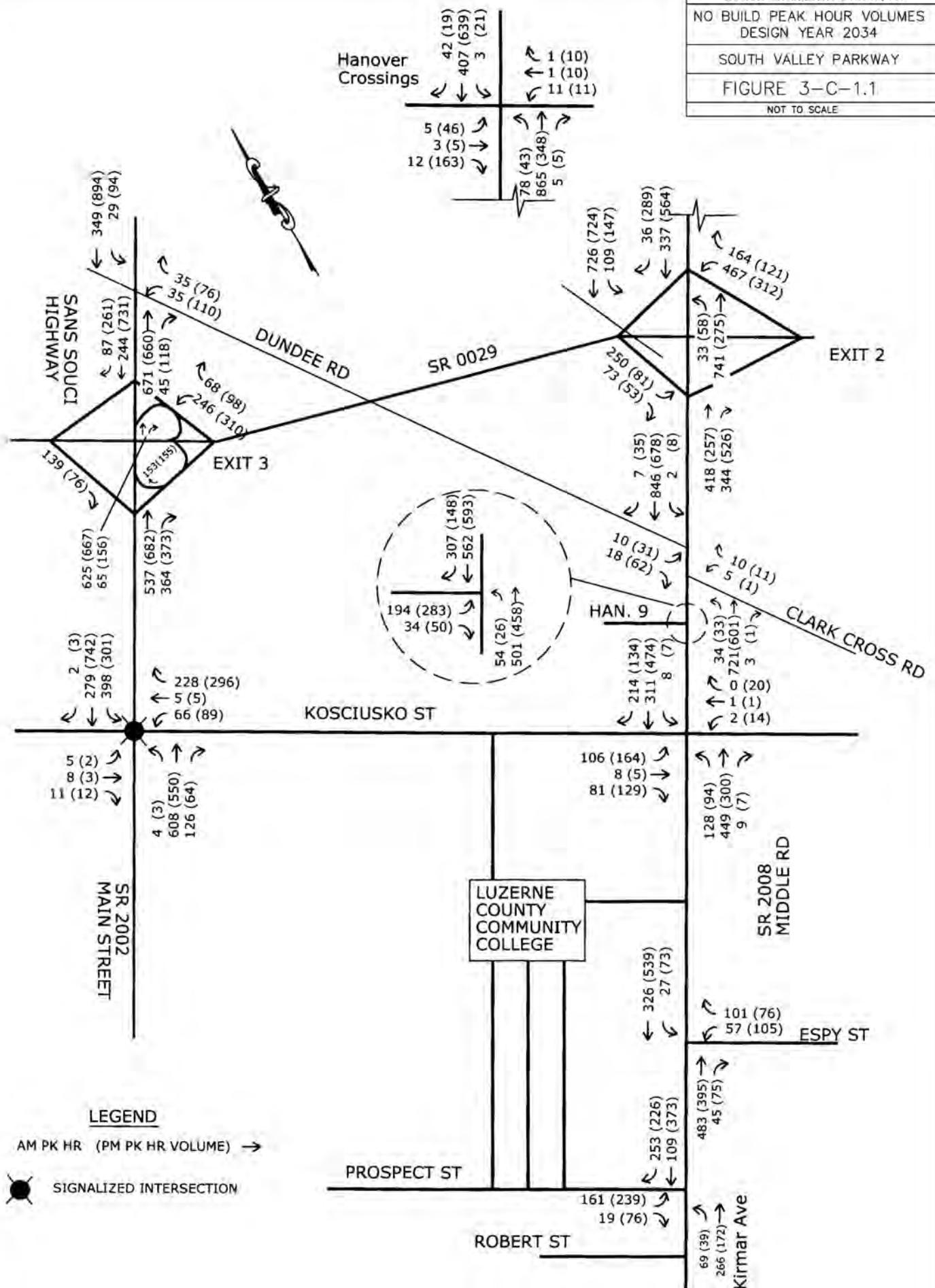
EA STEP 3: Alternative Development and Impact Analysis (Section C)

0.85 was used as the maximum threshold for proposed roundabouts. The traffic analysis completed for the SVP project included an analysis of both existing and projected intersections and road sections. The 2010 Highway Capacity Manual and Synchro Version 8 traffic models were used to perform capacity analysis at intersections and to calculate projected LOS and delay estimates. Roundabout operations were studied using the roundabout analysis tool, SIDRA Intersection, and the v/c ratio was calculated for both proposed signalized intersection improvements and roundabouts.

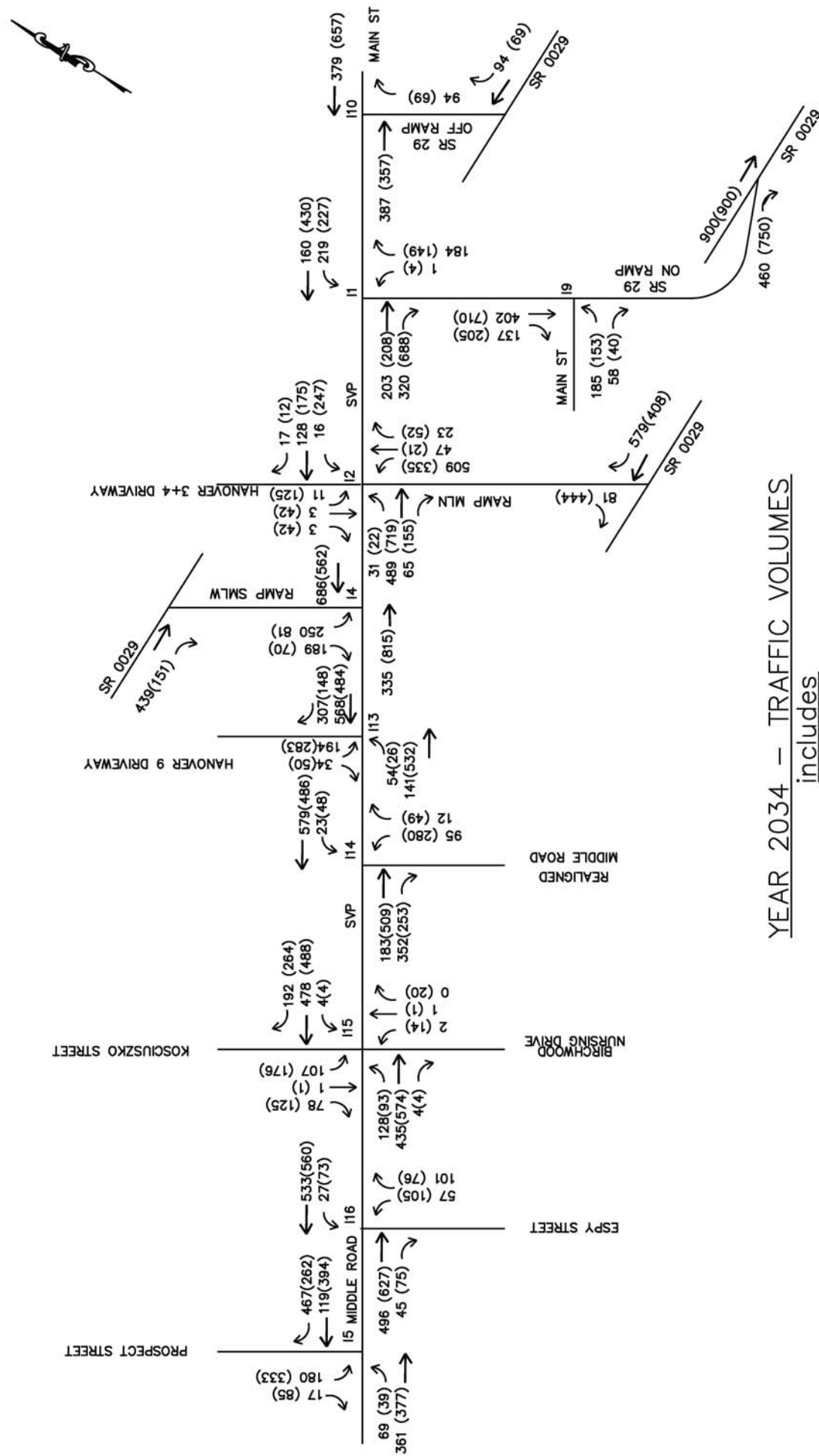
Opening year traffic projections were developed for year 2014, whereas the design year is based on 2034 traffic volumes. Peak hour traffic volumes for the Design Year 2034 used for the analysis are provided in Figures 3-C-1.1 and 3-C-1.2 for the No-Build and Build Alternatives, respectively. Traffic projections are based on the following:

- The Luzerne County Community College – used growth rate of 1.5% per year, for twenty years.
- Existing and projected traffic volumes were redistributed based on the findings of the project origin and destination survey, along with the conclusion that the SVP will provide a modern, safer and more efficient route to LCCC than Middle Rd currently provides.
- The background growth rate for the study area was determined to be 0.0% per year (PennDOT growth rate for an urban, non-interstate in Luzerne County).
- Opening Year 2014 traffic volumes – sum of proposed background growth traffic and the LCCC expansion traffic (although the growth rate is 0% for the study area, the existing traffic volumes were expanded by 1.0% per year until Year 2014 to be conservative due to the steady increase of enrollment year to year).
- Design Year 2034 background volumes were developed by applying the growth rate of 0% to the Year 2014 background traffic volumes; expanding LCCC volumes from Year 2014 at a rate of 1.5% per year for twenty years; and including Hanover Crossings development traffic based on 25% build out for proposed development of the Hanover 9 parcel and 50% build out for proposed development of Hanover 7 (Phases 3 and 4) parcel.

The project area encompasses Middle Road/Main Street (S.R. 2008), which functions as an urban, minor arterial. The existing roadway is a two-lane road characterized by narrow lanes and shoulders through the high density villages of Askam and Lower Askam, where there is minimal set-back distance for the residential structures. The roadway and shoulder widths vary from 18 to 24 feet and 0 to 3 feet, respectively, and the posted speed limit varies from 25 to 35 mph. At its intersections with the S.R. 0029 Exit 2 ramps, the roadway widens to provide a center lane for left turns. With the exception of this location, separate left or right turn lanes are not provided in the study area at the two-way stop controlled intersections. In summary, geometric deficiencies were identified throughout the corridor, including a lack of capacity, substandard lane and should widths, substandard sight distances, obstructions in clear zone, lack of access control, and substandard intersection widths for turning vehicles. A more detailed description of the existing roadway conditions is provided in the Project Needs Report (January 2005) and the Project POA Report (2012).



INCLUDES LCCC GROWTH, 25% HANOVER 9, AND 50% HANOVER CROSSINGS



YEAR 2034 – TRAFFIC VOLUMES

includes

Hanover Crossing

and

Hanover - 9

REVISÉ

25% HAN-9 / 50% HANOVER CROSSINGS

LEGEND

20(30)	--- AM(PM) PEAK HOUR TRAFFIC VOLUMES
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
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89	89
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93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

PREPARED BY:
BORTON-LAWSON WILKES-BARRE, PA
BOGART ENGINEERING MOSCOW, PA

BUILD PEAK HOUR VOLUMES
DESIGN YEAR 2034

SOUTH VALLEY PARKWAY

FIGURE 3-C-1.2

NOT TO SCALE	OCT. 2012
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EA STEP 3: Alternative Development and Impact Analysis (Section C)

Safety issues along Middle Road (S.R. 2008) were identified through an evaluation of crash history using PennDOT's reportable crash data for the five years between 2005 and 2009. A "reportable crash" is defined as a collision involving one or more vehicles that required a police report (i.e., collisions involving an injury or death, and/or the vehicle was damaged to the extent that it could not be driven and therefore required towing). There were a total of thirty-two (32) crashes that occurred between January 1, 2005, and December 31, 2009. An evaluation of the crash rates for Middle Road has shown that the Middle Road Crash Rate is 0.80 crashes per million vehicle miles travelled and the Middle Road Fatality Crash Rate is 2.49 fatal crashes per 100 million vehicle miles travelled. Four areas have been identified as crash cluster locations accounting for twenty-two (22) of the thirty-two (32) crashes or 69%:

- Prospect St & Middle Rd Intersection – six (6) crashes
- Espy St & Middle Rd Intersection – three (3) crashes
- Kosciuszko St & Middle Rd Intersection – nine (9) crashes
- S.R. 0029 Northbound Ramps & Middle Rd (Exit 2) – four (4) crashes

The details of the crash analysis were reviewed to determine common factors contributing to crashes along Middle Road. Based on this review, road surface, illumination, environmental factors and weather were ruled out as significant contributing factors. The most common vehicle type, the automobile, accounted for 84% of the crashes and the majority of the crashes were vehicles colliding with fixed objects, which accounted for 27% of the total crashes. The narrow lanes, narrow shoulders, and lack of lateral clearance throughout sections of Middle Road may have contributed to the frequency of these types of crashes. In addition, 85% of the crashes occurred during the typical LCC education semesters, September through April while the remaining four months, May through August, only account for 15% of the crashes. It is also important to note that the majority of the crashes occurred between 3:00 to 4:00 P.M. with 15% of the crashes, followed by 7:00 to 8:00 A.M. and 9:00 to 10:00 A.M. each with 12% of the crashes. These time frames correlate to typical peak hour periods of roadway networks; however, the double A.M. peaks could be attributed to normal workforce commuter traffic (early peak) followed by college traffic (later morning peak).

Impacts:

No-Build Alternative – The No-Build alternative would result in an Average Daily Traffic (ADT) volume of 16,200 vehicles per day (vpd) for Middle Road and would not correct the geometric deficiencies nor alleviate failing traffic conditions within the corridor. The future No-Build LOS would range from LOS C to F (2034) as illustrated in Tables 3-C-1.2 and 3-C-1.3.

Build Alternative – The proposed SVP Build Alternative is a principle arterial and parallel alternate route to Middle Road (S.R. 2008) as illustrated in Figure 3-C-1.3. The project includes the construction of a new two-lane facility between a relocated Exit 2 on S.R. 0029 to a new intersection with Middle Road just east of Kosciuszko Street, with an estimated capacity of 3,200 passenger cars per hour (pch) both directions and 1,700 pch one-way. The design and posted speed will be 45 mph. The new proposed roadway widens at proposed intersections and includes truck-climbing lanes in the eastbound/westbound directions. Three existing intersections along Middle Road (I15-Kosciuszko Street, I16-Espy Street, and I5-Prospect Street) will be upgraded with roundabouts. In addition, roundabouts were considered feasible for three other intersections (I1, I2, and I4) along the proposed SVP.

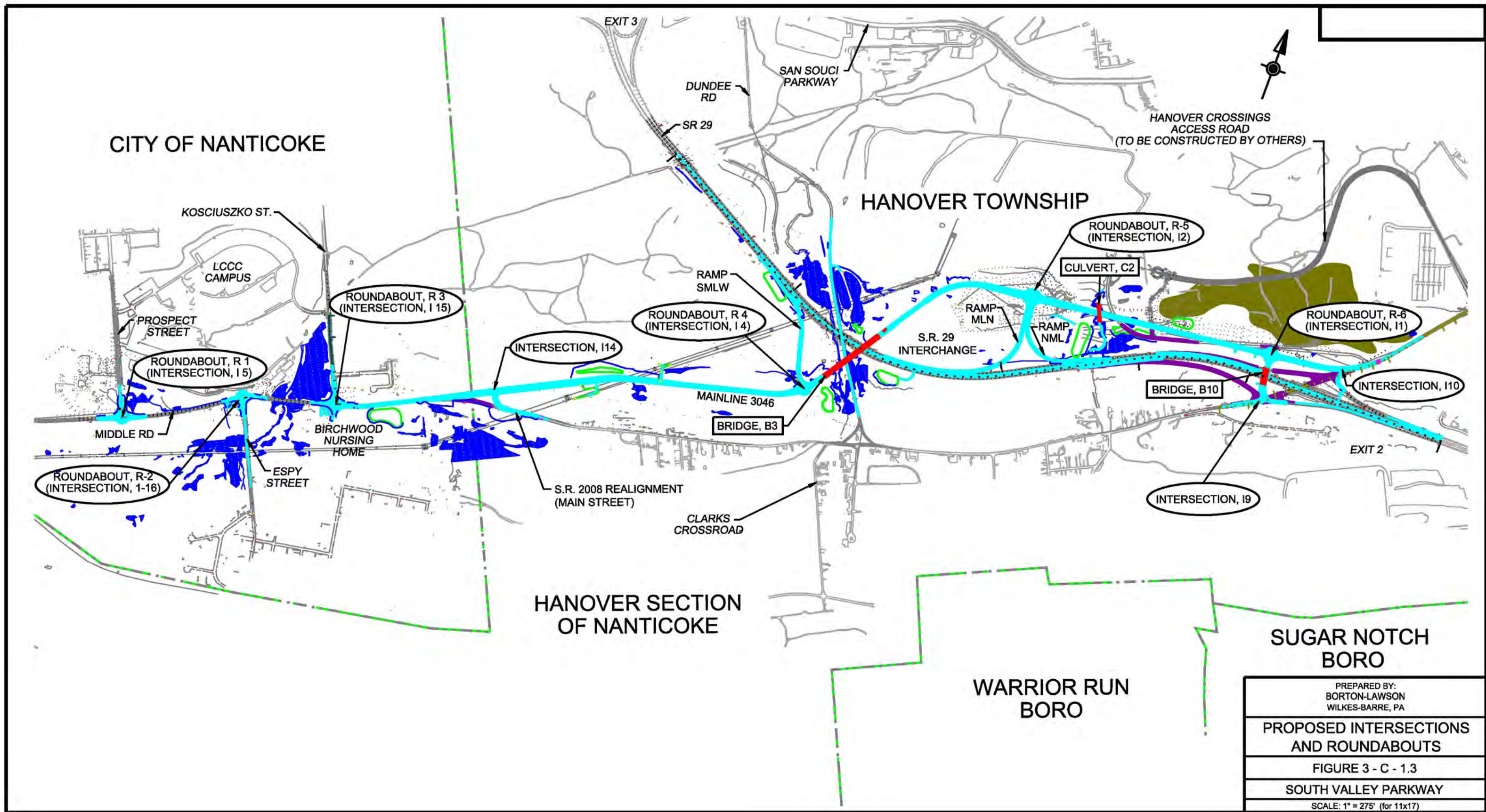
EA STEP 3: Alternative Development and Impact Analysis (Section C)

The proposed SVP connects to S.R. 0029 to the west of the existing Exit 2 as a new Point-of-Access (POA). The POA uses a split diamond alternative, along with modifications to Exist 2 (POA January 2012). The SVP is intended to improve the deteriorating conditions of safety, access, and congestion within the existing roadway network. The SVP is anticipated to operate at 60% of full capacity with a projected ADT volume of 9,100 vpd in the Opening Year 2014 and 14,300 vpd in the Design Year 2034. The LOS for the SVP is projected to range from LOS A to E in the Design Year 2034, as illustrated in Tables 3-C-1.2 and 3-C1.3. The SVP would divert traffic from Middle Road and Middle Road is projected to have a Design Year 2034 ADT volume of 4,900 vpd and LOS would range from LOS C to D.

A travel time study conducted for the project (documented in the SVP VE/ACTT Report, November 2007) shows that travel times will be reduced anywhere between 0.4 and 3.9 minutes with the proposed SVP improvements in-place as compared to using the existing Middle Road/Main Street. This travel time reduction will ultimately reduce the response times for the emergency service providers in the region.

While the roundabouts are intended to be a cost-effective and safe alternative to signalized intersections and the overall public feedback on the Build Alternative has been positive; at the last public meeting (Public Meeting #5 held on March 3, 2011) concerns were expressed over the ability of local residents, in particular older residents, to maneuver through roundabouts given that most people are not familiar with them. In response, the District proposes to conduct additional public informational meetings (during the final design process and/or immediately prior to opening the new roadway) to educate local motorists, bicyclists, and pedestrians on how to travel through roundabouts.

Minimization/Mitigation: The proposed SVP roadway improvements are anticipated to improve traffic operations and safety in the project area. The only mitigation measures proposed is to conduct additional public informational meetings (during the final design process and/or immediately prior to opening the new roadway) to educate local motorists, bicyclists, and pedestrians on how to travel through roundabouts.



**TABLE 3-C-1.2
INTERSECTION LEVELS OF SERVICE**

INTERSECTION	LEVELS OF SERVICE (V/C RATIO FOR ROUNDABOUT LOCATIONS)							
	BUILD				NO-BUILD			
	2014		2034		2034 UNSIGNALIZED		2034 SIGNALIZED	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
I5 (S.R. 2008/Middle Rd & Prospect St)	B or better	B or better	B or better (0.67)	B or better (0.57)	C*	F*	B	D
I16 (S.R. 2008/Middle Rd & S.R. 2010/Espy St)	B or better	B or better	B or better (0.63)	B or better (0.63)	C*	F*	B	C
I15 (S.R. 2008/Middle Rd & Kosciuszko St)	B	B	B or better (0.52)	B or better (0.67)	F*	F*	E	E
I14 EB/WB/NB (SVP & S.R. 2008/Middle Rd)	A/B/B	B/B/B	A/B/B	B/B/B	-	-	-	-
I4 (SVP & Ramp SMLW)	B	B or better	C or better (0.79)	B or better	-	-	-	-
I2 (SVP & Ramp MLN/Ramp NMLE)	C or better	D or better	B or better	B (0.81)	-	-	-	-
I1 (SVP & S.R. 2008/Main St)	C or better	B or better	B (0.34)	B (0.75)	-	-	-	-
I9 (S.R. 2008/Relocated Main St & S.R. 0029 SB On-Ramp) *	B	B	C	D	-	-	-	-
I10 (S.R. 2008/Main St & S.R. 0029 NB Off-Ramp)*	C	B	C	B	-	-	-	-
S.R. 0029 to Ramp SMLW	B	B	B	B	-	-	-	-
Ramp MLN to S.R. 0029	B	B	B	B	-	-	-	-
S.R. 0029 to Ramp MLN	A	A	A	A	-	-	-	-
S.R. 0029 On-ramp to S.R. 0029	B	B	B	B	-	-	-	-
S.R. 0029 to S.R. 0029 Off- ramp	A	A	A	A	-	-	-	-
Middle Rd & Clarks Cross Rd	-	-	-	-	D*	C*	-	-
Middle Rd and Dundee Rd – RT/LT	-	-	-	-	C/E*	C/E*	-	-
Middle Rd and Exit 2EB Off-ramp	-	-	-	-	F*	D*	E	D
Middle Rd and Exit 2 WB Off-ramp	-	-	-	-	F*	F*	F	D

* Unsignalized model – LOS shown for stopped approach.

**TABLE 3-C-1.3
ROADWAY SECTIONS LEVELS OF SERVICE**

SOUTH VALLEY PARKWAY (S.R. 3046) SECTIONS	LEVELS OF SERVICE	
	BUILD	NO-BUILD
	2034	2034
Middle Road (S.R. 2008) between Prospect St and Espy St	D	E
Middle Road (S.R. 2008) between Espy St and Kosciuszko St	D	
Middle Road (S.R. 2008) between Kosciuszko St and Middle Rd Realignment	D	
Middle Road (S.R. 2008) between Kosciuszko St and Relocated Main St	D	
SVP between Middle Road Realignment and proposed Hanover 9 Driveway	D	-
SVP between proposed Hanover 9 Driveway and S.R. 0029 Ramp SMLW	D	-
SVP between S.R. 0029 Ramp SMLW and S.R. 0029 Ramps MLN/NML	D	-
SVP between S.R. 0029 Ramps MLN/NML and Main St (S.R. 2008)	D	-
SVP between Main St (S.R. 2008) and S.R. 0029 Ramp D	D	-

Form 3C2 – Impact Form

Identification of Resource: Surface Waters (Wetlands, Streams and Floodplains)

Methodology & Existing Conditions: The wetland delineation study included both offsite and onsite investigations. The offsite investigation included information from the following resources: USFWS National Wetland Inventory (NWI) mapping (Nanticoke and Wilkes-Barre West); the USDA, Natural Resources Conservation Service (NRCS) Soil Survey maps and county hydric soils and soils with hydric inclusions lists for Luzerne County; and U.S. Geologic Survey (USGS) 7.5 Minute topographic mapping (Nanticoke and Wilkes-Barre West). The onsite wetland investigations were completed between 2002 and January 2010. All wetland mapping was completed in accordance with Executive Order 11990, Protection of Wetlands, DOT Order 5660.1A, Preservation of Wetlands, 23 CFR Part 777, Wetland Finding Procedures, Federal Clean Water Act, and Clean Stream Law. The results of the wetland and watercourse delineation were reviewed and verified by the U.S. Army Corps of Engineers (USACE) and the PA Department of Environmental Protection (DEP). A Jurisdictional Determination Field View (June 9, 2010, was conducted with the agencies to facilitate the verification of the delineation of the waters of the U.S. in the study area (see meeting minutes in Attachment B.1).

Wetland areas within nonagricultural lands were identified and delineated using the Routine On-Site Determination Method described in the USACE' Wetland Delineation Manual (1987). All wetlands identified were classified in accordance with the USFWS's Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979). Dominant vegetation, soil characteristics, and indicators of hydrology were evaluated for each wetland and adjacent upland habitat. The Munsell Soil Color chart was used to determine matrix and mottle colors for each soil sample. Watercourse channels were identified in accordance with the PA DEP Chapter 105 definition for regulated watercourses.

The Luzerne County Soil Survey and the Penn State online soil map (<http://soilmap.psu.edu>) were reviewed to identify the soil map units located within the SVP project study area. The Penn State online soil map application identifies Holly (Ho), Atherton (At), and Chippewa (ClA) as hydric soils. Basher (Bf), Braceville (BrB, BrC), Mardin (MaB), Oquaga and Lordstown (OlB, OlC, OlD, OpB, OpD, OXF), Pope (Ps), Strip Mine (Sm), Urban Land (Ub), Volusia (VoB, VoC), and Wurtsboro (WrB, WrC, WrD, WtB) soils are identified as containing hydric soil inclusions. Basher and Pope soils contain Holly inclusions. Braceville soils contain Rexford as hydric inclusions. Mardin, Volusia, and Wurtsboro soils contain Chippewa as hydric inclusions. Oquaga and Lordstown, strip mine land, and urban land contain wet areas as hydric inclusions.

Wetlands

Within the study area and as shown on Figure 3-C-2, 124 wetlands totaling 37.8 acres and 5 vernal pools totaling 0.13 acre were identified and delineated during field investigations. The functional assessment of the wetlands involved a two-step process of first organizing similar wetlands in common groups based on landscape position and secondly assessing the functions and values of each group using the Wetland Evaluation Technique 2.0. The functional groups of wetlands for the project include the following categories.

- Hillside - Wetlands are located entirely within and/or originate upslope of the floodplain. The hydrology to these wetlands includes groundwater seepage and surface water runoff.

EA STEP 3: Alternative Development and Impact Analysis (Section C)

- Floodplain - Wetlands are located within the floodplain of a watercourse. These wetlands do not extend up into the hillside. Floodplain wetlands are assumed to be connected to Waters of the United States (i.e., adjacent or abutting).
- Linear roadside - Wetlands are located adjacent to an existing roadway. These wetlands collect surface water runoff and act as drainage features for the roadway.
- Mining - Wetlands are generally located in an upland position within areas associated with past mining activities.

Details regarding each wetland delineated methods and functional assessment are described in the SVP “Wetland Delineation Report” (January 2010). Table 3-C-2.1 summarizes anticipated impacts to the individual wetlands.

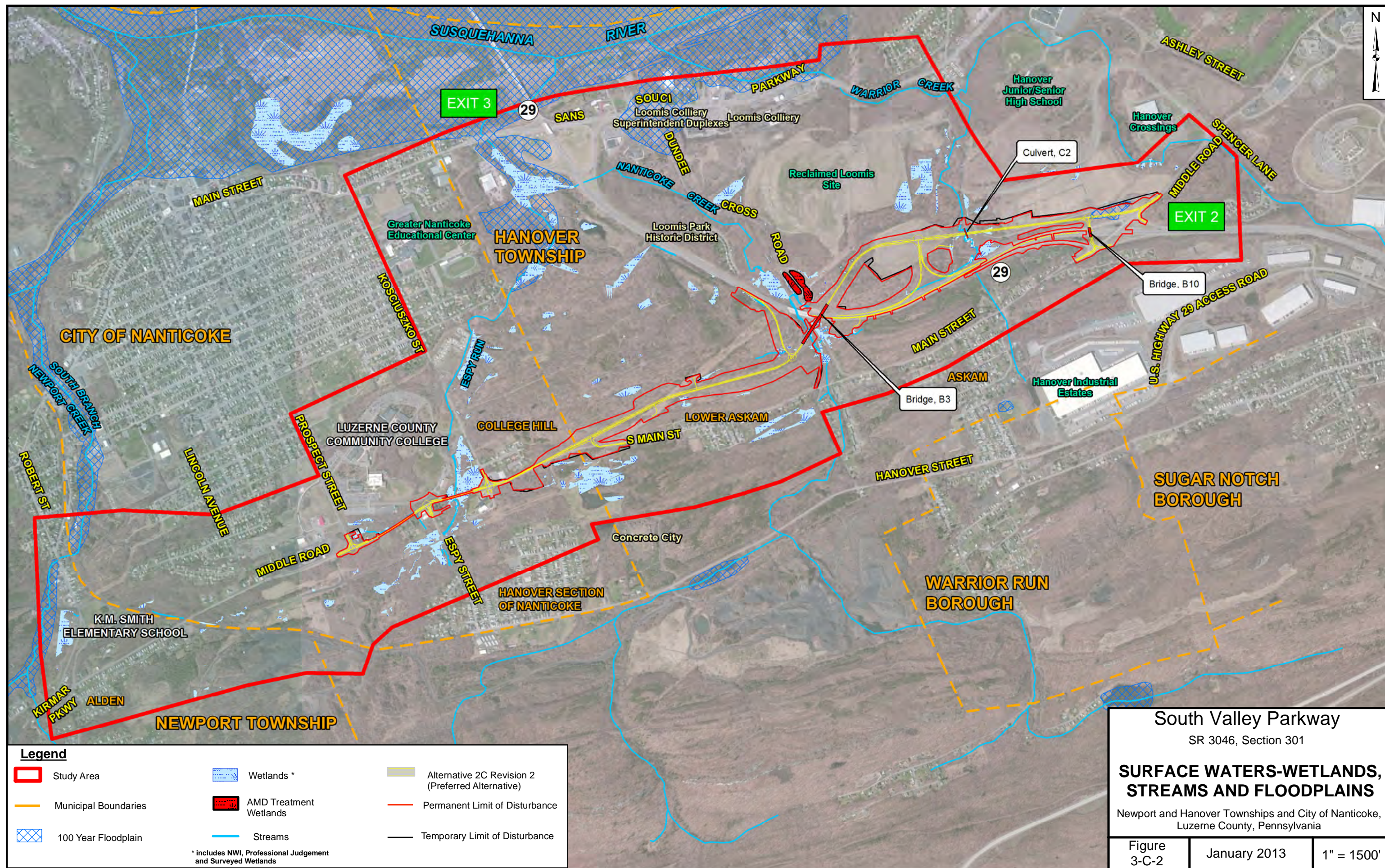
Streams

Within the study area, 15 streams were identified within the Susquehanna River watershed and includes four main, named tributary subwatersheds with several small unnamed tributaries. The four main subwatersheds include South Branch of Newport Creek, Espy Run, Nanticoke Creek and Warrior Creek. According to the PA DCNR’s Scenic Rivers program none of the four subwatershed streams are part of the Commonwealth’s Scenic River System. In addition, the Pennsylvania Fish and Boat Commission (PFBC) does not identify any of the four main subwatershed streams as Approved Trout Waters, Class A Wild Trout Streams or as special regulated areas. The watercourse flow regime and PA DEP’s Chapter 93 Water Quality Regulation – Protected Use Designations are described in Table 3-C-2.2. The water uses for the streams within each of the four subwatersheds are protected for cold water fishes (CWF) and migratory fishes (MF) in accordance with PA DEP Chapter 93 water quality regulations. Details regarding each watercourse are provided in the SVP “Wetland Delineation Report” (January 2010).

The proposed Build Alternative includes a crossing over Warrior Creek. A special agency field view was held on May 11, 2011, so the PFBC, USFWS, and PA DEP could complete a review of the aquatic community of Warrior Creek within the vicinity of the proposed crossing. The agency aquatic survey included a qualitative inspection of the physical habitat, macroinvertebrate community, and the fin fish community. The PFBC conducted a few kick net efforts along the section of stream (approximately 100 feet) downstream of the existing driveway crossing. The results of the effort included the observation of predominantly Chironomidae midges, with a few stoneflies, a crane fly, and a salamander. The agencies used a back pack electric shocker to sample the fish community. The fish sampling was conducted on the approximate 300-foot section of stream downstream of the existing culvert crossing. The results of the fish sampling included mostly creek chubs (approximately 20) with some blacknose dace (approximately 6).

Floodplains

Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) report(s) and Flood Insurance Rate Mapping (FIRM) were reviewed to identify FEMA floodplains within the project area. FEMA-FIRM 100-year floodplains are located in the northern and western portions of the project area along the Susquehanna River and the South Branch of Newport Creek. Within the project’s limits of disturbance for the Build Alternative, there are no FEMA-FIRM floodplains. Warrior Creek, Nanticoke Creek, and Espy Run have not been identified as having 100-year FEMA regulated floodplains within the project’s limit of disturbance according to FEMA mapping. This analysis and finding was performed in compliance with 23 CFR 650, subpart A (Location and Hydraulic Design of Encroachments on Flood Plains) and Executive Order 11988; Floodplain Management (May 24, 1977).



**TABLE 3-C-2.1
SUMMARY OF WETLAND IMPACTS**

WETLAND	CLASSIFICATION	SIZE (ACRES)	FUNCTION	PERMANENT IMPACTS (ACRES)	TEMPORARY IMPACTS (ACRES)
33	PEM	0.14	Floodplain	0.010	---
37	PEM	0.03	Floodplain	0.002	---
49	PFO/PSS	0.16	Mining	0.001	0.003
50	PFO/PSS	0.37	Mining	---	0.019
60	PEM	0.01	Hillside	0.010	---
61	PFO	0.44	Hillside	0.170	---
64	PEM/PFO	0.32	Hillside	0.003	0.029
65	PSS	0.07	Hillside	0.067	---
66	PFO	0.09	Floodplain	0.070	---
67	PEM/PFO	0.03	Hillside	0.027	---
68	PEM/PFO	0.05	Floodplain	0.048	---
70	PEM	0.01	Floodplain	0.002	---
71	PSS	0.02	Floodplain	0.016	---
72	PEM/PSS/PFO	0.10	Floodplain	0.098	---
73	PSS	0.04	Floodplain	0.044	---
74	PSS	0.02	Floodplain	0.022	---
75	PEM/PSS/PFO	0.05	Hillside	0.052	---
77	PEM/PSS/PFO	0.08	Linear roadside	0.084	---
82	PFO	1.37	Floodplain	0.190	---
87	PEM/PFO	0.06	Hillside	0.055	---
89	PFO/POW	0.03	Hillside	0.002	---
90	PSS/PFO	0.19	Hillside	0.197	---
91	PEM/PSS	0.02	Hillside	0.022	---
92	PEM	0.01	Hillside	0.005	---
94	PEM	0.01	Hillside	0.005	---
95	PEM/PSS/PFO	0.04	Floodplain	0.039	---
96	PSS/PFO	0.09	Hillside	0.087	---
98	PEM/PSS/PFO	0.02	Floodplain	0.050	---
100	PEM/PSS/PFO	0.01	Floodplain	0.007	---
102	PEM/PSS/PFO	0.01	Floodplain	0.010	---
103	PEM/PSS/PFO	0.01	Floodplain	0.010	---

**TABLE 3-C-2.1
(CONTINUED)**

WETLAND	CLASSIFICATION	SIZE (ACRES)	FUNCTION	PERMANENT IMPACTS (ACRES)	TEMPORARY IMPACTS (ACRES)
104	PFO	0.01	Floodplain	0.053	---
107	PEM/PSS	0.08	Floodplain	0.081	---
109	PEM/PSS/PFO	1.21	Hillside	0.029	---
112	PSS/PFO	0.26	Hillside	0.283	0.019
113	PFO	0.02	Mining	0.072	---
114	PSS/PFO	0.01	Hillside	0.011	---
115	PEM	0.02	Mining	0.020	---
116	PSS/PFO	0.02	Hillside	0.015	---
117	PEM/PSS/PFO	0.43	Floodplain	0.003	0.011
118	PEM/PSS/PFO	5.07	Floodplain	0.026	---
120	PFO	0.63	Hillside	0.116	0.265
121	PSS	0.03	Hillside	---	0.006
124	PEM/PSS/PFO	0.01	Floodplain	0.002	---
125	PEM/PSS/PFO	0.02	Floodplain	0.041	---
45 of the total 124 study area wetlands impacted		11.72 acres of the total 37.8 acres of study area wetlands impacted		Permanent Wetland Impacts = 2.159 acres	Temporary Wetland Impacts = 0.352 acre

In accordance with Pennsylvania Code Title 25, Chapter 105 regulations, in the absence of a detailed FEMA study, PA DEP protects 50 feet from the top of bank landward as the regulated floodway. Warrior Creek, Nanticoke Creek, Espy Run and the unnamed tributaries are all considered to have regulated floodways.

Impacts:

No-Build Alternative – The No-Build Alternative would have no wetland, stream or floodplain impacts.

Build Alternative – Permanent and temporary impacts will occur to both wetlands and streams as part of project construction; however, avoidance measures were implemented to maximize the reduction of total permanent wetland impacts. Permanent wetland impacts would total 2.159 acres and permanent stream impacts would total 3,073 linear feet. Permanent and temporary impacts to these resources are listed in the Summary of Wetland and Stream Impact Tables 3-C-2.1 and 3-C-2.2. Temporary impacts are described on Form 3-C-14 in further detail.

**TABLE 3-C-2.2
SUMMARY OF STREAM IMPACTS**

WATERCOURSE/SUBWATERSHED	FLOW	CHAPTER 93 DESIGNATION	PERMANENT IMPACTS (LINEAR FEET)
Channel 1 – Unnamed Tributary to South Branch Newport Creek	Intermittent	CWF, MF	0
Channel 2 – Unnamed Tributary to South Branch Newport Creek	Ephemeral	CWF, MF	0
Channel 3 – Unnamed Tributary to Espy Run	Ephemeral	CWF, MF	0
Channel 4 – Unnamed Tributary to Espy Run	Intermittent	CWF, MF	0
Channel 5 – Espy Run (Tributary to Nanticoke Creek)	Perennial	CWF, MF	0
Channel 6 – Unnamed Tributary to Espy Run	Intermittent	CWF, MF	0
Channel 8 – Nanticoke Creek	Perennial	CWF, MF	271
Channel 9 – Watershed of Nanticoke Creek	Intermittent	CWF, MF	129
Channel 10 – Watershed of Nanticoke Creek	Ephemeral	CWF, MF	0
Channel 11 – Watershed of Nanticoke Creek	Intermittent	CWF, MF	196
Channel 12 – Unnamed Tributary to Nanticoke Creek	Perennial	CWF, MF	0
Channel 13 – Unnamed Tributary to Nanticoke Creek	Intermittent	CWF, MF	78
Channel 14 – Unnamed Tributary to Warrior Creek	Perennial	CWF, MF	0
Channel 15 – Warrior Creek	Perennial	CWF, MF	2,399* Permanent 10 Temporary
Channel 18 – Unnamed Tributary to Espy Run	Intermittent	CWF, MF	145 Temporary
Total Stream Impacts			3,073 Permanent 155 Temporary

* Impacts to Warrior Creek include the installation of the box culvert (178 feet) and channel modifications.

The Build-Alternative will have no impacts to the 100-year floodplain. The SVP is classified as a principal arterial system, which is required to pass the 50-year storm at stream crossings without overtopping the roadway (per PennDOT DM-2 Design Standards, Chapter 10, Table 10.6.1). A new box culvert (16 feet x 9 feet, embedded 1-foot) is proposed for the Warrior Creek crossing. The current design of the box culvert will be able to pass the 50-year storm event. However, it is anticipated the water surface elevation would increase downstream of the proposed culvert. This rise in water surface elevation would not impact any existing structures. The Warrior Creek culvert will pass the 100-year storm event per PA DEP Chapter 105 requirements that the 100-year water surface elevation caused by the enclosure is limited to less than 1 foot for a stream enclosure more than 50 feet of the stream length. Several alternative designs were investigated for the proposed Warrior Creek crossing. During the special agency field view (May 11, 2011) PennDOT provided information on the alternatives analysis for the proposed crossing (see Attachment C3 for the Warrior Creek Alternative Analysis Matrix). At this time, Alternative 1 (the short box culvert) is used in the Build Alternative design. The agencies expressed a desire for a bottomless arch rather than the currently

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proposed embedded box culvert. PennDOT will continue coordinating with the agencies concerning the impacts associated with this crossing during the permit application process to be conducted during final design when more detailed information will be available. The new proposed bridge over Nanticoke Creek is substantially wider and higher than the surrounding Nanticoke Creek and is not anticipated to increase the water surface elevation. There are no new structures proposed over Espy Run or South Branch of Newport Creek.

Minimization/Mitigation: The proposed Build Alternative has been designed to avoid and minimize wetland and watercourse impacts. There are over 37 acres of wetlands and several miles of watercourse channels within the project area. The SVP will encroach upon 2.159 acres of wetlands and 3,073 linear feet of watercourses. Much of the watercourse impacts are associated with channel modifications; thereby further minimizing permanent impacts. The 2.1 acres of wetland impacts constitute approximately 5% of the wetlands within the study area. A compensatory wetland mitigation plan will be developed as part of the final design phase of the project to replace the impacted wetlands. The wetland mitigation area will be situated within the localized watershed and will replace the impacted acreage. Implementation of the SVP mitigation plan will ensure a no-net loss of wetlands as a result of the SVP project. To ensure that impacts to wetlands will be minimized during construction, orange protective fencing will be installed around those wetlands to be avoided prior to clearing and grubbing. These areas are preliminarily identified in the “Preliminary Engineering Plans and Environmental Constraints” provided in Attachment A.

PennDOT will also continue coordinating with the resource and permitting agencies concerning the impacts and mitigation options associated with the proposed Warrior Creek crossing during the permit application process to be conducted during final design when more detailed information will be available.

Form 3C3 – Impact Form

Identification of Resource: Land Use/Land Cover

Methodology & Existing Conditions: A vegetative cover and land use map was developed using aerial photography and field reconnaissance (2004) and later updated in both 2007 and 2011 based on select field reviews (see Figure 3-C-3). Habitat within the study area is generally classified as mixed forest with associated portions of mining areas and deciduous forest. Eastern and central portions of the project area have experienced more recent industrial and commercial built-up land due to transportation facilities. Residential, utilities and urban land-use classifications are less predominant classifications throughout the project area.

The new Final Draft Lackawanna-Luzerne Regional Plan (Comprehensive Plan and Long-Range Transportation Plan for Lackawanna & Luzerne Counties, May 2011) is structured on a framework of Priority Areas for targeted growth, and revitalization, Infill Areas for additional growth, and Conservation Areas for agricultural, recreation, and open space uses. It is through this framework that both counties will support their existing centers, minimize sprawl, and promote the conservation of natural resources. The Regional Plan identifies the area within and surrounding the SVP study area as Mixed Density Infill Areas that are intended to provide opportunities for new development and redevelopment on properties that are vacant or underutilized.

The study area contains various invasive plant species throughout as confirmed during the multiple field investigations completed for the project as recently as September 2011. A formal invasive plant species survey was not completed for the SVP project. Given the existing conditions of the project areas' past mining activities, the project area provides favorable conditions for invasive plant species primarily in the western and central sections of the study area.

Impacts:

No-Build Alternative – The No-Build Alternative will not require right-of-way acquisition and therefore would have no impacts on any land use types.

Build Alternative – The Build Alternative would intersect primarily mixed forest lands (36%) along with deciduous forest lands (16%) and herbaceous fields (10%). Table 3-C-3 summarizes existing land use types that would be required by the right-of-way and permanently converted to transportation use. The largest land cover impact is associated with forest lands (55% of the total impact). Most of these forest lands are within old mining properties designated for future development by the Earth Conservancy and the Greater Wilkes-Barre Area Chamber of Business and Industry.

While the study area is primarily forested, wildlife conflicts have not been identified as a problem in the existing Middle Road and S.R. 0029 corridors and are not expected to be a safety issue for the proposed SVP. PennDOT crash data for Middle Road and S.R. 0029 for the period from January 1, 2005, through December 31, 2009, indicated that there were only three collisions involving deer during this timeframe and all three occurred on S.R. 0029. In addition, a large portion of the SVP (46% of new S.R. 3046 mainline and 25% of the total project) will be in deep cut areas that are not conducive to wildlife crossings. The new Warrior Creek culvert as described in Form 3C2 would most likely be used as a wildlife crossing for larger animals (a box culvert of 9' x 16' x 188' is currently proposed). The existing upstream S.R. 0029 culvert carrying Warrior Creek shows evidence of use. The culvert will be depressed when installed to allow a natural bottom to form. During the normal dry weather conditions the whole culvert width is anticipated to

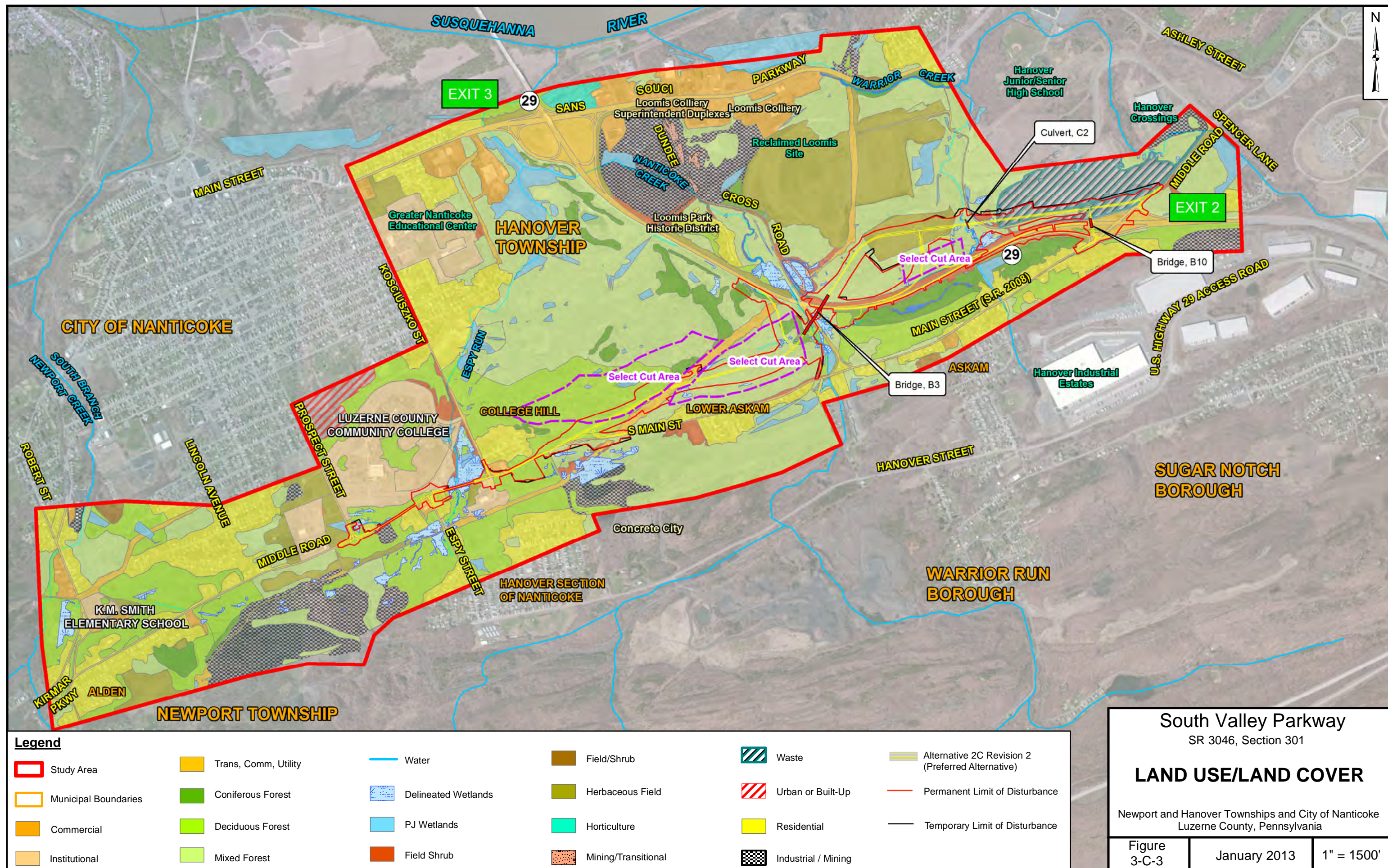
**TABLE 3-C-3
SUMMARY OF LAND USE IMPACTS**

LAND-USE DESCRIPTION	ACRES OF IMPACT	% OF TOTAL
Coniferous Forest	4.71	3%
Deciduous Forest	24.26	16%
Mixed Forest	53.50	36%
Herbaceous Fields	15.43	10%
Wetlands (Professional Judgment)	1.24	<0.1%
Institutional	1.89	1%
Mining	0.10	<0.1%
Shrub/Scrub	9.94	7%
Commercial	0.93	<0.1%
Residential	0.98	<0.1%
Waste	12.32	8%
Transportation/Utility	24.16	16%
Total	149.46 acres (125.30 acres/84% non-transportation)	

convey flow but flow depth will likely be a couple of inches deep (i.e., large mammals could still pass through). Culvert concept plans have included the installation of alternating baffles to accommodate fish passage, which could conflict with large mammal passage. Therefore, additional coordination will be conducted with the Pennsylvania Fish and Boat Commission during final design of the culvert to address both fish and wildlife passage.

The Build Alternative will require extensive grubbing, clearing, excavation, and grading which in turn will disturb the existing vegetation, including invasive plant species. Disturbed areas will be reseeded as directed in the project's erosion and sediment control plan to be developed during final design.

Minimization/Mitigation: Mitigation for the impacts to regulated land uses, wetlands, and Indiana Bat forest habitat is documented under Form 3C2 - Surface Waters (Wetlands, Streams, and Floodplains) and Form 3C4 - Threatened and Endangered Species. Reseeding activities to be included in the project's erosion and sediment control plan will be conducted in accordance with Section 804.2(b) or PennDOT's Specifications Manual (publication 408).



Form 3C4 – Impact Form

Identification of Resource: Threatened and Endangered (T&E) Species

Methodology & Existing Conditions: The Endangered Species Act of 1973 (ESA) provides for the protection of threatened and endangered species, both plants and animals, and the habitats that are considered critical to the survival of these species, e.g., breeding, nesting, roosting, and foraging areas. The ESA requires FHWA and PennDOT to consult with the USFWS regarding their transportation improvement projects and measures that can be implemented to minimize or eliminate potential project impacts to federally protected species. PennDOT projects must also address potential impacts to state-protected species. Pennsylvania statutes require FHWA and PennDOT to consult with the PA DCNR, PFBC, and the Pennsylvania Game Commission (PGC) regarding transportation projects, their potential impacts to state-listed species, and efforts to avoid or minimize impacts. T&E species coordination was conducted with the USFWS, the PA DCNR, the PFBC, and the PGC. The PNDI was reviewed and letter coordination was conducted in 2001, 2003, 2004, 2005, 2007, 2008, 2010, 2011, and 2012 (see Attachment C1 for copies of the Agency Correspondence responses). The natural resource agencies having jurisdiction over T&E species responded as follows.

- USFWS – The Indiana Bat (*Myotis sodalis*), a federally listed, endangered species was identified as a potential impact early during project coordination. The SVP study area is located within the ten-mile radius of known Indiana Bat hibernacula.
- PA DCNR – No protected plant species was identified.
- PFBC – The Northern Cricket Frog (*Arcis crepitans*), a state endangered species was identified as a potential impact.
- PGC – The Virginia Rail (*Rallus limicola*), a state species of special concern was identified early in the project as a potential impact. Further coordination with the agency confirmed the SVP project would have no impact on the Virginia Rail, and there is no subsequent concern regarding the Virginia Rail. Potential impacts identified in 2010-2011 were associated with the Indiana Bat (*Myotis sodalis*), the Eastern Small-footed Bat (*Myotis leibii*) – a state threatened species, and the Northern Long-eared Bat (*Myotis septentrionalis*) – a state species of special concern.

Due to the potential conflict identified for the Northern Cricket Frog, the Indiana Bat, and the Eastern Small-footed Myotis, additional assessment and survey efforts were completed as part of the project development process. These surveys and assessments included the following:

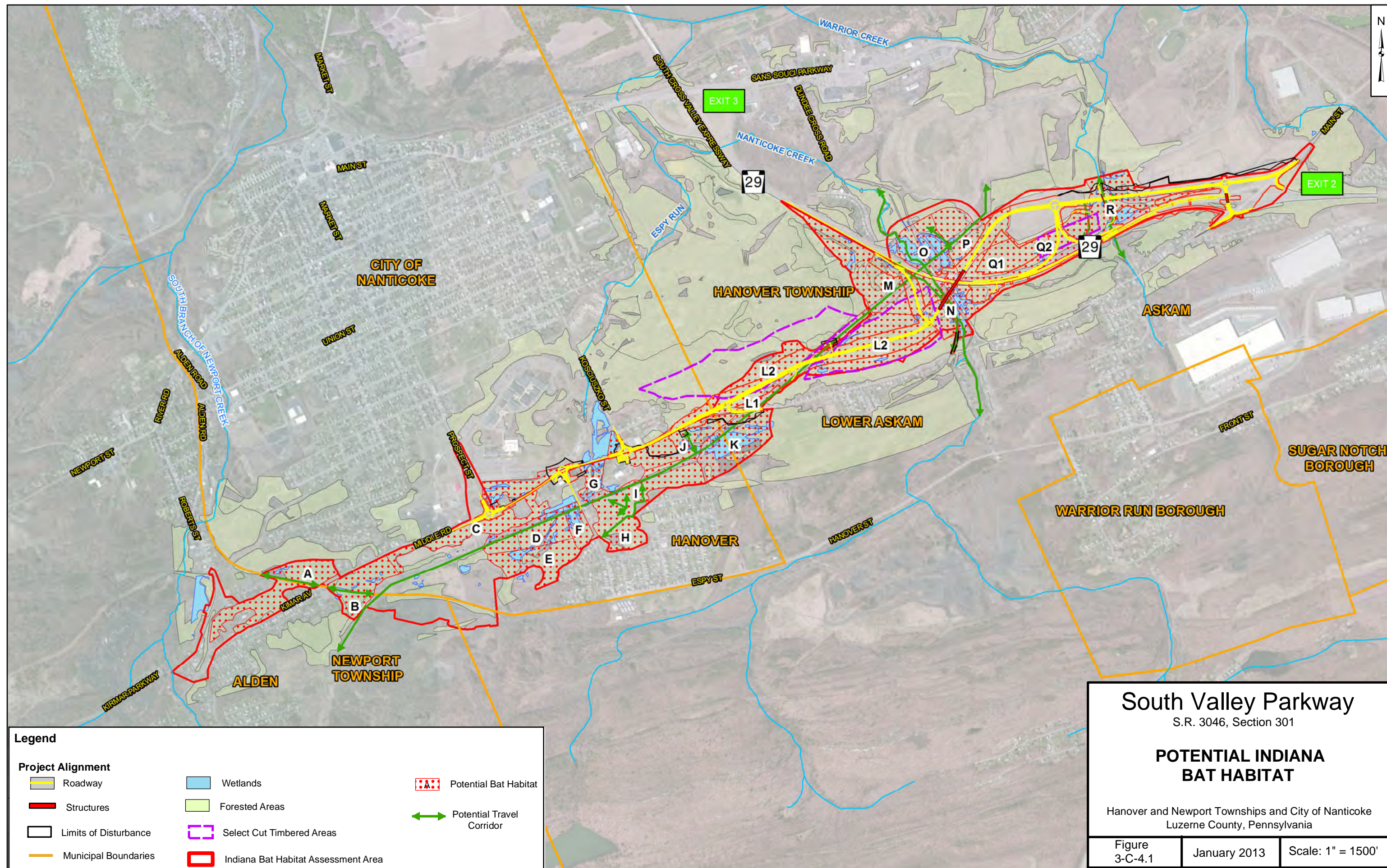
- Field surveys were completed in 2004, 2007 and 2011 to assess the potential for Indiana Bat habitat and hibernacula in the project area. Potential Indiana Bat habitat was found to exist throughout the SVP project area. No hibernaculum was identified within the project area. Potential Indiana Bat habitat was identified and mapped as shown in Figure 3-C-4.1.
- First mist netting bat survey was conducted between August 11 and 14, 2008 [“Indiana Bat (*Myotis sodalis*) Mist Netting Survey Report,” October 2009]. No Indiana Bat was captured; however, two Eastern Small-footed Bat were captured.

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- Second mist netting bat survey was conducted between August 8 and 14, 2010 [“Small-footed Myotis (*Myotis leibii*) Report,” September 2010]. No Indiana Bat was captured; however an Eastern Small-footed Bat was captured (August 9), fitted with a radio-transmitter, and tracked to identify foraging and roosting habitat.
- An Indiana Bat (*Myotis sodalis*) Biological Assessment (February 2012) was completed for the project in accordance with the Endangered Species Act and submitted to the USFWS.
- An emergence reconnaissance survey and an associated bat mist netting survey were conducted in July 2012, the vicinity of the existing rock cut along S.R. 0029 where the Eastern Small-footed Bat was found to roost in 2010. The purpose of the 2012 field efforts was to gain additional information on the rock cut being used by the Eastern Small-footed Bat, specifically in regards to its function as a potential maternity roost. One female, post-lactating Eastern Small-footed Bat was captured at the rock cut roost on July 22, 2012.
- A Northern Cricket Frog (*Arcis crepitans*) Presence/Probable Absence Survey was conducted from June 8 to July 7, 2012. No Northern Cricket Frog was captured in the project area. A report was prepared (August 20, 2012, Ecological Associates, LLC) and submitted to the PFBC for review. The PFBC concurred with the report’s findings (letter dated September 13, 2012 – see Attachment C1) and determined that the proposed project will not result in an adverse impact on the species.

The predominant land cover across the SVP project area is characterized as Red Oak-Mixed Hardwood and Red Maple Terrestrial Forests. Potential Indiana Bat Habitat was evaluated and identified based upon the presence of preferred forest type, presence of flyways, distance from water sources, and slope. Sixteen different potential habitat areas encompassing 90 acres are located within the limits of the SVP project area. As noted above, two Indiana Bat mist netting surveys were completed for the project in August 2008 and August 2010. No Indiana Bats were captured during the mist net survey efforts. The SVP project area is located within the 10-mile radius of two known Indiana Bat hibernacula, including the Glen Lyon and Shickshinny locations. Areas within 10 miles of hibernacula are known as swarming zones or Indiana bat primary zones. Indiana bats use these areas for swarming and foraging during spring, summer and fall seasons. Activities associated with the construction and operation of the SVP project could affect the bats that hibernate within two hibernacula sites. The combined 10-mile radius established a comprehensive Action Area for the evaluation of the effects of the SVP Project. Formal consultation with the USFWS was conducted for the federally listed Indiana bat and a Biological Assessment was completed. The USFWS reviewed the Biological Assessment and issued their Biological Opinion (October 12, 2012) on the effects of the proposed project (see Attachment F3).

The results of the two bat mist net surveys conducted by the project team biologists included the capture of two Eastern Small-footed bats, one in 2008 and one in 2010. During the 2010 survey event, the lone Eastern Small-footed bat that was captured (August 9) was fitted with a radio-transmitter and tracked to identify foraging and roosting habitat. Although the bat was observed to forage outside of the project area, it was found to roost within the existing rock cut along S.R. 0029 within the proposed SVP project alignment (see Figure 3-C-4.2). During the July 2012 emergence reconnaissance survey and mist netting survey conducted in the vicinity of the existing rock cut along S.R. 0029, one female, post-lactating Eastern Small-footed bat was captured on July 22, 2012. A report is being prepared to document the findings and further co-ordination with the PGC will be conducted to determine what mitigation is necessary for impacts to the Eastern Small-footed bat as a result of the proposed project.



Impacts:

No-Build Alternative – The No- Build Alternative would have no impacts to threatened and endangered species habitat.

Build Alternative – The Build Alternative avoids and minimizes impacts to the natural, cultural, and social resources through the region, including potential Indiana bat habitat; however the project will impact 93 acres of potential Indiana bat habitat. Table 3-C-4.1, Direct Effect Evaluation Summary, lists the potential direct effects to the Indiana bat as presented in the Biological Assessment prepared for the project and provided to the USFWS for their review. PennDOT and FHWA also stated in the Assessment that they are committed to minimize the use of pesticides and herbicides during construction and provide contribution to the Indiana Bat Conservation Fund and/or revegetation of disturbed areas in the region (where practical and feasible) for the replacement of the lost habitat. The USFWS issued their Biological Opinion (October 12, 2012) on the effects of the proposed project (see Attachment F3). The USFWS stated that, “(a)fter reviewing the status of the Indiana bat, the environmental baseline, the effects of the action, and the cumulative effects, it is the Service’s biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Indiana bat. There is no critical habitat for the Indiana bat in or near the action area. Therefore, this action will not affect any federally designated critical habitat.

The results of the mist net surveys conducted for the project indicate a population of the Eastern Small-footed Bat exists in the project area. In particular, it was found that the existing rock outcrop area along the north side of S.R. 0029 serves as a bat roost location for the bat during the 2010 telemetry tracking effort and the 2012 mist netting survey. Therefore, the design of Ramps MLN and NML that connect S.R. 0029 to the proposed SVP mainline was reevaluated to determine if the impacts to the rock outcrop could be reduced. Various options were considered. The first alternate option would slide both ramps 300 feet eastward towards Exit 2. This option reduced impacts to the rock cut, did not increase wetland or stream impacts and slightly reduced construction costs. A second alternate option was reviewed and proposed to slide both ramps 600 feet eastward towards Exit 2. This option further reduced rock impacts, but resulted in greater stream and wetland impacts. In addition, increased construction costs due to the extension of the existing box culvert on the downstream side of Warrior Creek or a retaining wall would be required. The first option was incorporated into the design and it is anticipated that the Build Alternative will impact approximately 649 feet of the existing known rock cut along S.R. 0029.

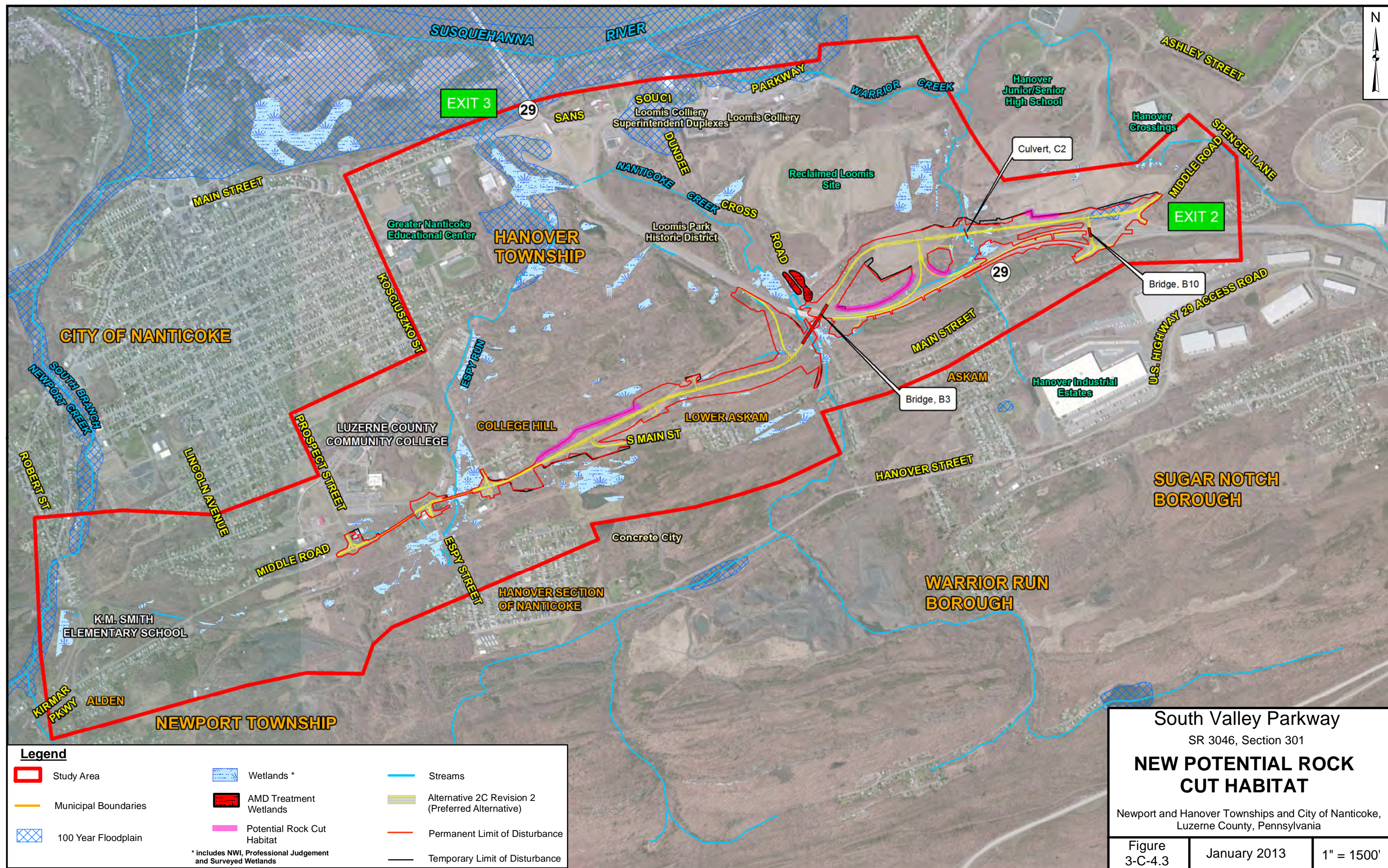
Minimization/Mitigation:

The loss of the 93 acres of potential Indiana Bat habitat will be replaced through a contribution to the Indiana Bat Conservation Fund and re-vegetation of disturbed areas (where practical and feasible). Wetland impacts will be replaced in the vicinity of the project area through the implementation of the compensatory wetland mitigation package (see Form 3C2). There is ample forest land surrounding the SVP, including many forested areas along the stream and river corridors and protected floodplains. Based upon the limited impact of the proposed SVP project, long-term habitat alterations are not anticipated. Additionally, the construction of the SVP project will create an additional 4,435 linear feet (101,543 square feet) of new south facing rock cut, which will provide additional roost habitat for the eastern small-footed bat (see Figure 3-C-4.3).

An Indiana Bat Habitat Mitigation Plan will be prepared for USFWS’s review and approval. The mitigation plan would identify the proposed SVP impacts and compensatory mitigation of contribution to the Indiana Bat Conservation Fund and re-vegetation of disturbed areas (where practical and feasible). It is anticipated that 93 acres will be permanently impacted and compensated through the contribution to the Indiana Bat Conservation Fund or re-vegetation of disturbed lands in the region.

**TABLE 3-C-4.1
INDIANA BAT – DIRECT EFFECT EVALUATION SUMMARY**

COMPONENT OF CONSTRUCTION	DESCRIPTION OF ACTIVITY	POTENTIAL STRESSOR	RESULTANT EFFECT FOR THE SVP PROJECT
Clearing and Grubbing of vegetation with implementation of seasonal cutting restriction (from November 15 to March 31)	Winter removal of trees and stumps	Loss of habitat	Lethal take and effects of noise avoided as a result of the implementation of the seasonal cutting restriction. Non-lethal take/harm/harass may occur due to loss of habitat which requires individuals to find alternative foraging areas. Habitat loss would be mitigated through re-vegetation of disturbed areas (where practical and feasible) and/or contribution to the Indiana Bat Habitat Conservation Fund.
Earth Disturbance for staging areas, access roads, and grading with implementation of daylight hours only construction restriction	Mobilization of construction equipment to and through-out project area for earth moving activities.	Noise from heavy equipment	Take (harass) associated with noise impacts avoided in foraging and roosting habitats through implementation of a daylight hours only construction restriction.
Rock Excavation with implementation of a daylight hours only construction restriction	Hammer drilling and blasting to excavate rock in cut areas.	Noise disturbance from drilling and blasting	Take (harass) associated with noise impacts avoided in foraging and roosting habitats through implementation of a daylight hours only construction restriction.
Erosion, Sedimentation, & Stormwater	Implementation and monitoring of an approved E&S Control Plan.	Possible temporary impacts to water quality at water sources used by individuals of the species	Take (harm/harass) minimized through implementation of an approved E&S pollution control plan. E&S disturbances are planned to be short-term and temporary in nature.
Installation of Stream Crossings	Installation of stream crossings, including culverts, pipes, piers, and abutments	Alterations to travel corridors may result in individuals altering travel patterns during construction and to a lesser degree post construction	Take (harm, harass) reduced with the design of minimized crossing lengths to reduce alteration to existing aquatic habitat. Ample alternative travel corridors are available and less undisturbed in the action area.
Wetland Fills with implemented compensation within localized watersheds	Fill in 2.1 acres of wetlands	Loss of wetland habitat, foraging area and potential temporary reduction in prey availability	Take (harm/harass) has been minimized through the avoidance of large diverse wetlands in the action area. There are substantial wetlands within each subwatershed (approximately 100 acres) surrounding the project area for use for foraging. Effect will be temporary due to the provision of compensatory wetlands that will replace the loss in prey availability and wetland foraging areas.



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Table 3-C-4.2 summarizes potential conservation measures for the Eastern Small-footed Bat as outlined by the PGC for the project (see Attachment C1 for PGC letters dated January 19, 2011, and December 28, 2011). As noted, the mitigation measures for this species are contingent upon the findings of future pre-construction mist net surveys and monitoring. Table 3-C-4.3 summarizes the conservation and mitigation measures, along with monitoring efforts, for the Indiana bat as required by the USFWS for exemption from the prohibitions of Section 9 of the ESA and outlined in their Biological Opinion (See Attachment F3 for the USFWS's Biological Opinion).

**TABLE 3-C-4.2
POTENTIAL MITIGATION FOR THE EASTERN SMALL-FOOTED MYOTIS**

MITIGATION CATEGORY	DESCRIPTION
Conservation Measures	Trees or dead snags greater than 5 inches in diameter at breast height that require removal as part of project implementation need cut between November 15 and March 31 (includes access roads or off right-of-way work spaces).
	Disturbance to the existing and new rock cut along S.R. 0029 where documented roosting has occurred should be completed between November 15 and March 31.
Survey	A pre-construction mist net survey at the existing S.R. 0029 rock cut (roost location) should be completed between July 15 – July 30 (completed in July 2012).
	An emergence reconnaissance should be conducted prior to the pre-construction survey to locate roost exits and travel corridors.(completed in July 2012)
Monitoring	Pre-construction roost monitoring will be required at least twice per year using infrared cameras.
	Post-construction roost monitoring will be required for three years following the new S.R. 0029 rock cut. The post-construction roost monitoring must be conducted twice per year using infrared cameras.
Mitigation	The creation of alternative roost structures may be necessary depending upon the results of the summer pre-construction mist net surveys. If any alternative roost structures are created then post-construction alternative roost monitoring will be required on all alternative roost structures.

Agency coordination with the USFWS and PGC will continue through the final design and permitting phase of the project.

**TABLE 3-C-4.3
REQUIRED MITIGATION FOR THE INDIANA BAT**

MITIGATION CATEGORY	DESCRIPTION
Avoidance and Minimization Measures	All trees that are greater than or equal to 5 inches in diameter at breast height shall be cut only between November 15 and March 31. This includes tree-cutting necessary for site preparation, road construction, road maintenance, and utility relocation.
	Complete earth disturbance activities for staging areas, access roads, grading, and rock excavation during the day to avoid the risk of noise and light disturbances of any foraging Indiana bats.
	No project-related or project-generated materials, waste, or fill will be deposited in areas that would result in additional forest clearing or sedimentation to any streams in the action area or areas providing habitat to Indiana bats.
	Inspect any buildings to be removed (demolished) to determine whether they are used by bats for roosting. Identify which species are using the building(s), as well as the total number of bats using the building. The discovery of an Indiana bat roost structure that may require demolition represents new information not previously considered in this opinion; therefore, should this occur, it will be necessary to reinitiate consultation with the Service to determine what measures are necessary to reduce or avoid potential take.
	During the bidding process, prospective project contractors will be notified regarding the presence of endangered species in the project area and the special provisions necessary to protect them. The successful contractor(s) will be instructed on the importance of the natural resources in the project area and the need to ensure proper implementation of the tree-cutting restrictions, erosion and sedimentation controls, and spill avoidance/remediation practices.
	<p>A. The following conditions (language) will be included in all project construction and demolition contracts:</p> <ol style="list-style-type: none"> 1. Endangered species are present in the project area and there is a risk of take (ESA Section 9 violation) if the Terms and Conditions of the USFWS's biological opinion are not closely followed. 2. Any trees greater than or equal to 5 inches diameter at breast height will only be cut from November 15 to March 31. 3. Best Management Practices for erosion and sedimentation control will be in place before, during, and after any work is conducted. 4. The USFWS will be notified immediately of any failures of erosion and sedimentation control measures or spills of hazardous materials. 5. No project-related or project-generated materials, waste, or fill will be deposited in areas that would result in forest clearing or sedimentation to any streams in the action area or areas providing habitat to Indiana bats. <p>B. Evidence will be provided to the USFWS that the terms and conditions of Item A above have been included in construction contracts prior to the initiation of construction.</p>
Conservation Measures	FHWA and PennDOT will provide a bat conservation plan to the USFWS for review and concurrence at least three months prior to the start of any proposed tree cutting in the project area.
	Prior to forest removal by either PennDOT or current landholders, either the Indiana Bat Conservation Fund (IBCF) calculation sheet (Appendix A of Biological Opinion in Attachment F3) must be used to determine the amount of deposit in the fund or forest must be permanently protected. Documentation that a contribution to IBCF has been made must be provided to the action agencies and the USFWS prior to issuance of state and federal permits and prior to any tree cutting. If forest habitat is proposed for conservation, FHWA and PennDOT must provide the USFWS with information about the parcel(s), including parcel location, amount of forest cover, name of the entity to whom the parcel will be transferred and entrusted for permanent protection, mechanism to ensure the parcel will be permanently protected and conserved for the primary benefit of the Indiana bat, and the anticipated date of land transfer. The conservation acreage, proposed land holder, and protection mechanism are subject to USFWS review and approval.

**TABLE 3-C-4.3
(CONTINUED)**

MITIGATION CATEGORY	DESCRIPTION
	<p>In the event that on-site forest restoration is proposed in the bat conservation plan, the protected land must provide for the long-term needs of the Indiana bat.</p> <p>A. The conservation acreage will be placed in the ownership of a conservation entity (<i>e.g.</i>, PGC, conservation organization or PennDOT in areas of retained right-of-way) that is both able and willing to protect and manage the habitat in perpetuity for Indiana bats. The recipient (proposed owner) of the conservation acreage is subject to Service review and approval. Conservation lands will be deed restricted to ensure the landowner holds, protects, maintains, and manages the lands in perpetuity for the primary conservation benefit of the Indiana bat, with any habitat management subject to a USFWS approved management plan.</p> <p>B. Reforestation will occur by replanting with at least six different tree species (listed in Appendix B of the BO – see Attachment F3). At least four “exfoliating bark” tree species will be planted and equal at least 40% of the stems per acre. No more than 20% of any one species will be included in the planting mixture, and no more than 50 stems per acre of black locust will be planted. Success will be measured as 400 live woody stems per acre. Forest restoration will be implemented in accordance with the methods detailed in the Forest Reclamation Advisories published by the Appalachian Regional Reforestation Initiative. Following reforestation, the PennDOT will manage the property consistent with the goal of conserving Indiana bat roosting and foraging habitat.</p> <p>C. The conservation acreage, including its location and quality, are subject to review and approval by the USFWS’s Pennsylvania Field Office.</p> <p>D. The USFWS and PGC, and their representatives, will have access to conservation lands for future research and monitoring.</p>
Monitoring	<p>Monitor the construction activities and report to the USFWS no less than monthly starting with initial tree removal and grubbing activities to detect compliance with the appropriate best management practices and conservation commitments. An Environmental Monitor will be provided with appropriate authority and professional experience to ensure compliance with relevant conservation commitments (particularly regarding areas of tree removal) and other applicable environmental rules and regulations. Monitor and report acreage of forest impacts. If it is anticipated or known that the actual forest impacts will exceed the estimated impacts, consultation with the USFWS will be reinitiated.</p>
	<p>Any dead Indiana bats located in the action area will be reported the USFWS’s Pennsylvania Field Office and Region 5 Division of Law Enforcement within 48 hours. Notification must include the date, time, and location of the carcass, and any other pertinent information. Indiana bats that are accidentally killed, or that are moribund, are to be preserved in a cold location until properly identified (date of collection, complete scientific and common name, latitude and longitude of collection site, description of collection site). Specimens shall be transferred to the USFWS or a Service-approved facility</p>

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Form 3C5 – Impact Form

Identification of Resource: Community, Environmental Justice, Right-of-Way, and Displacements

Methodology & Existing Conditions: The study area primarily encompasses large areas of undeveloped land surrounding multiple small communities in the Middle Road corridor (Askam, Lower Askam, Alden) and Loomis Park on the east side of S.R. 0029. This assessment addresses potential impacts to the communities and their community resources, the potential for impacts to environmental justice populations, and potential displacements and land acquisitions and the resulting effect on the local tax base.

Community Resources

Community resources were identified in the study area as illustrated on Figure 3-C-5.1. These facilities include publicly owned parks and recreational areas, privately owned parks and recreational areas, churches, libraries, post offices, public school, and emergency service providers. There are three publicly owned parks in the study area, including two Hanover Township municipal playgrounds (Upper Askam and Lower Askam Parks) and one Newport Township municipal playground (Alden Park). The Delaware and Lehigh Canal National Heritage Corridor and State Heritage Park, that stretch over 150 miles, extend into the study area. However, the National Heritage Corridor/State Heritage Park are not in and of themselves public park units. Rather the National Heritage Corridors are part of the National Heritage Area (NHA) program overseen by the National Park Service and are large regions (areas) where natural, cultural, historic and scenic resources combine to form a cohesive, nationally distinctive landscape arising from patterns of human activity shaped by geography. This particular NHA is also designated a Pennsylvania State Heritage Area (SHA) under the state's program and overseen by the PA Department of Natural Resources.

A major community resource in the project area is the LCCC. The main entrance to the LCCC is from Kosciuszko Street, which has a T-intersection with Middle Road. The Community College has been expanding over the years and has become the major traffic generator in the study area. During the fall 2010 semester, enrollment totaled 7,249 credit students and 5,680 noncredit students. Most recently, the LCCC has expanded west of Prospect Street to develop its Public Safety Institute. The Community College also recently opened a Culinary Art Center and Health and Science Center in the downtown section of Nanticoke City. The study area also encompasses the Greater Nanticoke Education Center that includes the local high school and an elementary school and school district administration facilities. This Center is located at the northern edge of the study area, adjacent to the more developed residential areas of Nanticoke.

As depicted on Figure 3-C-5.1, most of the community structures and services are located just outside the boundaries of the study area. These include multiple fire stations, police stations, and municipal buildings. The closest hospital is the Mercy Special Care Hospital in the City of Nanticoke that is outside the study area. This hospital provides acute long-term care. The closest full-service hospital is the Wilkes-Barre General Hospital about 4.5 miles north of the study area in the City of Wilkes-Barre.

The study area is along the eastern and southern edge of the City of Nanticoke and south of Wilkes-Barre. The new Final Draft Lackawanna-Luzerne Regional Plan (Comprehensive Plan and Long-Range Transportation Plan For Lackawanna & Luzerne Counties, May 2011) identifies the core areas of Wilkes-Barre and the City of Nanticoke as two of the eight City Center Priority Areas that are areas targeted for growth and revitalization and that would allow for the highest concentrations of residential uses and employment and provide a high level of transit service. Priority Areas are intended to provide a density of population suffi-

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cient to support new retail uses and community facilities, and attract employment. Concentrating jobs and residences in identified Priority Areas in turn is intended to increase transit ridership potential. The area surrounding these Priority Areas, including the area in and around the study area, is identified as Mixed Density Infill Areas. The infill designation is intended to provide opportunities for new development and redevelopment on properties that are vacant or underutilized.

Environmental Justice Populations

In accordance with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (February 11, 1994), Title VI of the Civil Rights Act of 1964, and related statutes, an assessment of environmental justice issues was conducted for the project. The purpose of the assessment is to identify and address disproportionately high and adverse human health or environmental effects associated with the proposed project on minority and low-income populations.

The first component of the analysis involved the identification of the locations and characteristics of minority and low-income populations in geographic proximity to the project. A minority person is defined as a person who is Black, Hispanic, Asian American, American Indian, or Native Alaskan and a low-income person is generally defined as persons having incomes at or below the Federal poverty level as defined by the Department of Health and Human Services guidelines. Census data (2000) were obtained at the block group level for the entire study area. In order to determine the presence of low-income populations, census data were consulted for both persons under the poverty level and households receiving public assistance income. Data were also collected for race and language spoken at home to identify minority populations within the project study area. Table 3-C-5.1 is a summary of the compiled Census data for the project area municipalities. Both 2000 and 2010 census data are used for comparison. Note, 2010 census data are only available at the Census Tract level and not the smaller Block Group level.

The Census data indicated that the combined minority and Hispanic populations in the project area are well under the percentages for Pennsylvania. In addition, field views and public outreach efforts did not identify any minority populations within the project area limits.

The Census data indicated that several block groups for the portions of Hanover Township and the City of Nanticoke within the study area have populations that exceed the county and state levels for poverty and public assistance (see Figures 3-C-5.2 and 3-C-5.3). Residential development within those portions of Hanover Township included in the project area is primarily located along Middle Road within the communities of Askam and Lower Askam. The United Neighborhood Housing Services has identified the Dundee Apartments (located opposite the T-intersection of Dundee Cross Road and Main Street/Middle Road/S.R. 2009, between Askam and Lower Askam) as “subsidized housing.” This apartment complex is accessed from Middle Road and straddles the study area boundary. Residential development also exists within Loomis Park located east of S.R. 0029. Nanticoke City’s southern portion of residential development is within the project area and includes a residential area referred to as the Hanover Section of Nanticoke (a small pocket of development south of Middle Road much removed from the City’s downtown). A large portion of the project area within Nanticoke includes the Greater Nanticoke Educational Center and the Luzerne County Community College, both accessed from Kosciuszko Street. There are a couple relatively new suburban developments, including the College Hill development, along Kosciuszko Street and across from the Community College. The majority of urban development within downtown Nanticoke City is north and west of the project area.

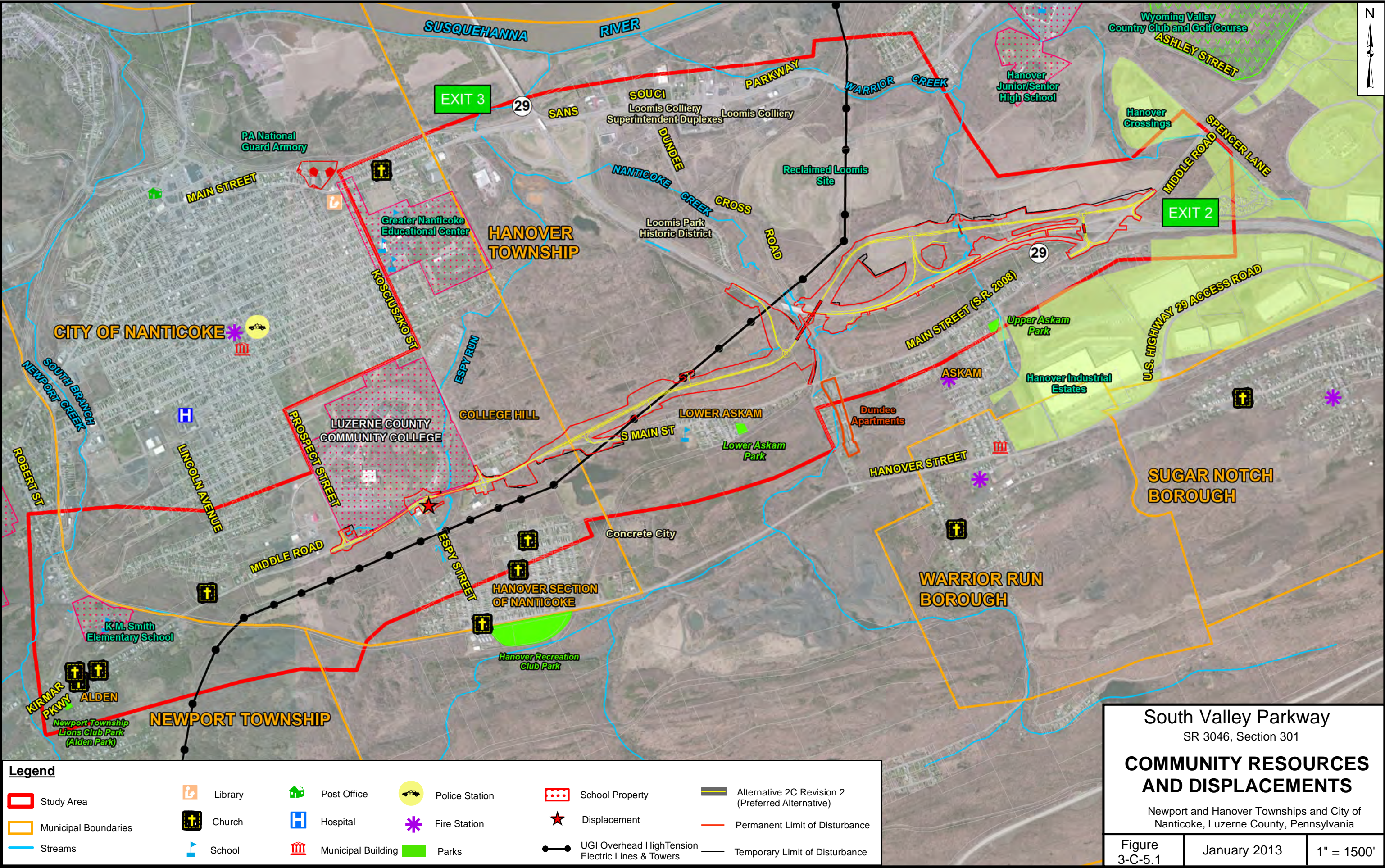


TABLE 3-C-5.1
COMMUNITY DEMOGRAPHIC DATA

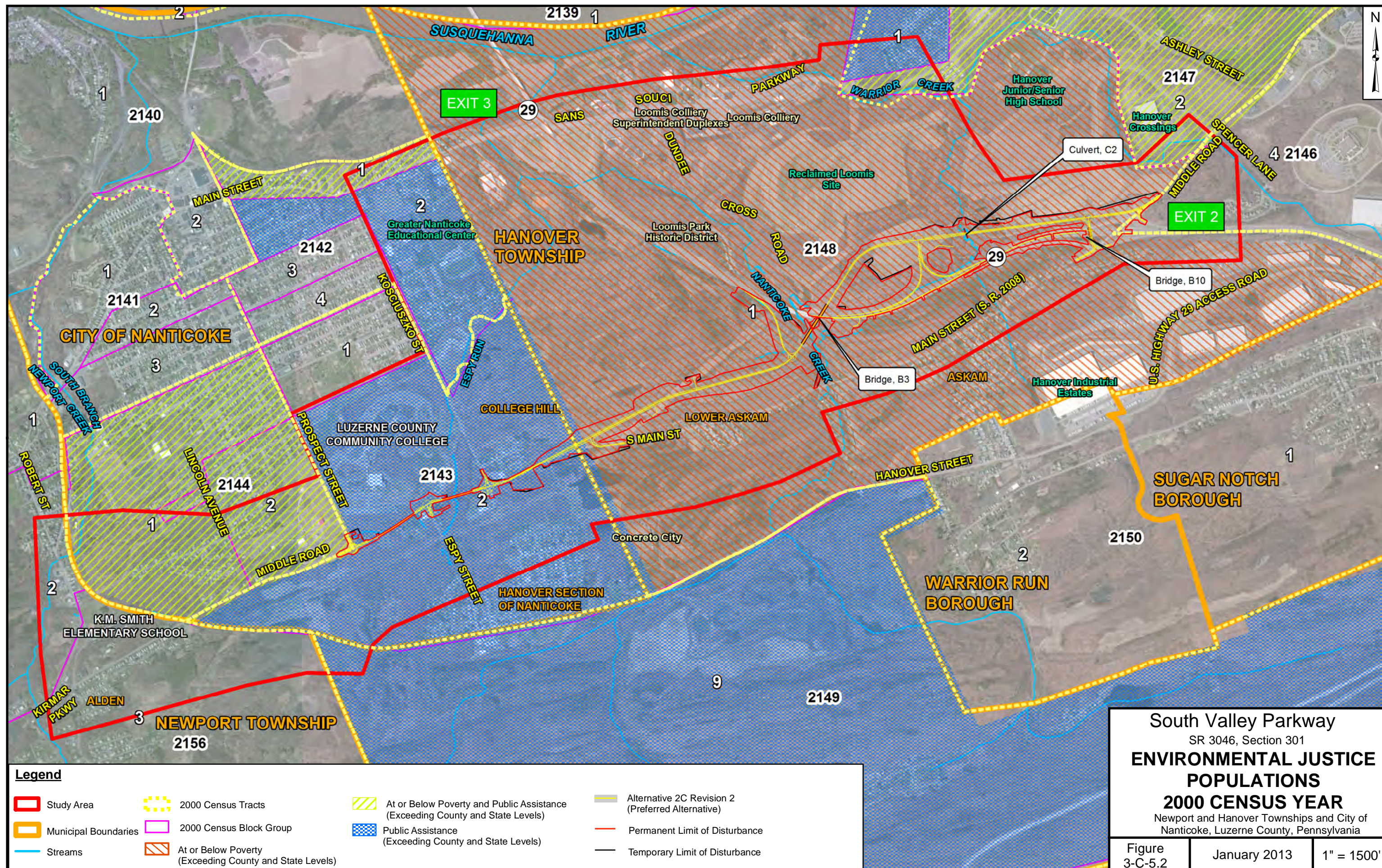
GEOGRAPHIC AREA		NUMBER OF PERSONS (% OF TOTAL)									
		TOTAL		LOW INCOME (1) PUBLIC ASSISTANCE (3)		MINORITY (2)		HISPANIC		LANGUAGE SPOKEN AT HOME (ENGLISH) (4)	
2000 CY	2010 CY	2000 CY	2010 CY	2000 CY	2010 CY	2000 CY	2010 CY	2000 CY	2010 CY	2000 CY	2010 CY
Pennsylvania		12,281,054	12,702,379	1,304,117 (11%) 370,023 (3%)	1,509,858 (12%)	1,796,851 (15%)	2,058,256 (16%)	394,088 (3%)	719,690 (6%)	11,885,430 (96%)	10,583,064 (92%)
Luzerne County		319,250	320,918	34,136 (11%) 8,148 (3%)	42,304 (14%)	10,774 (3%)	25,072 (8%)	3,713 (1%)	21,491 (7%)	302,702 (97%)	287,778 (95%)
Hanover Township		11,488	11,076	1,729 (15%) 438 (4%)	1,566 (14%)	220 (2%)	1,268 (12%)	69 (1%)	402 (4%)	10,563 (99%)	10,278 (96%)
• CT 2146 BG (4)	• CT 2146	226	3,943	15 (7%) 0 (0%)	631 (16%)	6 (3%)	228 (6%)	6 (3%)	155 (4%)	3,741(100%)	3,801 (97%)
• CT 2147 BG (1)	• CT 2180	1,300	3,990	97 (8%) 47 (4%)	598 (15%)	10 (1%)	182 (5%)	7 (1%)	105 (3%)	4,033 (99%)	N/A
• CT 2147 BG (2)		1,638		398 (24%) 77 (5%)		63 (4%)		16 (1%)			
• CT 2148 BG (1)		1,067		18 (17%) 0 (0%)		13 (1%)		5 (1%)			
• CT 2149 BG (9)	• CT 2149	683	1,456	32 (5%) 37 (5 %)	160 (12%)	15 (2%)	28 (2%)	4 (1%)	26 (2%)	1,332 (100%)	1,460 (97%)
Nanticoke		10,955	10,465	1,712 (16%) 644 (6%)	1,719 (16%)	127 (1%)	429 (4%)	49 (<0.5%)	310 (3%)	9,921(99%)	9,784 (94%)
• CT 2142 BG (1)	• CT 2142	569	2,833	173 (30%) 66 (12%)	416 (16%)	6 (1%)	115 (4%)	1 (<0.5%)	94 (3%)	2,441 (99%)	2,475 (95%)
• CT 2142 BG (2)		749		75 (10%) 26 (4%)		6 (1%)		1 (<0.5%)			
• CT 2143 BG (2)	• CT 2143	1,164	2,024	92 (8%) 42 (4%)	309 (15%)	12 (1%)	44 (2%)	5 (<0.5%)	43 (2%)	2,034 (100%)	1,863 (94%)
• CT 2144 BG (1)	• CT 2144	1,373	2,038	166 (12%) 70 (5%)	450 (21%)	16 (1%)	35 (2%)	3 (<0.5%)	30 (2%)	2,052 (100%)	2,025 (96%)
• CT 2144 BG (2)		832		108 (13%) 37 (4%)		7 (1%)		1 (<0.5%)			

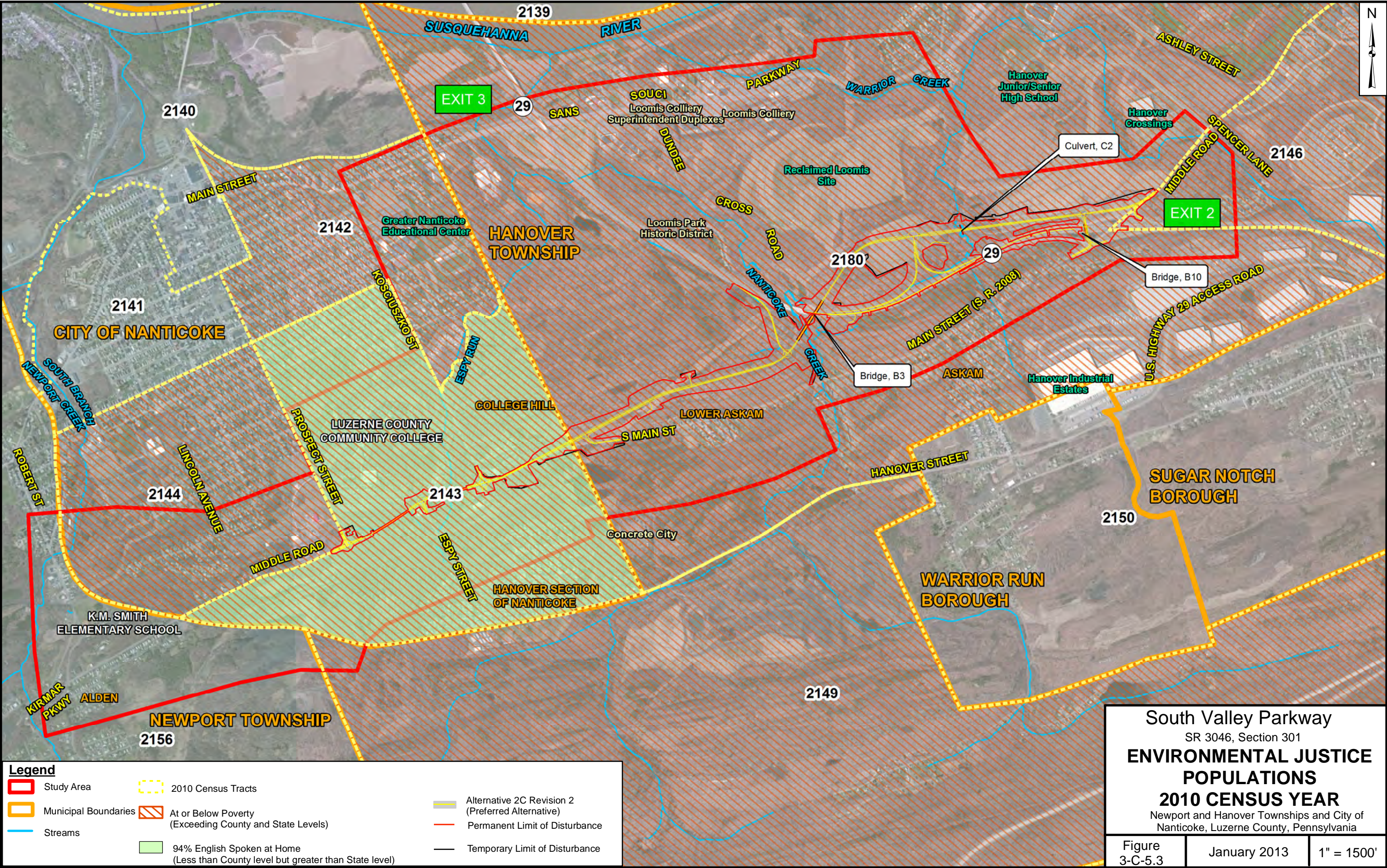
(1) **Low Income** population refers to persons with an annual household income at or below the Department of Health and Human Services poverty guidelines. Percentages may be slightly skewed due to the use of different (2006-2010) population data.

(2) **Minority** population refers to “non-white” persons (Black, Asian American, Native Hawaiian or Other Pacific Islander or American Indian/Alaskan Native).

(3) **Public Assistance** census data (available for the 2000 CY only) is in number of households receiving public assistance through programs administered by the Department of Health and Human Services. Number of households multiplied by Luzerne County average household size (2.34 persons per household) was used to calculate total individuals receiving public assistance. The average household size for Pennsylvania was used to determine persons receiving public assistance at the state level.

(4) **Language Spoken at Home (English)** is based on persons 5 years and older who speak English very well.





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The “Lackawanna-Luzerne Regional Plan Environmental Justice” narrative (May 2011, prepared as part of the 2010 Long Range Transportation Planning process) was also reviewed to determine the potential for environmental justice populations in the project area. The narrative used data from the 2000 Census, the 2005-2007 American Community Survey, and the Department of Education’s National School Lunch program. The findings are similar to the information gathered directly from the 2000 Census and 2010 Census for the SVP project. In summary, the narrative findings include the following related to the project area:

- The minority populations in the two-county region are primarily concentrated in the urbanized areas in and around Scranton, Wilkes-Barre, and Hazleton. The City of Nanticoke and Hanover Township are not in the top 20 list of municipalities (out of 116 municipalities) with concentrations of minorities, which means their municipal minority population makes up less than 3.5% of the total population. This is less than the 4.0% used in the Regional Plan to identify areas with “high” concentrations of minority populations. Nearby Newport Township has the second highest concentration of minority populations (11.6%) and it was determined this likely reflects the institutionalized population at the State Correctional Institute Retreat in the township.
- The City of Nanticoke and Hanover Township are not in the top 20 list of municipalities (out of 116 municipalities) with concentrations of “Limited English Proficiency” population. That means the two municipalities have “Limited English Proficiency” populations that make up less than 1.9% of the total population. However, the narrative noted that while overall population decreased in the two-county region from 2000 to 2007, the minority population increased over 25% which was primarily related to the significant growth in the Hispanic and Latino population (132%). There was also a corresponding growth (over 21%) in the “Limited English Proficiency” population. This mirrors the findings for the project area after comparing 2000 and 2010 Census data.
- The City of Nanticoke and Hanover Township, respectively, have the third (15.8%) and fifth (15.3%) highest concentration of low-income populations in the two-county region of 116 municipalities. **These are greater than the 10.9% used in the Regional Plan to identify areas with “high” concentrations of low-income populations.** As a surrogate indicator for low-income populations; the narrative considered the percent of students eligible for free or reduced price lunches. This effort indicated that all three of the public K-12 schools in the project area are above the regional average of the percent eligible for free or reduced priced lunches (the regional average based on 2008 data for 110 schools in 23 school districts is 40.2% of the total students are eligible for free or reduced price lunch). The percentages eligible for these schools ranged from 44.6% to 55.4%, which are equal to or substantially higher than the US and Pennsylvania percentages eligible for this period, which were 44.6% and 36.1%, respectively.

The project is compatible with the Regional Plan that uses six criteria, including Criteria 6 – “consistency with the fundamental principles of Title VI and Environmental Justice” to evaluate and prioritize candidate projects for potential programming on the TIP. Under Criteria 6, projects receive 0 to 3 points depending if the communities served include high concentrations of low-income and minority populations that exceed the Two-County averages (3 points), high concentrations of low-income or minority populations that exceed the Two-County averages (2 points), high concentration of low-income or minority or other traditionally underserved population that exceeds the Two-County average (1 point), or the project does not meet characteristics or criteria. The SVP project listed in the Regional Plan received 2 points for this criterion because the project provides benefits to and avoids impacts on project area communities that have a high concentration of low-income population that exceeds the Two-County averages.

Displacements and Tax Base Changes

Information on properties (digital tax parcel boundaries, assessed values, property acreage, and ownership) was obtained from Luzerne County tax parcel information. Aerial mapping and field views were used to identify the location and type of property structures in the project area. Tax base impacts associated with right-of-way acquisition for the project were calculated at the municipal level for Hanover Township and the City of Nanticoke; Hanover Area School District, Greater Nanticoke Area School District and Luzerne County. Coordination with the Hanover Township Tax Collector, Business Administrator, School District Administrator, the City of Nanticoke Treasurers' office and School District Administrator provided the recent total annual tax revenue and current property millage rates.

The methodology used to calculate real estate tax base impacts consisted of using GIS to measure the amount of land area in each tax parcel impacted by the project's anticipated right-of-way. The impacted land area was converted into a percent take by dividing it by the total size of the parcel. Impacts resulting in a residential or commercial structure displacement were assumed to be a 100% take of the property and any displaced property greater than 80% of the total property acreage were also assumed to be a 100% take of the property. The percent take was then multiplied by the assessed value for that property and the applicable millage rate to calculate the lost revenue for the municipality, school district and county. The lost revenues were summarized to generate the total lost revenue and divided by the most recent annual real estate tax revenue (date of data: December 2011) to calculate a percent reduction in real estate tax revenues. Table 3-C-5.2 is a list of the property impacts including displacements. Table 3-C-5.3 describes the tax base impacts in further detail.

Impacts:

No-Build Alternative: The No-Build Alternative would require no new right-of-way and therefore would result in no displacements and no tax base reduction for the municipalities, school district or Luzerne County. The No-Build Alternative would have no impact on low income or minority communities; however, the No-Build Alternative would deny the local low-income populations the benefits of a new road that would not only provide traffic relief along Middle Road but would also provide development opportunities in the region that has in the past decades been experiencing a declining local economy and relatively high unemployment rates.

Build Alternative: The Build Alternative will extend primarily through the undeveloped lands owned by the Earth Conservancy, bypassing the established villages in the Middle Road corridor. Below is a summary of the anticipated impacts.

Community Resources

The Build Alternative will avoid direct impacts to community structures, including churches, libraries, and emergency service stations. However, as noted in Form 3C1 – Safety and Mobility, the new road is anticipated to improve response times for the communities' emergency service providers. In addition, the new facility will improve access to the LCCC and to the Greater Nanticoke Educational Center. There will be some minor right-of-way impacts to the LCC for the construction of the three proposed roundabouts along idle Road but these roundabouts will provide an overall benefit to the Community College by improving access to the school and improving safety for student pedestrians along Middle Road.

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**TABLE 3-C-5.2
PROPERTY IMPACT SUMMARY**

PARCEL NUMBER	TAX IDENTIFICATION NUMBER	TOTAL ACREAGE	OWNER	IMPACTED ACREAGE	% OF PARCEL
City of Nanticoke					
1	42K7 001004000	44.89	Luzerne County Community College	0.25	0.6%
2	42K7 004097000	6.95	Earth Conservancy	0.09	1.3%
2	42K7 004008000	3.63	Earth Conservancy	0.39	10.7%
11	42K7S6 003002000	1.14	ACC Ventures, LLC/Market & Gas Station	0.03	2.6% (access)
14	42J7 00A12A000	122.44	Luzerne County Community College	1.01	0.8%
15	42K7S6 002001000	0.48	Private Individual	0.48	100% (displacement)
25	42K7S2 VARVAR	51.28	Private Individual	3.06	6.0%
26	42K7S2 001001000	5.17	395 East Middle Road, LLC	0.17	3.3%
27	42JTS1 003003000	0.40	Private Individual	0.02	5.0%
30	42JTS1 001017000	1.13	H&J Realty, LLC	0.09	8.0%
30	42JTS1 001016000		H&J Realty, LLC		
30	42JTS1 001015000		H&J Realty, LLC		
41	42J7 00A011001	34.18	Earth Conservancy	3.30	9.7%
	42J7K8 00A010000				
Hanover Township					
37	42K7 00AVAR	85.72	U.G.I. Corporation	10.73	12.5%
41	25J8 00A107000	384.62	Earth Conservancy	51.88	13.5%
	25J8 00A106000				
	25J8 00A105000				
	25J8 00A104000				
	25J8 00A103000				
42	25J8K8 00A109000	41.64	Earth Conservancy	1.20	2.9%
50	25J8 00A02D000	52.65	Earth Conservancy	1.60	3.0%
52	25J8 00A103000	2.24	Earth Conservancy	2.24	100% (undeveloped)
53	25J8K8 00A098000	45.98	Earth Conservancy	4.53	9.9%
	25J8 00A083000				
	25J8 00A084000				
	25J8 00A094000				
	25J8 00A093000				
	25J8 00A091000				
54	25J8 00A118000	108.70	Luzerne County Industrial Development Authority	58.18	53.5% (undeveloped)
55	25J8 00A113000	28.44	Luzerne County Industrial Development Authority	0.36	1.3%
56	25J8 00A121000	3.62	U.G.I Utilities, Inc.	0.76	21.0%
70	25J8 00A112000	57.56	Earth Conservancy	8.97	15.6%
70	25J8 00A090000		Earth Conservancy		
70	25J8 00A112001		Earth Conservancy		

**TABLE 3-C-5.3
MUNICIPAL, SCHOOL DISTRICT, AND COUNTY REAL ESTATE
TAX BASE REDUCTION IMPACT SUMMARY**

	LUZERNE COUNTY		HANOVER AREA SCHOOL DISTRICT		HANOVER TOWNSHIP		GREATER NANTICOKE AREA SCHOOL DISTRICT		CITY OF NANTICOKE	
Current Revenue*	\$85,619,104		\$9,962,401		\$5,419,279		\$2,892,711		\$877,541	
Build Alternative (\$/% Yearly Tax Base Reduction)	LOST	%	LOST	%	LOST	%	LOST	%	LOST	%
	\$5,936	<0.01	\$13,785	<0.01	\$4,601	<0.01	\$2,995	<0.01	\$1,111	<0.1

* Current Revenue is based on Fiscal Year 2010 property tax revenue.

Given that no public park or recreational area will be encroached by construction of the Build Alternative, there will be no use of Section 4(f) properties related to community and public resources. This includes the Delaware and Lehigh Canal National Heritage Corridor and State Heritage Park that extends through the study area. This large area is not in and of itself a public park unit. Therefore, it is not subject to the provisions of Section 4(f) except for those lands or sites within the area that are deemed eligible for listing on the NRHP or are designated public recreation lands. As noted in Form 3C7 – Historic Resources – Structure and Archaeological Site, all NRHP properties will be avoided.

Environmental Justice Populations

Given that only one isolated structure will be displaced and there are no adverse impacts to any one community or neighborhood (all communities will remain intact and cohesive), the project's construction would not have a disproportionate and adverse impact to an environmental justice population. The Dundee Apartment Complex, identified as "subsidized housing," was avoided. Compliance with the Environmental Justice EO and guidelines requires that the populations of concern receive proportional benefits as a result of the project and that efforts are undertaken to engage these populations in full and fair participation in the project development process. The proposed SVP improvements would not only be available to all travelers but would also provide relief to village communities along Middle Road (including the Dundee Apartments) by reducing the high-speed through traffic on that road and diverting it to the new SVP facility. Given that a large portion of the project area's population lives along Middle Road, these benefits would be equally shared. The preliminary engineering and environmental studies also provided multiple public involvement opportunities including six Project Advisory Committee (PAC) meetings (open to the general public), five general "open house" public meetings, and multiple special interest group meetings with local municipalities and businesses (see Attachment B.1). A project mailing list was maintained to provide citizens with notices for the meetings and to receive project newsletters.

Displacements and Tax Base Changes

The Build Alternative would result in partial right-of-way takes from multiple properties (most of which are undeveloped) and one structure displacement (a vacant commercial property with a second floor apartment) as summarized in Table 3-C-5.2. The property that includes the proposed displaced structure is located on

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the southeast corner of the existing Espy Street/Middle Road intersection (see Figure 3-C-5.1). There is also a mini-market and gas station at this intersection, which would remain; however, the proposed roundabout at this location will require modifications to the egress and ingress for the property's parking lot. Coordination with the owner of this establishment is ongoing and will continue as part of final design to maximize the operations and safety of customers patronizing the establishment and drivers using the roundabout proposed for this intersection and to ensure there is no temporary or permanent adverse impacts to the property's access. An assessment of the anticipated property acquisitions indicates that there will also be a minimal impact to the tax base and associated reduction in tax revenues for Luzerne County, Hanover Township, Nanticoke City, the Hanover Area School District and the Greater Nanticoke Area School District. Table 3-C-5.3 describes the preliminary tax base reductions.

Minimization/Mitigation:

No mitigation is proposed to offset the impacts to local tax revenues. Since there is only one displacement (a vacant structure) and no communities are directly affected, it was determined that not only is there no adverse impact to the general population but also there is no disproportionate and adverse impact to any environmental justice populations and no mitigation is proposed.

The Build Alternative will displace one isolated structure that includes a residential apartment located within the City of Nanticoke municipal limits near the Hanover Township border. It is unknown if the property owner lives on site or if the property is rented. The property's past use included the Laurel Inn, which was a commercial property and is not currently open for business and there are no plans to reopen. An abbreviated Conceptual Survey was conducted to address the ability to find replacement housing for the one displacement. Available housing information for the City of Nanticoke/Hanover Township area was obtained from Realtor.com (June 13, 2012). The information indicated 59 homes (consisting of at least two bedrooms and one bath) are available for sale in the price range of \$10,000 to \$300,000 (within the price range of the structure to be displaced). The least expensive home was listed as a 3-bedroom, 1-bathroom for a cost of \$14,400. Twenty homes were advertised for \$50,000 or less. The most expensive home was a 4-bedroom, 3-bathroom for a cost of \$280,000. Rental properties were also identified on Realtor.com and the classifieds of The Times Leader (local newspaper) in the range of \$100 to \$1,000 per month. Realtor.com identified two multi-unit apartment complexes within the Wilkes-Barre area mailing address and the local newspaper identified two house rentals within the City of Nanticoke and four house rentals in adjacent Hanover Township. Price ranges for the rental properties began at \$450 per month and continued up to \$2,154 per month. Based on the findings of the Realtor.com website and The Times Leader classifieds reviews it is determined that there is current housing available within the immediate vicinity of the displaced housing unit and within the current school district.

All properties acquired by PennDOT for construction of the project will be paid just compensation through the PennDOT Relocation Assistance Program. The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources are available to all eligible residential and business relocatees without discrimination pursuant to Title VI of the Civil Rights Act. No residential homeowner or tenant will be required to relocate until at least one comparable replacement dwelling has been made available to the displaced person and received a 90-day minimum notice to move. No business owner or tenant will be required to relocate until they have received a 90-day minimum notice to move. Advisory services shall be provided to all residential and business displacees. Qualified PennDOT staff and/or private licensed real estate brokers will perform property appraisals to determine fair market value to assure equitable reimburse-

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ment of just compensation to the recipient. Last resort housing will be used to accomplish the residential relocation if necessary. If an agreement is not made in a timely manner, residents are ensured that accommodations will be made available to them until an agreement is made. Displaced businesses will be paid just compensation for their businesses as well as moving costs.

Form 3C6 – Impact Form

Identification of Resource: Proposed Development and Local Planning

Methodology & Existing Conditions: The study area is within the lower part of the Wyoming Valley, a crescent-shaped depression that encompasses the metropolitan area known as the Scranton/Wilkes-Barre area. The valley was notable for its deposits of anthracite coal, which have been extensively mined. Deep mining has declined, however, following the 1959 Knox Mine Disaster when the roof of the Knox Coal Company's mine under the Susquehanna River collapsed, temporarily. The project area is along the eastern and southern edge of the City of Nanticoke, south of Wilkes-Barre, and includes large areas of undeveloped land abandoned by coal companies over the years.

During the assessment of the study area and development of alternatives, the project team continuously coordinated with the Luzerne County Planning Commission, the Greater Wilkes-Barre Chamber of Business and Industry, the EC, and municipal officials (Hanover Township, Newport Township and the City of Nanticoke) to identify the location, type, and status of proposed development within the study area. The EC, a major landowner in the study area, is a nonprofit organization formed in 1992. Between 1992 and 1994, and using grant funds and private loans, it purchased 16,300 acres of land from the former Blue Coal Corporation in Luzerne County, which had declared bankruptcy in the mid-1970s. The EC's stated mission includes undertaking projects through partnerships with governmental agencies, educational institutions, area businesses, residents and other conservation organizations to reclaim and reuse these former coal mining lands. Various planning documents from the EC were reviewed and municipal zoning data were obtained from the Luzerne County Planning/GIS Department in September 2010.

The LCCC is a major traffic generator in the study area. The college student enrollment and facilities have been expanding over the years. Most recently, the LCCC expanded facilities on its main campus (located in the SVP study area) with the development of its Public Safety Institute, in the northwest quadrant of the Middle Road/Prospect Street intersection that opened in 2008. The Community College also recently opened a Culinary Art Center and Health and Science Center in the downtown section of the City of Nanticoke. There are no new major facilities expansions planned for the foreseeable future.

The City of Nanticoke has initiated the design work for a streetscape improvement project using federal and local funds. The project could include new trees, LED streetlights, handicap ramps, paving, benches and parking meters in Nanticoke along several blocks of Main and Market streets, located at the northern edge of the SVP study area. Local officials see this project as a first step toward bringing new life to the city and attracting businesses back to the city and its downtown area.

Over the last several decades, the EC and the Chamber have been focusing their planning initiatives on vacant parcels scattered throughout the Wyoming Valley in Luzerne County. Since the mid-1990s the EC has completed various land use planning studies, including the following:

- “Long-Term Land Use Plan” (1996) – this document identifies areas of potential land use and development across the lower end of the Wyoming Valley.
- “Route 29 Mixed-Use Development Master Plan” (1999 Master Plan) – this study analyzes the economic opportunities in Wyoming Valley and presented a plan to guide development of 6,100 acres of the more than 16,300 acres of property owned by the EC.

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- “Lower Wyoming Valley Open Space Plan” (1999) – this plan was prepared in conjunction with Luzerne County and the PA DCNR and addresses the EC’s remaining 10,200 acres (of the 16,300 acres owned by EC) for the development of a network of open space and recreational opportunities while protecting that natural environment and valleys mining heritage. None of the EC properties in the project study area are identified solely for open space or recreational opportunities.
- “Open Space, Greenways, & Outdoor Recreation Master Plan” (2005) – this plan was prepared by the Lackawanna and Luzerne Counties to provide a planning framework for the preservation of open spaces and the development of greenways and outdoor recreation areas. None of the land within the project study area is identified as land to be preserved for open space, greenways, or outdoor recreation areas.
- “Reuse Analysis and Sustainable Redevelopment Framework” (2008) – this plan was prepared with support from the U.S. EPA. It includes a regional analysis that identified development opportunities and constraints that led to the formation of development concepts, including the “Thinkbelt” Development Area that encompasses the EC lands on the north side of Middle Road in the SVP project area (parcels Hano-9 and Hano-7b). The intent of the analysis is to help EC make informed decisions regarding implementation of their 1999 Plan and the phasing of proposed development and to provide preliminary data analysis for use by future developers and investors.
- “Hanover Crossings Phases 3 and 4 and Hanover Lot 9 Site Planning” (Draft Summary Report, 2012) – this planning concept is being prepared in conjunction with the Chamber to investigate the development potential of over 600 acres of currently vacant land that is located within the SVP study area.

The majority of the land proposed for development in the study area is located on abandoned mine land extending throughout Hanover Township and into the City of Nanticoke. The areas targeted for development include:

- Hanover 7a parcel – 304-acre parcel owned by the Chamber that includes Phases 1 and 2 of the Hanover Crossings Business Park in Hanover Township. The site opened in 2000 and includes internal paved access roads, telecom infrastructure, dual-feed electricity lines, natural gas lines, public water service, and sewage collection/treatment service. Currently there is only one business tenant, CVS Caremark RX, a mail-order pharmaceutical company. There are 213 acres available for additional development.
- Hanover 7b (Phase 3) parcel – 134-acre parcel owned by the Chamber that is part of the Hanover Crossing Business Park in Hanover Township. No infrastructure exists in this area at this time.
- Hanover 7b (Phase 4) parcel – 75-acre parcel owned by the EC that is part of the Hanover Business Park in Hanover Township. No infrastructure exists in this area at this time.
- Hanover 9 parcel – 410-acre parcel owned by the EC that is located in Hanover Township and the City of Nanticoke. No infrastructure exists in this area at this time.

As of July 2012, on-going coordination with the EC and the Chamber confirmed that the Hanover Crossings property (Phases 1 and 2 on Hanover 7a and Phases 3 and 4 on Hanover 7b) and the Hanover 9 property are the most likely EC and Chamber properties in the Wyoming Valley to develop since the economic downturn

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started in 2008. Figure 3-C-6.1 illustrates the locations of these parcels along with other undeveloped lands owned by the EC in the study area. Table 3-C-6.1 lists the type of proposed development along with associated square footage and acreage for the vacant parcels in and adjacent to the SVP study area as described in the development concepts provided in various planning documents. In addition, Keystone Opportunity Zones (KOZ) are present on the parcels owned by the EC, including Hanover 7b (Phase 4) and Hanover 9 parcels. KOZs are expected to attract development where minimal development exists. Properties enrolled in the KOZ program are exempt from certain state and local taxes. For some properties the tax burden is reduced to zero, but is contingent on the deductions, abatements and credits available.

**TABLE 3-C-6.1
PROPOSED DEVELOPMENT**

PARCEL	PROPOSED USE	ZONED USE*	KOZ	ACRES
Hanover Crossings – Phases 1 and 2 (Hanover 7a)	Commercial – currently includes CVS Caremark RX and has approved plans for 3 new buildings, a CEO Food Bank and 2 “speculative” developments	M-1	No	304 (213 available for development)
Hanover Crossings – Phase 3 (Hanover 7b)	Business Park = 277,000 sq ft	M-1	No	134
Hanover Crossings – Phase 4 (Hanover 7b)	Business Park = 300,000 sq ft	M-1	Yes	75
Hanover 8	Residential	R-2	Yes	~46
Hanover 9	Mixed Use Village <ul style="list-style-type: none"> • 235,000 sq ft – office/classroom • 235,000 sq ft – retail/restaurants • 160 units - residential Business Park <ul style="list-style-type: none"> • 647,000 sq ft – business park/flex space • 51,000 sq ft – convenience retail • 288,000 sq ft – medical services Single-family/Senior Housing Neighborhood <ul style="list-style-type: none"> • 266 Units – detached/townhouses Student Housing/Garden Apartments <ul style="list-style-type: none"> • 400 Units Open Space – 295 acres Park land – 4 acres	S-1R, R-2, FP	Yes	410
Hanover 10	Industrial	R-2	Yes	~164
Hanover 12	Residential	M-1, R-2	No	~40
Hanover 13a	Industrial or Residential	M-2, R-1A	No	~301
Hanover 13b	Industrial	R-1A	No	~419
Nanticoke 2	Industrial	S-1, R-2, M-1	No	~90

* See Figure 3-C-6.2 for zoning code type.

The Phases 1 and 2 parcels of the Hanover Crossings property have over 100 remaining acres available for commercial development since the site opened (with infrastructure in-place) in 2000. In April 2012 Hanover Township officials approved development plans submitted by Mericle for three parcels (new structures) in

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this part of the Hanover Crossings property. Mericle is a local commercial real estate developer that owns parcels immediately adjacent to the existing sections of Great Valley Boulevard that connects to Middle Road east of S.R. 0029 Exit 2. The plans include the construction of a new food bank for the Commission on Economic Opportunity (CEO), a local multi-service nonprofit community action agency whose mission is to alleviate poverty. The other two approved developments (buildings) are proposed as “speculative” development plans with no specific industry/commercial entity identified at this time.

The most recent conceptual design plans (2012) for the EC owned Hanover 9 property consists of four development areas: a mixed-use, walkable “village”; a business park/flex space/convenience retail/medical services area; a single family detached/townhouse/senior housing residential neighborhood; and a student housing/garden apartment area. The timetable for this development concept is unpredictable because there is no existing infrastructure or services available at this time and, as noted by EC, development activities in this area are dependent on economic conditions for both the short-term and long-term (20 to 50 years) planning periods. However, as of July 2012, a developer has verbally expressed interest in the development of student housing to accommodate LCCC students, given the proximity of the LCCC campus and its increasing enrollments.

The recent conceptual design plans (2012) also include concepts for development on property identified as Hanover Crossings Phases 3 and 4 (Hanover 7b) and located northeast of S.R. 0029. This proposed commercial business park would accommodate 577,000 square feet of business park/flex space development. As of July 2012, the EC stated that Walmart has expressed an interest in developing a part of the Phase 4 portion of Hanover 7b but no plans or concepts have been submitted for review at this time.

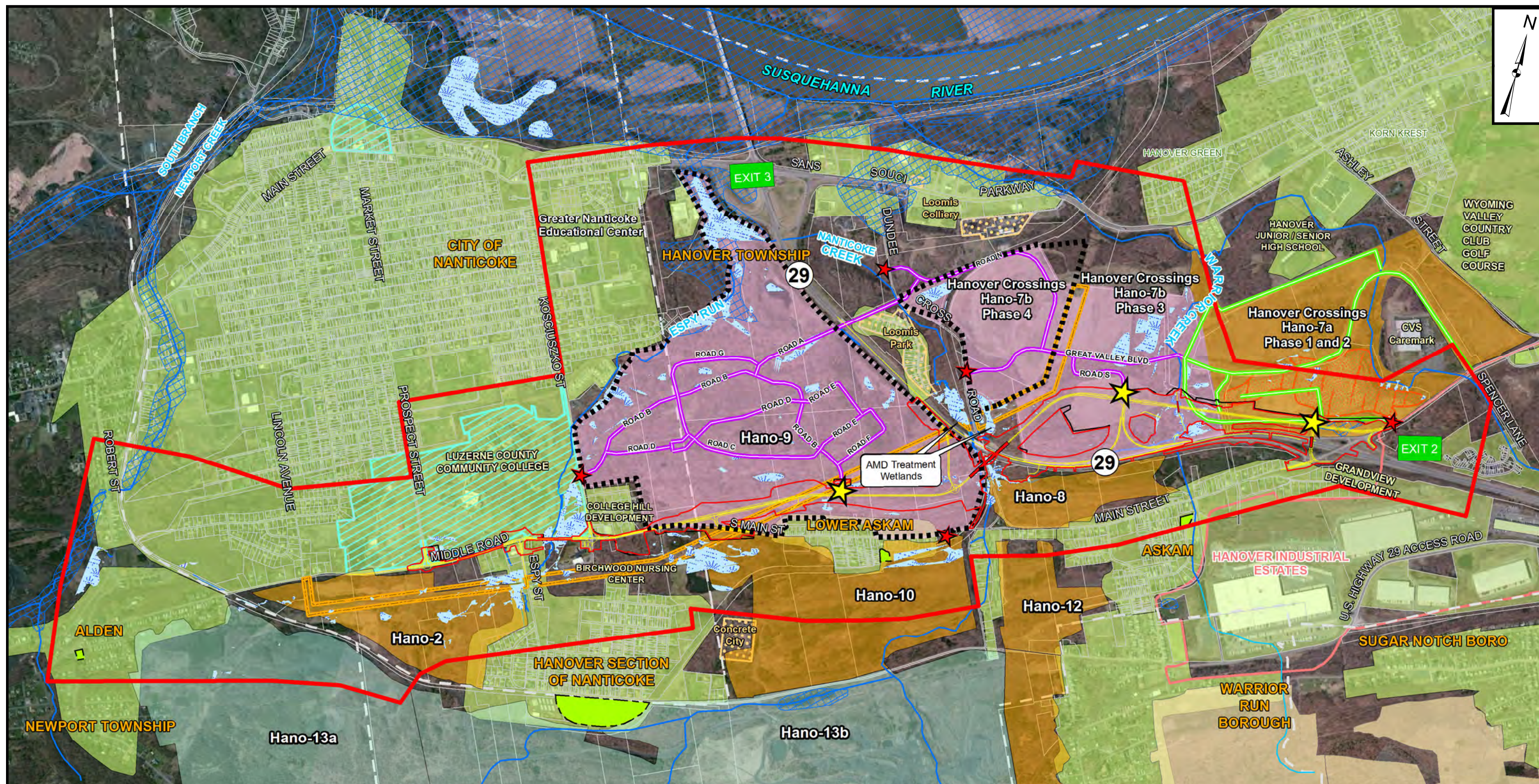
Local Planning

Local planning and development activities were assessed to determine if the project is compatible with local plans and initiatives. Table 3-C-6.2 summarizes the local municipality and county planning provisions in place to manage growth and development. Figure 3-C-6.2 is a composite zoning map of the region and all undeveloped properties in the study area are zoned to permit some type of development. A Joint Open Space, Greenways & Outdoor Recreation Master Plan was completed by Luzerne and Lackawanna Counties in 2005; however, none of the properties in the study area was identified for preservation as open space, greenways, or outdoor recreation.

**TABLE 3-C-6.2
SUMMARY OF PLANNING DOCUMENTS**

LOCAL GOVERNMENT	ZONING ORDINANCE	SUBDIVISION AND LAND DEVELOPMENT ORDINANCE	COMPREHENSIVE PLAN	HAZARD MITIGATION PLAN	STORMWATER MANAGEMENT PLAN
Luzerne County	2004	2004	Draft May 2011	2009	2010
Hanover Township	1991	1989	1988	2003	None
City of Nanticoke	1993*	1992	1971*	None	None
Newport Township	1995	None	None	None	None

* Indicates planning document is currently under revision.



LEGEND

- Study Area
- Alternative 2C Revision 2 (Preferred Alternative)
- Municipal Boundaries
- Utility R-O-W
- Streams

- ★ Existing Access Points
- ★ Future Access Points

Parcels with Conceptual Development Plans

- Parcels Included in Route 29 Mixed Use Master Plan, 1999
- Parcels Included in Thinkbelt Development Concept Plan, 2008
- Parcels in Current 2012 Concept Plan

- Existing Communities and Developed Areas
- Earth Conservancy Parcels With No Development Plans
- Keystone Opportunity Zone
- Existing Hanover Industrial Estates
- Existing LCCC Campus Property

- National Register of Historic Places Boundaries
- Parks
- Former Luzerne County Landfill
- Wetlands
- 100 Year Floodplain

- Proposed Roads by Developer
- Existing Roads by Developer

South Valley Parkway Project

SR 3046, Section 301

EXISTING AND PLANNED DEVELOPMENT

Newport and Hanover Townships and City of Nanticoke, Luzerne County, Pennsylvania

Figure 3-C-6.1

January 2013

1" = 1500'



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The previous Long Range Transportation Plan for the Lackawanna-Luzerne Transportation Study Area (2003-2025), dated May 2003, included an earlier version of the SVP (previously known as the LCCC/Sans Souci Connector) as a project of “regional significance” for Luzerne County. This project is considered to be an important component of the regional infrastructure to improve access to existing residential areas and the LCCC, in addition to accommodating the development plans proposed for the abandoned mine lands, particularly the large EC parcels encompassed by Middle Road, Kosciusko Street, Sans Souci Parkway, and S.R. 0029.

The new Final Draft Lackawanna-Luzerne Regional Plan (Comprehensive Plan and Long-Range Transportation Plan For Lackawanna & Luzerne Counties, May 2011) identifies the core areas of Wilkes-Barre and the City of Nanticoke as two of the eight City Center Priority Areas that are targeted for growth and revitalization. It is planned that these areas would allow for the highest concentrations of residential uses and employment and provide a high level of transit service. Priority Areas are intended to provide a density of population sufficient to support new retail uses and community facilities, and attract employment. Concentrating jobs and residences in identified Priority Areas in turn would increase transit ridership potential. The area surrounding these Priority Areas (including all area in the study area) is identified as Mixed Density Infill Areas. It is intended that the infill designation for these areas will provide opportunities for new development and redevelopment on properties that are vacant or underutilized. The Regional Plan references the SVP project as a planned project on the Twelve Year Transportation improvement plan. The SVP project is described in the Regional Plan as a new two-lane road, which includes a new interchange with S.R. 0029. Note – the Regional Plan does not identify any areas within the study area as land to preserved for open space.

Impacts:

No-Build Alternative: The No-Build Alternative would have no impact on areas proposed for development areas and would not be compatible with local and regional plans and initiatives.

Build Alternative: During the development of Build Alternative options, the project team coordinated with municipal officials and representatives of the EC and the Chamber to ensure the proposed land development concepts and plans would not conflict with the design of the SVP Project. The Build Alternative would cross through some of the parcels targeted for development but the EC has agreed to donate land for the project’s right-of-way. The timetable for the planned land development is unpredictable because it is highly dependent on economic conditions for both the short-term and long-term (next 20 to 50 years) planning periods. However, the design of the SVP has incorporated four new access points that can be developed in the future when the land development plans move forward. The SVP is being designed to operate primarily as a limited access roadway but including the four breaks at key locations will allow safe access and accommodate future local roadway infrastructure connections while maintaining the safe and efficient operations of the SVP. The proposed SVP is compatible with local and regional planning initiatives and has the support of local developers and municipal and county planners and officials.

Minimization/Mitigation: The SVP will be designed to include four access points that can be developed in the future, when needed, to accommodate future land development actions.

EA STEP 3: Alternatives Development and Impact Analysis (Section C)

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Form 3C7 – Impact Form

Identification of Resource: Historic Resources – Structures and Archaeology Sites

Methodology & Existing Conditions: The study area is situated within the northern anthracite field and the landscape has been transformed by the anthracite extraction industry. The current landscape includes culm banks (piles of mine tailings), abandoned railroad beds, and coal processing structures, as well as inhabited commercial and residential buildings. Settlement of British Americans in Luzerne County began in the 1760s. After the American Revolution, settlers continued to establish farmsteads on the broad, fertile floodplains of the Wyoming Valley. They cleared forests for fields and orchards. Lumbering was an early economic activity as settlers exploited the dense forests in the area. Luzerne County was formed in September 1786 and Wilkes-Barre was designated as the county seat. Few of the buildings erected during the colonial period in the Wyoming Valley remain.

Settlement of Luzerne County in the early nineteenth century was largely agrarian in character. During this time, industrial activity was not limited to coal mining. The historic landscape featured tanneries (particularly a tannery within in the project area near Askam), paper mills, iron forges, smithies, a ferry, foundries, rolling mills, and textile mills. Small-scale mining in support of local forges gradually transformed into intensive, industrial mining. Within 50 years of the first mines, coal mining emerged as the dominant industry and many established farmers sold out and moved west. Industrial manufacturing, supported by anthracite extraction and immigration, prevailed in Luzerne County’s social and economic history until its decline in the late twentieth century. The period of significance for the anthracite industry ranges from the 1830s to the 1960s. The decline began during the Great Depression. Attempts were made by local mining corporations, such as the Glen Alden Corporation, to modernize the mining program and strip mining became a predominant method of anthracite extraction in an effort to lower production costs. The Glen Alden Corporation declared bankruptcy in 1976. The Earth Conservancy purchased the bankrupt corporation with federal government support in 1994 and began mine land reclamation projects.

Historic Structures

The investigation of historic resources was initiated after the Area of Potential Effects (APE) was defined. The APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist” (36 CFR §800.16[d]). The boundaries for the project’s APE historic resources were determined to be the boundaries defined for the project’s NEPA study area. Historic properties eligible for listing on the National Register of Historic Places (NRHP) were identified in the project’s “Historic Resource Survey and Determination of Eligibility Report” (2003). The Eligibility Report used background research and field survey for a total of 32 potential historic buildings or structures. Concurrence with the PHMC on eligibility and NRHP boundaries was obtained in correspondence (February 2004 – October 2007, see Attachment C.2). The four NRHP-eligible historic properties are listed in Table 3-C-7 and shown on Figure 3-C-7.

Archaeological Resources

Archaeological Resources were investigated in a three-phase approach. Initial investigations included background research, archaeological/geomorphological reconnaissance and archaeological resource sensitivity mapping (Skelly and Loy, 2002). Additional geomorphological investigations were completed from January 2002 through March 2004 to locate many localized, relatively undisturbed areas and intact soils that have the potential to contain historic and/or pre-contact archaeological deposits (Skelly and Loy, 2004). Lastly, Phase I Archaeological investigations (Skelly and Loy, 2010) were completed within the project’s

TABLE 3-C-7
HISTORIC PROPERTIES ELIGIBLE FOR LISTING
ON THE NATIONAL REGISTER OF HISTORIC PLACES

RESOURCE (NO.)	DESCRIPTION	ANALYSIS	NRHP RECOMMENDATION
Loomis Colliery (1)	Glen Alden coal processing facility	Significant under NRHP Criteria A and C	Eligible
Loomis Colliery Superintendent Duplexes (3)	Coal related housing type, manager housing	Significant under NRHP Criteria A and C	Eligible
Loomis Park Historic District (26)	Coal related housing type, manager housing duplexes	Significant under NRHP Criteria A and C	Eligible
Concrete City	Housing for the Truesdale Colliery	Significant under NRHP Criteria A and C	Previously determined Eligible, 1991

archaeology APE. The archaeological APE followed the footprint of the proposed SVP construction activities and included all areas of potential ground disturbance, as delimited on project mapping. Generally, the archaeological APE was an irregularly shaped polygon totaling approximately 138.6 acres.

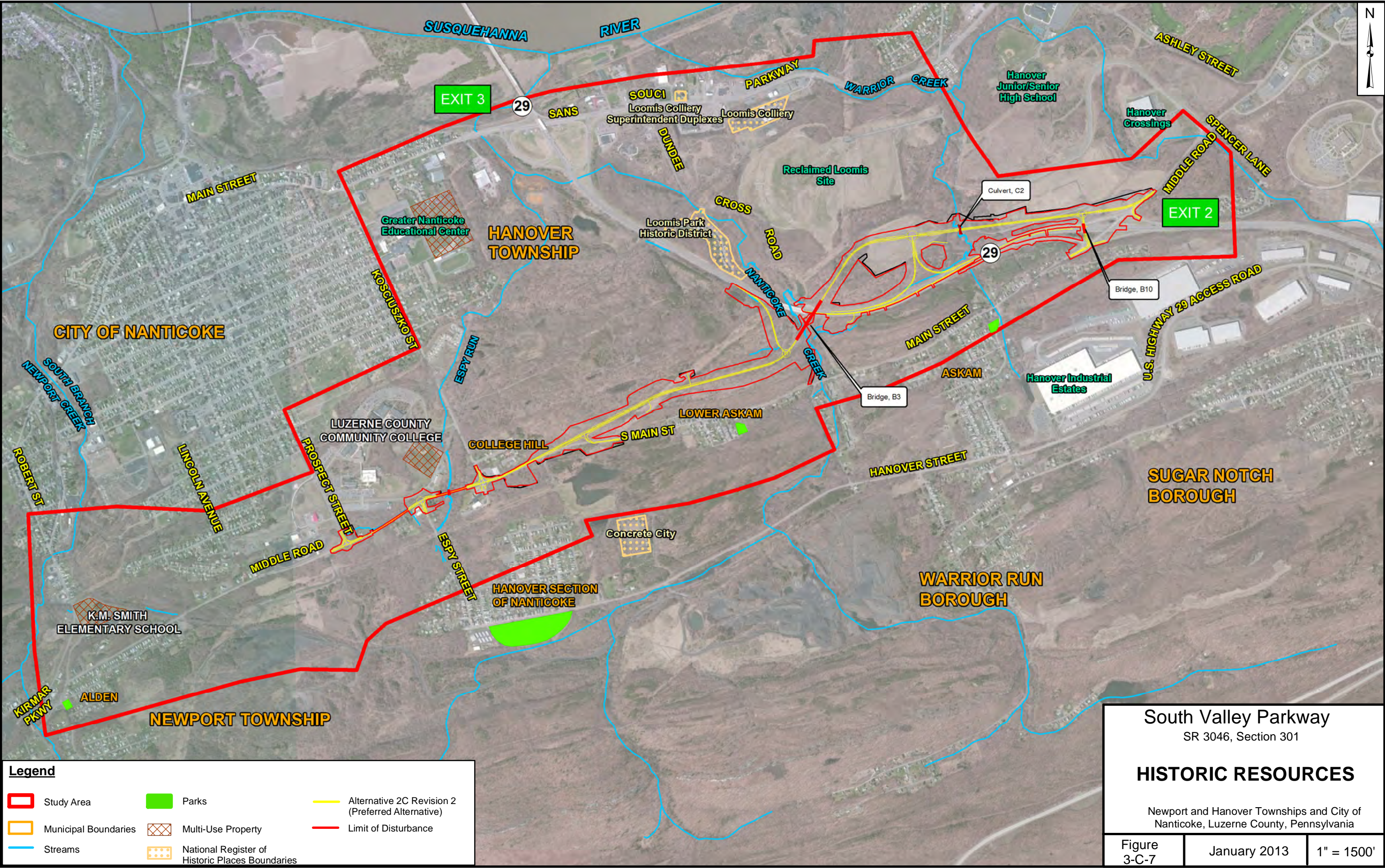
Background research indicated that no pre-contact archaeological resources had been previously recorded within the study area limits. The project study area is located in the Appalachian Mountain Section of the Ridge and Valley physiographic province. The geomorphological investigations revealed that the study area is profoundly and extensively disturbed by activities related to the historic/modern mining of the anthracite coal, as well as quarrying activities.

During the Phase I Archaeology survey a total of 301 shovel test pits (STPs) were excavated within the APE to identify any pre-contact or historic period archaeological resources. Six test areas (Test Areas D, R, F, G, H, and I) were included. The results of the archaeological survey confirmed those made in both the sensitivity and geomorphology reports that the majority of the project area had only a low probability for the presence and preservation of archaeological remains. Five pre-contact period isolates (Isolate 1, 2, 4, 5, and J), one historic period isolate (Isolate 3), one pre-contact period archaeological site (36LU276), and one historic period archaeological site (36LU277) were identified within the APE.

Impacts:

No-Build Alternative: The No-Build Alternative would have no impact on historic properties nor to on archaeological resources.

Build Alternative: An Abbreviated Determination of Effects Report (December 2009) was prepared for the project and it was determined that there will be no historic properties affected by the SVP project. Specifically, the Build Alternative will not alter the characteristics that qualify the Loomis Park Historic District for NRHP eligibility. The PHMC concurred on March 22, 2010, that the project will have no effect on the Loomis Park Historic District. It is also anticipated that the Build Alternative would have no impacts on any archaeological resources eligible for listing on the National Register of Historic Places based on the findings of the Phase I Archaeological Report (November 2010). PHMC concurred on January 6, 2011, that no further archaeological work is necessary based on the finding of the Phase I Archaeology Report (see Attachment C.2). However, there is one historic period archaeological site (36LU277) in the vicinity of the project's proposed limits of disturbance along Middle Road.



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Given that no historic properties or archaeological sites listed or eligible for listing on the National Register will be encroached by construction of the Build Alternative, there will be no use of Section 4(f) properties related to cultural resources.

Minimization/Mitigation: There is no mitigation required for the historic structures because there will be no historic properties affected. However, orange protective fencing will be placed around the archaeological site (36LU277) in the vicinity of the project prior to clearing and grubbing to ensure the site is not disturbed during construction.

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Form 3C8 – Impact Form

Identification of Resource: Utilities

Methodology & Existing Conditions: The Pennsylvania One Call System, Inc. was contacted to identify utilities within the project’s study area. Public Utilities identified within the study area include the following:

- UGI Overhead High Tension Electric Lines – overhead lines extend throughout the study area as shown on the alternative map figures of Section II.B – Alternatives Considered and on Figure 3-C-5.1 – Community Resources and Displacements.
- UGI Overhead Electric Line – overhead lines are present along Middle Road/Main Street (S.R. 2008) in the western section of the study area.
- Pennsylvania American Water Lines – underground lines are present along Middle Road/Main Street (S.R. 2008) in the western section of the study area.
- UGI Penn Natural Gas – underground lines are present along Middle Road/Main Street (S.R. 2008) in the western section of the study area.
- Wyoming Valley Sanitary Sewer Authority – underground piping is present in the western section of the study area. More specifically, sanitary sewer pipes cross Middle Road (S.R. 2008) approximately 360 feet west of the intersection with Kosciuszko Street.

Impacts:

No-Build Alternative: The No-Build Alternative would not have any impacts to utilities and no relocations would be required.

Build Alternative: The Build Alternative was designed to avoid the Overhead High Tension Electric Lines. The SVP mainline will cross under the power lines between the Main Street/Middle Rd/SVP mainline Intersection (Intersection I14) and the SVP mainline-Ramp SMLW Intersection. It was initially anticipated that rock would be encountered throughout the project. Therefore, the design team assumed a 1:1 maximum cut slope. Test borings were taken along the alignment and analyzed for maximum cut slope/side slope rates and compared with the assumed values. The geotechnical results from the test borings in the vicinity of the power line tower at the proposed crossing indicate that the maximum cut slope at this location would be 1.5:1. Since the revised cut slope would be “flatter” than the assumed cut slope, the roadway footprint would widened and the proposed cut associated with the original proposed centerline would impact the power line tower’s foundation. Therefore, the 2,200 feet of the alignment’s mainline was shifted slightly (approximately 30 feet to the west) to avoid impacts to the power line and the tower.

It is anticipated that the overhead electric lines (includes the lower voltage lines), waterlines, gas lines and sewer lines will only be impacted during construction in areas along Middle Road (S.R. 2008) in the western section of the project. Impacts could potentially include pole relocations for electric lines, valve adjustments, and pipeline relocations for both water and gas. In addition, rim adjustments for stormwater and sanitary lines are anticipated.

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Minimization/Mitigation: Additional coordination will be conducted during final design. Another Pennsylvania OneCall will be made during final design and “A Letters” will be mailed to utility companies within the project area.

Form 3C9 – Impact Form

Identification of Resource: Waste Site Evaluation

Methodology & Existing Conditions: Waste facilities, including municipal, industrial and hazardous waste sites are considered during the highway development process because roadway improvements can disturb areas that may cause environmental damage, health hazards and excessive cleanup cost.

Waste site investigations were completed in accordance with the PennDOT Bureau of Environmental Quality Publication 281, entitled *Waste Site Evaluation Procedures Handbook Volumes I and II*. The initial waste site assessments were completed in January 2003 (Borton Lawson) and in May 2004 (Borton Lawson). Due to revisions to the proposed Build Alternatives, an updated Waste Site Environmental Assessment was completed in February 2008 (Borton Lawson). This document combined the findings of the previous investigations into a modified Phase I Environmental Site Assessment (ESA) document. Background file reviews included: Environmental Data Resources, Inc (EDR – March 2, 2007); U.S. EPA's Envirofacts Warehouse Database; EPA's Region III Database of Storage Tank Release Sites and a PA DEP file review. Phase II and III investigations were also completed for the following two sites.

- **O'Karma Mini Market** – The O'Karma Mini Market is a former gasoline station and car wash located in the vicinity of Kirmer Avenue and Grover Street in northern Newport Township at the southwest boundary of the project study area. Both Phase II (October 2007) and Phase III (September 2008) ESA documents were completed to address an inactive leaking underground storage tank (LUST).
- **Former Luzerne County Landfill** – The former Luzerne County Landfill is located on approximately 230 acres in the northeast portion of the project area and northwest of the intersection of S.R. 0029 and Middle Road. A 41-acre portion of the former Luzerne County Landfill was initially used in 1972 for the disposal of flood debris generated during Hurricane Agnes and then later used for uncontrolled dumping of municipal waste until 1982. As a result a Phase III ESA (September 2008) was completed for the unregulated landfill.

Impacts:

No-Build Alternative: The No-Build Alternative would not impact any waste sites.

Build Alternative: The Build Alternative would have no impact on the O'Karma Mini Market or the Former Luzerne County Landfill. Alternative 2C, Revision 2 project limits were reduced in the western portion of the South Valley Parkway thereby avoiding the O'Karma Mini Market. In addition, the Phase III ESA soils samples for the O'Karma Mini Market concluded no petroleum hydrocarbon constituents are above the Act 2 Non-Residential Clean-up Standards, therefore, no further action is necessary for this property.

The former Luzerne County Landfill was not identified as a Recognized Environmental Concern according to the Phase III ESA report. No further investigations are recommended for the former Luzerne County Landfill based on the current Alternative 2C, Revision 2.

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The residential/commercial structure located at the southeastern corner of Middle Road and Espy Street will be demolished during construction of the proposed improvements. This structure was not investigated for asbestos containing materials (ACMs) during the Waste Site Evaluations. It is anticipated this structure could contain ACM and should be investigated during final design. In addition, the existing Bridge 10 (also referenced as Bridge 1) that is the Middle Road bridge over S.R. 0029, is known to contain heavy metals in paint due to prior bridge rehabilitation activities.

Minimization/Mitigation: During final design hazardous waste inspections will be conducted in accordance with National Emission Standards for Hazardous Air Pollutants (NESHAPS) regulations for existing structures to be demolished, including ACM investigations for the residential/commercial structure located on the southeastern corner of Middle Road and Espy Street and for the existing Middle Road bridge over S.R. 0029 (Bridge 10). A Waste Management Plan and special provision will be prepared to address the handling and disposal of any ACM identified in structures to be demolished. This plan will also include a special provision for the demolition of the existing Bridge 10 to ensure the contractor adheres to the proper disposal of heavy metals in paints in accordance with NESHAPS regulations. During construction, coordination will be conducted with the PA DEP, as needed, if waste in the former Luzerne County Landfill is to be excavated. If waste is to be excavated due to constructability concerns, then a Scope of Work Plan will be prepared and provided to PA DEP for approval of the proposed management options (e.g., disposal at an approved permitted facility or reburial on site).

Form 3C10 – Impact Form

Identification of Resource: Geologic Features: Mining, Acid Rock Drainage, Steep Slopes and Rock Cuts

Methodology & Existing Conditions:

Geologic Setting

The study area is located within the Northern Anthracite Field of the Anthracite Valley Section of the Ridge and Valley Physiographic Province of Pennsylvania. This canoe-shaped valley is also known as the Wyoming Valley that includes the North Branch of the Susquehanna and the Lackawanna River. In the study area, the Northern Anthracite Field exceeds three miles in width and contains numerous anthracite-bearing strata that have been extensively mined. The Llewellyn Formation of Middle and Upper Pennsylvanian age underlies the entire study area. This formation is predominately composed of a non-marine sequence of interbedded sandstone, siltstone, and conglomerate in addition to coal and dark gray to black shale. The Northern Anthracite Field is a complexly folded and faulted down-fold or synclinorium.

Given the study area's geologic setting and the rolling terrain, roadway construction could encounter several constructability issues:

- Large volumes of fill and excavation material to be managed with the potential for large volumes of waste to be disposed.
- Rock material requiring blasting with the potential for blast-related gases such as carbon monoxide (CO) to follow bedding planes upwards towards residences potentially causing impacts, if nearby residences were located at higher elevations.
- Large and steep rock cut slopes with the potential for rockfall.

The project engineers conducted preliminary earthwork estimations to determine the volumes of cut and fill associated with various sections of the Build Alternatives to identify constructability issues associated with the hauling and wasting of material. The project geologists conducted a preliminary evaluation of the potential for CO migration and a preliminary assessment of the proposed rock cuts. During final design, more detailed geological investigations will be conducted and a Final Geotechnical Engineering Report (GER) will be prepared to more fully identify potential problem areas and measures to be undertaken for constructability, safety, and environmental protection.

Mining Conditions

Since the study area is located within Pennsylvania's Northern Anthracite Coal Field, it has been extensively surface and underground mined since the late 1800s. Large-scale coal mining in the valley along with its accompanying industry, railroads, have long been abandoned. The land surface is riddled with coal refuse piles and abandoned strippings and there is evidence of mine subsidence and acid mine drainage. These abandoned mine features may jeopardize the health and safety of the public, degrade the quality of the environment, and diminish the use land and water resources if disturbed during construction activities associated with the SCP project.

A preliminary review of mining features was completed to identify the abandoned mine features within the study area. The project team geologists visited various agencies (including the Department of Interior's

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Office of Surface Mining and Enforcement [OSM] and the Wilkes-Barre Bureau of Abandoned Mine Reclamation Office [BAMR]), examined aerial photographs and completed limited reconnaissance field inspections for various portions of the project area.

The OSM mine map repository located in Wilkes-Barre, PA was not aware of any problems areas within the study area. The use of aerial photographs, GIS mapping and limited field reconnaissance indicated various abandoned mine structures, including concrete foundations and reclaimed shafts; various mine openings; old surface mine cuts; spoil piles; evidence of acid mine drainage and subsidence areas were observed. During site reconnaissance, additional abandoned mine features were identified including shafts, surface openings, and other structures. Features of potential concern in the study area are illustrated on Figure 3-C-10.

The BAMR provided the location of future reclamation work. This future reclamation work is primarily located within the Nanticoke Creek watershed and consisted of abandoned mine land reclamation near the headwaters of the creek. The SVP study area includes several areas of reclamation, including the Dundee Treatment Wetland. This 2.2 acre constructed wetland is a passive successive alkalinity producing (SAP) treatment system that was developed to treat acid mine drainage (AMD) from the Askam Borehole. The Dundee SAP wetland discharges into Nanticoke Creek just east of the S.R. 0029 crossing in Hanover Township. After the borehole collapsed in 2008, the EC reconstructed the system and it is now a smaller wetland area that serves primarily as an education tool for area schools and universities. EC is currently planning to build a second AMD wetland treatment system nearby to treat the new Askam boreholes (drilled after the collapse of the first one) using funds provided by PA Growing Greener Program, the OSM, the PA Association for Conservation Districts, and the EC. The EC also completed the “Espy Run Wetlands Enhancement Project” in the downstream floodplains where Espy Run flows to Nanticoke Creek. The wetland enhancement project was completed in 2011 and it was funded using monies from EPA Brownfields and Land Revitalization Cleanup Grant (engineering services were provided by funds from the PA Growing Greener Program and the US DA). The project increased the treatment capacity and improved the performance of an existing constructed wetland passive treatment system to reduce the amount of AMD being introduced into the watershed.

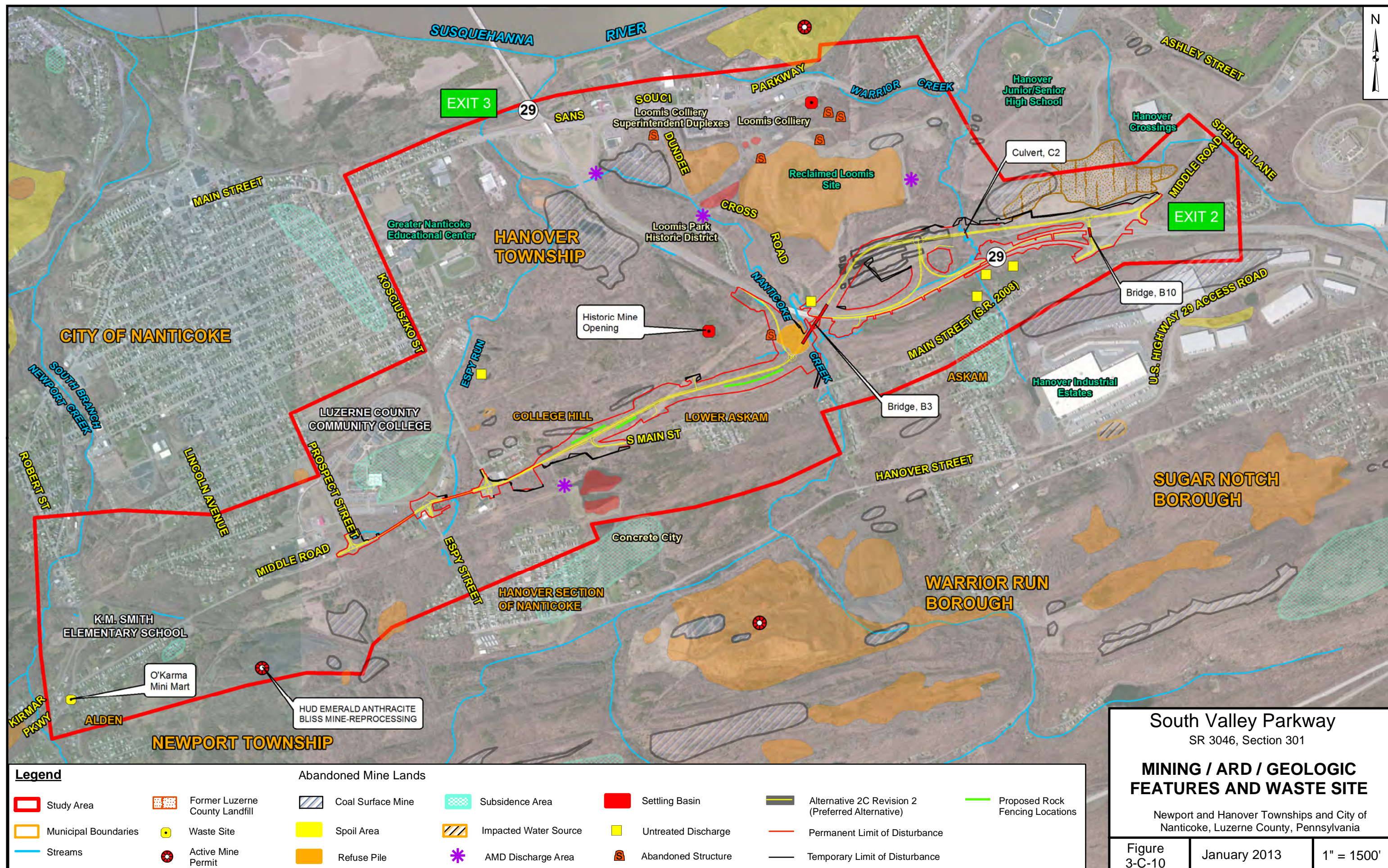
Acid Rock Drainage

The potential for exposing pyritic rock during construction Acid Rock Drainage (ARD) or Acid Bearing Rock (ABR) problems during roadway construction (including rock cuts and stormwater basin excavations) was preliminarily identified given the project setting within the anthracite coal region and related geologic setting. Testing plans were prepared in accordance to PennDOT’s Acid Bearing Rock Policy Strike-Off Letter (SOL) of September 30, 2009. A Phased Acid-Base Testing Plan (October 11, 2010) was developed along with Phase II Acid-Base Testing (February 28, 2011) and Spoil and Coal Dump Sampling and Testing (March 9, 2011) was completed to identify potential ARD or ABR within the project area’s limit of disturbance.

Impacts:

No-Build Alternative: The No-Build Alternative would have no impact mining features nor would it require special measures to address ARD, steep rock slopes, CO migration, and management of large volumes of material.

Build-Alternative: The Build Alternative has the potential for multiple geological-based issues.



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The construction of the Build Alternative will result in large volumes of earthwork. Preliminary estimates include 1,275,494 cubic yards of cut and 384,441 cubic yards of fill with a net volume of 891,053 cubic yards of waste for the Build Alternative. Preliminary earthwork was studied for the final four alternates (Alternatives 1A, 1AB, 2A, and 2C). Based on the preliminary earthwork, the earthwork costs ranged from \$8,125,000 to \$10,812,000 (2007 dollars), with the Alternative 2C having the highest costs. During final design, efforts will be made to reduce the extent of earthwork (to better balance the excavation and to minimize long hauls and large volumes of waste), while maintaining the design criteria and proposed alignment that best meets the project needs and receives the most public support. It should be noted that the volume of earthwork was not a critical issue in determining the identification of the Build Alternative to be carried forward.

A preliminary assessment of the project's potential for CO gas migration as a result of blasting was conducted. It was determined that, given the location of potential blasting activities during construction and the location of nearby residential structures along Middle Road and Birch Avenue, it does not appear that there is a high probability of CO migration associated with the construction of the SVP. (Note – this assessment was only conducted for the Alternative 2C after it was identified as the Build Alternative for comparison with the No-Build Alternative and therefore was not a factor in the selection of an alternative to be carried forward. It is likely that all Build Alternatives in this terrain and geology would have similar potential.)

Given the potential for large cuts associated with road improvements, an assessment of the Build Alternative's proposed rock cuts identified four potential areas that may require the use of a rockfall barrier along the mainline of the SVP. The proposed cut slopes range from 0.75:1 to 1.5:1 and would be located along the mainline between the propose new S.R. 0029 interchange and the tie-down at Middle Road in the western section of the project area. Computer aided rockfall simulation modeling was used to identify the areas that may require the installation of rock fence/barrier between the mainline stations listed in Table 3-C-10.

**TABLE 3-C-10
PROPOSED ROCK FENCING LOCATIONS**

ROCK CUT ID#	STATIONS	LENGTH (LINEAR FEET)	HEIGHT (FEET)	CUT SLOPE
1	1017+00 to 1023+50 Left	650	94 @ Sta. 1021+00	0.75:1
1	1025+50 to 1028+50 Right	300	63 @ Sta. 1026+50	1.5:1
2	1044+50 to 1055+50 Right	1,100	111 @ Sta. 1050+00	1.5:1

One mine shaft and the associated mine structure was identified within close proximity to Ramp SMLW of the Build Alternative on the west side of S.R. 0029 as seen on Figure 3-C-10 and as illustrated within the Preliminary Engineering Plans and Environmental Constraints map (see EA Attachment IV.A). The current design will avoid this mining feature.

Acid base testing was completed along the Build Alternative alignment and included 220 rock and 36 spoil samples from geotechnical borings, 10 spoil samples from bulk samples, and 5 coal dump bulk samples. A total of 271 samples were submitted for acid base testing. An index indicator for the potential for development of significant acidity is a sulfur content greater than 0.5%. Only four of the 271 samples tested had a sulfur content in excess of 0.5%. The testing results concluded the four sample occurrences of sulfur in

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excess of 0.5% indicated a de minimis amount of potential ABR was present in the proposed rock cuts of the Build Alternative (Alternative 2C, Revision 2). In addition, there were no sulfur contents in excess of 0.5% within stormwater basins, soil, spoil, or coal dump samples tested. ARD is not anticipated to be a problem during construction.

Minimization/Mitigation: Mitigation will include:

- Installation of protective fencing around the mine shaft area near Ramp SMLW prior to clearing and grubbing;
- Continued refinement of the design to balance the earthwork (note, if the project continues to result in large volumes of waste, it will be the contractor's responsibility to identify haul roads and waste sites and to obtain environmental clearance/permits, as needed, for these areas);
- Continued assessment of the potential rock cuts to determine the need for the implementation of rockfall controls (such as barriers, catch fences, and/or catchment areas) for those road sections listed in Table 3-C-10; and
- Consideration of the use of readily available CO detectors/test kits for pre-, during, and post-blasting activities.

Form 3C11 – Impact Form

Identification of Resource: Noise

Methodology & Existing Conditions: The noise analyses was performed in accordance with PennDOT’s “Publication #24: Project Level Highway Traffic Noise Handbook,” May 2011. PennDOT guidelines are based on the FHWA “Federal Aid Policy Guide 23 CFR 772,” updated July 13, 2010. A separate Preliminary Design Noise Analysis Report (June 2010, updated January 2012) was prepared and is included in the project’s technical file.

Noise-sensitive receptors were identified in the project area based on those land uses that are especially susceptible to noise impacts. These may include hospitals, schools, residences, motels, hotels, recreational areas, parks, and places of worship. The sensitive receptors identified within the SVP project study area are all considered Activity Category B, as defined by the FHWA traffic noise regulations (23 CFR Part 772) and summarized in Table 3-C-11.1. The table provides a brief description of the different activity categories as well as the absolute federal/state noise criteria for each. The locations of the noise-sensitive areas and monitoring/modeling locations are shown on Figure 3-C-11. The majority of noise sensitive land uses in the project area are located within the villages of Askam and Lower Askam along Middle Road and also in the Loomis Park community adjacent to S.R. 0029. To facilitate the analysis, most noise-sensitive receptors were grouped into Noise Sensitive Areas (NSAs) based on geographic proximity and topographical features (see Table 3-C-11.2). Additional receptors that are not easily grouped into an NSA due to their location are listed independent of any NSA. (Note - several noise receptors are geographically distant and unaffected by the Build Alternative. These monitoring locations were identified prior to the downsizing of the Build Alternative.)

**TABLE 3-C-11.1
NOISE ABATEMENT CRITERIA
HOURLY A-WEIGHTED SOUND LEVEL DECIBELS (dBA)**

ACTIVITY CATEGORY	Leq (h)	EVALUATION LOCATION	DESCRIPTION OF ACTIVITY CATEGORY
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential
C	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	---	---	Agriculture, airports, bus yards, emergency services, industrial, logging maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	---	---	Undeveloped lands that are not permitted

TABLE 3-C-11.2
NOISE ANALYSIS SUMMARY

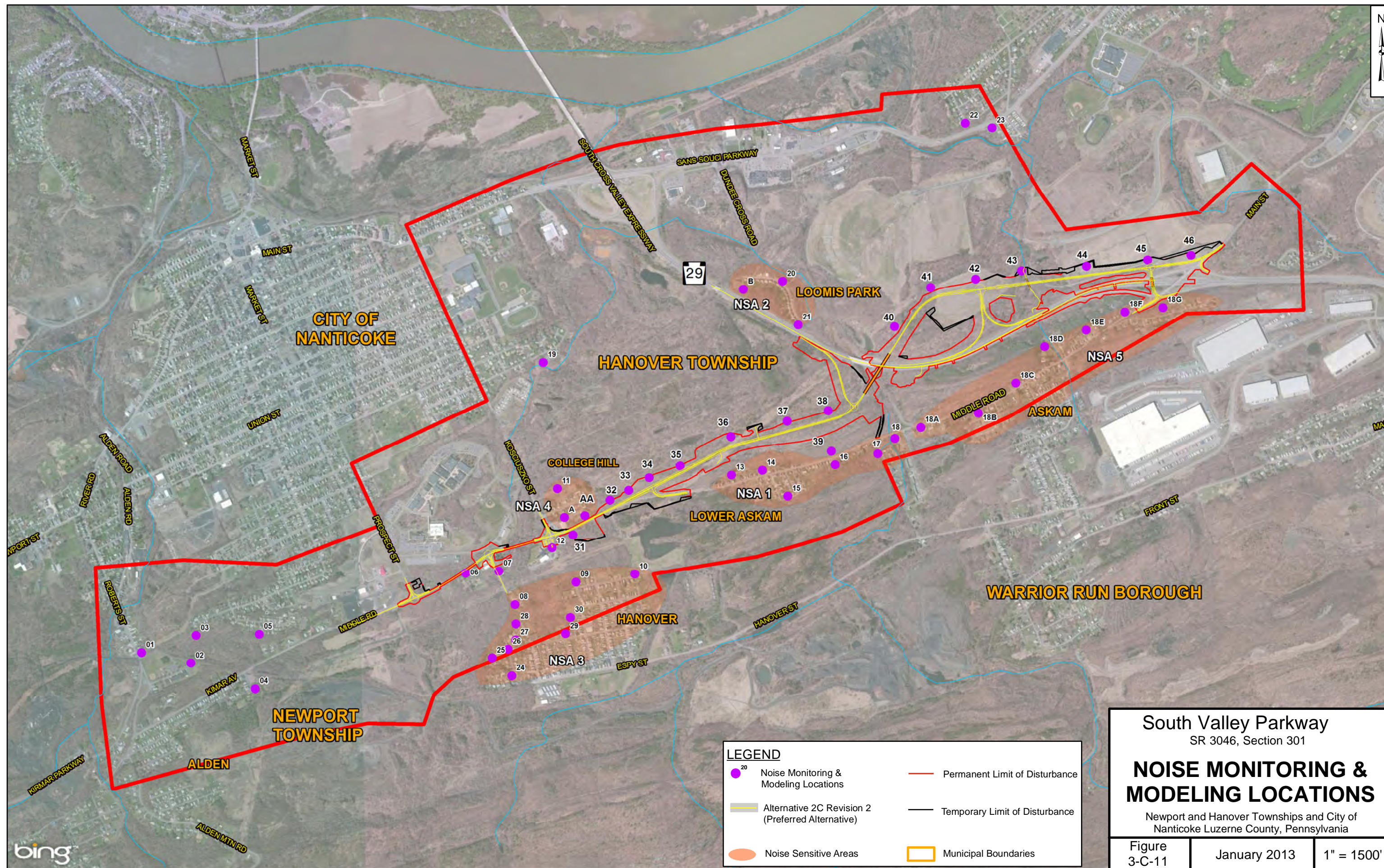
NOISE SENSITIVE AREA (NSA)	RECEPTOR	DESCRIPTION	2003 P.M. PEAK EXISTING (DBA) (MEASURED)	2003 P.M. PEAK EXISTING (DBA) (MODELED)	2034 P.M. PEAK NO-BUILD (DBA) (MODELED)	2034 P.M. PEAK BUILD (DBA) (MODELED)	2034 P.M. PEAK BUILD (INCREASE OVER EXISTING)	2034 BUILD VERSUS NO-BUILD (DBA)
NSA 3 - Hanover Section of Nanticoke	06	191 Middle Road	65	64	66	67	4	1
	07	410 Espy Street	58	59	61	59	0	-1
	08	308 Espy Street	61	59	61	59	0	-2
	09	400 Jones Street	44	42	45	46	4	1
	10	306 Mosier Street	44	39	42	43	4	1
	24	105 Meadowcrest Drive	42	37	40	40	3	1
	25	74 Seneca Drive	43	38	41	42	3	1
	26	86 Seneca Drive	45	40	43	43	2	0
	27	126 Meadowcrest Drive	46	46	47	46	1	-1
	28	133 Meadowcrest Drive	51	55	56	55	0	-1
NSA 4 - College Hill	29	corner of Oak Street & Bliss Street	47	39	41	42	3	1
	30	225 Center Street	46	40	42	43	3	1
	11	20 Cherry Drive	51	46	49	50	4	0
	A	42 Birch Avenue	50	50	54	55	5	1
	AA	46 Birch Avenue	-	57	62	61	4	-1
	12	Birchwood Nursing & Rehab Center	55	53	57	57	4	0

TABLE 3-C-11.2
(CONTINUED)

NOISE SENSITIVE AREA (NSA)	RECEPTOR	DESCRIPTION	2003 P.M. PEAK EXISTING (DBA) (MEASURED)	2003 P.M. PEAK EXISTING (DBA) (MODELED)	2034 P.M. PEAK NO-BUILD (DBA) (MODELED)	2034 P.M. PEAK BUILD (DBA) (MODELED)	2034 P.M. PEAK BUILD (DBA) (INCREASE OVER EXISTING)	2034 BUILD VERSUS NO-BUILD (DBA)
NSA 1 - Lower Askam	13	3120/3122 Middle Road	53	51	55	53	2	-2
	14	3086 Middle Road	55	52	57	54	2	-3
	15	31 Haefele Street	45	43	47	46	3	-1
	16	2989 Middle Road	49	48	52	51	3	-1
	17	25 Clarks Cross Road	51	48	51	50	2	-1
	18	Dundee Apartments	59	58	62	59	1	-3
NSA 5 - Askam	18A	Middle Road Residence	-	61	66	63	2	-3
	18B	Middle Road Residence	-	58	63	60	2	-3
	18C	Middle Road Residence	-	58	62	59	2	-2
	18D	Middle Road Residence	-	55	57	56	0	-2
	18E	Middle Road Residence	-	56	59	58	2	-1
	18F	Middle Road Residence	-	59	62	61	2	-1
	18G	Middle Road Residence	-	55	59	59	4	1
NSA 2 - Loomis Park	20	18 Loomis Street	51	50	52	51	1	-1
	21	Residence at south end of Loomis Street	63	63	65	64	1	-1
	B	Residence at north end of Loomis Street	60	59	61	60	1	-1

TABLE 3-C-11.2
(CONTINUED)

NOISE SENSITIVE AREA (NSA)	RECEPTOR	DESCRIPTION	2003 P.M. PEAK EXISTING (DBA) (MEASURED)	2003 P.M. PEAK EXISTING (DBA) (MODELED)	2034 P.M. PEAK NO-BUILD (DBA) (MODELED)	2034 P.M. PEAK BUILD (DBA) (MODELED)	2034 P.M. PEAK BUILD (DBA) (INCREASE OVER EXISTING)	2034 BUILD VERSUS NO-BUILD (DBA)
Undeveloped Lands	31	Undeveloped Land	-	58	62	60	3	-2
	32	Undeveloped Land	-	54	59	55	1	-4
	33	Undeveloped Land	-	52	56	58	7	2
	34	Undeveloped Land	-	47	51	49	2	-2
	35	Undeveloped Land	-	45	48	54	9	6
	36	Undeveloped Land	-	44	47	55	11	8
	37	Undeveloped Land	-	47	49	58	11	9
	38	Undeveloped Land	-	50	52	60	10	8
	39	Undeveloped Land	-	54	58	56	2	-2
	40	Undeveloped Land	-	53	55	55	2	0
	41	Undeveloped Land	-	48	50	56	8	6
	42	Undeveloped Land	-	49	51	56	7	5
	43	Undeveloped Land	-	50	53	53	3	1
	44	Undeveloped Land	-	59	61	62	3	1
	45	Undeveloped Land	-	58	60	60	2	0
	46	Undeveloped Land	-	51	53	62	11	8



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Monitoring of the existing acoustical environment was conducted at the project area's 31 Activity Category B noise-sensitive areas. The measured noise levels are presented in Table 3-C-11.2. Short-term noise measurements were conducted during the A.M. and P.M. peak traffic hours at 23 locations (Sites 01 through 23) and noise levels were concurrently measured for twenty-four hours at additional sites (Sites A and B) on June 10 and 11, 2003. Analysis of the twenty-four-hour data indicates that traffic noise is fairly consistent throughout the daytime hours near both S.R. 0029 and Middle Road. Noise levels at all of the monitoring locations are well below the FHWA/PennDOT NAC of 66 dBA, even during peak traffic periods. Additional A.M. peak short-term noise measurements were taken at seven additional receptors within the western portion of the Hanover Section of Nanticoke on July 25, 2006.

Upon completion of noise monitoring, a computer model of the existing roadway network and monitored receptors was constructed using data from digital topographical maps, highway design files, traffic volumes recorded in the field, and surveying (GPS) of existing terrain. Modeling of the project area was accomplished by applying the FHWA Traffic Noise Model (TNM) computer model, Version 2.5 and in accordance with PennDOT validation procedures. Additional modeling sites were added to predict existing noise levels throughout the project area and to determine the baseline sound-level data at these modeling sites where no field measurements were made. Future, design year noise levels associated with the Build Alternative were predicted and assessed to determine if the future levels will approach or exceed the noise abatement criteria (NAC). The federal procedures require the state to specify the level that "approaches" the NAC. For Activity Category B, PennDOT considers a level of 66 dBA up to 67 dBA as approaching the federal criteria of 67 dBA. In addition, federal procedures stipulate that abatement considerations are required if the project results in a substantial noise increase above existing conditions. PennDOT regulations state that if a noise level at any given receptor approaches or exceeds the appropriate abatement criterion, or if predicted traffic noise levels substantially exceed the existing noise levels (i.e., an increase of 10dBA or more), abatement, considerations are required.

Impacts:

No-Build Alternative: Based on a comparison of existing traffic volumes to design year no-build traffic volumes, future design year noise levels remain below the FHWA/PennDOT NAC except at one location in the village of Askam along Middle Road. Future traffic noise levels at noise sensitive land uses along Middle Road and in the developed areas of Loomis Park, College Hill, and the Hanover Section of Nanticoke are predicted to increase by 1 to 5 dBA. This predicted increase in future traffic noise levels can be attributed to the projected increase in traffic volume using the existing roadway network.

Build Alternative: The Build Alternative was analyzed to determine the effects of the project upon traffic noise levels at each of the noise sensitive land uses. Future predicted noise levels for design year 2034 remain below the FHWA/PennDOT NAC. Future traffic noise levels at NSAs along Middle Road and in the developed areas of Loomis Park, College Hill, and the Hanover Section of Nanticoke are predicted to increase by 1 to 5 dBA. It is noted that there are three noise measurement locations that were analyzed to determine future noise levels independent of any NSA (see Receptors 06, 07, and 12 of Table 3-C-11.2). At Receptors 07 and 12, the future traffic noise levels were predicted to be below the FHWA/PennDOT NAC. The only occurrence of a future traffic noise level that was predicted to exceed the FHWA/PennDOT NAC was at Receptor 06 along Middle Road. The 67 dBA traffic noise level predicted at this residence can be attributed to a less than ideal placement of the location of the original noise measurement. Due to a fenced in yard and the close proximity of the residence to Middle Road, the original noise measurement was taken at a location too close to the shoulder of Middle Road, which resulted in a noise measurement not entirely

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representative of typical Category B outdoor land uses. The resulting high future predicted noise level is due to the poor location of this measurement site. Although this modeled site technically exceeds the NAC, it was determined (based on professional judgment) that this site does not warrant abatement consideration. The improvements at this location will be construction of a roundabout at the nearby Middle Road/Espy Street intersection and reconstruction of the 2-lane roadway on existing alignment immediately in front of the property. The future noise levels for those receptors predicted to experience an increase can be attributed to the Build Alternative as well as an overall increase in traffic using the existing roadway network.

Minimization/Mitigation: As none of the noise sensitive land uses approaches or exceeds the NAC of 66 dBA (with the exception of Receptor 06 as explained above) and there is no substantial noise increase (10 dBA or greater) attributable to the project, no noise abatement consideration is warranted for the Build Alternative. Temporary noise impacts resulting from construction of the Build Alternative are addressed in Form 3C14.

Form 3C12 – Impact Form

Identification of Resource: Air Quality

Methodology & Existing Conditions: Air Quality for the project was assessed in accordance with PennDOT’s “Publication 321: Project Level Air Quality Handbook,” March 2008. PennDOT policy requires that several pollutants of concern associated with transportation projects must be documented. Whether the assessment for each of these pollutants is qualitative or quantitative is dependent upon the attainment status of the project area and the nature of the project. As Luzerne County is in attainment status for all six criteria pollutants and the project will help to ease traffic congestion, air quality for this project is discussed qualitatively.

Carbon Monoxide (CO)

The proposed project is exempt from a detailed CO analysis. The proposed project does not include or directly affect any roadways for which the 20-year forecasted daily volume will exceed 87,500 vehicles per day, nor does the 20-year forecasted daily truck volume exceed 7,000 heavy trucks per day. It can therefore be concluded that the project will have no significant adverse impact on air quality as a result of vehicular CO emissions.

PM25 (Particulate Matter less than 2.5 microns in diameter)

The proposed project is located in Luzerne County which has been designated as being in attainment for PM25 standards. The project does not require a project level conformity determination. According to the PM25 and PM10 hot-spot analysis requirements established in the March 10, 2006, final transportation conformity rule (71 FR 12468) no further project level air quality analysis for these pollutants is required.

Mobile Source Air Toxics (MSATs)

The purpose of this project is to construct a new highway that would meet current engineering design standards, improve roadway approaches, and include efforts to improve conditions to minimize the potential for future flooding events. The minimization of the number of intersections in the route as well as the inclusion of a roundabout in the design will help to reduce congestion and improve traffic flow. This project will not result in any meaningful changes in traffic volumes, vehicle mix, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such, it has been determined that this project will generate minimal air quality impacts for the Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns.

Moreover, 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 72 percent from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, vehicle miles traveled (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.

Air toxics analysis is an emerging field and current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that would result from a transportation project in a way that would

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be useful to decision makers, who would need to weigh this information against various project benefits such as reducing traffic congestion and accident rates, improved access for emergency response, and accommodating local economic development through infrastructure improvement. FHWA's position regarding project-specific MSAT health impacts analysis is that information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a highway construction/improvement project. 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.

Regional Conformity

Regional air quality concerns have been evaluated for the South Valley Parkway Project. In accordance with the Clean Air Act Amendments of 1990 (CAAA), all transportation projects, plans, or programs in nonattainment and maintenance areas must conform to the State Implementation Plan (SIP). A final conformity rule was issued by the US EPA on November 24, 1993, as part of 40 CFR Part 51. The final conformity rule requires that transportation plans and programs in nonattainment areas are consistent with the most recent estimates of mobile source emissions; provide for the expeditious implementation of transportation control measures in the applicable implementation plan; and contribute to annual emission reductions in ozone and carbon monoxide nonattainment areas.

Luzerne County has been designated as in attainment for all six principal or "criteria pollutants" which include ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides and lead; therefore, the conformity requirements, as outlined by the CAAA, do not apply.

Impacts:

No-Build Alternative: The No-Build Alternative will have no air quality impacts.

Build Alternative: The Build Alternative will have no air quality impacts.

Minimization/Mitigation: No mitigation of air quality impacts is required for the South Valley Parkway Project.

Form 3C13 – Impact Form

Identification of Resource: Agricultural Resources - Prime Agricultural Land and the Federal Farmland Protection Policy Act

Methodology & Existing Conditions:

Prime Agricultural Land

The Agricultural Land Preservation Policy (ALPP) protects the Commonwealth's "prime agricultural land" from irreversible conversion. The policy applies to productive agricultural land that has been actively farmed in at least the preceding three years. The policy classifies primary agricultural land into five priority categories: Preserved Farmland, Agricultural Security Areas, Clean and Green or preferential tax assessments, Agricultural Zoning District and Unique Farmland or Soil Capability Class I, II, III or IV.

Aerial mapping and field reconnaissance was used to determine there is no prime agricultural land currently in production within the permanent or temporary limits of disturbance. Therefore, 4 PA Code Chapter 7, & 7.301 et seq. Agricultural Land Preservation Policy does not apply.

Federal Farmland Protection Policy Act

The Federal Farmland Protection Policy Act of 1981 (FPPA) defines “farmland” as prime farmland soils and farmland soils of statewide importance. These are considered areas with soil conditions that produce the highest yields with few erosion concerns and require little need for the implementation of soil conservation management practices. Soil mapping units were obtained from the USDA NRCS – Soil Data Mart. Mapping analysis was completed through the use of GIS to calculate the area of prime farmland soils and farmland soils of statewide importance that would be directly converted to a non-agricultural use due to the required right-of-way for the bridge replacement project. Farmland soils already converted to urban use or existing transportation use were not included in the assessment (see Figure 3-C-13).

Impacts:

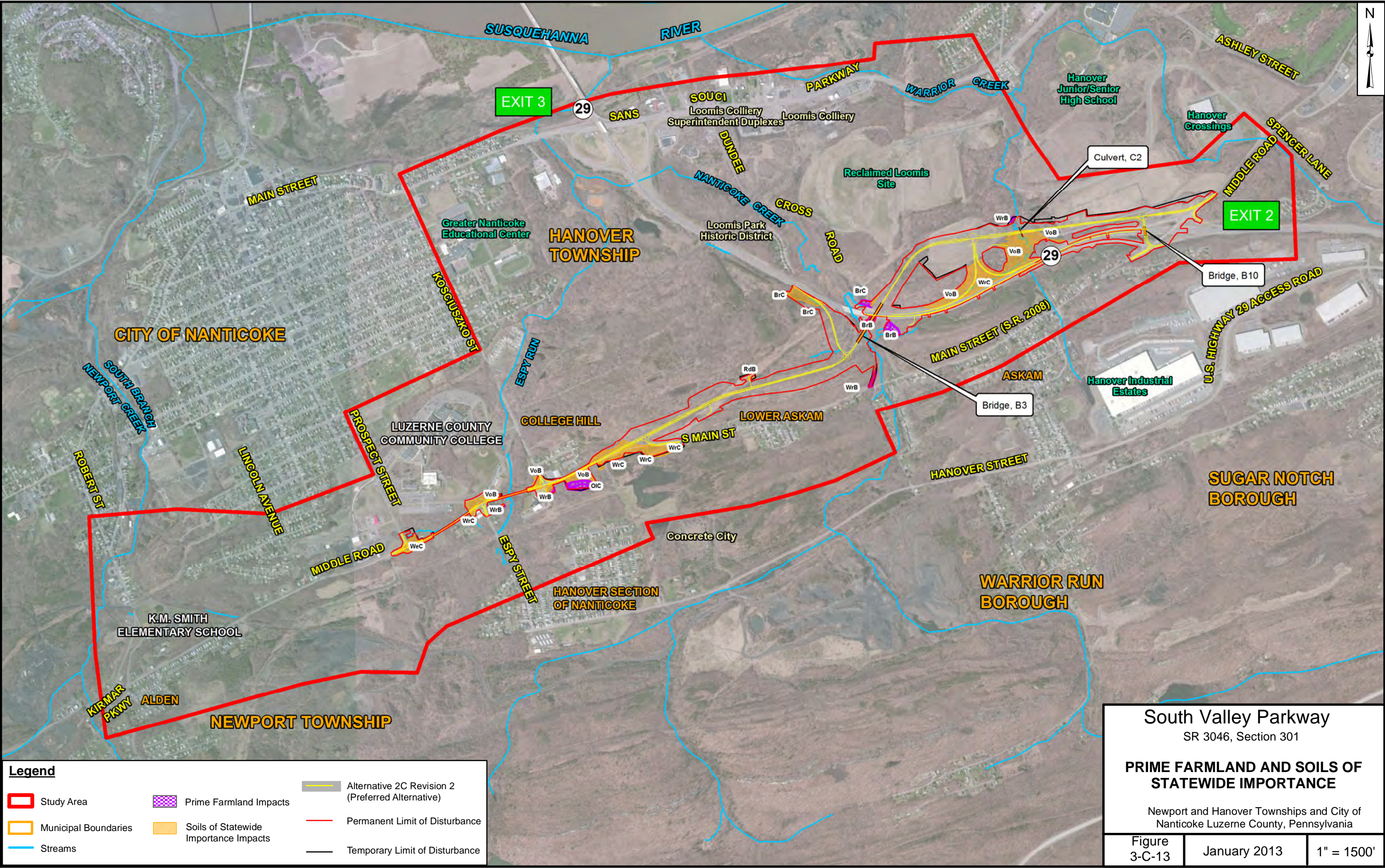
No-Build Alternative: The No-Build Alternative would have no impact on Prime Agricultural Land – ALPP or FPPA farmland soils.

Build Alternative: The Build Alternative would have no impacts to prime agricultural land therefore, 4 PA Code Chapter 7, & 7.301 et seq. Agricultural Land Preservation Policy does not apply. Impacts to FPPA soils would consist of 3.15 acres of prime farmland soils and 29.60 acres of impacts to statewide important farmland soils for a combined total of 32.75 acres of permanent impacts. Because the Farmland Conversion Impact Rating falls below the criterion of 160, FPPA compliance is complete. The Farmland Conversion Impact Rating is included with Attachment F2.

Minimization/Mitigation: The Build Alternative will not require any mitigation for impacts to prime agricultural land. A Soil Erosion and Sedimentation Control Plan will be prepared during final design and incorporated into the Plans, Specifications, and Estimates (PS&E) Package for the project.

EA STEP 3: Alternatives Development and Impact Analysis (Section C)

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Form 3C14 – Impact Form

Identification of Resource: Temporary Impacts

Methodology & Existing Conditions: Temporary impacts are defined as those impacts that are temporary in nature and generally occur during the construction and/or installation of proposed improvements. During the individual assessments of the study area's existing environmental and community resources and potential permanent impacts to the resources as described in other sections of this document, potential temporary impacts were also identified.

Impacts:

No-Build Alternative: The No-Build Alternative would not require any construction activities and would therefore have no temporary impacts.

Build Alternative: The preliminary engineering plans for the Build Alternative were developed in consideration of constructability and are provided in Attachment A. The plans include proposed temporary construction easements that are areas outside of the proposed right-of-way that are anticipated as being temporarily required for the construction of the proposed transportation improvements. In addition, there is also potential for temporary impacts within the proposed right-of-way. During final design the location, type, and extent of temporary impacts will be further refined and efforts to avoid, minimize, and mitigate these impacts will be considered and incorporated into the PS&E submission.

Potential temporary construction impacts associated with the Build Alternative include disturbances to wetlands and watercourses, disturbances to wildlife habitat, temporary noise from construction equipment and blasting, and traffic related impacts as described below.

Wetlands and Watercourses

In addition to permanent impacts to regulated waters, it is anticipated that there will be temporary impacts to wetlands and streams. The construction of the proposed SVP project will temporarily impact 0.352 acre of wetlands and 155 linear feet of stream. During the construction of Culvert C2, Warrior Creek will be temporarily diverted. This in-stream work will be conducted using approved E&S controls and best management practices to avoid sediment from entering the stream channel. The PS&E package will include detailed structure plans for the proposed culvert crossing and the E&S Control Plan will provide stream diversion details. Separately the proposed vertical clearance where Bridge B3 would cross Nanticoke creek is over 65 feet. Nanticoke Creek is a relatively narrow stream and the proposed bridge crossing will locate the piers outside of the waterway. In-stream work will be minimal and stream flow will be maintained during construction of the bridge.

Terrestrial Habitat

The use of construction easements will result in temporary impacts to forested areas, including potential Indiana bat habitat. To minimize the impacts to forested lands, orange protective fencing will be installed in those areas that are to be avoided during construction. This includes land within the proposed right-of-way but outside of the permanent limits of disturbance and that is not needed for construction activities.

Noise

Throughout the construction phase of the SVP project, noise sensitive land uses that were analyzed for traffic noise impacts associated with the Build Alternative are also susceptible to construction noise impacts. Typical highway construction/reconstruction equipment such as loaders, dump trucks, graders, bulldozers, etc., are likely to temporarily elevate noise within the project area. Sensitive receptors within 100 to 200 feet of construction activities may experience varying periods and degrees of noise impacts, with potential noise levels between 75 dBA and 85 dBA, depending upon the nature of the construction activity, the type of equipment in use, and the relative nearness to the activity.

Given the geology of the study area, the construction of large rock cuts is anticipated to require blasting. Most of the large cuts are proposed along the north side of the ridge that runs parallel to and north of Middle Road and the ridge could serve to buffer the blasting noise levels for the residents along Middle Road in Askam and Lower Askam. For those areas close to sensitive receptors, final design efforts will consider time of day restrictions for the blasting to minimize disruptions to residents.

Traffic

The majority of the construction work will be on new alignment and this work is not expected to have a significant impact on local traffic patterns and operations. However, the construction of the new interchange with S.R. 0029 and the roundabouts along Middle Road will require the implementation of a Maintenance of Traffic Plan. Preliminary plans have been prepared and will be finalized during final design for inclusion in the PS&E package. In summary, the temporary disruption of local traffic is anticipated to include the following:

- Short term rolling roadblocks along S.R. 0029 as needed for blasting (rock cut along eastern side of the highway).
- Implementation of temporary road closures and detours for Middle Road/Main Street in the vicinity of the new interchange.
- Temporary partial lane closures along S.R. 0029 (one lane in each direction will be maintained at all times with the exception of the short term roadblocks referenced above for the construction of the rock cut,
- Implementation of temporary road closures and detours in the vicinity of the intersections along Middle Road where roundabouts are to be constructed (Espy Street, Kosciuszko Street, and Prospect Street). Road closures will be implemented to ensure local traffic accessing properties within the construction areas are provided safe access.

Minimization/Mitigation:

Wetlands and Watercourses

The following measures to minimize temporary impacts will be considered during final design and construction.

EA STEP 3: Alternatives Development and Impact Analysis (Section C)

1. Equipment servicing areas and refueling areas will be located outside of regulated waters to the extent possible.
2. Temporarily impacted wetlands will be restored by:
 - removing all temporary fill materials, fabrics and erosion and sedimentation control features;
 - restoring the original grade and contour;
 - decompacting the soil to pre-construction conditions to allow the reestablishment of wetland vegetation; and
 - replanting the area with native wetland and riparian vegetation.
3. Regulated wetlands adjacent to the projects permanent limits of disturbance, including those areas within PennDOT right-of-way will be protected with orange protective fencing to limit any inadvertent disturbances. The preliminary locations of the protective fencing are shown on the Preliminary Engineering Plans and Environmental Constraints provided in Attachment A.

PennDOT's standard operating procedures also include the implementation of an approved E&S Control Plan. An E&S Control Plan will be submitted as part of the Section 404/Chapter 105 Joint Permit Application. The Plan will identify best management erosion and sediment controls to be used to prevent erosion of lands and sediment loads to wetlands and streams. It will also include the identification of construction access points and proposed staging areas that would avoid and minimize impacts to regulated waters. Any changes to these areas proposed by the construction contractor will require PennDOT and DEP approval if they affect protected streams and wetlands or other resources identified during the NEPA studies.

Terrestrial Habitat

Orange protective fencing will be installed in those areas that are to be avoided during construction. This includes land within the proposed right-of-way but outside of the permanent limits of disturbance and that is not needed for construction activities. The preliminary locations of the protective fencing are shown on the Preliminary Engineering Plans and Environmental Constraints provided in Attachment A.

Noise

Construction noise can be minimized by implementing specific measures to help mitigate the noise at the source. The contractor shall exercise proper maintenance procedures for all construction equipment regularly and thoroughly. Replacement of failing or ineffective muffling and exhaust systems, periodic lubrication of moving parts, and properly tuned engines are necessary in order to keep construction equipment noise emissions to a minimum.

Low-cost, easy to implement measures will be incorporated into project plans and specifications where feasible (e.g., time-of-day work-hour limits, elimination of a tail gate banging, reduction of backing up for equipment with alarms, complaint mechanisms). Additionally, several other specific mitigation procedures will be considered during final design to help minimize construction noise impacts for work in the vicinity of sensitive noise receptors along Middle Road. These could include temporary noise barriers, varying the

EA STEP 3: Alternatives Development and Impact Analysis (Section C)

areas of construction activity, community input regarding the sequence of operations, and financial incentives for the contractor to keep construction noise levels at a minimum.

Mitigation of blasting noise in the vicinity of sensitive noise receptors such as Loomis Park near the proposed S.R. 0029 rock cut will be considered including the potential use of blasting mats and time of day restrictions.

Traffic

Proposed detours during construction will be incorporated into the PS&E package as part of the Maintenance of Traffic Plan. Advance signing will be placed on all approaches to the work areas. Traffic control signage and devices will be installed as specified in the Plan. PennDOT and the contractor will coordinate with the Hanover Area School District, Greater Nanticoke Area School District, emergency service providers, municipal and Luzerne County emergency management agencies, municipal officials, and property owners in the immediate vicinity of the work areas prior to implementing detours during construction.

Form 3C15 – Impact Form

Identification of Resource: Indirect and Cumulative Impacts

In addition to the consideration of a project's direct impacts, the Council on Environmental Quality (CEQ) regulations require that the indirect and cumulative impacts of a project be examined (40 CFR § 1508.25 (c)). Indirect impacts are defined as, "Effects which are 'caused' by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR § 1508.8 (b)). Cumulative impacts are defined as, "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 § 1508.7).

The assessment of project impacts requires consideration of the project needs, particularly in defining the study area boundaries to be used in determining the potential for project-related growth to be considered in the assessment of indirect impacts. The proposed SVP project needs address the following: safety, access to the regional transportation network (functional classification), traffic congestion, and accommodation of economic development consistent with local and regional land use plans. A more detailed description of the project need is provided in Section I.C (Project Purpose and Need).

Indirect Impacts

Methodology & Existing Conditions: The project's proposed "area of influence" for the assessment of indirect impacts encompasses the limits of the project area's watersheds (Espy Run, Nanticoke Creek, and Warrior Creek) for a total area of 7,741 acres as shown on Figure 3-C-15.1. These boundaries were identified as the boundaries of the area of influence because they encompass the communities and areas identified by county planners and developers for future development areas that would be served by the proposed transportation improvements and potentially result in indirect effects attributed to the construction of the SVP project. In addition, the watershed boundaries represent the natural boundary of the natural resources that could be affected by indirect actions. Approximately 48% of the area of influence is forested and approximately 29% is currently developed. Other land covers include non-forested vacant lands, transportation land use (including the S.R. 0029 and I-81 corridors), and unrestored abandoned mine lands. A portion of the forested area (179 acres) in the upper reaches of the Nanticoke Creek watershed is preserved as part of State Game Lands No. 207 (on east side of I-80).

Coordination was conducted with municipal and county planning officials and local developers, including the EC and the Wilkes-Barre Chamber of Commerce/Business and Industry, to identify the location, type, and status of recent, on-going, and proposed land development activities in the study area and in the project's area of influence. Various past and current planning documents from the EC and county were reviewed and municipal zoning data were obtained from the Luzerne County Planning/GIS Department in September 2010. Form 3C6 (Proposed Development and Local Planning) provides a detailed description of recent past and on-going planning and development activities (since the mid-1990s). This information was used to determine: (1) the potential amount and pattern of growth that is anticipated for the project's "area of influence" if the project does not proceed (i.e., under the No-Build Alternative); (2) whether the Build Alternative could influence the amount or pattern of future development; and (3) what, if any, difference would occur in the amount or pattern of growth between the No-Build Alternative and the Build Alternative in-place. The following includes a discussion of the potential for development and growth, including project-related growth.

Regional Development Opportunities

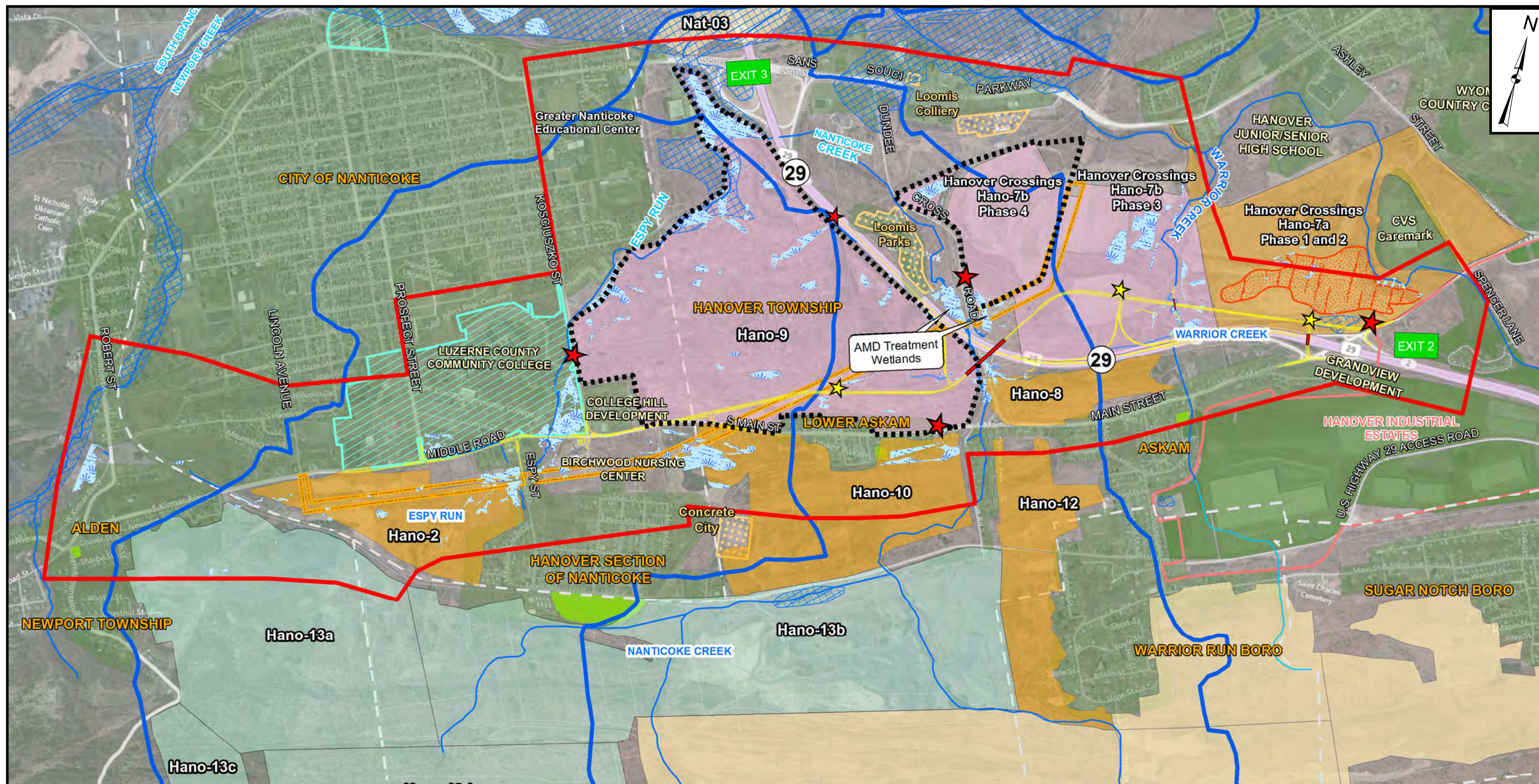
The new Final Draft Lackawanna-Luzerne Regional Plan (Comprehensive Plan, Hazardous Mitigation Plan, and Long-Range Transportation Plan for Lackawanna & Luzerne Counties, May 2011) is structured on a framework of Priority Areas for targeted growth and revitalization, Infill Areas for additional growth, and Conservation Areas for agricultural, recreation, and open space uses. It is through this framework that both counties will support their existing urban centers, minimize sprawl, and promote the conservation of natural resources. The Regional Plan identifies the SVP project's area of influence (the three watershed areas) as predominantly Mixed Density Infill Area that is intended to provide opportunities for new development and redevelopment on properties that are vacant or underused. There is no Priority Area identified within the three watersheds however, a small Priority Area encircling the City of Nanticoke's urban center where Main Street and Market Street intersect lies just west of the project's area of influence.

The Regional Plan identifies a small headwater area of the Nanticoke Creek watershed on the south side of I-81 and a small stretch of land immediately adjacent to the Susquehanna River as the only Conservation Areas within the SVP project's area of influence. This area is part of State Game Lands No. 207 (approximately 166 acres or 2% of the total area of influence). However, the county and the EC (a major landowner in the project area of influence) have undertaken previous planning studies to identify areas of potential open space lands, including areas within the Mixed Density Infill Areas. The county and EC, in conjunction with the PA DCNR, prepared the "Lower Wyoming Valley Open Space Master Plan" (April 1999) that introduced a strategy for creating a network of open spaces areas with interconnected trails. Within the project's area of influence, entire parts of the EC land parcels in the headwaters of the watersheds were identified in the Master Plan as areas targeted for conservation or open space (includes those EC lands identified as having no development plans and lands within Hano-13d on Figure 3-C-15.1). Other EC lands include plans that identify selected areas for open space to be interspersed around proposed development areas and these proposed open space areas typically include lands with steep slopes, floodplains, and stream corridors.

In 2005, Lackawanna and Luzerne Counties prepared the "Open Space, Greenways, & Outdoor Recreation Master Plan" to provide a planning framework for the preservation of open spaces and the development of greenways and outdoor recreation areas. Within the SVP project's area of influence, this plan proposes two areas as conservation areas (in addition to the existing State Game Lands). These areas include the floodplains along the Susquehanna River that would be part of the Susquehanna Warrior Trail and the Penobscot Mountain Highlands that encompass the steep slopes of the mountain ridge that forms the headwater boundary of the three watersheds. While the local developers, including the EC, have developed planning concepts that incorporate open space areas (particularly along streams, floodplains, and steep slopes), a review of the county and local municipal land development and subdivision ordinances indicate that both the City of Nanticoke and Hanover Township have open space requirements for residential development but none for commercial and industrial properties.

The large parcels of vacant lands adjacent to and in the vicinity of the SVP project are primarily owned by the EC and Wilkes-Barre Chamber of Business and Industry. Figure 3-C-15.1 illustrates the expanse of the 3,516 acres of land holdings in the area of influence (Table 3-C-6.1 includes a summary of the EC parcels, their size, zoned use, and proposed use). These land holdings and the opportunities for their development in the SVP project's area of influence for indirect impacts fall into three categories as defined below:

1. Property with no current development plans – Over 75% (2,638 acres) of the parcels are identified as having no infrastructure and no current conceptual plans for development. Some parcels, including Hanover 10, 12, and 13, were previously included in the EC planning efforts and have been partially reclaimed. However, these lands are currently up for sale at reduced prices given the slow economy and inability to attract



LEGEND

Watershed Boundary

Espy Run 2,007 Acres
Nanticoke Creek 2,841 Acres
Warrior Creek 2,893 Acres

Study Area

Utility R-O-W

★ Existing Access Points
★ Future Access Points

Parcels with Conceptual Development Plans

Parcels Included in Route 29 Mixed Use Master Plan, 1999

Parcels Included in Thinkbelt Development Concept Plan, 2008

Parcels in Current 2012 Concept Plan

Existing Communities and Developed Areas

Earth Conservancy Parcels With No Development Plans

Keystone Opportunity Zone

Existing Hanover Industrial Estates

Existing LCCC Campus Property

National Register of Historic Places Boundaries

Parks

State Game Land

Former Luzerne County Landfill

Wetlands

100 Year Floodplain

Streams

Municipal Boundaries

Alternative 2C Revision 2 (Preferred Alternative)

South Valley Parkway Project SR 3046, Section 301

INDIRECT AND CUMULATIVE AREA OF IMPACTS

Newport and Hanover Townships and City of Nanticoke,
Luzerne County, Pennsylvania

Figure
3-C-15.1

January 2013

1" = 2200'

EA STEP 3: Alternatives Development and Impact Analysis (Section C)

private and public investment opportunities. In addition, 4% of the EC parcels are targeted for open space/park use exclusively. (Note, some EC properties targeted for development also include areas identified for open space in and around the proposed development as discussed later.)

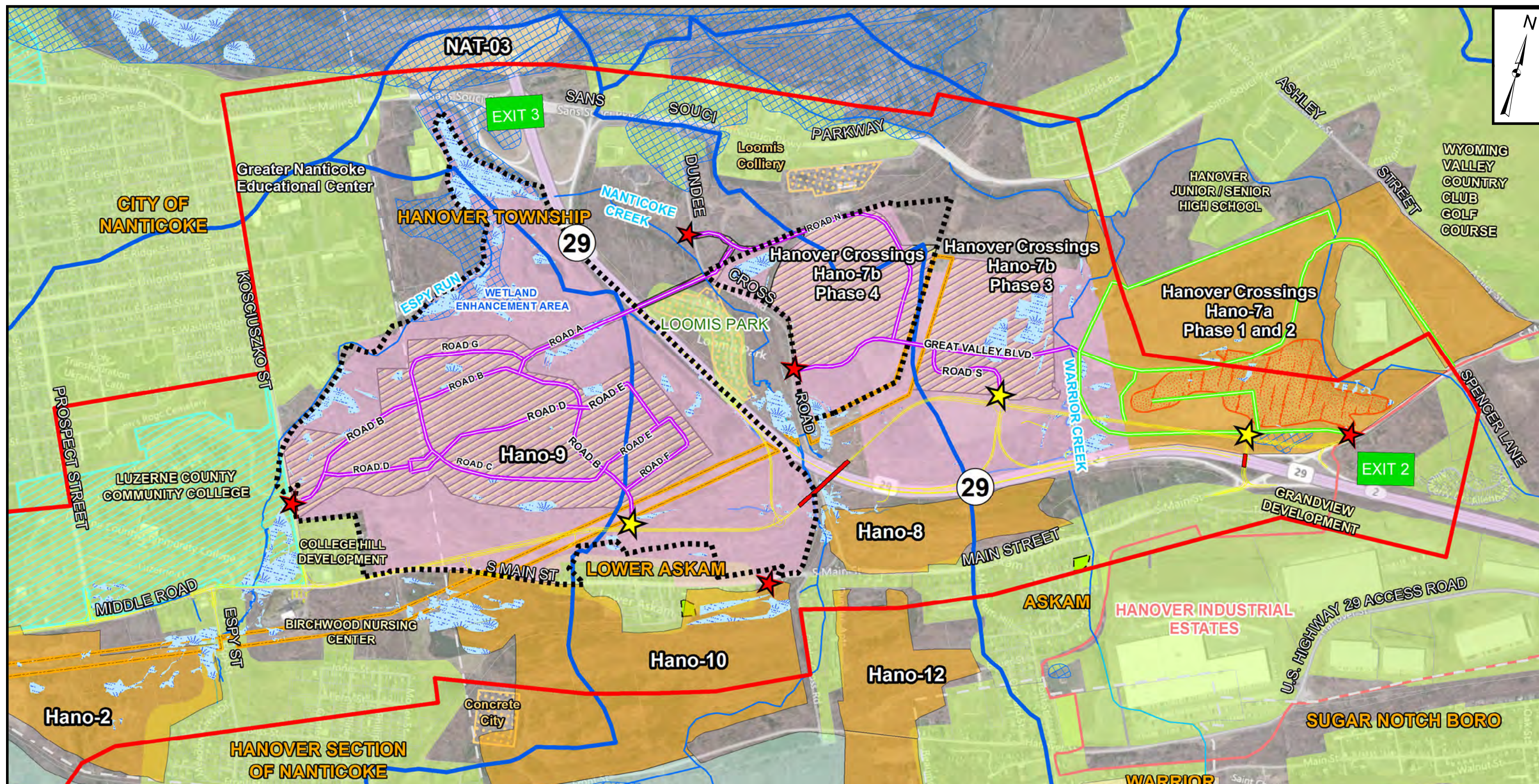
2. Property with approved development plans – This property includes 7% (241 acres) of the property that includes the Hanover Crossings Phases 1 and 2 (Hanover 7a) parcels with 213 acres of available land remaining for development. As described in Form 3C6 (Proposed Development and Local Planning), these parcels have existing internal paved access roads and are served by existing telecom infrastructure, dual-feed electricity lines, natural gas lines, public water service, and sewage collection/treatment service. Currently this property houses one business tenant, CVS Caremark RX, a mail-order pharmaceutical company. In April 2012, Hanover Township officials approved plans submitted for the construction of three developments, including a new CEO food bank structure and two “speculative” developments with no specific industry/commercial tenant identified at this time.
3. Property with conceptual plans – The EC and the Chamber recently renewed their land development planning efforts for the parcels identified as Hanover 9 and Hanover 7b (see Attachment F4 – Earth Conservancy Development Concept Plan). These parcels, which make up 18% (637 acres) of their land holdings in the area of influence, have no infrastructure in-place but do have existing access to local roads, including Kosciusko Street, Dundee Road, Middle Road, and the San Souci Parkway. The existing access points are delineated on Figure 3-C-15.1, along with three proposed access points that would be provided with the SVP project. In addition, Figure 3-C-15.2 illustrates the proposed internal roadway network that connects to the existing roads and to a new SVP alignment, as illustrated in the concept plans, along with the general areas of proposed development within the parcels.

The old mining-related areas of Hanover 7a property have been reclaimed and all infrastructure facilities (see list above) have been put in-place. In addition, as previously described, the property includes one tenant, CVS Caremark. Therefore, impacts to environmental resources associated with the recently approved development plans for the remaining parcels of this property are expected to be relatively minor given that the area has been disturbed by mining and then reclaimed and prepared for development. The Hanover 9 and Hanover 7b properties have also been disturbed by past mining activities but large areas of these properties have naturally restored with forest cover. In addition, the EC and the Chamber have been undertaking mine reclamation projects on these properties for the last couple of decades, including projects to manage and treat acid mine drainage and to remove/correct old mining hazards.

Potential direct impacts to resources associated with the future development of Hanover 9 and Hanover 7a/7b parcels are shown in Table 3-C-15.1. These potential impacts are based on the most current development plans that include areas proposed for open space. In particular, the current concept plan for the Hanover 9 property includes 4 acres of parkland and 295 acres of open space in and around the proposed developed areas which makeup approximately 73% of the total 410 acres. The proposed open spaces areas of this parcel primarily encompass the areas of steep slopes paralleling Middle Road and the area set aside for the “Espy Run Wetlands Enhancement Project” in the downstream floodplains where Espy Run flows to Nanticoke Creek (see Figure 3-C-15.2). The wetland enhancement project was completed in 2011 using monies from EPA Brownfields Cleanup Grant. The project increased the treatment capacity and improved the performance of an existing constructed wetland passive treatment system to reduce the amount of AMD being introduced into the watershed.

TABLE 3-C-15.1
IMPACTS FROM LAND DEVELOPMENT ACTIVITIES AND CUMULATIVE IMPACTS

RESOURCE	AREA OF INFLUENCE TOTAL RESOURCES	PAST (1990 TO PRESENT) IMPACTS (% OF TOTAL RESOURCES)	FUTURE IMPACTS (% OF TOTAL RESOURCES)				CUMULATIVE IMPACTS (% OF TOTAL RESOURCES)	
			SVP PROJECT	HANO-9 TOTAL IMPACTED	HANO-7B TOTAL IMPACTED	HANO-7A IMPACTED	NO-BUILD	BUILD
Total Land Area	7,741 acres							
Espy Run	2,007 acres	282 ac (4%)	149 ac (2%)	410 ac (5%)	209 ac (3%)	213 ac (3%)	773 ac (10%)	922 ac (12%)
Nanticoke Creek	2,841 acres			161 ac (2%)	117 ac (2%)	(remaining available for development)		
Warrior Creek	2,893 acres							
100-Year Floodplains	245 acres	3 ac (1%)	0	24 ac (10%)	0	0	3 ac (1%)	3 ac (1%)
				0	0			
Wetlands	170 acres			23.9 ac (14%)	12.6 ac (7%)			
Espy Run	64 acres	1.5 ac (1%)	2.2 ac (1%)	4.1 ac (2%)	4.2 ac (2%)	1.5 ac (<1%)	11.3 ac (7%)	13.5 ac (8%)
Nanticoke Creek	43 acres							
Warrior Creek	63 acres							
Streams	84,899 linear feet			5,628 lf (7%)	5,167 lf (6%)			
Espy Run	16,905 linear feet	3,357 lf (4%)	3,073 lf (4%)	0	0	3,292 lf (4%)	6,649 lf (8%)	9,722 lf (11%)
Nanticoke Creek	40,810 linear feet							
Warrior Creek	27,184 linear feet							
Forest Land	3,696 acres	32 ac (1%)	93 ac (3%)	260 ac (7%)	54 ac (1%)	33 ac (<1%)	253 ac (7%)	346 ac (9%)
				157 ac (4%)	31 ac (<1%)			
Total Land Area	248,320 ac (388 sq. mi.)	282 ac (<1%)	149 ac (<1%)	410 ac (<1%)	209 ac (<1%)	213 ac (<1%)	773 ac (<1%)	922 ac (<1%)
(Combined Ten Mile Radius)				161 ac (<1%)	117 ac (<1%)	(remaining available for development)		
T&E Species Habitat *	168,960 ac (264 sq. mi.)	32 (<1%)	93 ac (<1%)	260 ac (<1%)	54 ac (<1%)	33 ac (<1%)	253 ac (<1%)	346 ac (<1%)
				157 ac (<1%)	31 ac (<1%)			
* Forest habitat within ten miles of two hibernacula								



LEGEND		Future Access Points		Streams	
Watershed Boundary	Future Access Points	Existing Communities and Developed Areas	Streams	Municipal Boundaries	Streams
Espy Run 2,007 Acres	Parcels with Conceptual Development Plans	National Register of Historic Places Boundaries	Parks	Alternative 2C Revision 2 (Preferred Alternative)	Existing Roads by Developer
Nanticoke Creek 2,841 Acres	Parcels Included in Route 29 Mixed Use Master Plan, 1999	Earth Conservancy Parcels With No Development Plans	Former Luzerne County Landfill	Proposed Roads by Developer	Existing Roads by Developer
Warrior Creek 2,893 Acres	Parcels Included in Thinkbelt Development Concept, 2008	Keystone Opportunity Zone	Wetlands		
Study Area	Parcels in Current 2012 Concept Plan	Existing Hanover Industrial Estates	100 Year Floodplain		
Utility R-O-W	Development Areas in Current 2012 Concept Plan	Existing LCCC Campus Property			
Existing Access Points					

South Valley Parkway Project
SR 3046, Section 301

PROPOSED DEVELOPMENT AREAS AND ROADWAY NETWORK

Newport and Hanover Townships and City of Nanticoke, Luzerne County, Pennsylvania

Figure 3-C-15.2	January 2013	1" = 1150'
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EA STEP 3: Alternatives Development and Impact Analysis (Section C)

Impacts: Based on guidance provided in PennDOT's Indirect and Cumulative Effects (ICE) Desk Reference (Publication #640, March 10, 2008), the potential for project-related growth (and its associated impacts) depends on project type, project location, and growth pressure. Below is a summary of the SVP project characteristics.

Project Type – The proposed SVP is a new facility that includes a section on new alignment that will also provide four (4) additional access points for undeveloped lands. One component of the project need is to accommodate economic development consistent with local and regional land use plans. This type of development project would typically have a high potential for project-related growth.

Project Location – The project is located in a rural to suburban area. The proposed SVP project crosses through vacant land identified in the Final Draft Lackawanna-Luzerne Regional Plan (2011) as “Infill Areas,” which is a designation intended to provide opportunities for new development and redevelopment of properties that are vacant or underused. The Regional Plan also identifies a small area in the City of Nanticoke that encompasses the Main Street/Market Street intersection as a “City Center Priority Area.” Priority Areas are targeted for growth, however, this Priority Area lies outside and to the west of the SVP's area of influence. There are no other Priority Areas in or near the SVP project's area of influence. Two “Conservation Areas” are located in the project's area of influence including a small portion of State Game Lands No. 207 in the Nanticoke Creek headwaters and a small corridor of land along the Susquehanna River where the three watersheds join. These lands are set aside for non-development uses and are not EC properties nor are they identified for future development. In summary, the SVP's area of influence is predominantly identified as Infill Area with properties that are vacant or underused along with two small Conservation Areas – one in the headwaters and another in the confluence area with the Susquehanna River. This more rural/suburban location would typically have a moderate potential for project-related growth.

Growth Pressure – In the project's “area of influence,” growth pressure also varies, primarily based on the availability of existing infrastructure to support growth. For the undeveloped properties with potential for development (i.e., the EC lands) in the project's area of influence, 89% of the land area lacks infrastructure (including telecom, electricity, natural gas, and water and sewer service) to support new growth. In addition the demand for land to develop in the region is unpredictable as reflected in the inability of the EC to attract tenants to the fully equipped Hanover Crossings/Hanover 7a property in the last 10 years, possibly due to the local economy. Therefore, the traffic projections for the SVP project's design year 2034 reflect a limited build-out condition for these parcels (only 25% to 50% of the projected traffic volumes estimated for the current plans are included in the design year traffic projections). Given the lack of infrastructure for most of the land area, combined with relatively low consumer demand for new land to develop, the potential for project-related growth (including growth and development of EC lands) related to growth pressure is considered low.

The following summarizes the projected changes in the amount, distribution, and timing of land development for the No-Build and the Build Alternative and the resulting indirect impacts. Table 3-C-15.1 summarizes the direct impacts associated with potential land development activities in the SVP project's area of influence. These impacts estimates were calculated using existing PADEP's PASDA GIS files including forested land cover, wetlands, and streams along with their respective FEMA floodplain or DEP floodway. More detailed data collected as part of the SVP project field studies were merged into these secondary source GIS layers for those areas within the project study area.

Since the SVP project will not have any direct impacts on cultural resources and there are no known cultural resources within the properties identified for new development, potential indirect impacts to cultural resources were determined to be negligible and not included in the analysis. In addition, potential adverse

EA STEP 3: Alternatives Development and Impact Analysis (Section C)

indirect impacts to social and community resources were not included in the analysis because it was determined that: (1) the SVP project will not have any adverse direct impacts on social or community resources (only one isolated displacement and no community cohesion issues associated with the construction of the project); (2) the properties identified for development by others are vacant properties on abandoned mining areas, and (3) both the SVP project and the proposed development by others are compatible with the Lackawanna-Luzerne Regional Plan (Comprehensive Plan and Long-Range Transportation Plan for Lackawanna & Luzerne Counties, May 2011). The SVP project and the properties proposed for development by others are in an area identified as a Mixed Density Infill Area that is intended to provide opportunities for new development and redevelopment on properties that are vacant or underused for additional growth. The SVP project and the proposed development by others are considered by local and regional government officials and planners as having beneficial impacts for the local economy by supporting existing community and business centers, minimizing sprawl, and promoting the conservation of natural resources.

No-Build Alternative:

Hanover 7a Property – Under the No-Build Alternative, this property will continue to develop given its existing access, internal road system, and in-place infrastructure and services that support development. The property has an existing tenant and recent (April 2012) plan approval for development on three additional parcel lots.

Hanover 7b and Hanover 9 Properties – The No-Build Alternative does not include any additional access points to lands identified for development in these properties; however, there are four existing access locations and the properties are identified in the Regional Plan for infill development. The EC and the Chamber are actively updating the concept plans for these properties and they have asserted that the development of these parcels can occur without the SVP. The plans are being designed to address access with additional new roadways in the advent that the SVP project is not constructed; however, the specific development areas account for the potential loss of available land that would be used for SVP right-of-way. The EC has stated that a developer has recently (2012) expressed interest in developing student housing on the western edge of Hanover 9 property due to its proximity to the LCCC and that Walmart has expressed interest in a lot on Hanover-7b (Phase 4 on Figures 3-C-15.1 and 3-C-15.2).

Given the existing access points and development and planning activities underway, it is likely that the Hanover 7a/b, and Hanover 9 properties will develop under the No-Build Alternative, particularly if the local and regional economy improves. Figure 3-C-15.2 illustrates the proposed roadway network for these properties as identified in the recent (2012) updated concept plans. (This proposed network would be in-place with under both the Build and No-Build Alternatives.) The main roads to and through the properties would include new roads connecting to the existing access locations, including Road B that would connect to Kosciuszko Street, Roads A and N that would connect to Dundee Cross Road, and an extension of Great Valley Boulevard to connect to Dundee Cross Road. The proposed interconnected roadway network ensures that all of the proposed development areas in these properties would have access under the No-Build scenario.

However, given the large size of the properties and the likelihood that the development of the individual parcels and lots would be undertaken in phases as investment monies become available, it is anticipated that the parcel lots closest to the access points at the existing roads would develop first and as the economy continues to improve, the other internal areas would be developed later. In particular, the Hanover 9 parcel lots next to Kosciuszko Street would most likely develop first due to the proximity of the LCCC and the college's recent expansions and continued increase in student enrollment. Likewise, for Hanover 7b, the eastern lot parcels in Phase 3 would most likely develop early given their proximity to the development

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occurring in Hanover 7a and the northwestern parcel lots of Phase 4 would most likely develop early given their proximity to Dundee Cross Road and Sans Souci Parkway. The KOZ designation may make Phase 4 lots more attractive for early development over the Phase 3 lots, which are no longer designated as KOZ areas. (KOZ areas are properties that are in a Keystone Opportunity Zone that allows businesses to receive state and local tax breaks for development in these designated areas. The KOZ designation is expected to attract development where little or no activity existed beforehand in an effort to also produce spin-off taxable activity outside the designated zone.)

Build Alternative:

Hanover 7a Property – Under the Build Alternative this property will continue to develop given its existing access, internal road system, and in-place infrastructure and services that support development. The property has an existing tenant and recent (April 2012) plan approval for development on three additional parcel lots. The Build Alternative includes an additional access point for this property that would maintain the relatively direct access to S.R. 0029 at the proposed relocated Exit 2. The existing access point near the existing Exit 2 would be maintained as a connection to Middle Road.

Hanover 7b and Hanover 9 Properties – The Build Alternative would include two additional access points (one for each property); however, these properties have four existing access locations. These properties are identified in the Regional Plan for infill development and the EC and the Chamber are actively updating the concept plans for Hanover 9 and 7b. The EC has stated that a developer has recently (2012) expressed interest in developing student housing on the western edge of Hanover 9 property due to its proximity to the LCCC and Walmart has expressed interest in a lot on Hanover 7b (Phase 4). Therefore, it is likely that these areas will develop under the Build Alternative, particularly if the local and regional economy improves. The timetable for the implementation of the development plans is unpredictable because, in part, it is dependent on economic conditions. In addition, there is no infrastructure in-place on the Hanover 9 and Hanover 7b properties for telecommunication, electrical, natural gas, water or sewer service to support development. It is expected that these large properties would develop in phases as investment funds becomes available, similar to what occurred and continues to occur in the existing Hanover Industrial Estates (currently completed but with developed parcels still available for tenants) and the Hanover 7a, Hanover Crossings industrial area.

Figure 3-C-15.2 illustrates the proposed roadway network for Hanover 9 and Hanover 7b properties as identified in the recent (2012) updated concept plans. In addition, the areas where the development would be focused are delineated. Similar to the No-Build Alternative, the main roads to and through the properties would include roads connecting to the existing access locations, including Road B that would connect to Kosciuszko Street, Roads A and N that would connect to Dundee Cross Road, and an extension of Great Valley Boulevard to connect to Dundee Cross Road. The new access locations that would be provided by SVP would include an extension of proposed Road B, Road S, and an existing road in Hanover 7a. Given the interconnected proposed roadway network, all of the proposed development areas in these properties would have access. The Build Alternative for the SVP has been designed to operate primarily as a limited access roadway and the inclusion of these additional access points at key locations is intended to allow safe access and accommodate the future local road connections for planned development, if needed, while maintaining safe and efficient operations along the SVP.

Due to the large size of the properties and the stagnant economy, it is anticipated that the parcels will develop in phases. Similar to the No-Build Alternative, the parcels closest to the existing roads would most likely develop first, particularly given the proximity of the LCCC to the west, the proximity of Sans Souci Parkway to the north, and the current development occurring in Hanover 7a to the east. However, the new access points could possibly make the parcels near them just as desirable for development as the parcels near the

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existing access points. This could affect the phasing of the planned development activities and push forward the time of development for those lots in the internal areas of Hanover 9 and Hanover 7b next to the proposed access points. As evidenced by the slow development of the Hanover 7a parcels that have been available for development since the early 2000s (including supporting infrastructure in-place), the local and regional economy would still have a significant influence on the overall rate of development of these properties.

Since the EC's and Chamber's land areas that are the focus of their current planning efforts have existing access and there is no predictable timetable for the development of specific parcels and lots, **it has been determined that the development of these parcels are not dependent upon the construction of the SVP**. The development of these parcels (Hanover 7a/b and Hanover 9) would not occur "but for" the project but rather is more dependent on the state of the economy. In summary, the SVP project is providing additional access to properties that have existing access. The reclamation and development of old abandoned mining areas in the region (including the large land holdings of the EC) depend on the vibrancy of the economy and the ability to invest in reclamation and new construction in addition to extending other growth-supporting infrastructure (e.g., electric, telecom, natural gas, water and sewer services) not yet in-place. Once the economy improves, these properties can and would develop with or without the SVP in-place.

The only potential indirect impact to the development on these vacant lands is the timing and phasing of development on the various parcels lots within the Hanover 7b and Hanover 9 properties given that new access points will provide more direct access to internal parcel lots of the larger properties. Therefore, it has been determined that the SVP project will not result in any significant indirect impacts.

Minimization/Mitigation: No additional mitigation is proposed as part of SVP project for indirect impacts. The county and local land use and development plans promote orderly land development that includes environmental protection and stewardship practices by providing a planning framework and strategy for the preservation of open spaces.

Cumulative Impacts

Methodology & Existing Conditions: The identification of the project's proposed "area of influence" for the assessment of cumulative impacts is based on the resources of concern that would be directly or indirectly impacted. The resources that would be directly impacted by the SVP are streams, wetlands, forest cover, and Threatened and Endangered (T&E) species. Floodplain resources are also considered since they could be indirectly impacted. For the SVP project, it was determined that the area of influence for potential cumulative impacts to streams, floodplains, wetlands, and general forest cover would encompass the limits of the project area's watersheds (Espy Run, Nanticoke Creek, and Warrior Creek) for a total area of 7,741 acres. These boundaries encompass the communities and areas identified by county planners and developers for future development areas that would be served by the proposed transportation improvements and the potential cumulative effects attributed to the construction of the SVP project and to the development activities of others. In addition, the watershed boundaries represent the natural boundary of the natural resources that could be affected by the cumulative actions. As previously noted, approximately 48% of the area of influence is forested and approximately 29% is currently developed. Other land covers include non-forested vacant lands, transportation land use (including the S.R. 0029 and I-81 corridors), and unrestored abandoned mine lands. A portion of the forested area (179 acres) in the upper reaches of the Nanticoke Creek watershed is preserved as part of State Game Lands No. 207 (on east side of I-80). Refer to the discussion of Indirect Impacts for the description of planned and proposed open space areas in the project's area of influence.

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For the assessment of cumulative impacts to T&E Species, in particular the Indiana bat, the project's potential area of influence is defined as the Action Area used in the Indiana Bat Biological Assessment (February 2012) prepared for the project. The SVP Action Area is comprised of the area within the combined 10-mile radius areas around the Glen Lyon and Shickshinny hibernacula (see Figure 3-C-15.3). The areas within 10 miles of hibernacula are known swarming zones or primary habitat zones. The SVP Action Area is approximately 388 square miles (248,320 acres) and includes a large part of Luzerne County along with a small portion of eastern Columbia County, including the community of Berwick. Approximately 68% (264 square miles) of this area includes forest cover.

The following includes a discussion of regional growth trends and the potential for development and growth, including project-related growth that was used to identify the past and future times frames for the assessment of cumulative impacts.

Regional Growth Trends

Much of Luzerne County and the surrounding region's population historically relied heavily on the anthracite coal mining industry. After 1910 the anthracite industry failed to keep pace with other energy sources such as oil and natural gas as alternate fuel sources. The percent change in population from 1900 through 1940 was consistent for Pennsylvania and Luzerne County; however, from approximately 1940 through 1960 Luzerne County experienced a decline in population due to the slowdown in the anthracite mining industry. Post World War II growth throughout Pennsylvania, which included the steel industry and bituminous coal mining in western Pennsylvania, helped the state achieve greater overall growth than Luzerne County. This lasted until about 1970, when the steel industry declined. The decades from 1970 to 2000 saw the state experience only modest growth while the nation had robust increases in population. During this time most of the municipalities in Luzerne County experienced a continued steady decline in population as summarized in Table 3-C-15.2.

**TABLE 3-C-15.2
SUMMARY OF POPULATION TRENDS**

AREA	POPULATION (% CHANGE)					
	1960	1970	1980	1990	2000	2010
United States	179,323,175	203,302,031 (+13.4%)	226,542,199 (+11.4%)	248,709,873 (+9.8%)	281,421,906 (+13.2%)	308,745,538 (+9.7%)
Pennsylvania	11,319,366	11,800,766 (+4.3%)	11,863,895 (+0.5%)	11,881,643 (+0.2%)	12,281,054 (+3.4%)	12,702,379 (+3.4%)
Luzerne County	346,972	342,211 (-1.4%)	343,079 (+0.3%)	328,149 (-4.4%)	319,250 (-2.7%)	320,918 (+0.5%)
Hanover Township	12,781	12,108 (-5.3%)	12,601 (+4.1%)	12,050 (-4.4%)	11,488 (-4.9%)	11,076 (-3.5%)
Nanticoke City	15,601	14,632 (-6.2%)	13,044 (-10.9%)	12,267 (-6.0%)	10,955 (-10.7%)	10,465 (-4.7%)
Newport Township	7,083	6,002 (-15.3%)	4,989 (-16.9%)	4,593 (-7.9%)	5,006 (+9.0%)	5,374 (+7.4%)

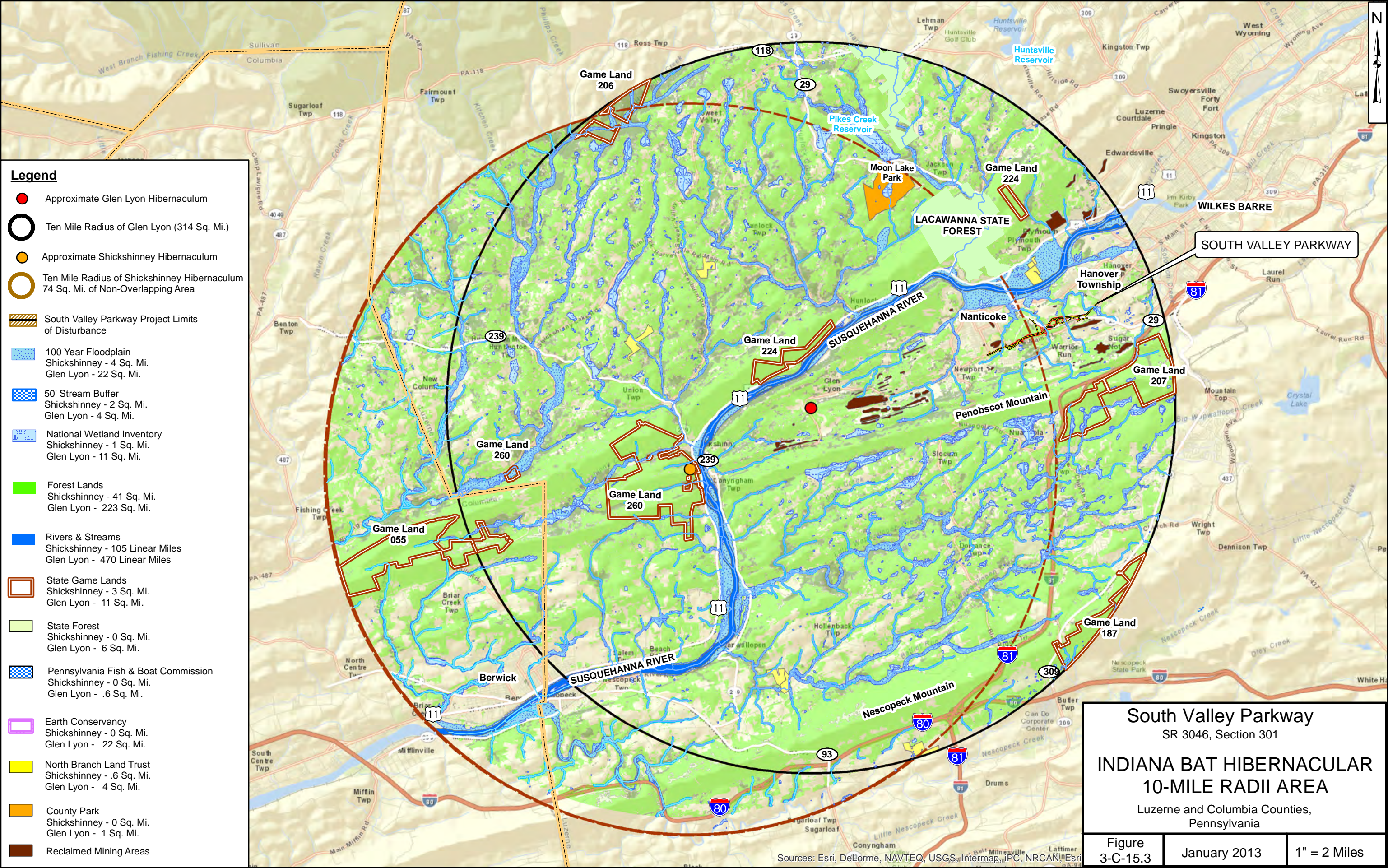
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Like Luzerne County, Columbia County is basically rural in nature with the main population centers located in Bloomsburg and Berwick, the latter which is located at the edge of the Indiana bat Action Area. The county's growth pattern in recent decades has been along accessible routes such as the US 11 and I-80 corridors. These corridors remain the focus of planning and development activities. In particular, the Bloomsburg-Berwick corridor serves as the county's primary future urban growth area. The county doesn't have a current comprehensive plan (existing plan is dated 1994), but the county is actively identifying areas to target for conservation and open space and has an active agriculture lands preservation program with many properties designated as agricultural security areas. Unlike Luzerne County, Columbia County has experienced a steady increase in population and the county unemployment rate tends to be 1% lower than the unemployment rate for Luzerne County with an 8.2% unemployment rate in June 2012.

Efforts to revitalize the Luzerne County economy started in the early 1970s with attempts to reuse old abandoned mining areas for large commercial and industrial parks. Virtually all of the large development in the county has occurred directly adjacent to I-81, near the urban hubs of Scranton, Wilkes-Barre, and Hazleton – all outside of the project's area of influence. However, the Hanover Industrial Estates within the project's area of influence was started in 1973 and is now a diverse business park with distribution centers, call centers, and financial and manufacturing operations. About 5,000 people are employed in the park and in 2004 it reached its development capacity and currently has approximately 40 tenants (however some developed lots are still available for leasing). Despite these efforts, the county and the municipalities in the project's area of influence continue to experience population decline and high unemployment.

Recent economic development efforts in the project's area of influence were initiated in the early 1990s when large land areas of abandoned property, totaling more than 16,300 acres in Luzerne County and formerly owned by the Blue Coal Corporation (which declared bankruptcy in the mid-1970s), were purchased by EC with federal financial support (see Figure 3-C-15.1). The EC is a not-for-profit organization, founded in 1992. The impetus for the formation of EC was the desire by area business leaders, higher education institutions and residents to assure that the abandoned coal mine lands left by the bankruptcy of Blue Coal Corporation would be reclaimed and responsibly reused in ways that best served the community. The regional development activities associated with these lands in the vicinity of the SVP project, including land reclamation and development projects, are summarized in Form 3C6 for Proposed Development and Local Planning and under the Indirect Impacts discussion. (Note – approximately 3,500 acres (22%) of the EC properties lie within the three watershed areas that encompass the SVP project and approximately 13,900 acres (85%) of EC lands lie within the combined 10-mile radius areas around the Glen Lyon and Shickshinny hibernacula.)

The change in the unemployment rate from 1990 through 2003 was fairly consistent for the U.S., Pennsylvania and Luzerne County while Luzerne County's unemployment rate has been consistently higher than both the U.S. and Pennsylvania. Recent growth of service sector employment during the turn of the 21st century in Luzerne County explains the decline in unemployment after 2001 when compared to the U.S. and Pennsylvania. However, since 2008, unemployment rates have continued to be higher for Luzerne County than Pennsylvania. As of June 2012, Luzerne County was experiencing an unemployment rate of 9.9% while Pennsylvania maintained an 8.0% unemployment rate (Bureau of Labor and Statistics).



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The timeframe for the assessment of cumulative impacts for the SVP project is defined to be 1990 to 2035, the project's design year. The year 1990 is used as the baseline because that is when the large areas of old abandoned mine lands were purchased by EC which then proceeded to compile and evaluate resource data to determine the need for reclamation of the abandoned lands and degraded streams and wetlands in the effort to identify lands for open space (including conservation and recreation), in addition to redevelopment. Prior to 1990s the large areas of abandoned mine areas were left to naturally restore where possible, including reforestation of strip mine areas and vast culm piles. The past coal mining in the region has also left most of the streams and wetlands degraded, exposing them to acid mine drainage that has resulted in reduced water quality, including lack of aquatic life. The EC has initiated small water quality improvement projects through the construction of passive wetland treatment systems at select locations.

Impacts: Cumulative impacts are the summation of the direct impacts associated with the past, present, and reasonably foreseeable actions (including future land development) by others, in addition to the proposed project impacts.

No-Build Alternative: Cumulative impacts for the No-Build Alternative are the summation of the direct impacts associated with actions by others that would continue even without the construction of the SVP in the project's area of influence. Development from 1990 to present within the project's area of influence was primarily focused around S.R. 0029, including Hanover Crossings (Phase 1 and 2) and expansions of the Luzerne County Community College.

Table 3-C-15.1 lists the past and potential future impacts to select resources of concern associated with each of the sites that are actively undergoing subdivision approval and conceptual planning. Since no final development plans are available, the estimation of impacts is based on the general areas proposed for development on the Current 2012 Concept Plans as delineated on Figure 3-C-15.1. The projected cumulative impacts to wetlands, stream, and floodplains would all be equal to or less than 8% of the resources in the project's area of influence. In particular, floodplain impacts and stream impacts would be avoided or minimized due to the planning efforts for future development to avoid these resources and identify them as open space areas in the EC's concept plans. In addition, the proposed future development activities will be required to undergo an avoidance and minimization analysis as part of the federal and state waterway permitting processes when these plans move forward for subdivision plan approval. Of special note is the open space area of Hanover 9 that has been designated as land set aside for the "Espy Run Wetlands Enhancement Project" in the downstream floodplain area where Espy Run flows to Nanticoke Creek. This project has recently been completed and the current 2012 conceptual site plans indicates that this area would be left as "Open Space."

Related to T&E Species, in particular the Indiana bat, the cumulative effect of all past actions has resulted in the current existing condition of approximately 264 square miles (168,960 acres) of forested habitat within ten miles of two bat hibernacula. The cumulative impact to forested habitat related to recent past and future development would be 253 acres which is less than 1% of the total forest habitat area for the project's defined Action Area.

Note that cumulative impacts are defined differently under the Endangered Species Act (ESA) than they are under NEPA. The project's Biological Assessment determined that the cumulative impacts (as defined in the ESA) associated with the future development activities are limited because it is reasonable to expect that any future development approvals in the project's Action Area as depicted on Figure 3-C-15.3, will require "federal actions," including permits (Section 404/Chapter 105 or NPDES) which would result in separate subsequent ESA Section 7 review/consultation (separate from the SVP project) and most likely require measures to avoid and minimize impacts to water resources and to provide compensatory mitigation for unavoidable impacts. The EC has also indicated that their development plans include the intention to reclaim large parcels of land in the region using funding from the US EPA, the OSM, and the PA DEP in addition to private funds. Federal funding would require separate environmental reviews, including the Section 7 review/consultation in compliance with the ESA regulations.

Build Alternative: Cumulative impacts associated with the Build Alternative are the summation of the SVP project's direct impacts combined with the direct impacts associated with the actions by others. Development from 1990 to present within the project's area of influence was primarily focused around S.R. 0029, including Hanover Crossings (Phase 1 and 2) and expansions of the Luzerne County Community College. Table 3-C-15.1 lists the past and potential future impacts to select resources of concern associated with each of the sites that are actively undergoing subdivision approval and conceptual planning. Since no final development plans are available, the estimation of impacts is based on the general areas proposed for development on the Current 2012 Concept Plans as delineated on Figure 3-C-15.1.

As shown in the table, the cumulative impacts associated with the Build Alternative are slightly higher than the cumulative impacts associated with the No-Build Alternative. The projected cumulative impacts to wetlands, stream, and floodplains would be equal to or less than 11% of the resources in the project's area of influence. Similar to the SVP project, the future land development activities impacting these resources would be required to undertake an avoidance and minimization analysis as part of the federal and state waterway permitting processes. As previously noted under the No-Build scenario, floodplain impacts and stream impacts would be avoided or minimized due to the planning efforts to avoid these resources and identify them as open space areas in the EC's development concept plans. In conclusion, it is determined that the cumulative impacts associated with the construction of the SVP project (the Build Alternative) and the construction of other proposed development projects is not expected to be significant to the water resources and forest lands within the project's watershed-based area of influence.

Not only is the percentage of resources in the watershed potentially affected minimal, but the recent past development, the proposed SVP project, and the future land development projects by others are compatible with the Final Draft Lackawanna-Luzerne Regional Plan (Comprehensive Plan and Long-Range Transportation Plan for Lackawanna & Luzerne Counties, May 2011) which identifies the potentially impacted land as Mixed Density Infill Areas. This designation is intended to provide opportunities for new development and redevelopment on properties that are vacant or underused. The Regional Plan has been developed to accommodate economic growth using a framework that supports existing urban centers (including economic and community centers), minimizes sprawl, and promotes the conservation of natural resources. The Regional Plan also includes the construction of the SVP project that would accommodate the planned development activities in the infill areas. As proposed, the SVP project will accommodate planned development activities in a manner consistent with the Regional Plan. It will accommodate development activities in a manner that is better than or the same as the No Build Alternative is likely to while also meeting all other

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project needs. Lastly, the EC's recent and ongoing development activities include opportunities to enhance the water quality of the watersheds that have been degraded by past mining activities, such as the recently completed Espy Run Wetland Enhancement project. Therefore, the proposed development activities could have a net beneficial cumulative impact to water resources in the project's potential area of influence.

Related to T&E Species, in particular the Indiana bat, the cumulative effect of all past actions has resulted in the current existing condition of approximately 264 square miles (168,960 acres) of forested habitat within ten miles of two bat hibernacula. The cumulative impact to T&E species habitat associated with recent past development, the proposed SVP project, and future development proposed by others would be 346 acres, that would be less than 1% of the total habitat area for the project's defined Action Area.

Note that cumulative impacts are defined differently under the ESA than they are under NEPA. The project's Biological Assessment determined that the cumulative impacts (as defined under the ESA) associated with the future development activities are limited because future development approvals will require "federal actions," including permits (Section 404/Chapter 105 or NPDES) which would result in separate subsequent ESA Section 7 review/consultation (separate from the SVP project). Therefore, it was determined in the Biological Assessment, for the purposes of the ESA, that there is no non-Federal, large scale, reasonably foreseeable land development activity within the general proximity of the SVP project area and the project's Action Area (depicted on Figure 3-C-15.3) that would result in additional losses to Indiana bat habitat or take of Indiana bats.

The cumulative effects to wetlands, floodplains, streams, forested land, and T&E species habitat resulting from the Build Alternative and other recent past, present, and reasonably foreseeable future projects are not significant.

Minimization/Mitigation: No additional mitigation is proposed as part of SVP project. The SVP project will include mitigation for direct impacts associated with the construction of the new roadway. The future development activities by others will most likely require federal and state environmental review as part of permit approval processes (e.g., National Pollution Discharge Elimination System [NPDES] Permit, Section 404-Chapter 105 Joint Permit), which require measures to avoid and minimize impacts to water resources and to provide compensatory mitigation for unavoidable impacts. The EC has also indicated that their development plans include the intention to reclaim large parcels of land in the region using funding from the US EPA, the OSM, and the PA DEP in addition to private funds. Federal funding would require separate environmental reviews, including Section 7 review/consultation in compliance with the Endangered Species Act regulations.

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A IDENTIFICATION OF PREFERRED ALTERNATIVE

Preferred Alternative: Alternative 2C - Revision 2

The Alternative 2C – Revision 2 is identified as the Preferred Alternative (see Figure 3-B-6). The Preferred Alternative will meet the project needs listed below:

Safety – To improve the safety conditions at select intersections and roadway sections that currently exhibit high crash rates in the Middle Road/South Main Street corridor and other local roadways in the project area.

The Preferred Alternative will be a new highway that will accommodate through traffic traveling between S.R. 0029, Exit 2 and the LCCC. It will remove the higher speed traffic from the narrow local roads (including Middle Road/South Main Street) that extend through small rural villages. The Preferred Alternative will include the construction of six roundabouts, three of which will be at the Middle Road intersections with Prospect Street, Espy Street, and Kosciusko Street. These roundabouts will improve traffic operations and safety. The section of Middle Road paralleling the Preferred Alternative will be maintained for local traffic, primarily for the villages of Askam and Lower Askam.

Congestion – To improve traffic operations and provide relief of traffic congestion for the Middle Road/South Main Street corridor and other local roadways in the project area.

The Preferred Alternative will be a new two-lane roadway that will provide additional capacity to the regional network. In addition, it will include a truck-climbing lane and center turn lanes where applicable to reduce congestion. It will divert through traffic from Middle Road to a 3.8-mile facility on new alignment that parallels Middle Road. West of the tie-in with Middle Road, Middle Road will be upgraded from the Prospect Street Intersection to the Kosciusko Street Intersection. The new roundabouts at the Middle Road intersections with Prospect Street, Espy Street, and Kosciusko Street will provide efficient and improved level of service at the intersections.

Accessibility – To provide better access to the regional expressway system (I-81 and S.R. 0029) and better mobility within the project area municipalities to major destinations, such as the Luzerne County Community College.

The Preferred Alternative will include reconstruction of the S.R.0029 Exit 2 interchange to capture and divert through traffic headed from S.R. 0029 to the LCCC and points west to the new facility. The revised Exit 2 will also allow traffic to exit off of northbound S.R. 0029 and access Middle Road to travel east towards Hanover Crossings Business Park. The SVP is designed to operate primarily as a limited access roadway but will include four access points at key locations to accommodate ongoing development activities. By doing this, the Preferred Alternative will allow safe access while maintaining the safe and efficient operations of the SVP.

Economic Development – To support Luzerne County economic development that is consistent with adopted Land Use Plans.

The Preferred Alternative will provide four new access points to adjacent properties to accommodate the current and long-term development plans and land restoration activities for these properties that include large

EA STEP 4: Identification of Preferred Alternative and Mitigation (Sections A-B)

areas of abandoned mine lands. The proposed SVP is compatible with local and regional planning initiatives and has the support of the general public, local developers, and municipal and county planners and officials.

The Preferred Alternative will minimize the number of structure displacements (only one isolated structure currently used as a residence will be displaced), avoids adverse impacts to the local communities and environmental justice populations, avoids historic properties and archaeological sites eligible for listing on the National Register, avoids park lands, minimizes encroachments into wetlands and the number of stream crossings. Floodplains and waste sites are also avoided and impacts to forested areas are minimized. Coordination with the US FWS, PF&BC, and the PGC was undertaken to ensure that there will be no adverse impacts to protected species and impacts to their habitat will be minimized.

Avoidance and Minimization efforts were incorporated into the Preferred Alternative; however, unavoidable impacts will occur as part of project implementation. Section III.B includes a summary of the mitigation commitments for the Preferred Alternative. A matrix was prepared for the project's Environmental Commitment and Mitigation Tracking System (ECMTS) and is provided in Attachment F6. It includes the list of environmental commitment actions and resolutions for the next three phases of project development – final design, construction, and post-construction/maintenance.

EA STEP 4: Identification of Preferred Alternative and Mitigation (Sections A-B)

B. SUMMARY OF MITIGATION FOR PREFERRED ALTERNATIVE

RESOURCE	EFFECT	RECOMMENDED MITIGATION
1. Regulated Wetlands	2.159 acre direct/0.352 acre temporary wetland impacts.	<ul style="list-style-type: none"> Develop and implement a compensatory wetland mitigation plan. Install orange protective fencing around wetlands to be avoided prior to clearing and grubbing activities (fencing locations to be identified on the project's E&S Control Plan). Prohibit construction equipment from being refueled in regulated waters to the extent possible. <p>Temporary Impact Mitigation</p> <ul style="list-style-type: none"> Remove all temporary fill materials, fabrics and erosion and sedimentation control features; Restore original grade and contour; Decompact soil to pre-construction conditions to allow the reestablishment of wetland vegetation; and Replant the area with native wetland and riparian vegetation. Implement an approved Erosion and Sedimentation Control Plan and include Best Management erosion and sedimentation controls.
2. Regulated Watercourses	3,073 linear feet of permanent stream impacts/155 linear feet of temporary stream impacts.	<ul style="list-style-type: none"> Continue coordination with US ACE, PA DEP, and PF&BC during final design, particularly during the development of the design plans for the Warrior Creek culvert. Install orange protective fencing along channels to be avoided prior to clearing and grubbing activities (fencing locations to be identified on the project's E&S Control Plan). Keep fill embankments out of Nanticoke Creek. Minimize the placement of rock scour to the extent possible. Incorporate special provisions to temporary encroachments into regulated waters in the final design plans and PS&E submission package to minimize impacts during construction.
3. Floodway/ Floodplains	The Warrior Creek box culvert is anticipated to increase the water surface elevation downstream of the culvert, but will not impact any building structures.	<ul style="list-style-type: none"> Structure to be designed to pass the 50-year design storm without overtopping the roadway (per PennDOT DM-2 Design Standards, Chapter 10, Table 10.6.1) and the 100-year storm event (per PA DEP Chapter 105 requirements that the 100-year water surface elevation caused by the enclosure is limited to less than 1 foot for a stream enclosure more than 50 feet of the stream length).
4. Invasive Plant Species	Existing populations of invasive plant species to be disturbed during construction.	<ul style="list-style-type: none"> Reseeding activities to be included in the project's erosion and sediment control plan will be conducted in accordance with Section 804.2(b) or PennDOT's Specifications Manual (publication 408).
5. Farmland Protection Policy Act – Farmland Soils	Direct impact to Soils of Statewide Importance and Prime Farmland Soils.	<ul style="list-style-type: none"> Prepare Soil Erosion and Sedimentation Control Plan during final design for PS&E Package to minimize the soil erosion.
6. Archaeology	Existing Archaeology site to be avoided.	<ul style="list-style-type: none"> Install protective fencing around the historic locus 2 archaeological site prior to clearing and grubbing activities.
7. Utilities	Direct impacts to overhead electric lines, existing waterlines, gas lines and sewer lines.	<ul style="list-style-type: none"> Complete additional coordination with utilities during final design to coordinate relocation/reconstruction of impacted utilities with the design and construction schedule of the project. Complete additional PA OneCall prior to ground disturbance activities.

EA STEP 4: Identification of Preferred Alternative and Mitigation (Sections A-B)

RESOURCE	EFFECT	RECOMMENDED MITIGATION
8. Indiana Bat	Potential direct and indirect impacts to the Indiana Bat (includes direct impacts to 93 acres of potential forested habitat)	<ul style="list-style-type: none"> • Prepare and implement Bat Conservation Plan (with USFWS's approval at least 3 months prior to the start if proposed tree cutting in project area). • Provide compensatory mitigation (use IBCF calculation sheet to determine the amount of deposit in the fund or forest to be permanently protected and coordinate with USFWS for review and approval of compensatory mitigation plan ; see BO for additional requirements if on-site forest restoration is proposed). • Minimize the use of pesticides and herbicides <p>Temporary Impact Mitigation</p> <ul style="list-style-type: none"> • Develop special provisions for PS&E submission to require contractors to adhere to construction actions/commitments associated with the bat. • Install orange protective fencing at the limits of temporary construction easements to avoid further impacts to forested areas during construction, including land within the proposed right-of-way, but outside the permanent limits of disturbance. • Inspect buildings to be demolished to determine if used by roosting bats and identify bat species and numbers – if Indiana bats use structure, re-initiate USFWS consultation. • Develop construction schedule in compliance with time of year timbering restrictions (November 15 to March 31) and prepare Special Provision for timbering time restrictions. • Complete earth disturbance activities and excavation only during daytime to avoid noise and light disturbances during foraging. • Avoid depositing waste or fill in areas that would result in additional forest clearing and sedimentation to streams. • Minimize the use of pesticides and herbicides during construction • Provide Environmental Monitor to provide monthly (or more frequent) reports to USFWS to detect compliance with BO commitments. • Report any dead Indiana bats to USFWS within 48 hours.
9. Eastern Small-Footed Myotis	Potential direct and indirect impacts to the Eastern Small-Footed Myotis (includes direct impact to 649 feet of existing rock cut serving as a bat roost location)	<ul style="list-style-type: none"> • Cut trees or dead snags greater than 5 inches diameter at breast height that require removal as part of project implementation between November 15 and March 31. • Conduct construction in the area of the existing rock cut along S.R. 0029 where known roosting occurs between November 15 and March 31. • Complete a pre-construction survey at the existing S.R. 0029 rock cut (roost location) between July 15 and July 30. • Conduct an emergence reconnaissance prior to the pre-construction survey to locate roost exits and travel corridors (completed June/July 2012). • Conduct pre-construction roost monitoring at least twice per year using infrared cameras. • Conduct post-construction roost monitoring for three years following the new S.R. 0029 rock cut (areas and extent to be determined in coordination with PGC). The post construction roost monitoring must be conducted twice per year using infrared cameras. • Coordinate with the PGC concerning mitigation contingent upon the results of the summer pre-construction mist net surveys. • Conduct post-construction monitoring for alternative roost structures created, such as new rock cut slopes (areas and extent to be determined in coordination with PGC).

EA STEP 4: Identification of Preferred Alternative and Mitigation (Sections A-B)

RESOURCE	EFFECT	RECOMMENDED MITIGATION
10. Waste Sites	Potential impact to structures containing asbestos containing materials and paint with heavy metals and to the Luzerne County Landfill	<ul style="list-style-type: none"> • Conduct hazardous waste inspections in accordance with National Emission Standards for Hazardous Air Pollutants (NESHAPS) regulations for existing structures to be demolished, including ACM investigations for the residential/commercial structure located on the southeastern corner of Middle Road and Espy Street and for the existing Middle Road bridge over S.R. 0029 (Bridge 10). • Prepare a Waste Management Plan and special provisions to address the handling and disposal of any ACM identified in structures to be demolished. This plan will also include a special provision for the demolition of the existing Bridge 10 to ensure the contractor adheres to the proper disposal of heavy metals in paints in accordance with NESHAPS regulations. • Coordinate with the PA DEP, as needed, if waste in the former Luzerne County Landfill is to be excavated. If waste is to be excavated due to constructability concerns, then prepare a Scope of Work Plan and provide it to PA DEP for approval of proposed management options (e.g., disposal at an approved permitted facility or reburial on site).
11. Geologic Features	Road cut areas will result in large volumes of waste (soil/rock).	<ul style="list-style-type: none"> • Install of protective fencing around the mine shaft area near Ramp SMLW prior to clearing and grubbing. • Continue refinement of the design to balance the earthwork (note, if the project continues to result in large volumes of waste, it will be the contractor's responsibility to identify haul roads and waste sites and to obtain environmental clearance/permits, as needed for these areas), and • Continue assessment of the potential rock cuts to determine the need for the installation of rock fencing (or other rock catchment measures).
12. Planned Development	Direct loss of land proposed for development.	<ul style="list-style-type: none"> • Include four new access points along the South Valley Parkway mainline.
13. Stormwater	Improvements increase the impervious area in the project area and will increase surface stormwater runoff	<ul style="list-style-type: none"> • Develop Drainage and Stormwater Management Plan during final design and as part of the NPDES permit process. • Incorporate BMPs into the Drainage and Stormwater Management Plan, including: infiltration trenches, bioretention facilities, retentive grading/infiltration berms, vegetated swales, and landscape restoration.
14. Residential Displacements	One residential displacement	<ul style="list-style-type: none"> • The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources are available to all eligible residential and business relocatees without discrimination pursuant to Title VI of the Civil Rights Act.
15. Commercial Displacements	One commercial displacement	<ul style="list-style-type: none"> • The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources are available to all eligible residential and business relocatees without discrimination pursuant to Title VI of the Civil Rights Act.

EA STEP 4: Identification of Preferred Alternative and Mitigation (Sections A-B)

RESOURCE	EFFECT	RECOMMENDED MITIGATION
16. Temporary Noise	Temporary elevated noise levels between 75 dBA to 85 dBA during project construction.	<ul style="list-style-type: none">• Construction contractor should replace failing or ineffective muffling and exhaust systems, periodic lubrication of moving parts, and properly tuned engines are needed to keep noise to a minimum.• Investigate during final design the use of temporary noise barriers, varying the areas of construction activity, community input regarding the sequence of operations, and financial incentives for the contractor to keep noise levels at a minimum.• Implement time of day restrictions for the blasting of rock to minimize disruption to residents in those areas close to sensitive receptors.
17. Operations and Temporary Traffic Detours	Temporary detours during construction.	<ul style="list-style-type: none">• Incorporate proposed detours during construction into the PS&E package as part of the Maintenance of Traffic Plan.• Provide advance signing on all approaches to the work area.• Coordinate with the Hanover Area School District, Greater Nanticoke Area School District, local Emergency Service Providers, municipal officials, and property owners in the immediate vicinity of the work areas prior to implementing detours during construction.• Conduct public informational meetings (during final design and/or immediately prior to opening the new roadway) to educate local motorists, bicyclists, and pedestrians on how to travel through roundabouts.