



ENVIRONMENTAL ASSESSMENT
for the S.R. 0424, SECTION 390
HAZLETON BELTWAY EXTENSION
Hazle Township, Luzerne County, Pennsylvania

Prepared by:
U.S. Department of Transportation
Federal Highway Administration
and
Pennsylvania Department of Transportation
Engineering District 4-0

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for the
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Hazle Township
Luzerne County, Pennsylvania

MPMS #70467


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

And, as applicable:

Executive Order 11990, Protection of Wetlands; Executive Order 11988; Floodplain Management;
Executive Order 12898, Environmental Justice; and 49 U.S.C. Section 303(c) – Section 4(f)

Approved by: _____


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List of Acronyms

| | |
|-------------|--|
| APE | Area of Potential Effect |
| BHA | Bat Habitat Assessment |
| BMP | Best Management Practices |
| BOD | Pennsylvania Department of Transportation, Bureau of Design |
| CAN DO | Community Area New Development Organization |
| CFR | Code of Federal Regulations |
| CWF | Cold Water Fisheries |
| d.b.h. | Diameter at breast height |
| DCNR | Department of Conservation and Natural Resources |
| EB | Eastbound |
| EO | Executive Order |
| EPA | Environmental Protection Agency |
| EPDS | Pennsylvania Department of Transportation, Bureau of Design, Environmental Policy and Development Section |
| ERDC | Engineer Research and Development Center |
| EV | Exceptional Value |
| E&S | Erosion and Sedimentation |
| FEMA | Federal Emergency Management Agency |
| FHWA | Federal Highway Administration |
| FT | Feet |
| GHA | Greater Hazleton Area |
| HCA | Hazleton City Authority |
| HIP | Humboldt Industrial Park (includes the entire campus, including Humboldt Industrial Park Proper, Humboldt East, Humboldt West, Humboldt North, Humboldt Northwest, and Humboldt Station) |
| IPCC | Intergovernmental Panel on Climate Change |
| KOZ | Keystone Opportunity Zones |
| LLRP | Luzerne County Long Range Plan |
| LOS | Level of Service |
| mph | Miles per hour |
| MPO | Metropolitan Planning Organization |
| NEPA | National Environmental Policy Act |
| NOAA | National Oceanic and Atmospheric Administration |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | Natural Resources Conservation Service |
| N&W | Navarro & Wright Consulting Engineers, Inc. |
| PADCNR-PNHP | Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry - Pennsylvania Natural Heritage Program |
| PADEP | Pennsylvania Department of Environmental Protection |

| | |
|---------|---|
| PEM | Palustrine emergent |
| PennDOT | Pennsylvania Department of Transportation |
| PFBC | Pennsylvania Fish & Boat Commission |
| PFO | Palustrine forested |
| PGC | Pennsylvania Game Commission |
| PNDI | Pennsylvania Natural Diversity Inventory |
| POW | Palustrine Open Water |
| PPL | PPL Corporation (formerly Pennsylvania Power & Light) |
| PRNA | Pismir Ridge Natural Area |
| PSS | Palustrine Scrub-Shrub |
| RDTF | Ridgetop Dwarf-Tree Forest |
| ROW | Right-of-Way |
| RPW | Relatively Permanent Waterway |
| RSA | Resource Study Area |
| S.R. | State Route |
| TBD | To Be Determined |
| TIP | Transportation Improvement Plan |
| TYP | Twelve Year Plan |
| T&E | Threatened and Endangered |
| TNW | Traditionally Navigable Waterway |
| USACE | United States Army Corps of Engineers |
| USDOT | United States Department of Transportation |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| VMT | Vehicle miles of travel |

I. Introduction/Project Description

The S.R. 0424, Section 390 project involves an extension of S.R. 0424, commonly referred to as the Hazleton Beltway, from the I-81/Exit 141 Interchange to Humboldt Industrial Park (HIP) in Hazle Township, Luzerne County. The approximately 1.1-mile long extension would involve the construction of a four-lane roadway from the current termination of the beltway just west of I-81 to Commerce Drive. The roadway would require an at-grade railroad crossing and provide access to the White Birch Road extension directly south of the railroad. Traffic would proceed onto Commerce Drive, Forest Road, and this newly constructed White Birch Road, a two-lane road to Maplewood Drive, which connects to S.R. 0924. Turning lanes would be added to the intersections of S.R. 0424 and I-81 northbound ramps, S.R. 0424 and I-81 southbound ramps, S.R. 0424 and Commerce Drive, and Commerce Drive and Forest Road. This extension would ultimately connect the Hazleton Beltway to S.R. 0924 west of I-81, utilizing HIP's existing roadway network (see Figure 1).



Photograph 1: Hazleton Beltway (S.R. 0424) bridge over I-81. All proposed build alternatives would extend from this location northward into HIP (June 2008).

The S.R. 0424 Beltway Extension would connect to the White Birch Road Extension. The White Birch Road Extension is a separate stand-alone project with independent utility. Its purpose is to enhance safety, transportation circulation, and access within the HIP, attracting businesses and promoting new, value-added employment opportunities. The White Birch Road Extension project is covered under its own environmental clearance, design, and construction phase, separate from the S.R. 0424 project. For the purpose of this environmental assessment, the White Birch Road Extension is considered to be an existing in-place feature.

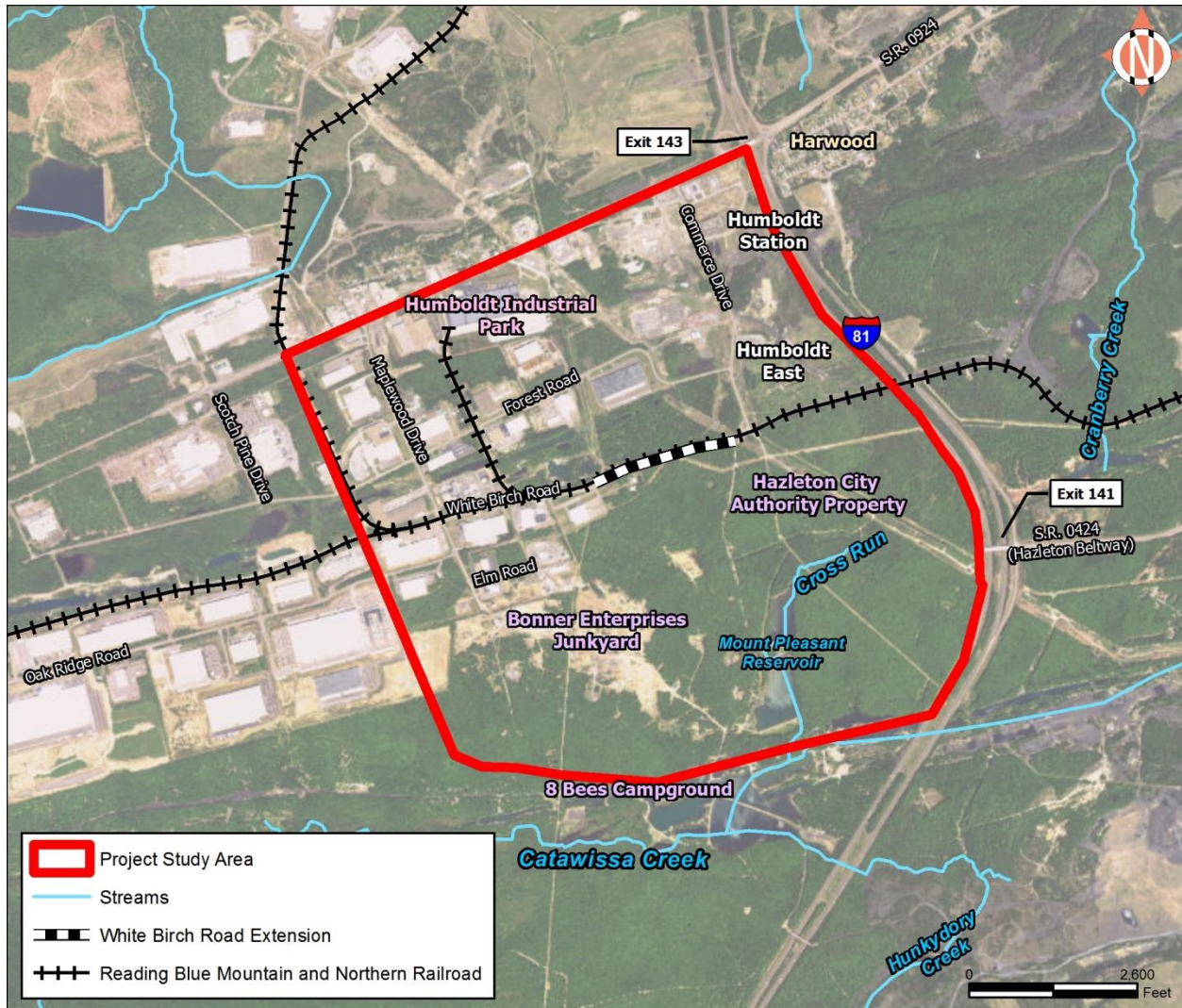


Photograph 2: View along the S.R. 0424 bridge over I-81 to where it terminates at the start of the proposed Beltway Extension (September 2006).

Project Study Area

The project study area was defined to include a full range of reasonable alternatives and includes 1,584 acres within Hazle Township, Luzerne County (Figures 1 and 2). S.R. 0924 and S.R. 0424 are arterials that connect industrial and urban areas with I-81, a major north-south route in the area. The study area is serviced by the city of Hazleton and the Greater Hazleton Area that includes many smaller residential communities and industrial and commercial centers.

Figure 1. Project Study Area



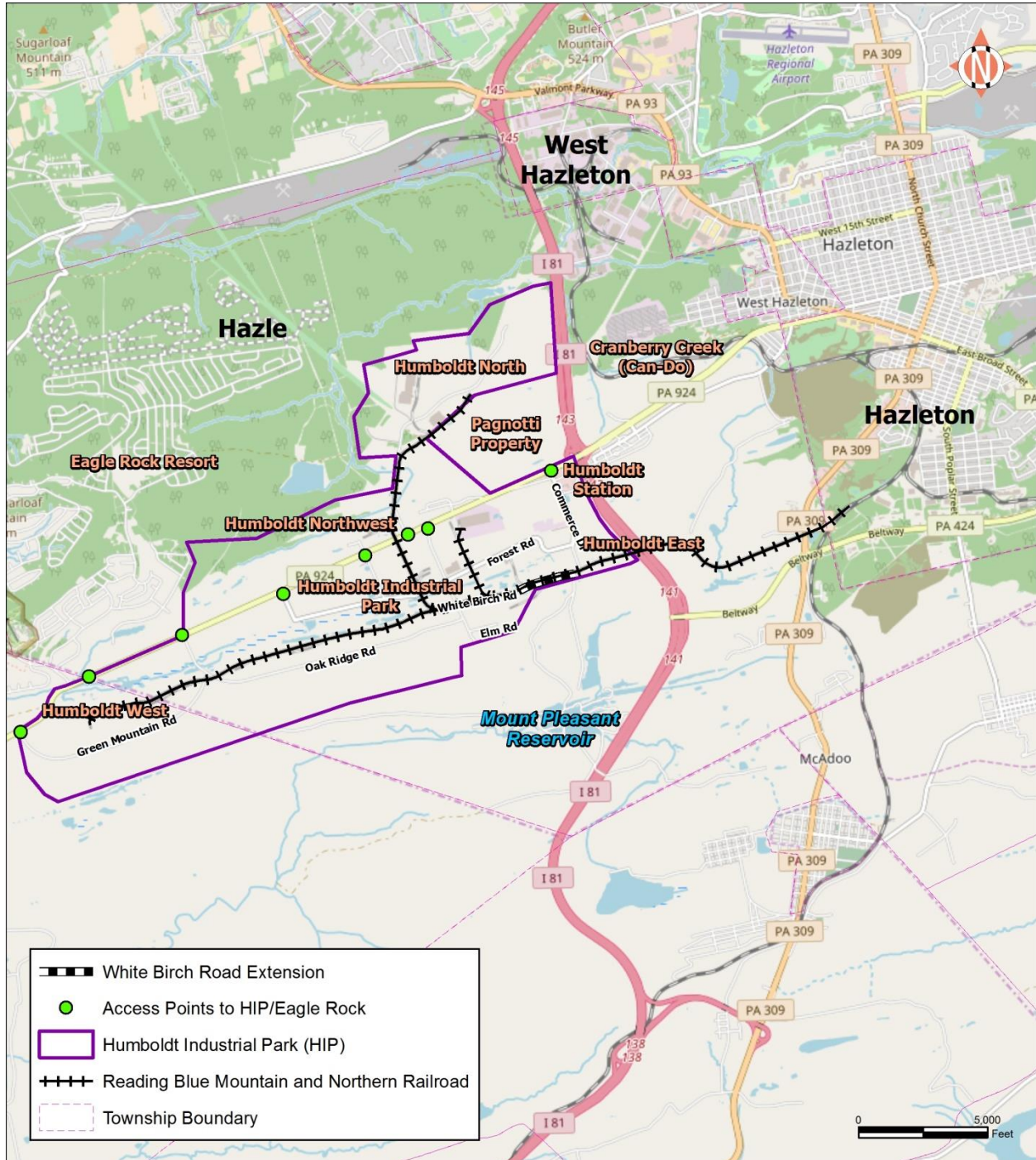
II. Project Purpose and Needs

The purpose of the project is to provide a secondary and emergency access between I-81 and Humboldt Industrial Park, as well as additional incident management for local roadways.

The project's purpose was developed from an analysis of:

1. System linkages and transportation demand of the existing roadway network; and
2. Traffic operations (which includes incident management).

Figure 2. Humboldt Industrial Park and Surrounding Communities



1. System Linkages and Transportation Demand

System Linkages

The Greater Hazleton Area (GHA), with a population of approximately 85,000, consists of several communities located in and around southern Luzerne County, including the City of Hazleton, West Hazleton Borough, Freeland Borough, Hazle Township, Beaver Meadows Borough, McAdoo Borough, Sugarloaf Township, Conyngham Borough, and Butler Township. Within this community resides the HIP, one of Pennsylvania’s largest industrial parks and home to many businesses and industries that employ a large portion of the GHA work force. In addition, Eagle Rock Resort, a large gated resort community, is located to the west of HIP. Neither the HIP nor the resort has been developed to capacity. This community of municipalities and industrial and residential developments is served by several main transportation corridors in the existing roadway network, consisting of I-81, S.R. 0424, and S.R. 0924. A roadway network map of the GHA is provided in Figure 2 and identifies access points for these land uses along S.R. 0924.

In order to better serve the above community and accommodate regional growth, this project seeks to increase transportation linkages and connectivity within the roadway network with an additional access for both HIP users and local vehicular traffic. It would provide a direct continuous transportation facility through the project study area.

The need for increased system linkage is primarily associated with the existing S.R. 0424 roadway, known as the “Hazleton Beltway,” which connects S.R. 0309 to I-81 at Exit 141. This two-lane roadway terminates at the I-81/Exit 141 interchange, and a gap currently exists from the Hazleton Beltway to the HIP. This gap limits access from the GHA to the large industrial, commercial, and residential areas west of I-81; therefore, there is no secondary access into the HIP from S.R. 0424 or I-81, and all traffic must proceed along S.R. 0924. The need is compounded by the fact that S.R. 0924 remains the main access for the expanding Eagle Rock Resort and HIP businesses in the North and Northwest campuses.

Transportation Demand

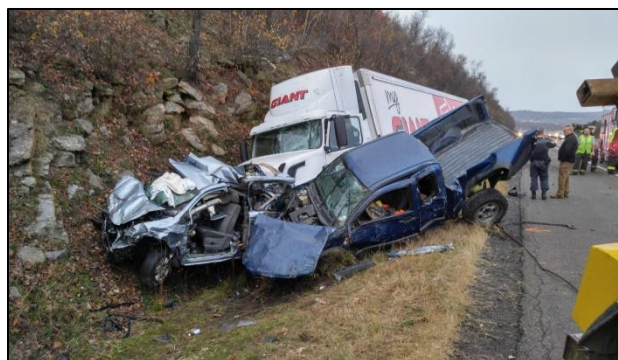
The study area for the S.R. 0424, Section 390 project contains multiple land uses that range from industrial/commercial land to residential dwellings. As part of the Traffic Analysis Report for this project, the transportation demand analysis consisted of examining the existing land uses in two ways: regionally and site specific. Regional land uses consisted of large tracts that included, for example, Eagle Rock Resort or the industrial campuses of the HIP (i.e., Humboldt Station). These land uses are accessed from external roadways (i.e., S.R.



Photograph 3: Access road to Humboldt Station from S.R. 0924 (June 2016).

0924) by a limited number of driveways or roadways (see Figure 2). While many of these regional land uses rely on one access driveway, several of the land uses also contained internal roadway networks (i.e., HIP) that were further analyzed for their site-specific influence on transportation demand. This site-specific analysis involved evaluating the traffic volume expected to be generated by individual tenants. For example, the Amazon distribution center and Hershey factory located in Humboldt Proper would generate traffic to and from the proposed Beltway Extension. The transportation demand analysis indicated a need for east-west roadways (Forest Road and White Birch Road Extension) within HIP to distribute traffic to and from north-south roadways (Maplewood Drive and Commerce Drive) that would connect S.R. 0424 to S.R. 0924 (see Figure 1).

One of the largest traffic generators is the HIP, located approximately 1 mile northwest of I-81/Exit 141. HIP continues to grow and currently consists of over 3,000 acres and 7,000 employees. HIP is located on the border of Hazle Township, Luzerne County; and East Union



Photograph 4: Tractor-trailer accident along southbound I-81 near the S.R. 0924 exit. The accident shut down the region for hours (Source: WNEP.com, November 2016).

Township, Schuylkill County, with the majority of the Park in Hazle Township (Figure 2). HIP mostly consists of manufacturing and warehousing land uses; however, commercial buildings are beginning to be introduced in their various campuses (e.g., Humboldt Station). HIP is primarily accessed by S.R. 0924 and its interchange with I-81 at Exit 143. The S.R. 0924 corridor running through HIP between the Schuylkill/Luzerne County Line and the I-81/Exit 143 Interchange experiences large volumes of traffic during peak hours, with HIP traffic contributing a significant amount of these volumes.

Another large traffic generator is Eagle Rock Resort, which is located on the north side of S.R. 0924 and is accessed by its main driveway on S.R. 0924. Eagle Rock Resort is a planned residential development consisting of 9,800 lots, over 5,000 acres, and contains several public amenities such as a golf course and ski resort. While 1,000 homes are currently built, 90 percent of the buildable lots have been sold, and the development is expected to grow well into the future.

In addition, the Pagnotti Property is forecasted as large traffic generator. This 237-acre future development is located north of S.R. 0924 and would be accessed by two driveways from S.R. 0924. It is planned to contain high cube warehousing and distribution centers, as well as subdivisions of commercial development, including restaurants and gas stations.

2. Traffic Operations (and Incident Management)

A traffic analysis was conducted to determine what effect a secondary access would have on the roadway network within the GHA study area. For modeling purposes, the analysis assumed the secondary access would be provided by the S.R. 0424 extension to HIP and the surrounding roadway network via I-81/Exit 141, but the results of the analysis apply to all solutions that provide secondary access. Traffic recorders were used to determine the current number of vehicles at intersections in the field during peak traffic times. These data were coupled with traffic modeling software to determine the characteristics of the proposed secondary roadway, including number of lanes and dedicated turning lanes that would be necessary for redistributing future traffic volumes. The results of this analysis indicated that the extension would improve network connectivity by redistributing traffic from S.R. 0924 to I-81/Exit 141 via the existing roadway network. It would redistribute the large volumes of existing traffic to help regional land uses while facilitating the transportation demand of site-specific land uses (e.g., Amazon) within the regional land use (e.g., HIP) in the project study area. This information ultimately helped determine the appropriate traffic volumes to consider when developing the levels of service (LOS) analysis of the proposed roadway and connector roads for the Traffic Analysis Report. It is anticipated that 9,800 vehicles per day would use the S.R. 0424 extension as a secondary access in the year 2038.



Photograph 5: Crash article from the Hazleton Standard Speaker (June 9, 2017).

An analysis of the traffic operations within the Traffic Analysis Report focuses on LOS and incident management. The study area traffic flows to and from the local and regional roadway network via I-81 and S.R. 0924. The extension of S.R. 0424 would redistribute and divert some of this traffic and improve operating conditions. All of the study area intersections currently operate at acceptable LOS (A through D); however, the LOS start to degrade within the study area in the build year 2018 without the extension, and would continue to worsen through the design year 2038 without the extension. LOS can be viewed as a report card, with “A” being the best and “F” being the worst. The study area intersections that would facilitate the flow of traffic from an extension of S.R. 0424 consist of S.R. 0424 and I-81 Northbound ramps, S.R. 0424 and I-81 Southbound ramps, Commerce Drive and White Birch Road, Commerce Drive and Forest Road, Commerce Drive and S.R. 0924, Maplewood Drive and White Birch Road, Maplewood Drive and Forest Road, and Maplewood Drive and S.R. 0924.

The different **Levels of Service (LOS)** are categorized by assigning one of six letter grades that corresponds to the control delay (i.e., the average time for a vehicle to get through an intersection). LOS A is the most favorable condition, and LOS F is the least favorable, as shown in Table 1. The Pennsylvania Department of Transportation (PennDOT) has determined that an LOS E or LOS F for proposed roadways and intersections that are planned for urban settings is considered unacceptable. For intersections within the network that already exist, the LOS that exists before and after the proposed roadway is completed cannot change by more than one letter grade (i.e., an LOS A becoming an LOS B, or LOS B becoming an LOS C, etc.). If an intersection does degrade by one letter grade, it cannot have a control delay increase by more than 10 seconds per vehicle.

The intersections of Maplewood Drive and S.R. 0924, and Commerce Drive and S.R. 0924, would experience failing LOS (unacceptable progression/gridlock) in 2018 and 2038, respectively, without secondary access. The S.R. 0424 extension would help mitigate these failing LOS, and no other intersection in the project study area would experience a drop in LOS. Therefore, providing secondary access would maintain the operation of the other intersections at acceptable LOS. The LOS for each intersection in the project study area would range from an LOS A (4.8 Seconds/Vehicle Control Delay) to an LOS C (30.6 Seconds/Vehicle Control Delay) with a secondary access.

Table 1. Level of Service (LOS) Thresholds.

| LOS | Control Delay (Sec/Veh) | Description |
|-----|---------------------------|---------------------------------|
| A | 10.0 or less | Extremely Favorable Progression |
| B | Greater than 10.0 to 20.0 | Good Progression |
| C | Greater than 20.0 to 35.0 | Fair Progression |
| D | Greater than 35.0 to 55.0 | Unfavorable Progression |
| E | Greater than 55.0 to 80.0 | Poor Progression |
| F | Greater than 80.0 | Unacceptable Progression |

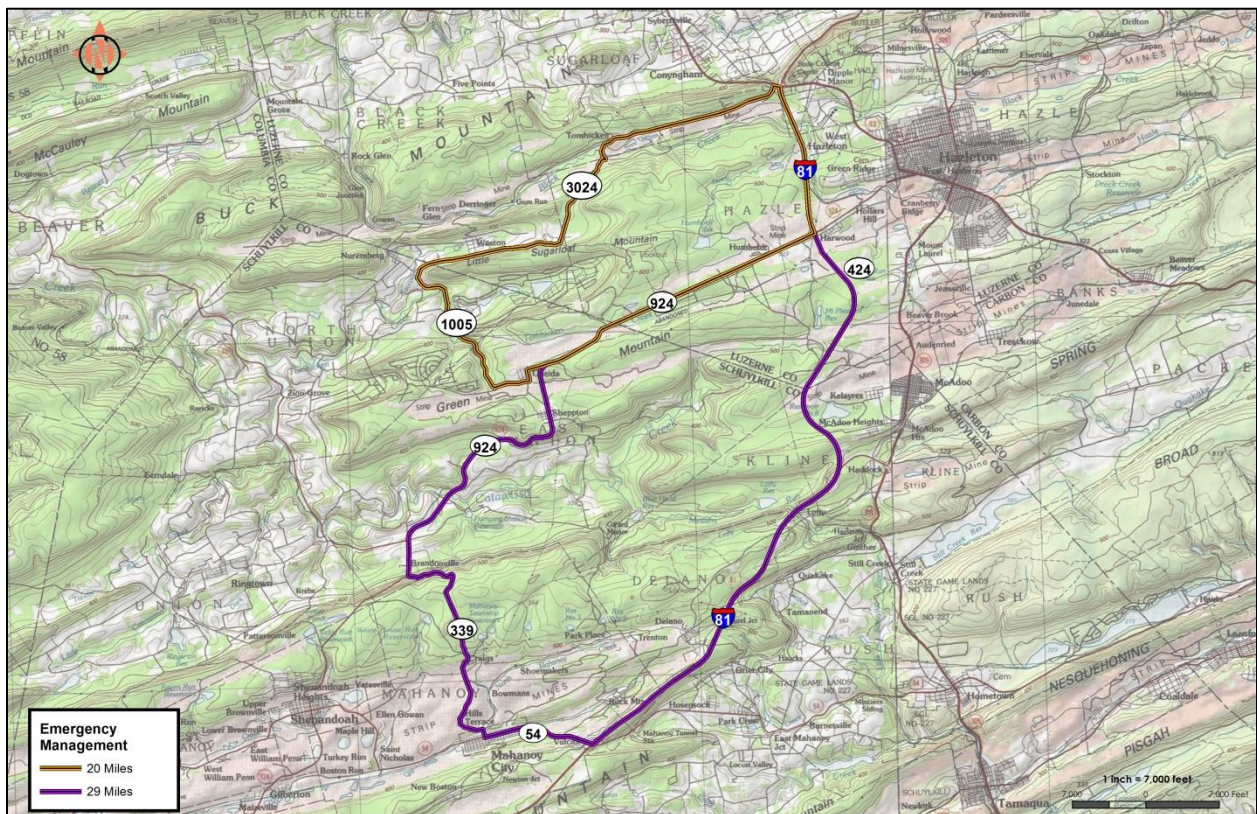
Incident Management

When a crash occurs between Exits 141 and 143 on I-81, there are no emergency access turnaround locations to divert traffic off of I-81. This project would alleviate the backup or queue problems that stretch for several miles during such incidents by providing an option to divert traffic off of I-81 through the HIP. As regional traffic volumes grow, so does the potential for traffic accidents along S.R. 0924 to the west of I-81, as well as the entire GHA. Currently, in the event of such an emergency, detour routes would send traffic to the southwest, away from the GHA (Figure 3). To access the GHA to the south, the detour route is approximately 29 miles

through northern Schuylkill County and follows S.R. 0924 to the Village of Brandonville (Schuylkill County), S.R. 0339 to Mahanoy City Borough (Schuylkill County), S.R. 0054 to its interchange with I-81 at Exit 131, and finally I-81 to its interchange with S.R. 0924 at Exit 143. To access the GHA to the north, the detour route is approximately 20 miles through northern Schuylkill County and southern Luzerne County and follows S.R. 0924 to the Village of Oneida (Schuylkill County), S.R. 1005 to the Village of Nuremburg (Schuylkill County), S.R. 3024 to the Village of Tomhicken, S.R. 0093 to its interchange with I-81 at Exit 145, and finally I-81 to its interchange with S.R. 0924 at Exit 143. The distance of both routes would increase greatly if the roadway must be suitable for large and oversized trucks.

“Incident management is defined as the deployment of planned resources in response to an unplanned emergency situation which has the potential to rapidly deteriorate without effective leadership, identification of existing hazards, analysis of available corrective actions and employment of effective actions. The goal of incident management is to provide for life safety, protection of remaining facilities from further damage and the restoration of essential traffic.”
Source: All-Hazards Incident Management Manual, PennDOT 2014

Figure 3. Potential Detour Routes for S.R. 0924 and I-81, Incident Management



3. Project Need Statement

As a result of the above analysis, two project needs were identified based on the existing and projected condition of the transportation network and operations. The project needs are *system linkage/transportation demand* and *traffic operations*.

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System Linkage/Transportation Demand

- Provide an additional access for both HIP users and local vehicular traffic via increased network connectivity.
- Provide a direct continuous transportation facility through the study area.
- Accommodate the regional growth of the GHA.

Traffic Operations

- Provide an additional access route to HIP.
- Provide an additional route for both HIP users and local traffic in case of an emergency within HIP, on S.R. 0924 and/or on I-81.
- Provide an incident management route for an incident on I-81.



Photograph 6: Traffic backup caused by accident (June 2017).

III. ENVIRONMENTAL OVERVIEW

The project study area features a diversity of natural habitats, including deciduous and mixed forest, wetlands, and waterways that support threatened and endangered (T&E) species along the Pismire Ridge, which bisects this area. While many areas were heavily influenced by past mining practices, large forest tracts remain intact along the ridge and in the southern portion of the study area. Wetlands and waterways were surveyed within the project study area along 250-foot wide investigation corridors associated with each alternative considered. In total, 15 wetlands were identified consisting primarily of palustrine emergent (PEM) wetlands north of the railroad and along the gas/water right-of-way (ROW), and palustrine forested (PFO) wetlands to the south. One large wetland mitigation site, created to offset wetland impacts associated with the HIP development, is located north of the railroad adjacent to I-81.



Photograph 7: Wetland along a utility ROW within the proposed alignment for Alternatives 4, 4A, and 4A Modified. I-81 is in the background (May 2015).

Several wetlands within the project study area are designated as Exceptional Value (EV) wetlands, as defined in 25 PA Code, Section 105.17(1)(iv), as they are within a public drinking water supply area and maintain the quality of the water supply. The Mount Pleasant Reservoir is an active public water supply reservoir for the Hazleton City Authority (HCA), which provides water to the City of Hazleton, Pennsylvania, and its population of over 23,000 residents.

The forest and wetlands in the study area also provide habitat for several T&E species, and includes a community of special concern, the Ridgetop Dwarf-Tree Forest (RDTF). The RDTF is part of the ridgetop acidic barren complex that represents a group of open-canopy ridgetops and summits that occur throughout central and northeastern Pennsylvania, such as the Pismire Ridge.



Photograph 8: View of the RDTF along the crest of the Pismire Ridge in the project study area. Pitch pine, scrub-oak, and lowbush blueberries are typical of this plant community (August 2008).

IV. Alternatives Considered

Alternatives Development

The process of developing alternatives begins with a search for alternatives that meet current engineering design parameters while satisfying the approved project purpose and needs. These proposed alternatives must also be engineered to minimize their impact on natural, cultural, and socioeconomic resources in the project study area. Public and resource agency input further refine the range of alternatives. Finally, the process results in the examination of multiple proposed alternatives, including the No Build Alternative, to identify reasonable alternatives that are then further evaluated to ultimately select a preferred alternative. This project followed a multi-phased approach to screen recommended alternatives for those that met the project purpose and needs while minimizing impacts to natural, cultural, and socioeconomic resources, and to ultimately select a preferred alternative.

Screening of Preliminary Alternatives

The alternatives development screening process included the following phases:

Phase 1

1. Review the transportation problems (needs) in the project study area.
2. PennDOT and the project consultant develop alternatives that would potentially address these problems (needs).
3. Conduct an initial screening of proposed alternatives with local stakeholders (project and task force teams) and resource agencies.

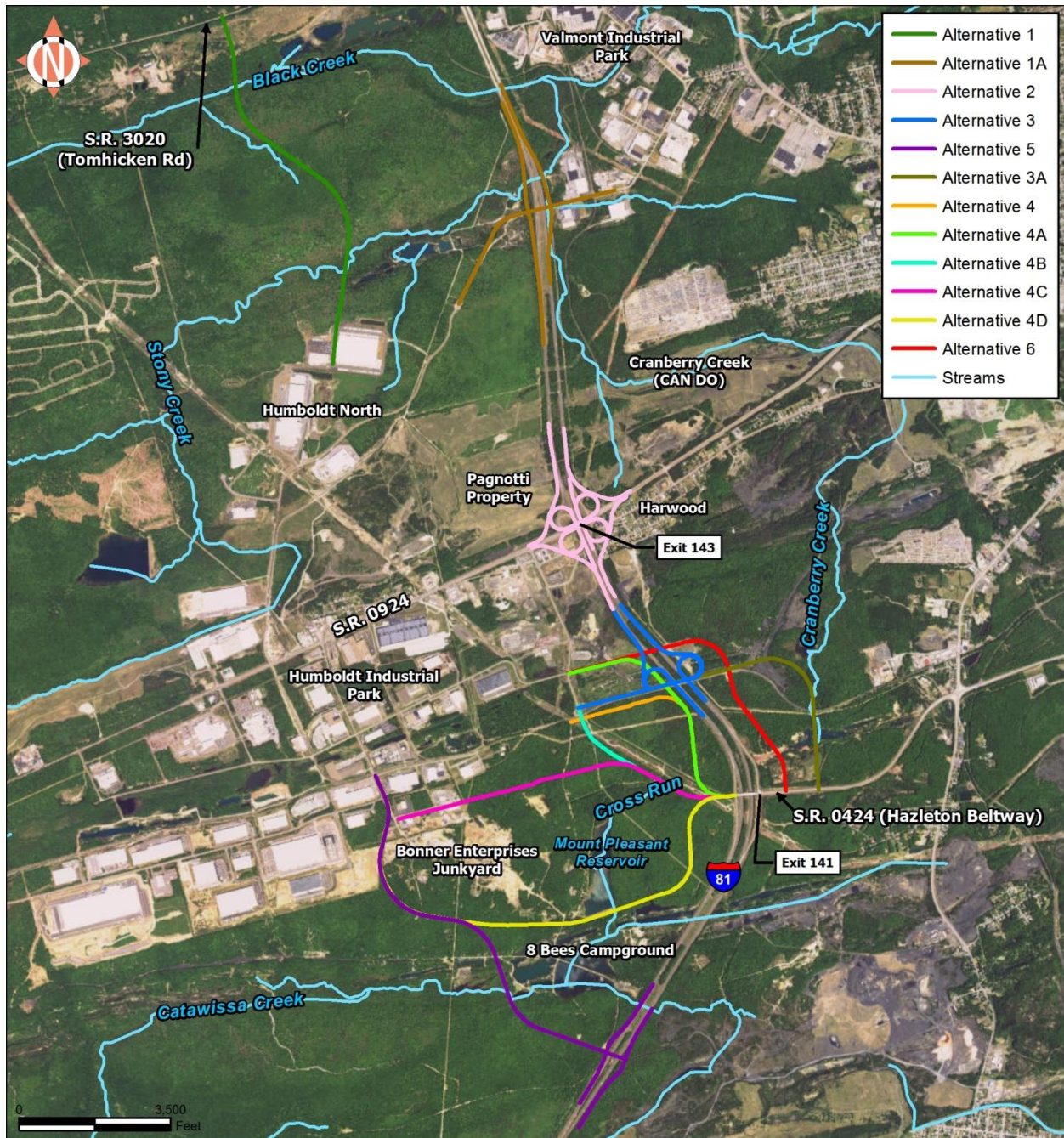
Phase 2

4. Refine the selection of alternatives with public and resource agencies (reasonable alternatives).
5. Examine the feasibility of the reasonable alternatives based on the Alternatives Analysis study.

Phase 3

6. Examine the impacts of the final reasonable alternatives and the No Build Alternative on natural, cultural, and socioeconomic resources.
7. Complete a final evaluation of impacts for the reasonable alternatives to select the preferred alternative.

Figure 4. Preliminary Alternatives Considered



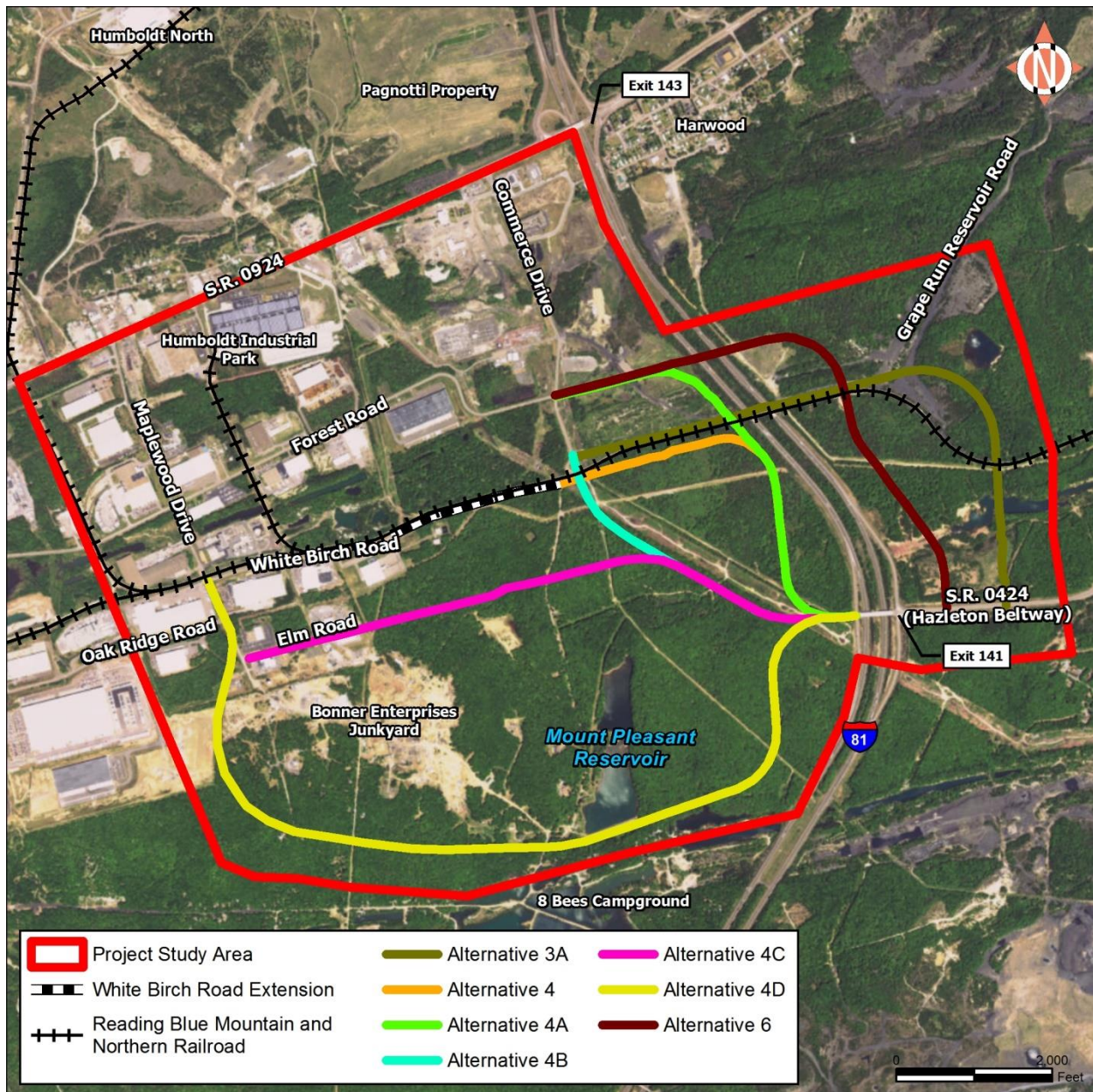
Phase 1

During the initial Phase 1 screening, 12 build alternatives and the No Build Alternative were evaluated to determine whether they met the project purpose and needs for the S.R. 0424, Section 390 project (Figure 4; Table 2). These alternatives were conceptualized in an effort to improve system linkages and traffic operations in the region with several alternatives located north of S.R 0924 and south of the Hazleton Beltway. The initial screening phase was conducted at a project kickoff meeting held on February 2, 2007. Subsequent meetings were held with the project task force, which included Community Area New Development Organization (CAN DO), Humboldt Business Association, Hazleton City Authority (HCA), Greater Hazleton Chamber of Commerce, Hazle Township, Luzerne County Planning, PennDOT, project consultants, and resource agencies throughout 2007 (Figure 4). Of the 12 build alternatives considered, seven (7) were determined to meet the project's purpose and needs (**Alternatives 3A, 4, 4A, 4B, 4C, 4D, and 6**). In particular, all of these *reasonable alternatives* extend from the existing S.R. 0424 Hazleton Beltway and would provide an additional access for HIP users and local vehicular traffic, as well as an incident management route for I-81. In addition, **Alternatives 3A, 4D, and 6** were also considered during the Phase 1 screening as they would completely avoid the HCA watershed, which provides drinking water for local communities from wells and the Mt. Pleasant Reservoir on their property south of the HIP (Figure 4).

Phase 2

The Phase 2 screening process involved a review of secondary source information, field views of the project study area, and meetings with the public and task force prior to a project shutdown at the end of 2009. The project study area for the phase encompassed the seven reasonable alternatives noted above (Figure 5). The secondary source review and field views were conducted to document the presence of aquatic resources, T&E species, historic structures and archaeology, and hazardous waste along these alternative alignments. The public and task force meetings also helped to further refine the selection of reasonable alternatives for detailed study by identifying local and regional concerns associated with each alignment. In particular, the HCA expressed a concern with any alternative that directly impacted their drinking water source (i.e., wells and reservoirs) in the Mt. Pleasant watershed.

Figure 5. Reasonable Alternatives Studied in Phase 2



As a result of the Phase 2 screening, **Alternatives 3A and 6** were eliminated due to their extensive impacts to intact forestland, and the need to build or expand multiple crossings for the railroad, I-81 and a mine pool. In addition, these alternatives would not provide system linkage and incident management that is as effective as the alternatives that extend directly from I-81. **Alternatives 4B, 4C, and 4D** were also eliminated due to their potential impact to the HCA watershed, including the drinking water wells and reservoir, EV wetlands that maintain drinking water quality, and impacts to overhead utilities requiring tower relocations. The project consultant also noted that the remaining alignments, **Alternatives 4 and 4A**, could be modified to maximize their distances from Well #2 of the HCA watershed and limit the potential for

drinking water impacts, including completely avoiding EV wetlands and species of special concern associated with these wetlands. These modifications focused on using either a roundabout, reverse curve, or single curve geometry to bring the southern approach of the **Alternatives 4 and 4A** alignments closer to I-81 and still provide a roadway geometry that ties into S.R. 0424. As a result, Alternatives 4 and 4A were selected for detailed study in Phase 3, which followed project interruption in 2009 and its restart in 2014.

Phase 3

A project restart kickoff meeting was coordinated with PennDOT, Federal Highway Administration (FHWA), and the project consultant on April 28, 2014, to summarize the status of the project and alternatives development, and discuss the reasonable alternatives to carry into the final environmental study process. In addition to **Alternatives 4 and 4A**, the project team (Appendix F) requested that a new alternative, **Alternative 4A Modified**, be considered for the list of reasonable alternatives. This alternative follows a similar southern alignment as the other two, but would follow an abandoned railroad spur north of the existing active railroad to bypass wetlands that were noted during previous studies. Figure 6 illustrates the final three alternatives selected for detailed study and identifies where they would tie into the White Birch Road extension, Commerce Drive, and Forest Road within the HIP.

During the April 28 meeting, attendees also agreed that project engineering design parameters would follow the urban design criteria for these three remaining alternatives. Table 3 provides a summary of the design criteria to be utilized based on these parameters. The proposed pavement, shoulder, and median widths presented in Table 3 are also in conformance with Smart Transportation design guidelines.

Table 2. Preliminary Alternative Screening Details.

| Alternative Number | Description | Meets Project Purpose and Needs (Y/N) | Project Team Comment | Advanced for Detailed Study (Y/N) |
|-------------------------|--|---------------------------------------|--|-----------------------------------|
| Alternative 1 | This alternative would connect Humboldt North to S.R. 3020 (Tomhicken Road) involving a new two-lane access road (1.7 miles long) with two new structures over Stony and Black creeks. An at-grade railroad crossing and construction of a new intersection at Tomhicken Road would be required. | N | No direct access to I-81, or access to HIP proper (primary traffic generator). Would not improve incident management for I-81. | N |
| Alternative 1A | This alternative would connect Humboldt North to a new diamond interchange with I-81 between Exit 143 and Exit 145. It would involve a new two-lane access road (0.7 mile long) with two new structures over Stony Creek. An access road could also connect HIP with Valmont Industrial Park. | N | Additional interchange needed on I-81. No direct access to I-81 or access to HIP proper (primary traffic generator). Would not improve incident management for I-81. | N |
| Alternative 2 | This alternative would involve the development of the existing partial cloverleaf interchange at Exit 143 into a full cloverleaf interchange. | N | Possible future capital improvements project separate from the S.R. 0924 Corridor Improvements Project. Provides no additional capacity on S.R. 0924. | N |
| Alternative 3 | This alternative would involve a road to connect Humboldt East to a new I-81 interchange between Exit 141 and Exit 143. In addition, this alternative would include the construction of a new two-lane access road (0.6 mile long) and a new partial cloverleaf interchange that would carry I-81 over the new access road. | N | Additional interchange needed on I-81, which would be less than 1 mile from Exit 141. | N |
| Alternative 3A | This alternative would involve the construction of a road north of and parallel to the railroad to connect Humboldt East (Commerce Drive) to S.R. 0424 east of I-81 Exit 141. This alternative would include the construction of a new two-lane access road (1.5 miles long), construction of an at-grade railroad crossing, and the lengthening of the two I-81 bridges over the railroad. A 300+ foot long bridge would be required to cross a mine pool located east of I-81. | Y | Would require significant costs for the roadway and not provide a practical detour for incident management along I-81. | N |
| Alternative 4 | This alternative would involve a road to connect Humboldt East (Commerce Drive) to S.R. 0424 and I-81 at Exit 141. This alternative would also include the construction of a new two-lane access road (1.1 miles long), construction of an at-grade railroad crossing, implementation of post-construction stormwater management Best Management Practices (BMPs) to address water quality issues in the HCA watershed (i.e., a controlled drainage system [curbing, inlets, pipes, lined swales, lined detention ponds, etc.]), and a 300-foot buffer between the new road and HCA well #2 with a design speed of 45 mph. | Y | Minimizes impact to the HCA watershed, wells, and reservoirs while meeting purpose and needs. | Y |
| Alternative 4A | This alternative would involve a road to connect Humboldt East (Forest Road) to S.R. 0424 and I-81 at Exit 141. This alternative would also include the construction of a new two-lane access road (1.2 miles long), construction of an at-grade railroad crossing, implementation of post-construction stormwater management BMPs to address water quality issues in the HCA watershed (i.e., a controlled drainage system [curbing, inlets, pipes, lined swales, lined detention ponds, etc.]), and a 300-foot buffer between the new road and HCA well #2 with a design speed of 45 mph. | Y | Minimizes impact to the HCA watershed, wells, and reservoirs while meeting purpose and needs. | Y |
| Alternative 4A Modified | This alternative would involve a road to connect Humboldt East (Forest Road) to S.R. 0424 and I-81 at Exit 141. This alternative would also include the construction of a new two-lane access road (1.1 miles long) along an existing haul road, construction of an at-grade railroad crossing, implementation of post-construction stormwater management BMPs to address water quality issues in the HCA watershed (i.e., a controlled drainage system [curbing, inlets, pipes, lined swales, lined detention ponds, etc.]), and a 300-foot buffer between the new road and HCA well #2 with a design speed of 35 mph. | Y | Minimizes impact to the HCA watershed, wells, and reservoirs while meeting purpose and needs. | Y |

| Alternative Number | Description | Meets Project Purpose and Needs (Y/N) | Project Team Comment | Advanced for Detailed Study (Y/N) |
|----------------------|---|---------------------------------------|--|---------------------------------------|
| Alternative 4B | This alternative would involve a road to connect Humboldt East (Commerce Drive) to S.R. 0424 and I-81 at Exit 141. This alternative would also include the construction of a new two-lane access road (0.9 mile long), construction of an at-grade railroad crossing, implementation of post-construction stormwater management BMPs to address water quality issues in the HCA watershed (i.e., a controlled drainage system [curbing, inlets, pipes, lined swales, lined detention ponds, etc.]). | Y | Impacts HCA watershed, wells, and wetlands, and transmission lines while meeting all purpose and needs. | N |
| Alternative 4C | This alternative would involve a road to connect Humboldt East (Elm Road) to S.R. 0424 and I-81 at Exit 141. This alternative would also include the construction of a new two-lane access road (1.6 miles long), construction of an at-grade railroad crossing, and implementation of post-construction stormwater management BMPs to address water quality issues in the HCA watershed (i.e., a controlled drainage system [curbing, inlets, pipes, lined swales, lined detention ponds, etc.]). | Y | Impacts HCA watershed, wells, wetlands, and large forestland while meeting all purpose and needs. | N |
| Alternative 4D | This alternative would involve the construction of a road through the Bonner family private property and around the Mount Pleasant Reservoirs to its intersection with Maplewood Drive. This alternative would include the construction of a new two-lane access road (2.4 miles long) and implementation of post-construction stormwater management BMPs to address water quality issues for the Bonner family (i.e., a controlled drainage system [curbing, inlets, pipes, lined swales, lined detention ponds, etc.]). | Y | Requires significant costs for the roadway with impacts to forestland and residential property while meeting all purpose and needs. | N |
| Alternative 5 | This alternative would involve a road to connect HIP (Maplewood Drive) to a new I-81 Interchange south of Exit 141. This alternative would also include the construction of a new two-lane access road (1.9 miles long), construction of a new structure over Catawissa Creek, and construction of a new I-81 diamond interchange that would carry the new access road over I-81. This would include the removal and replacement of the existing Haul Road bridge. | N | Additional interchange needed on I-81. In proximity to junkyard, and impacts 8 Bees Campground, wetlands, and large forestland. | N |
| Alternative 6 | This alternative would involve one at-grade railroad crossing and two new bridges on I-81 to extend Forest Road eastward under I-81 and to its connection with S.R. 0424 on the east side of the I-81/Exit 141 interchange. | Y | Requires significant costs for the roadway and new bridges and does not provide a practical detour for incident management along I-81. | N |
| No Build Alternative | This alternative would involve no additional access roadways or improvements to existing roadways. | Y | Does not satisfy project purpose and needs. | Used as comparison in detailed study. |

Table 3. Roadway Design Criteria.

| Criterion | Hazleton Beltway (S.R. 0424) | S.R. 0424 Extension | HIP Road Network |
|-------------------|---|---|---|
| Existing or New | <i>Existing</i> | New | <i>Existing</i> |
| Functional Class | Rural Arterial | Suburban Corridor, Community Collector | Urban Collector |
| Design Speed | 60 mph (rolling) | 35 mph (5000 < ADT < 15000) | 40 mph (desired) 30 mph (min) |
| Posted Speed | <i>50 mph (existing)</i> | 35 mph | 35 mph |
| Pavement Widths | 12 ft | 12 ft | 12 ft (desired) 10 ft (min) |
| Shoulder Widths | Varies based on ADT (4 ft-10 ft paved) | 8 ft (min) | 10 ft (desired) 8 ft (min) |
| Median Widths | 60 ft (desired) 4 ft (min) | None | None |
| Cross Slopes | 8% (max) 2% (min) | 6% (max) 2% (min) | 6% (max) 2% (min) |
| Vertical Grades | 4% (max) (rolling) 0.5% (min) | 9% (max) (rolling) 0.5% (min) | 10% (max) (rolling) 0.5% (min) |
| Horizontal Radius | 1,205 ft (min) (rolling) | 340 ft (min) | 510 ft (desired) 275 ft (min) |
| Sight Distances | Stopping 570 ft (min) | Stopping 250 ft (min) | Stopping 305 ft (min) |
| | Passing 2,285 ft (min) | Passing 1,280 ft (min) | Passing 1,270 ft (min) |
| Clear Zone | See Design Manual 2, Chapter 12 | See Design Manual 2, Chapter 12 | 1 ft-6 in from edge of shoulder or face of curb |
| Bridge Widths | Pavement width + shoulders | Pavement width + shoulders | Pavement width + shoulders |
| Parking Lanes | N/A | N/A | 10 ft (desired) 8 ft (min) |
| Sidewalks | N/A | N/A | N/A |
| Vertical Clear | 16 ft-6in (min) | 14 ft-6 in (min) | 14 ft-6 in (min) |

The remaining three alternatives would all follow the same alignment parallel to I-81 south of the railroad (see Figure 6).

Figure 6. Reasonable Alternatives Studied in Detail (Alternatives 4, 4A, and 4A Modified)

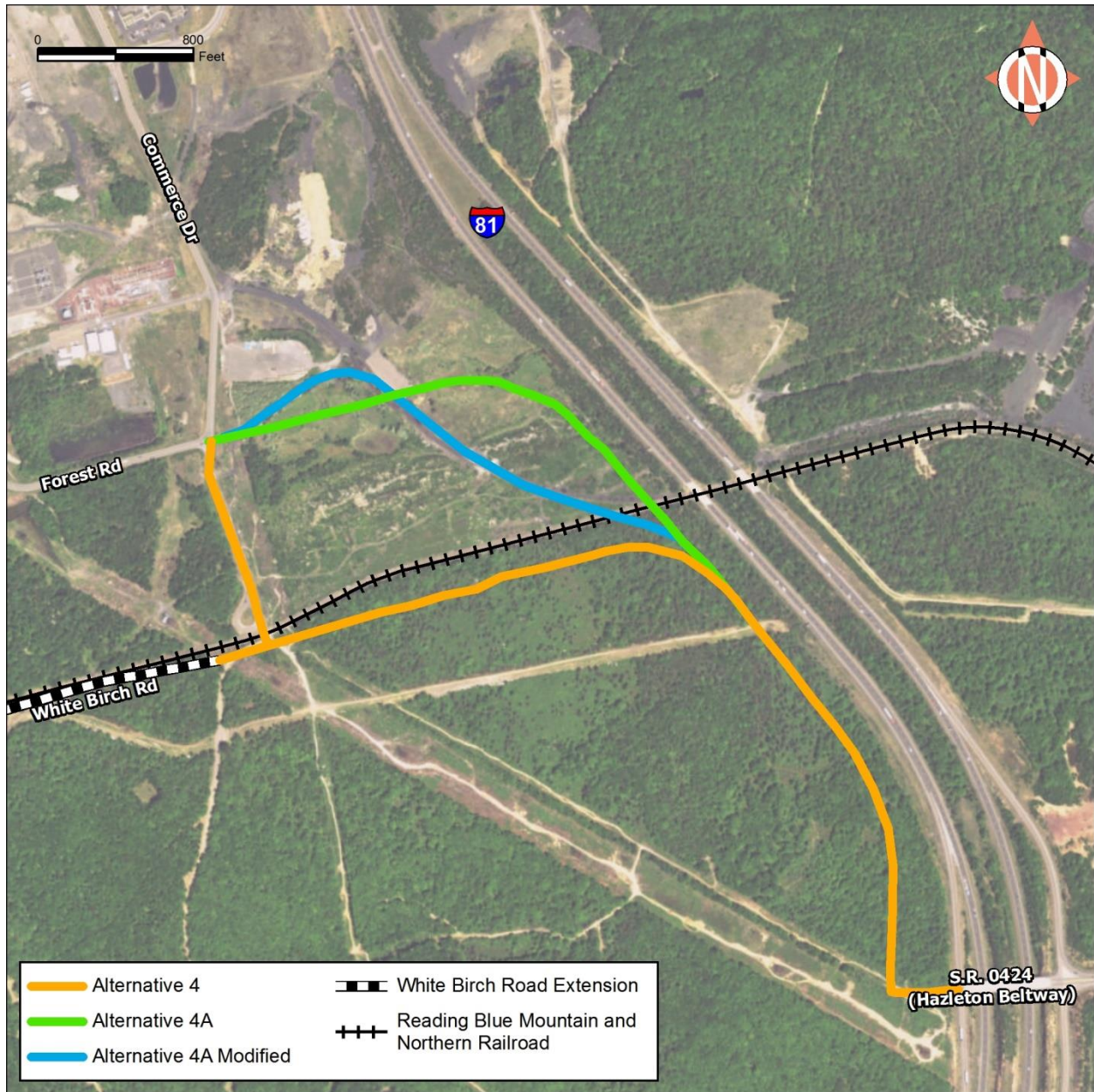


Table 4 summarizes the development and evolution of the alternatives and identifies when various alternatives were dismissed from additional study.

Table 4. Preliminary Alternative Development and Evolution.

| Alternatives | PHASE I | | | | PHASE II | | PHASE III | | | | | |
|---|-------------------------------------|------------------------------------|--|-------------------------------------|-----------------------------|------------------------------------|---------------------------------|---|-----------------------------------|-----------------------------------|--------------------------|-----------------------|
| | Project Kickoff Meeting 2/2/2007 | Task Force Meeting #1 6/21/2007 | Agency Coordination Meeting 8/21/2007 | Task Force Meeting #2 12/21/2007 | Public Meeting 6/24/2008 | Task Force Meeting #3 11/5/2009 | Project Field View 4/28/2014 | Agency Coordination Meeting 11/19/2014 | Task Force Meeting #4 2/5/2015 | Project Team Meeting 2/24/2015 | Environmental Assessment | Preferred Alternative |
| 1 Humboldt North to S.R. 3020 (Tomhicken Road) | | | | | | | | | | | | |
| 1A Humboldt North to new I-81 diamond interchange | | | | | | | | | | | | |
| 2 I-81/S.R. 0924 (Exit 143) Interchange modifications | | | | | | | | | | | | |
| 3 Humboldt East (Commerce Drive) to new I-81 interchange | | | | | | | | | | | | |
| 3A Humboldt East (Commerce Drive) adjacent railroad to S.R. 0424 | | | | | | | | | | | | |
| 4 Humboldt East (Commerce Drive) to I-81/S.R. 0424 (Exit 141) near I-81 | | | | | | | | | | | | |
| 4A Humboldt East (Forest Road) to I-81/S.R. 0424 (Exit 141) | | | | | | | | | | | | |
| 4A MOD Humboldt East (Forest Road) to I-81/S.R. 0424 (Exit 141) | | | | | | | | | | | | |
| 4B Humboldt East (Commerce Drive) to I-81/S.R. 0424 (Exit 141) direct | | | | | | | | | | | | |
| 4C Humboldt (Elm Road) to I-81/ S.R. 0424 (Exit 141) | | | | | | | | | | | | |
| 4D Humboldt (Maplewood Drive) to I-81/S.R. 0424 (Exit 141) south of reservoirs | | | | | | | | | | | | |
| 5 Humboldt (Maplewood Drive) to new I-81 diamond interchange (Haul Road) | | | | | | | | | | | | |
| 6 Forest Road under I-81 to S.R. 0424 | | | | | | | | | | | | |
| NB No Build | | | | | | | | | | | | |

V. Environmental Resources, Impacts, and Mitigation

This section summarizes the impacts to environmental resources and associated mitigation measures for the No Build Alternative and three build alternatives selected for detailed study by the project team in coordination with the public, the local task force, and resource agencies (Figure 6). Each resource discussed in this section was identified within the project study area; however, several resources were only studied within an investigation corridor that contained the build alternative alignments. For example, wetlands, waterways, and T&E species habitat were surveyed in the field within an investigation area that expanded 250 feet on either side of the three proposed alignment centerlines.

As a result of the three-phased approach, Alternatives 4, 4A, and 4A Modified were selected for detailed study to determine the environmental, cultural, and socioeconomic impacts of each alignment.

The Hazleton Beltway Project, as proposed, would not impact the following resources, and therefore no further discussion of these resources is presented: coastal zones, navigable waterways, wild and scenic rivers, National Natural Landmarks, wildlife sanctuaries/refuges, state game lands, public parks, National Historic Landmarks, and community facilities and services.

In addition, several resources were identified within the project study area and would either be impacted minimally or to the same extent by the three build alternatives. In these cases, the resources are identified in the paragraph below but are discussed more extensively in Appendix C, as they would not play a prominent role in the selection of a preferred alternative. The following resources fall into this category: agricultural, air, noise, waste, cultural resources (historic structures and archaeology), groundwater, and greenhouse gases (GHG) and climate change. Further information on these resources can be requested from the list of materials in the technical file, as identified in Appendix E. In addition, proposed development and local planning, environmental justice communities, utilities, and displacements also did not play a prominent role in the alternative selection.

Secondary source and field investigations within the project study area determined that the three build alignments travel through a landscape affected by strip mining and, more recently, by commercial and industrial development with a supporting roadway and utility network. As such, many resources within the alignment study areas were not significantly impacted, and these impacts do not differ between the three build alternatives studied in detail. They are noted below:

- Agricultural Resources - Soils of Statewide Importance (Alvira silt loam [AIB]) are present along the common southern alignment of the three build alternatives.
- Air Quality and Noise - Luzerne County has been designated as “in attainment” for all regional air pollutants, and the project would not result in any meaningful increases in

traffic volumes. There are also no noise-sensitive land uses in the proximity of the build alignments. Air and noise impacts would be minimal.

- GHG and Climate Change – The build alternatives would support the reduction of GHG emissions and not be significantly impacted by climate change.
- Hazardous Waste Sites - Site investigations indicated that a waste site (Waste Site 14) associated with the PPL Harwood steam electric station property was identified at the intersection of Forest Road and Commerce Drive. This waste site could be impacted by any of the three build alternatives and would require testing of any soil removed.
- Cultural Resources (Historic Structures and Archaeology) - Neither intact historic structures nor any significant archaeological resources were identified along the three build alternatives.
- Groundwater Resources (Wells, Water Supply) - The HCA’s groundwater resources, including wells and reservoir, will not be directly impacted by the build alternatives, and stormwater management measures will be implemented to indirect limit impacts to the drinking water supply.
- Proposed Development - The proposed S.R. 0424 beltway extension is compatible with local and regional planning initiatives and has the support of local developers and municipal and county planners and officials.
- Utilities – Utilities in the project study area include underground water lines (HCA), underground and overhead transmission and distribution lines (PPL Electric Utilities Corporation), and underground gas lines (UGI Utilities Inc.). Minor relocation of lines or utility poles will be required.
- Environmental Justice and Displacements – No impacts to environmental justice communities and no residential displacements will occur. The project will provide additional access and also ease congestion in the greater Hazleton area.

Please refer to Appendix C for background on the studies completed on the above resources.

The following resources were identified as having the potential to be impacted by the build alternatives and were selected for detailed study.

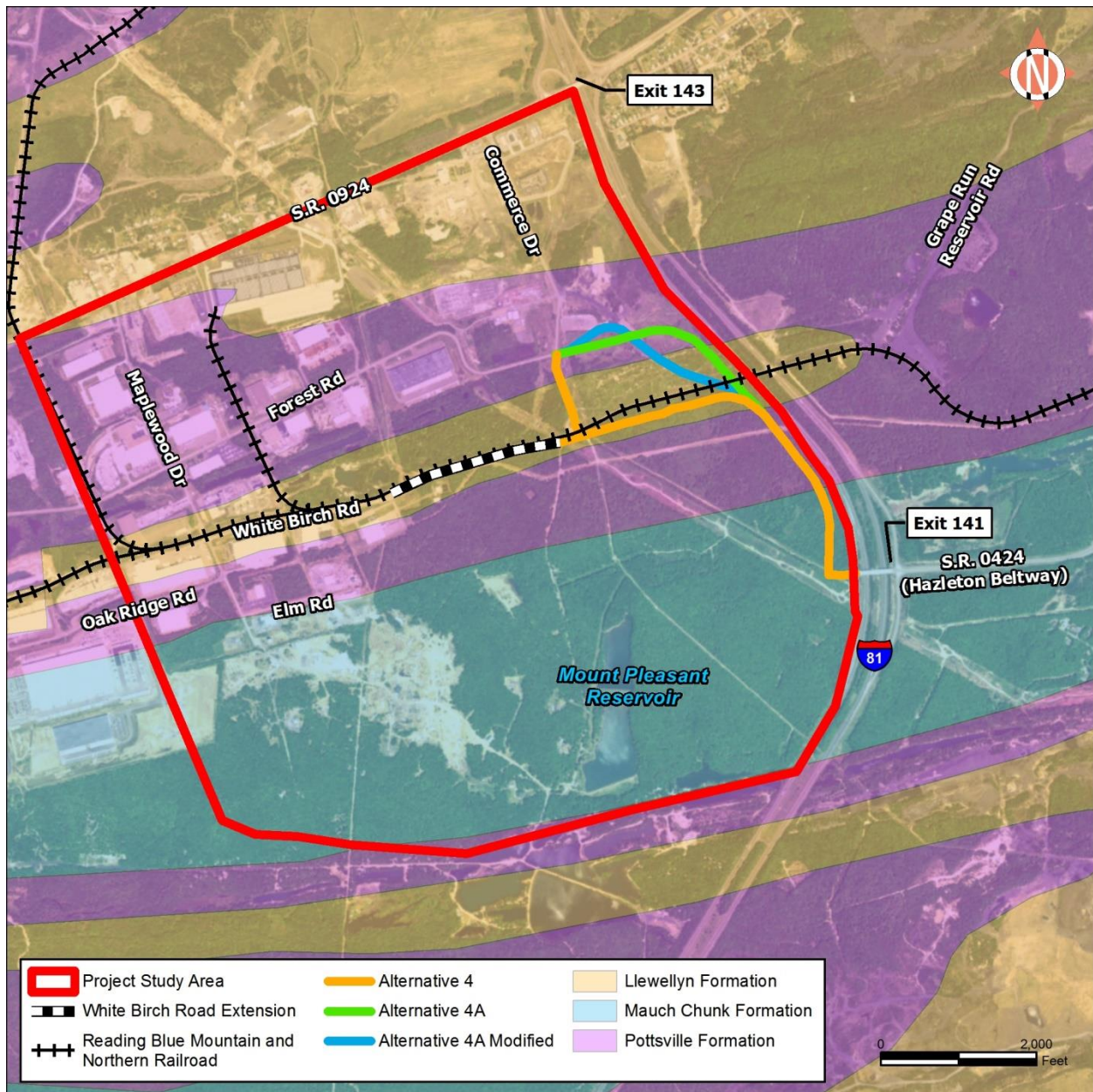
A. Geologic Features: Mining, Acid Rock Drainage, Steep Slopes and Rock Cuts

Geologic Setting

The study area is located within the coal-bearing area known as the Eastern Middle Anthracite Field of the Anthracite Upland Section of the Ridge and Valley Physiographic Province of Pennsylvania. The dominant topography consists of an upland surface having low, linear to rounded hills; strip mines; and waste piles; and upland surrounded by an escarpment, a valley, and a mountain rim. The bedrock geology of the area indicates the presence of the Mauch Chunk Formation of Mississippian age and the Pottsville and Llewellyn formations of Pennsylvanian age (Figure 7). As a group, the formations’ dominant rock types are composed of sandstone, siltstone, shale, conglomerate, and coal. The Llewellyn Formation is the chief coal-bearing rock unit. Foundation stability for these types of rocks is generally good, although underground

mining activities may give rise to subsidence. Cut slope stability is good, except when undercutting occurs where resistant beds of sandstone and conglomerate are underlain by more easily weathered rocks, such as shale. The Pottsville and Llewellyn formations contain acid-bearing rock; therefore, newly exposed rocks and fill material may require remediation. The surficial materials throughout the study area are primarily mining waste and stony, glacially influenced soils weathered from sandstone and conglomerate. The predominant non-mining soils encountered throughout the area are extremely stony sandy loams on the hilltops and hillsides and very stony silt loams in the low areas. The only major negative characteristic of the soils throughout the area is the potential to be corrosive to steel.

Figure 7: Geology



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

- Cut slope and fill slope stability;
- Settlement of newly placed embankment fill;
- Material suitability issues from the potentially acidic rock units;
- Acid rock drainage, which may cause *in-situ* materials to be unsuitable for on-site usage; and
- Roadway drainage would need to be designed to divert any potential pollutants away from water resources and areas of public water supplies.

Existing Conditions:

Mining Conditions

Portions of the area surrounding the Humboldt Industrial Park (HIP) and the existing S.R. 0081 and S.R. 0424 Interchange display past surface mining activities, as well as some areas where deep mining has been performed (Figure 8). Current land use of the mined areas varies from woodland to industrial and residential areas. A preliminary review of mining features was completed. Although no mine or subsidence features were mapped within the project study area, there may be occurrences of subsidence that have not been reported due to going unnoticed, such as in the non-developed woodlands. Evidence of acid mine drainage was noticed during a previous field view. These abandoned mine features may cause issues concerning the health and safety of the public, degrade the quality of the environment, and diminish the use of land and water resources if disturbed during construction activities associated with the project.

Subsidence is the gradual caving or sinking of land. This is related to the mining activities within the project study area, but no instances were identified in the project study area.

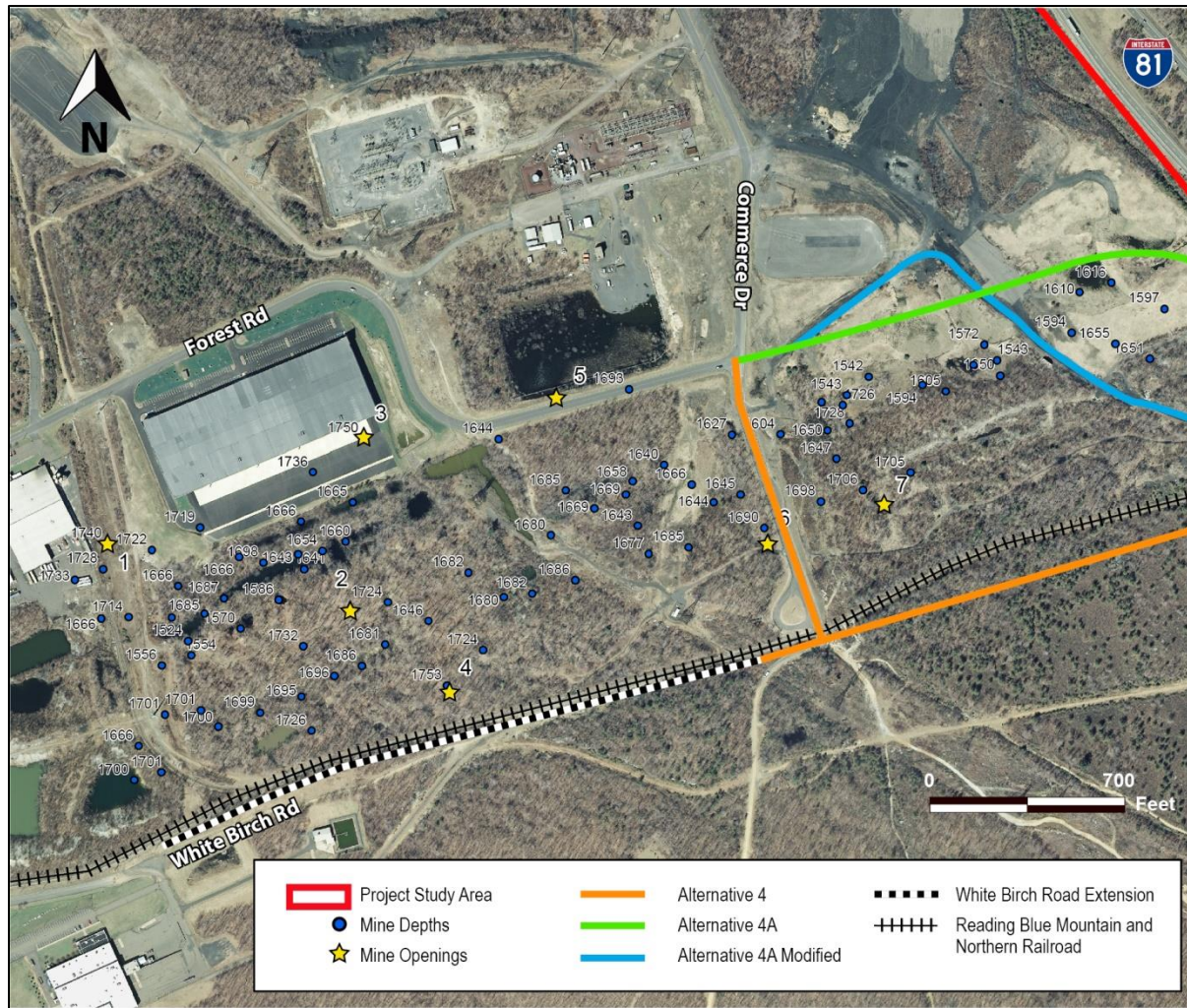
Acid Rock Drainage

The potential for acid rock drainage problems during roadway construction as a result of rock cuts or excavations was preliminarily identified given the project setting within the anthracite coal region and related geologic setting.

Steep Slopes and Rock Cuts

The potential for steep slopes and rock cuts complications during roadway construction was preliminarily identified given the related geologic setting.

Figure 8. Mine Openings



Impacts:

No Build Alternative: The No Build Alternative would have no impact to mining features, nor would it require special measures to address cut and fill slope stability, embankment fill settlement, material suitability and acid rock drainage, or roadway drainage.

Build Alternatives: Alternatives 4A and 4A Modified all have the potential for multiple geological-based issues, including the potential for significant excavation of mining waste. **Alternative 4** would also require cut slopes in excess of 30 feet, requiring rockfall catchment areas and/or rockfall fencing to provide adequate safety with respect to rock slope stability.

Alternatives 4A and 4A Modified, which extend north of the railroad tracks, have the potential for stability issues associated with deep mining below their footprints.

Navarro & Wright Consulting Engineers, Inc. (N&W) conducted geotechnical studies associated with Alternative 4 in January and February 2017. Rock core samples were selected for acid-base

accounting testing performed according to the Pennsylvania Department of Environmental Protection (PADEP) Overburden Sampling and Testing Manual, Contract No. ME86120. Based on the results of the acid-base accounting, the underlying bedrock does not contain acid-bearing rock. However, Alternatives 4A and 4A Modified were not fully tested and would still pose a potential risk for encountering acid-bearing rock that would need to be either encapsulated on-site, treated on-site, or landfilled.

Environmental Features/Constraint Mapping:

Please refer to the Environmental Constraints Map in Appendix B.

Minimization/Mitigation:

Potential minimization and mitigation would involve the following:

- Continued assessment of the potential slope cuts to determine the need for the implementation of rockfall controls. Based on the geotechnical studies currently being conducted by N&W, cut slopes are proposed to be 1.5 to 1, and no catchment areas are anticipated. The existing PPL electric tower located south of the Commerce Drive cul-de-sac is considered to be a critical section for the Alternative 4 alignment, and an R-6 rip-rap buttress is proposed to stabilize the load near the top of the proposed cut.
- Implementation of acid-bearing rock testing during final design to develop treatment methods to buffer drainage runoff for Alternatives 4A and 4A Modified. Geotechnical studies associated with **Alternative 4** determined that the underlying bedrock does not contain acid-bearing rock.
- Additional borings along Alternatives 4A and 4A Modified to determine the presence of subsurface mining north of the railroad tracks.
- Balancing earthwork to minimize the amount of waste material generated.

B. Surface Waters (Wetlands, Streams, and Floodplains)

Methodology:

The wetland investigations were conducted in accordance with the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont* (USACE Engineer Research and Development Center [ERDC] 2010), the PADEP Chapter 105 Regulations, and Section 404 of the Federal Clean Water Act. Wetland habitats were classified according to U.S. Fish and Wildlife Service (USFWS) Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).

The wetland and watercourse boundaries were delineated from September 27 to 29, 2007; October 2 to 3, 2007; and on October 25, 2007, in an area identified as the “Waters of the United States” (“Waters of the U.S.”) investigation area. The “Waters of the U.S.” investigation area consisted of five distinct alternative route sites:

1. Commerce Drive to S.R. 0424 north of Hazleton City Authority (HCA) watershed (Alternative 4);
2. Forest Road to S.R. 0424 (Alternative 4A);
3. Commerce Drive to S.R. 0424 along power lines (Alternative 4B);
4. Maplewood Drive to S.R. 0424 (Alternative 4C); and
5. Maplewood Drive to S.R. 0424 routed below the reservoirs (Alternative 4D).

A.D. Marble prepared a “Waters of the U.S.” Investigation, Delineation, and Functional Assessment Report for the S.R. 0424, Section 390, Hazleton Beltway Extension, which was submitted to the USACE and the PADEP on May 30, 2008. A jurisdictional determination (JD) was conducted by the Baltimore District of the USACE on November 18, 2009. This JD was conducted within an “investigation area” defined as the project limits associated only with Alternatives 4 and 4A. An approved JD letter was provided on February 3, 2010. In May 2015, A.D. Marble conducted a field investigation in the study area defined by Alternatives 4 and 4A, as well as the newly added Alternative 4A Modified alignment, to update known wetland boundaries and include any new wetlands and waterways observed. After the JD expired in 2015, a JD field view was coordinated by A.D. Marble & Company (A.D. Marble) on July 1, 2015, along the Alternatives 4, 4A, and 4A Modified project alignments. An approved JD letter was received on December 15, 2015.

A **jurisdictional determination (JD)** is an official review or determination by the USACE regarding whether “waters of the United States” or “navigable waters of the United States” are present.

Existing Conditions:

The “Waters of the U.S.” investigation area limits for each of the three field-investigated alternative routes included a 500-foot corridor that measured 250 feet to either side of the centerline. The boundaries for all wetlands and watercourses encountered were delineated within this “Waters of the U.S.” investigation area.

The wetlands and watercourses identified in the “Waters of the U.S.” investigation area are located in two separate watersheds, Cranberry Creek (subwatershed of Black Creek) and Cross Run (subwatershed of Catawissa Creek), which ultimately discharge into the Susquehanna River. The Susquehanna River is the nearest Traditionally Navigable Waterway (TNW) relative to the project study area. Much of the project study area consists of lands disturbed through past coal mining operations. Wetlands and watercourses are associated with headwaters to the Catawissa Creek and Black Creek watersheds and with remnant strip mining depressions, some of which are isolated. The headwater areas are expansive, particularly in Cross Creek where surface and subsurface waters contribute to HCA’s Mt. Pleasant reservoirs and several water supply wells. Remnant strip mining depressions and disturbed lands are located primarily within the Cranberry

Creek watershed where wetland restoration and mitigation projects have also been constructed. Some of the disturbed area depressions are contained within wetland systems, while others occur as isolated areas with no apparent surface water connection to other wetlands or watercourses.

A total of 15 wetland areas and 12 watercourses were initially identified within the “Waters of the U.S.” investigation area on the west side of I-81. A second field investigation and JD was conducted in 2015 to assess the presence of wetlands within the 250-foot investigation corridor associated with the three build alternatives. In total, 16 wetlands were identified and included an additional five new wetlands (including Wetlands IF-A, 4A, 4A-A to 4A-C, and 4B). These wetlands are shown on Figure 9. Wetlands identified along the investigation corridors of the study area included palustrine forested (PFO), palustrine scrub-shrub (PSS), palustrine emergent (PEM), and palustrine open water (POW) wetlands (see Table 5). A wetland functional analysis was conducted for each wetland using the Corps Descriptive Method evaluation (USACE 1995). The results of the functional assessments indicate that the major functions of most of the project wetlands are groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, production export, and wildlife habitat.

Within the project study area, wetlands in the watershed of the Mount Pleasant Reservoir are considered Exceptional Value (EV) wetlands as defined in 25 PA Code, Section 105.17(1)(iv), if they are within a public drinking water supply area and maintain quality of that water supply. Wetlands 1A and 1B appear to be hydrologically connected and satisfy the EV definition. The Mount Pleasant Reservoir is an active public water supply reservoir for the HCA. The HCA provides water to the City of Hazleton, Pennsylvania, with a population over 23,000 residents.

The project study area falls within two main watersheds: the Catawissa Creek watershed and the Black Creek watershed. Pismire Ridge, which runs east/west near the center of the project study area, divides the north and south portions of the project study area and provides the drainage divide for the two watersheds. The watershed of Catawissa Creek drains areas to the south, and the northern portion of the study area drains into Catawissa Creek and into the watershed of Black Creek. Both Catawissa Creek and Black Creek are tributaries to the Susquehanna River, which is the nearest TNW to the project study area.

There are numerous mine pools within the study area that are associated with historic strip-mining activities, streams, and other bodies of water. The north side of Pismire Ridge has a history of strip-mining activity. Numerous remnant excavations have become water-filled over time. These strip-mine pools are scattered in the landscape on the northern flank of Pismire Ridge.

Figure 9. Wetlands and Waterways Identified Adjacent to Proposed Build Alternatives (Alternatives 4, 4A, and 4A Modified).

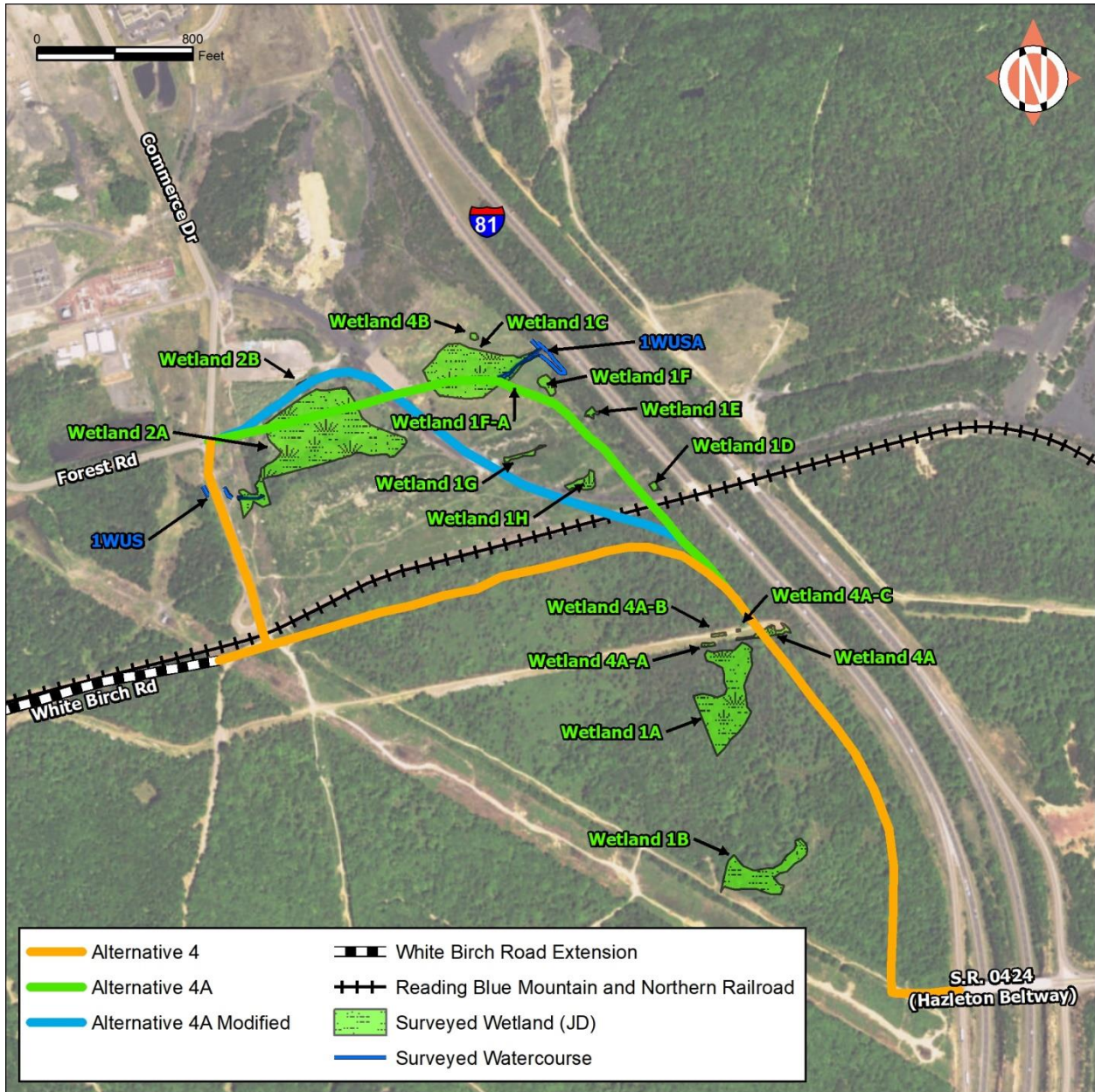


Table 5. Wetlands Identified within the S.R. 0424, Section 390 “Waters of the U.S. Investigation Area (Alternatives 4, 4A, and 4A Modified).

| Wetland ID | Cowardin Classification | Extends Beyond Investigation Area | Description | Watershed | Area (Acres) |
|------------|-------------------------|-----------------------------------|--|-------------------------------|--------------|
| Wetland 1A | PFO1B | Yes | Associated with headwaters of perennial stream (1WUSB) serving HCA Reservoir | Cross Run (Catawissa Creek) | 1.7 |
| Wetland 1B | PFO1B/PSS1B | Yes | Associated with headwaters of perennial stream (1WUSB) serving HCA Reservoir | Cross Run (Catawissa Creek) | 1.0 |
| Wetland 2A | PEM1B | Yes | Associated with intermittent stream (1WUS); part of wetland mitigation site within Alt. 4A | Cranberry Creek (Black Creek) | 4.6 |
| Wetland 2B | PEM1A | No | Stormwater collection drains via pipe into wetland mitigation | Cranberry Creek (Black Creek) | <0.1 |
| Wetland 1C | PEM1 | No | Created wetland area. Associated with intermittent stream (1WUSC) and headwater tributary to Cranberry Creek | Cranberry Creek (Black Creek) | 2.3 |
| Wetland 1D | PEM1Bx | No | Vegetated strip mine pit; isolated | Cranberry Creek (Black Creek) | <0.1 |
| Wetland 1E | PEM1/PSS1Bx | No | Vegetated strip mine pit; isolated | Cranberry Creek (Black Creek) | <0.1 |
| Wetland 1F | PEM1 | No | Apparent created wetland area; associated with headwaters to Cranberry Creek | Cranberry Creek (Black Creek) | 0.1 |

| Wetland ID | Cowardin Classification | Extends Beyond Investigation Area | Description | Watershed | Area (Acres) |
|--------------|-------------------------|-----------------------------------|---|-------------------------------|--------------|
| Wetland 1F-A | PEM1 | No | Vegetated depression; isolated | Cranberry Creek (Black Creek) | <0.1 |
| Wetland 1G | PEM1/PSS1Bx | Yes | Vegetated strip mine pit; isolated | Cranberry Creek (Black Creek) | 0.1 |
| Wetland 1H | PSS1/PEM1Bx | No | Vegetated strip mine pit; isolated | Cranberry Creek (Black Creek) | 0.2 |
| Wetland 4A | PEM1 | No | Vegetated depression along gas line access road; isolated | Cross Run (Catawissa Creek) | 0.2 |
| Wetland 4A-A | PEM1 | Yes | Vegetated depression along gas line access road; isolated | Cross Run (Catawissa Creek) | <0.1 |
| Wetland 4A-B | PEM1 | No | Vegetated depression along gas line access road; isolated | Cross Run (Catawissa Creek) | <0.1 |
| Wetland 4A-C | PEM1 | No | Vegetated depression along gas line access road; isolated | Cross Run (Catawissa Creek) | <0.1 |
| Wetland 4B | PEM1 | No | Vegetated strip mine pit, isolated | Cross Run (Catawissa Creek) | <0.1 |
| TOTAL | | | | | 10.2 |

Watercourses delineated adjacent to the build alternatives include several unnamed tributaries to Cranberry Creek on the north flank of Pismire Ridge: one is an intermittent, non-Relatively Permanent Waterway (non-RPW), and the other is a Perennial RPW. These watercourses are first order streams within the Susquehanna River drainage basin. According to the PA Code Title 25, Chapter 93 *Water Quality Standards*, the Catawissa Creek Main Stem, from its source to Rattling Run in Schuylkill County, and the Black Creek basin in Luzerne County are designated as a Cold Water Fisheries (CWF; PADEP 2000). There are no streams designated as high quality or EV by Chapter 93 that are located within the project study area. In addition, there are no Class A Wild Trout Waters or Approved Trout Waters, nor are there any 100-year floodplains or

regulated floodways within the project study area according to the Pennsylvania Fish and Boat Commission (PFBC) and FEMA. It should be noted that the Mt. Pleasant Reservoirs, located on the south side of the project study area, provide potable water to the City of Hazleton and receive drainage from several of the wetlands noted above.

Table 6. Watercourses/Impoundments Identified within the S.R. 0424, Section 390 “Waters of the U.S.” Investigation Area.

| Watercourse ID | Classification | Watercourse Length (feet) | Average Width (feet) | Associated Wetland or Watercourse |
|----------------|----------------------|---------------------------|----------------------|---|
| 1WUS | Intermittent Non-RPW | 367 | 3 | Wetland 2A |
| 1WUSA | Perennial RPW | 490 | 4 | Wetland 1C and tributary to Cranberry Creek |

Impacts:

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

Build Alternatives:

Alternative 4 would potentially impact 0.2 acre of PEM wetland (Wetlands 4A and 4A-C) located along the gas and water lines access corridor within the watershed of HCA’s Mount Pleasant reservoirs. While located within the reservoirs’ watershed, these wetlands are isolated and do not meet the classification of EV wetlands, as defined in PA Code, Title 25, Section 105.17(1)(iv), as they do not maintain the quality of the water supply. Alternative 4 is not anticipated to impact waterways.

Alternative 4A would potentially impact 2.2 acres of PEM wetland (Wetlands 2A, 1C, 1D, 1E, 4A, and 4A-C). The majority of these PEM wetlands are located outside the reservoir watershed and are either water-filled strip mine depressions or are wetland mitigation sites to offset wetland impacts from previous projects conducted by CAN DO at the Humboldt Industrial Park (HIP). Wetlands 4A and 4A-C are located along the gas and water lines access corridor within the watershed of HCA’s Mount Pleasant reservoirs. While located within the reservoirs’ watershed, these wetlands are isolated and do not meet the classification of EV wetlands, as defined in 25 Pa. Code, Section 105.17(1)(iv) as they do not maintain the quality of the water supply. Alternative 4A is anticipated to have approximately 42 linear feet of impacts to perennial waterways.

Alternative 4A Modified would potentially impact 0.4 acre of PEM wetland (Wetlands 2A, 1G, 1H, 4A, and 4A-C). The majority of these PEM wetlands are located outside the reservoir watershed and are either water-filled strip mine depressions or are wetland mitigation sites to offset wetland impacts from previous projects conducted by CAN DO at the HIP. Wetlands 4A

and 4A-C are located along the gas and water lines access corridor within the watershed of HCA's Mount Pleasant reservoirs. While located within the reservoir's watershed, these wetlands are isolated and do not meet the classification of EV wetlands, as defined in 25 Pa. Code, Section 105.17(1)(iv), as they do not maintain the quality of the water supply. Alternative 4A Modified is not anticipated to impact waterways.

Environmental Features/Constraint Mapping: Please refer to the Environmental Constraints Map in Appendix B.

Minimization/Mitigation:

The build alternatives have been designed to avoid and minimize wetland and watercourse impacts. Additional measures, such as steepened slopes and retaining walls, would be considered during final design for the selected alternative. A compensatory wetland mitigation plan would be developed as part of the final design phase of the project to replace the impacted wetlands. Implementation of the mitigation plan would ensure a no-net loss of wetlands as a result of the project. To ensure that impacts to wetlands would be minimized during construction, orange protective fencing would be installed around those wetlands to be avoided prior to clearing and grubbing. As of June 2017, CAN DO provided access to Pit G, a 5.6-acre mitigation site in construction that can be expanded to provide the compensatory mitigation acreage required for any of the build alternatives.

C. Threatened and Endangered (T&E) Species

Methodology:

An initial investigation of the project study area revealed the potential for several threatened and endangered (T&E) plant species and a community of concern. A Pennsylvania Natural Diversity Inventory (PNDI) electronic inquiry in 2007 indicated two potential conflicts with species of special concern. The USFWS and the Pennsylvania Department of Conservation and Natural Resources (DCNR) were consulted for additional information.

DCNR defines a **species of special concern** as “a classification that is composed of colonies, groups or single individuals of a plant species that the Department has determined to be a unique occurrence deserving protection. Among the factors that may be used to classify a plant population within this category are the existence of unusual geographic locations, unisexual populations or extraordinarily diverse plant populations.” This classification is not as serious as **threatened and endangered**, which is a classification for species that are in danger of extinction or that may become endangered if critical habitat is not protected.

The response from the USFWS dated November 8, 2007, indicated that the project study area is within the range of the federally listed, endangered *Myotis sodalis* (Indiana bat). Indiana bats hibernate in caves and mines during the winter months and use a variety of upland, wetland, and riparian habitats in the spring, summer, and fall. Indiana bats usually roost in dead or living trees with exfoliating bark, crevices, or cavities. Female Indiana bats form nursery colonies under the exfoliating bark of trees such as shagbark hickory, black birch, red and white oak, or sugar maple in upland or riparian areas. Land clearing, especially of forested areas, may adversely affect Indiana bats by killing, injuring, or harassing roosting bats and by removing or reducing the quality of foraging and roosting habitat. In addition, if any natural caves or abandoned mines occur within a project study area, it is possible that Indiana bats or other bat species may be using them during hibernation or potentially as summer roost sites.



Photograph 9: *Bartonia paniculata* (screw-stem).



Photograph 10: *Platanthera blephariglottis* (white-fringed orchid).

The response from the DCNR, dated January 16, 2008, indicated potential impacts to species and resources of special concern. One species, *Juncus filiformis* (thread rush; Pennsylvania – Rare), and one community of special concern, Ridgetop Dwarf-Tree Forest (RDTF) community, are known in the vicinity of the project study area. In addition, *Bartonia paniculata* (screw-stem Pennsylvania – rare), *Platanthera ciliaris* (yellow-fringed orchid, Pennsylvania – threatened), and *Muhlenbergii uniflora* (fall dropseed muhly, Pennsylvania – threatened) were also included in the list of target species for the 2008 plant survey after subsequent coordination with DCNR. These three species are known to grow in bogs and on sandy shores. The RDTF is part of the ridgetop acidic barren complex that represents a group of open-canopy ridgetops and summits that occur throughout central and northeastern Pennsylvania. This complex is found on high

ridgetops and summits (1,200 to 2,200 feet above sea level), where low soil moisture, shallow soils, high wind velocities, frequent fires, and a history of cutting limit tree growth.

Since the initial PNDI database inquiry in 2006, an updated PNDI database inquiry was completed on April 1, 2014, and again on July 20, 2015, following the Pennsylvania Game Commission’s (PGC’s) and USFWS’s announced updates to the database. This inquiry indicated potential impacts requiring additional coordination with the PGC, DCNR, and the USFWS. Subsequent coordination with these agencies revealed the need to conduct habitat assessments for the state threatened *Myotis leibii* (eastern small-footed bat), the federally threatened *Myotis sodalist* (Indiana bat) and *Myotis septentrionalis* (northern long-eared bat). DCNR listed species and communities that were previously noted in early coordination (*Bartonia paniculata* [screw-stem], thread rush, and pitch pine-scrub oak woodlot [an RDTF]).

A.D. Marble & Company (A.D. Marble) completed a plant survey in July and August 2008 to determine the presence of the target plant species and RDTF. Table 7 lists the state status of the target plant species. In addition, the project team completed a bat habitat assessment (BHA) report (May 1, 2015) of the project study area defined by Alternatives 4, 4A, and 4A Modified, and provided results to USFWS and PGC.

Table 7. List of Plant Species and Their Pennsylvania Statuses.

| Species | | Current Pennsylvania State Status | Proposed Pennsylvania State Status |
|------------------------------|-----------------------|-----------------------------------|------------------------------------|
| <i>Bartonia paniculata</i> | screw-stem | N | TU^^ |
| <i>Platanthera ciliaris</i> | yellow-fringed orchid | TU^^ | PT** |
| <i>Muhlenbergia uniflora</i> | fall dropseed muhly | PE* | PT** |
| <i>Juncus filiformis</i> | thread rush | PR*** | PR*** |

Source: Pennsylvania Natural Heritage Program, accessed July 28, 2008

PE* - Pennsylvania Endangered

PT** - Pennsylvania Threatened

PR*** - Pennsylvania Rare

N - No current legal status, but is under review for future listing

TU^^ - Tentatively undetermined

Existing Conditions:

Preliminary field surveys conducted during wetland delineations confirmed that areas of potential habitat exist in the wetland and waterway delineation investigation area. A detailed field investigation for species of special concern (SPOSCs) was conducted in July and August 2008 in the study areas that included Alternatives 4, 4A, and 4A Modified; the investigation coincided with the optimal identification period for the target SPOSCs. Four different occurrences of two SPOSCs (see Table 8) were observed and documented within the July and August 2008 Plant Survey Area. In addition, three different occurrences of the community of special concern identified as the RDTF (see Table 9) were observed and documented within the

July and August 2008 Plant Survey Area. Thread rush, yellow-fringed orchid, and fall dropseed muhly were not observed during the course of the survey; however, suitable habitat for these species is present in some of the wetland areas within the July and August 2008 Plant Survey Area.

Table 8. Plant Species of Special Concern Identified within the July and August 2008 Plant Survey Area.

| Species | | Current PA State Status | Investigation Area |
|------------------------------------|----------------------|-------------------------|--------------------|
| <i>Bartonia paniculata</i> | screw-stem | N | 4B/4C |
| <i>Platanthera blephariglottis</i> | white-fringed orchid | N | 4/4A |

N - No current legal status, but is under review for future listing

Table 9. Communities of Special Concern Identified within the July and August 2008 Plant Survey Area.

| Plant Community | Investigation Area | Acreage (acres) |
|-----------------|--------------------|-----------------|
| RDTF 1 | 4/4A | 14.9 |
| RDTF 2 | 4/4A | 5.3 |
| RDTF 3 | 4/4A | 1.8 |

The response from the PFBC dated November 16, 2007, indicated no adverse impacts are expected from the proposed project and, except for occasional transient species, rare, candidate, threatened, or endangered species under PFBC jurisdiction are not known to exist in the vicinity of the project study area.

The project team completed a BHA report (May 1, 2015) of the project study area defined by Alternatives 4, 4A, and 4A Modified; and provided results to USFWS and PGC. On July 8, 2015, USFWS indicated that potential exists to injure or kill the Indiana bat, as well as the northern long-eared bat, during the removal of trees and forested areas within the study area. The agency requires a seasonal restriction on tree cutting. In coordination with the USFWS, PennDOT has agreed to cut trees and forest areas within the project areas between November 15 and March 31 to avoid killing or injuring these bats. In addition, wherever possible, PennDOT will retain shagbark hickory trees, dead and dying trees, and large diameter trees (greater than 12 inches diameter at breast height [d.b.h.]) to serve as roost trees for bats. Following the review of the BHA report, PGC indicated on September 15, 2015, that the project would result in no impact to the eastern small-footed bat.

The USFWS, in addition to the bat habitat recommendation, provided additional recommendations to avoid and minimize impacts to migratory birds within the project area

(Appendix D: USFWS letter, July 8, 2015). These recommendations include restricting clearing and maintenance activities (e.g., mowing) to the period between September 1 and March 31 when birds are no longer nesting; this restriction would avoid take of most breeding birds, their nests, and their young. Minimization of land and vegetation disturbance during design and construction is recommended to reduce habitat fragmentation, as well as avoid permanent habitat alterations in areas where birds are highly concentrated. Finally, a habitat restoration plan should be developed for the proposed project to avoid and minimize negative impacts to birds.

Additional coordination with DCNR occurred in 2015 to address potential impacts to the species noted above, as well as the RDTF community. Following a review of the study area comprised of Alternatives 4, 4A, and 4A Modified, DCNR indicated in a letter dated October 2, 2015, that no impacts are anticipated to noted herbaceous species of concern if wetlands in which they have been found would be avoided. DCNR recommended conservation measures (voluntary action) to limit disturbance within the RDTF community to minimize impact, to the fullest extent possible, to protect the integrity of this significant woodland. DCNR also recommends the cleaning of construction equipment and vehicles thoroughly before they are brought on-site and to avoid using seed mixes that include invasive plant species to re-vegetate the area in order to prevent the spread of invasive plant species.

In an effort to stem the decline in pollinator species, such as bees and butterflies, FHWA developed best management practices (BMPs) to help transportation agencies identify ways to integrate pollinator friendly practices. These practices include utilizing pollinator-friendly native wildflower seed mixes, planting flowering shrubs and trees along roadsides and medians, and judicious mowing and herbicide use. These BMPs should be utilized, where possible, to reduce the project's impact on pollinator species and promote greater diversity of native vegetation along roadsides.

Under the *Natural Resources Assessment and Mitigation Agency Partnering Policy* (2007), PennDOT recognizes the environmental benefit of natural resources and need to protect ecologically significant resources that are not otherwise protected or regulated by legislation and/or executive orders. Under this policy, Districts are directed to consider mitigation by application of the FHWA "reasonable expenditure of public funds" test. Those resources, such as the RDTF, that may be significant in providing biological diversity and functional intactness of ecosystems, as well as providing opportunities for public recreation or environmental education. According to the policy, a natural resource may be considered a "Natural Resource Meriting Compensation" (NRMC) if it possesses any of the Type A or Type B ecological or social characteristics, can be documented to be significant or unique, and is likely to be significantly impacted by the proposed project.

The policy defines the natural resources as the following:

TYPES-A Natural Resources: Significant or unique natural resources that promote and maintain the biological diversity of the region. Examples include rare vegetative communities (listed by PNDI), communities and habitats not locally abundant, and isolated habitats that provide limiting life requirements such as winter thermal cover and hibernacula.

TYPES-B Natural Resources: Significant or unique natural resources that promote and maintain the functional intactness of ecosystem(s). Examples include riparian and upland travel corridors, intact sensitive Forest Interior habitats, Major Forest Patch Networks, large area herbaceous communities, certain life requisite limiting successional communities, and certain location-sensitive microhabitats (i.e., vernal pools).

The Ridgetop Dwarf-Tree Forest (RDTF) community would appear to match the definition of a Type A natural resource. DCNR refers to this community as a significant woodlot and was identified on the PNDI list.

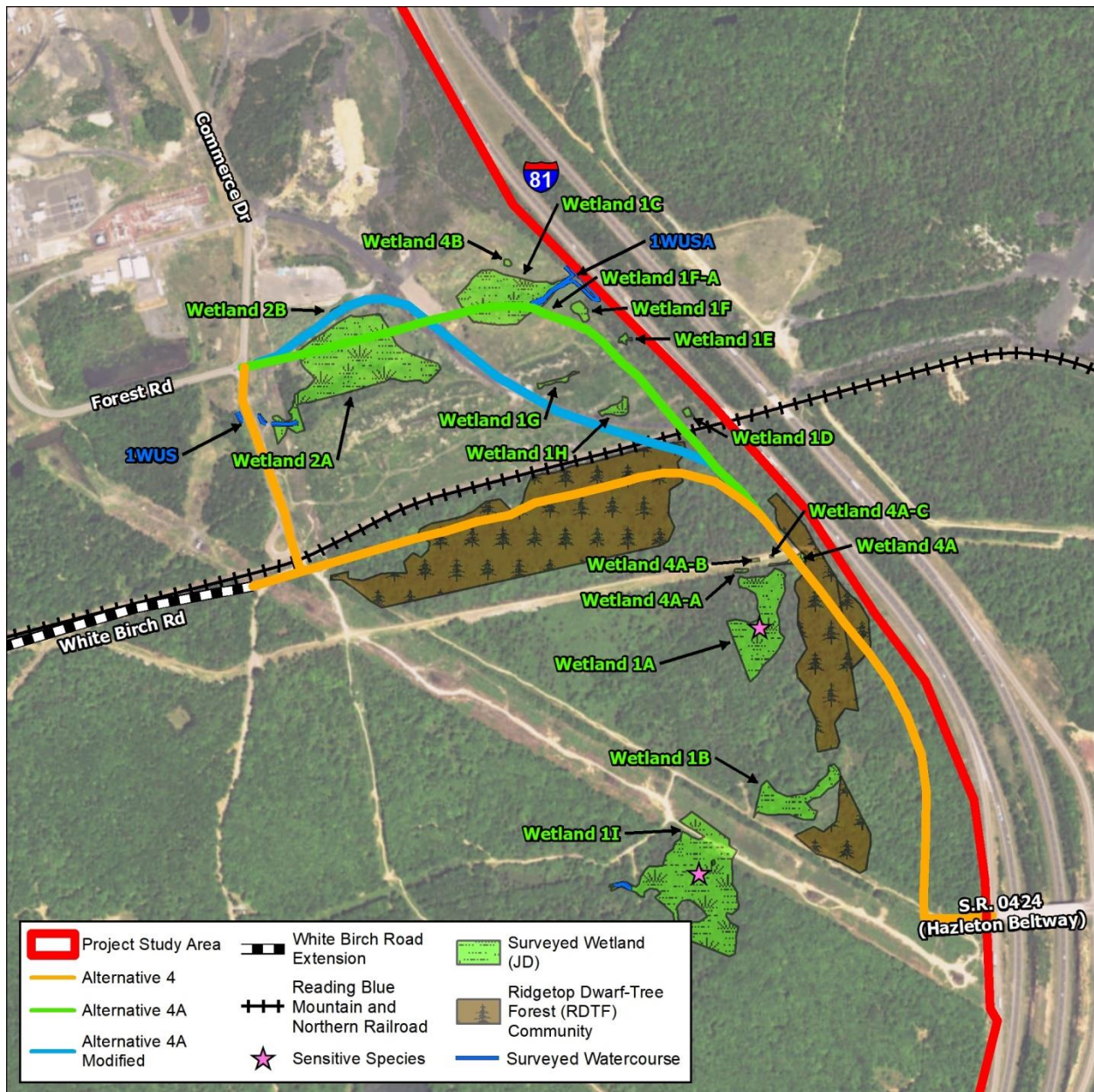
Impacts:

No Build Alternative: The No Build Alternative would have no impact on threatened and endangered species noted in the project study area.

Build Alternatives: Occurrences of plant SPOSCs and the community of special concern identified as RDTF were documented during the July and August 2008 Plant Survey in the vicinity of **Alternatives 4, 4A, and 4A Modified** (Figure 10). Coordination with DCNR was conducted in 2015 to evaluate the potential for impacting species of concern along these alignments. Following a review of the study area, DCNR indicated in a letter dated October 2, 2015, that no impacts are anticipated to noted species of concern if wetlands in which they have been found would be avoided (Wetland 1A, 1I). In addition, DCNR recommended conservation measures (voluntary action) to limit disturbance within the RDTF community.

All three build alternatives would result in impacts to an RDTF woodlot adjacent to I-81 (0.1 acre); however, **Alternatives 4 and 4A Modified** would impact an additional RDTF woodlot that parallels the railroad. These impacts are associated with both the roadway and proposed stormwater basins. In total, **Alternative 4** would impact approximately 5.2 acres, while **Alternative 4A** (1.1 acre) and **Alternative 4A Modified** (1.7 acre) would impact significantly less.

Figure 10. Threatened and Endangered Species



The three build alternatives would require impacts to forestland located within the swarming range of several bat species. A bat habitat assessment was completed for these alignments that determined only a few roosting trees were located adjacent to the proposed alignments, and no hibernacula were identified. The closest known hibernacula are currently identified as Priority 4 sites, with fewer than 50 individuals, and are located over 10 miles away. In addition, the project would not affect south-facing slopes, which are a preferred habitat for foraging bats. Coordination with the USFWS and PGC determined that if seasonal restrictions on tree cutting are observed during construction, the project would not have an effect on bat species, including

the Indiana, northern long-eared, and eastern small-footed bats. In addition, proposed future projects would require consultation with the USFWS; and avoidance, minimization, and mitigation measures would be required that reduce any significant cumulative impact on these federally listed species. Therefore, the project would not result in the degradation of bat habitat or overall health of federally endangered or state threatened bat species.

Environmental Features/Constraint Mapping: Please refer to the Environmental Constraints Map in Appendix B. Locations for proposed stormwater basins are noted in Appendix A (Alternative 4) and in Appendix B (Alternatives 4A and 4A Modified).

Minimization/Mitigation:

Agency coordination with the USFWS and DCNR would continue through the final design and permitting phase of the project. The implementation of conservation measures to avoid impacts to bat, plant, and tree communities would be followed for the preferred alternative. These measures would include seasonal restrictions on tree removal, installation of protective fencing to limit disturbance of wetlands, and minimization of disturbance to the RDTF woodlots. For example, stormwater basins located within the RDTF will be reduced in size, where possible, to limit impacts to existing RDTF tracts. Consideration of bioretention areas and subsurface infiltration beds, including over excavation of basins, can be explored to reduce the size of proposed stormwater management basins and minimize impacts to the RDTF. In addition, cleaning of construction equipment and vehicles before entering the construction site and a restriction on the use of seed mixes with invasive plant species will be followed to prevent the spread of these invasive species.

D. Indirect Impacts

In addition to the consideration of a project's direct impacts, the Council on Environmental Quality (CEQ) regulations require that the indirect impacts of a project be examined (40 CFR § 1508.25 [c]).

The project needs, as described in Section II of the report, help define the limits of the project's influence and quantify the indirect impacts on natural, cultural, and socioeconomic resources. One of the most likely causes of indirect effects is project-related growth; however, even when this growth is minimal, there remains a potential for indirect effects associated with non-growth-related indirect effects.

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]).

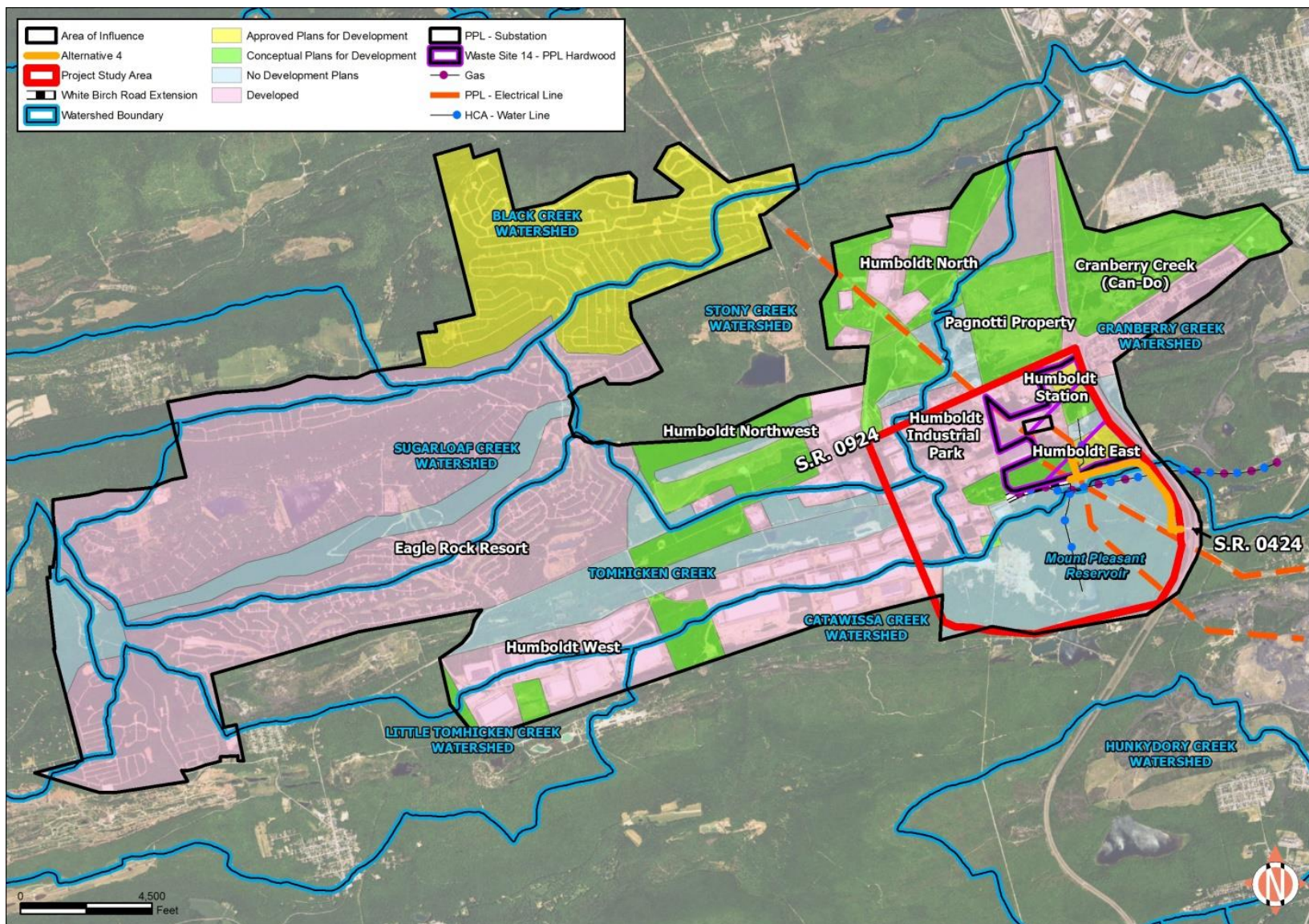
The analyses of the potential for growth-induced effects on land use and related effects on natural, cultural, and socioeconomic resources were completed for the build alternatives on geology, surface water quality, and threatened and endangered species. A detailed analysis for indirect impacts by the three build alternatives on agricultural resources, air quality and noise, cultural resources, environmental justice communities, proposed developments, and utilities was not completed as there were no direct, or significant, impacts to these resources. The area is in attainment for air quality and there are no noise sensitive receptors, cultural resources, or environmental justice communities present. The project area is already planned for development, and that development is not dependent upon this project; therefore, additional indirect impacts to agricultural soils or utilities would not occur due to this project.

The analyses on the noted resources above begins with a review of regional and local planning initiatives that affect the indirect impact “area of influence,” or AOI, for the beltway extension project. This AOI extends past the limits of disturbance of the build alternatives and takes into account any project-related growth that would occur in the future. For this project, the limits of the AOI extend outside of the project study area and include the entire HIP (Proper), including Humboldt Station, West campus, and East campus, as the primary goal of this project is to provide access to and through the HIP roadway network. In addition, the planned (conceptualized and unfinished) developments at the intersection of I-81 and S.R. 0924 (Pagnotti Property and CAN DO’s Cranberry Creek) and the Northwest and North HIP campuses north of S.R. 0924 should be included in the AOI as the project could induce project development of these areas (Figure 11). Finally, the Eagle Rock Resort is included as it represents one of the biggest generators of traffic in the region, and its residents would benefit greatly by the improved system linkage and incident management. No additional properties outside of the project study area would experience induced growth as a result of the construction of the S.R. 0424 extension. Meetings with the task force, including a public meeting, were conducted to better understand the ongoing and proposed development within the AOI.

The regional and local planning initiatives that help to identify the pressure to develop land within and adjacent to the HIP include the Lackawanna-Luzerne Comprehensive and Long Range Transportation Plan (LLCLRT; McCormick Taylor 2012) and the Lackawanna-Luzerne Long Range Transportation Plan Update (McCormick Taylor 2015), which serve as a guide for the Metropolitan Planning Organization (MPO) to achieve desired regional development in the two counties. As part of this planning effort, the MPO selected Priority Areas

...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 would increase transit ridership potential. As the demand for transit emerges, local transit authorities can offer new routes or extend existing ones. (McCormick Taylor 2012)

Figure 11. Indirect Impacts, Area of Influence



Once selected and established, these Priority Areas would help to promote greater access and interconnectivity efforts for multi-modal forms of transportation. In effect, these areas would help to promote local and regional development and the expansion of the public transportation network while fostering more “walkable, bikable, and transit-friendly” areas. In addition, the LLCLRT identifies infill areas where additional growth can be promoted. The Regional Plan identifies one priority area, the Humboldt Center, within the AOI, and multiple priority areas northeastward. These include the Valmont Plaza, Valmont Industrial Park, and Penn State Hazleton priority areas. The entire project study area falls within designated infill areas. In addition, the Greater Hazleton Area region, as a whole, is designated as Mixed Density Infill Areas except for the portion of undeveloped land south of the existing railroad that forms the HCA’s Mount Pleasant Reservoir watershed (McCormick Taylor 2012:Figure 2.1 Land Use Plan). It should be noted that the HIP, as well as the three neighboring Priority Areas, are more specifically designated a Transit Village Priority Area. These areas would involve “transformations of existing settings that already attract people for education, employment, shopping, or entertainment” (McCormick Taylor 2012).

Within the HIP, industrial growth has been promoted by the designation of Keystone Opportunity Zones (KOZs). KOZ areas exist throughout the HIP and specifically adjacent to Commerce Drive where the build alternatives would tie into the newly constructed White Birch Road Extension, Commerce Drive, and Forest Road (see Figure C-7 in Appendix C). As of September 2017, many of these KOZ areas were beginning to be developed or had planned developments designed. For example, Parcel 105 (31 acres) is currently under development for a commercial warehouse, while Parcel 103 (46.8 acres) was designed for industrial tenants with access to rail service.

KOZ areas were established to stimulate economic development within already developed industrial parks, focusing on light industrial uses such as manufacturing, assembly and warehouse facilities, or office and commercial structures.

Designated conservation areas occur within the project study area. The Open Space, Greenways, and Outdoor Recreation Master Plan (2004) identifies the HCA’s Mount Pleasant Reservoir and drinking water watershed as conservation areas. Additional conservation areas are located east of I-81 on either side of the existing S.R. 0424 Hazleton Beltway (McCormick Taylor 2012:Figure 2.1 Land Use Plan). According to the Open Space Plan, this area is part of the Pismire Natural Area and is targeted for recreation and open space. Development is generally discouraged in these areas, in particular, where incentives for development occur on adjacent properties. The HCA, as a member of the project task force, was a driving force behind the development of alternatives that bordered I-81 and the railroad to limit impacts to the wells and reservoirs utilized for drinking water.

As a result, the initiatives noted above would, theoretically, encourage the development of the previously mined land above the Reading Blue Mountain and Northern Railroad, while limiting

development of the large forest tract associated with the HCA's drinking watershed. This can be highlighted in the assessment of vacant land in and adjacent to the project study area. Vacant land is present in large tracts within the project study area and east of I-81 along the S.R. 0424 Hazleton Beltway. The majority of this land is owned by Bonner Family Enterprises, HCA, and a private landowner (Louis Beltrami). CAN DO manages the vacant land within the HIP, as well as large tracts designated for light industrial, commercial, and residential use in the HIP Northwest, North, and Cranberry Creek campuses north of S.R. 0924. At this time, much of this previously strip-mined land is used as staging areas for equipment, construction material, or regenerated forest land. In addition, a large wetland mitigation site was constructed in Humboldt East (Lot 106) in 2007 to compensate for wetland impacts within the HIP campus.

The vacant land present in the AOI falls into three categories of development opportunities listed below:

1. *Properties with no current development plans.* This category features vacant land with no infrastructure and no current plans for development. This category includes Lot 106, the Bonner Family Enterprises, and the HCA Mount Pleasant Reservoir property. These large tracts of land are primarily targeted for conservation to maintain water quality or to preserve open space and recreation. Lot 106 contains a wetland mitigation site which has associated easements that further restrict its development. This represents approximately 18 percent, or 1,992 acres, in the AOI.
2. *Properties with approved development plans.* This category features vacant land with approved development plans and existing infrastructure to serve development. Vacant properties in the Humboldt Station complex adjacent to a recently developed hotel and restaurants meet this criterion. These lands are cleared of vegetative cover and prepared for development. In addition, Lot 105 has been approved for development and began grading activities in May 2016. This represents approximately 12 percent, or 1,338 acres, in the AOI.
3. *Property with conceptual plans.* This category features vacant land with conceptual plans for development, but internal access roads or infrastructure may be non-existent or limited. The Pagnotti Property, Cranberry Creek planned development, and Lot 103 in Humboldt East fall into this category. High cube warehousing and distribution centers, as well as commercial development, such as restaurants and gas stations, are proposed for the Pagnotti Property, while Lot 103 and Cranberry Creek have conceptual plans for development; however, all remain vacant with a regenerating forest cover. In addition, vacant properties in Humboldt West, Northwest, and North have access to limited infrastructure, but lack approved plans at this time. This represents approximately 16 percent, or 1,764 acres, in the AOI.

While the majority of land within the AOI falls under either developed or no development plan categories, approximately 16 percent of the AOI features parcels with at least a conceptual plan for development and some connection to infrastructure. While it is unlikely that these parcels would be

developed in the near future, it should be noted that they all feature land that was either previously mined or supported the strip-mining industry. Several of these properties, including Cranberry Creek, the Pagnotti Property, and parcels in Humboldt North and Northwest, were cleared of vegetation in the recent past in anticipation of development but have since started to regenerate a vegetative cover. Therefore, if developed, their environmental impact would be minimal.

The remainder of the developable parcels includes property that features approved plans or no plans for development. Potential indirect impacts to these properties would be minimal. Humboldt Station and the Lot 105 properties have already been cleared for development or are in the process of being developed into a warehouse facility. Environmental impacts have already been realized, as forested and wetland areas were impacted as of May 2016. In addition, Eagle Rock Resort has approved units for sale, residential development, and an existing roadway network, and areas with aquatic resources have already been protected as open space outside of these lots. The fact that 90 percent of the buildable lots were sold in the resort, yet only 10 percent of them have been developed, indicates relatively low pressure for further development. Parcels categorized in the AOI as having no development plans include the HCA's watershed, the private properties of the Bonner and Beltrami families, or open areas protected as part of the HIP development plans, and are unlikely to be affected by this project. Most of these areas contain streams and wetlands or drinking water wells and reservoirs that make them unsuitable for further development.

The project's AOI includes a variety of undeveloped properties in the north and western regions which have access to infrastructure to support growth (though it is limited in some of these regions). Properties along S.R. 0924 or directly along existing access roads within the HIP have access to water, sewer, and electricity; however, large parcels such as the Pagnotti Property and Cranberry Creek lack internal infrastructure to fully develop these sites. In addition, the demand for development is relatively low based on the inability of CAN DO to find tenants for parcels within the HIP still zoned as KOZ and the inability for Lot 103, Cranberry Creek, and Pagnotti Property concept plans to move forward. Even properties within Humboldt Station, where infrastructure is present, have not found commercial tenants. As a result, the potential for project-related growth due to growth pressure is considered to be relatively low.

Impacts:

No Build Alternative: Under the No Build Alternative, developmental pressure on the existing vacant parcels would remain unchanged, as no additional access roads would be built from S.R. 0424 or I-81 into the HIP. A proposed White Birch Road extension would provide additional access for Humboldt West and HIP tenants to access Commerce Drive and provide a minor improvement in travel time to S.R. 0924. As a result, properties zoned as KOZ in these park campuses may become more favorable to future tenants. The North, Northwest, Pagnotti, and Cranberry Creek properties would not benefit from the No Build scenario and are unlikely to experience any accelerated growth, as traffic congestion issues at the S.R. 0924 and I-81 interchange would not be lessened.

Build Alternatives: The construction of the S.R. 0424 beltway extension would provide a new access into the HIP from the I-81/S.R. 0424 interchange. In any of the **Alternatives 4, 4A, or 4A**

Modified scenarios, traffic congestion related to HIP traffic and incident management would improve, especially during peak travel periods. In particular, these alternatives would help mitigate the failing LOS in the build year 2018 through 2038, as analyzed in the Traffic Analysis Report. In addition, access directly to vacant properties in Humboldt East, Humboldt Station, and HIP (Proper) should improve with the new connection to Commerce Drive, making these parcels more desirable to tenants. Eagle Rock Resort residents would also benefit from the increased system linkage and access to a detour route for incident management along I-81 or S.R. 0924. However, a closer look at the vacant properties in these campuses suggests that development pressure would not significantly increase. For example, Lots 103 and 106 are designated as KOZ, but only until the end of 2017. With the extension unlikely to be built by then, tax benefits for developing these sites would end. In addition, environmental concerns are present on these sites that may continue to dissuade tenants, including their location within the PPL-Hardwood hazardous waste site, the presence of existing wetlands or a wetland mitigation site, and the PPL Electrical transmission line, which crosses over Lot 103. Finally, the lack of development in the resort, despite 90 percent sale of buildable lots, suggests that other factors besides the transportation network are dissuading owners from beginning construction.

All other vacant properties, including the North, Northwest, Pagnotti Property, and Cranberry Creek sites, as well as undeveloped lots in Eagle Rock Resort, would not gain additional direct access from the build alternatives. Any benefit they attain from the proposed project would be related to incident management and the availability of an alternate route through the HIP to the S.R. 0424 and I-81 interchange. While this should help traffic flow and incident management along S.R. 0924 and I-81 in the vicinity of the project, it is unlikely to spur the development of these properties if economic pressures remain constant. These parcels have been available since the early 2000s and are associated with redevelopment initiatives related to the Humboldt Center Priority Area, including many assigned as KOZs. Finally, additional vacant land is located within Priority Areas just north of the project study area at CAN DO's Valmont Industrial Park, which further reduces the development pressures in the AOI. As a result, the development of vacant parcels within the AOI is not dependent upon the construction of the S.R. 0424 Beltway Extension. Therefore, the indirect impact of the build alternatives would be minimal on geology, surface water quality, and threatened and endangered species, as the project would not induce indirect impacts to these resources.

Environmental Features/Constraint Mapping:

Please refer to the Environmental Constraints Map in Appendix B.

Minimization/Mitigation:

No additional mitigation is proposed as part of S.R. 0424 Beltway Extension project for indirect impacts. Existing local and regional planning, as well as existing environmental protection efforts, would continue to preserve open spaces and promote land development practices that reduce impacts on natural and cultural resources in the vicinity of the project study area.

E. Cumulative Impacts

In addition to the consideration of a project's direct impacts, the Council on Environmental Quality (CEQ) regulations require that the cumulative impacts of a project be examined (40 CFR § 1508.25 [c]). The project needs, as described in Section II, help define the limits of the project's influence and quantify the cumulative impacts on natural, cultural, and socioeconomic resources.

A **cumulative impact** is 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).

Documentation of cumulative impacts includes an analysis of potential incremental impacts to significant environmental features as a result of the proposed S.R. 0424, Section 390 Hazleton Beltway Extension Project. These incremental impacts can result in individually minor but collectively significant impacts occurring over a period of time when added to other past, present, and reasonably foreseeable future actions. Resources that are not significantly impacted by the project are not a focus of this analysis (e.g., soils of statewide importance).

Methodology:

This cumulative effects analysis begins with the identification of resources that would be directly and/or indirectly affected by the proposed alternatives (**Alternatives 4, 4A, and 4A Modified**). A boundary, or Resource Study Area (RSA), is assigned to each resource along with time frames for a past and future trend analysis. The time frames affecting these resources are established based on available information in county comprehensive plans; Long Range Transportation Plans; PennDOT's Four & Twelve Year Plans (TYP) and Transportation Improvement Plans (TIP); resource agency inventories; and from meetings with local stakeholders (i.e., CAN DO). Potential impacts resulting from these future projects were assessed based on the type of project (e.g., resurfacing), previous knowledge of such projects, and professional judgment. The proposed project's impacts were then combined with an analysis of past trends and future potential effects to generate a potential cumulative effect. The current condition of the resource and the likelihood the resource would recover from the impact determined the significance of the cumulative effect.

Cumulative Effects Study Area Boundaries:

Each resource impacted by the proposed project needs to be evaluated for its cumulative impacts within an established RSA (PennDOT 2008). The RSA is defined as a "geographic area" within which the impacts on a particular resource are analyzed. The proposed S.R. 0424, Section 390 Hazleton Beltway Extension Project would have direct/indirect impacts on aquatic resources, forestland (Pismir Ridge Natural Area, including the Ridgetop Dwarf-Tree Forest community), and threatened and endangered wildlife (Indiana, northern long-eared, and eastern small-footed

bats). Table 10 presents the cumulative effects RSAs for each of the impacted resources identified in the study area. Figure 12 identifies the RSAs for each resource.

Table 10. Resources’ Current Conditions in the Resource Study Area (RSA).

| Resource | RSA |
|---|--|
| Surface Waters (Wetlands/Waterways) | Cranberry and Cross Run Watersheds |
| Forestland (Pismir Ridge Natural Area; including RTDF) | Pismir Ridge Natural Area (Hazle Township, Luzerne County) |
| Indiana (federally endangered) and northern long-eared (federally threatened) bats, and eastern small-footed bat (state threatened) | Indiana bat rangewide boundary |

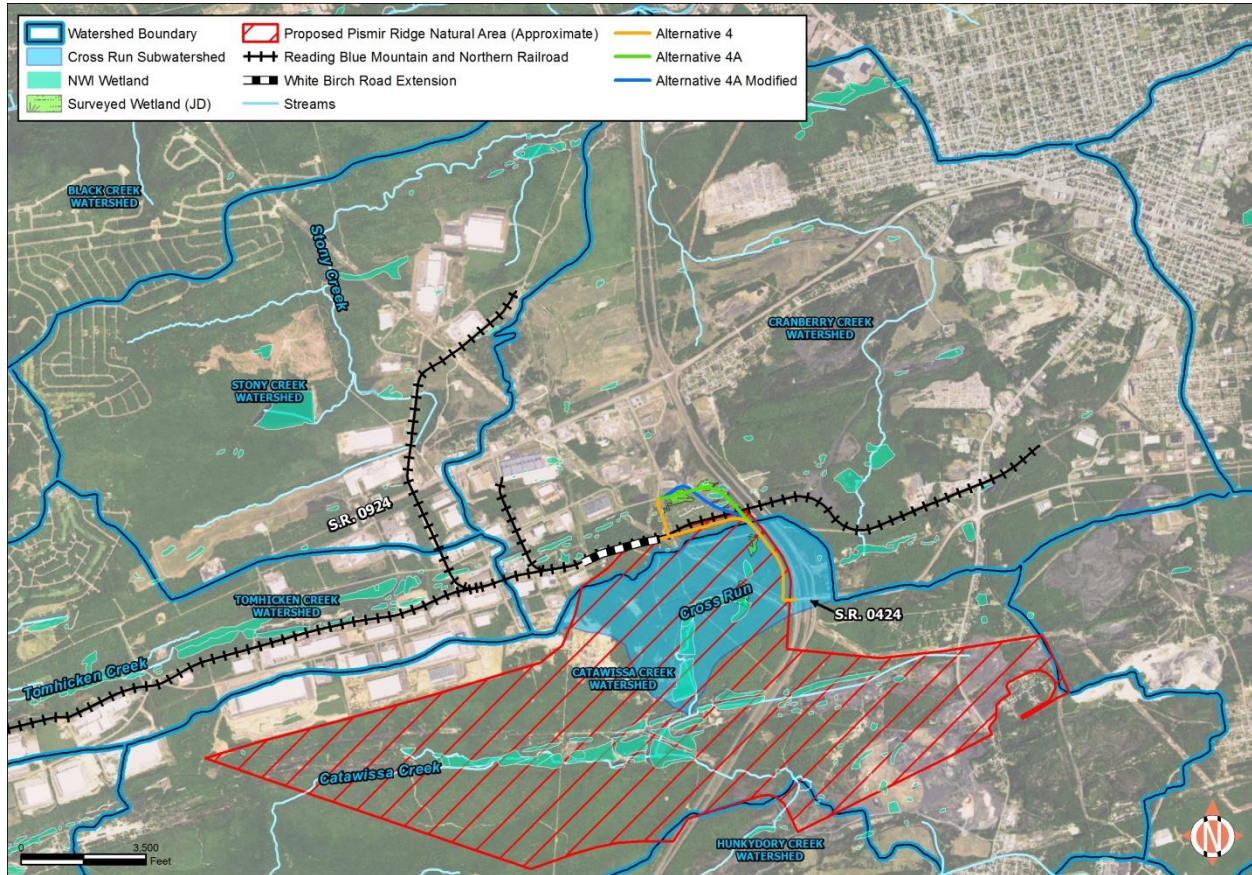
Impacts to surface waters, including wetlands and streams, are restricted to their respected watersheds (Cranberry Creek and Cross Run watersheds).

Forestland is represented as the dominant cover of the Pismir Ridge Natural Area (PRNA), a forested region south of the HIP. While not managed as a state forest, park, or DCNR natural area, the PRNA is a large, mostly privately owned forest tract that includes stands of RTDF. The area’s boundary was identified in the *Open Space, Greenway & Outdoor Recreation Master Plan, Lackawanna & Luzerne Counties* (April 2004) as a priority area for proposed conservation efforts to protect water quality, recreational opportunities, and scenic quality, and comprises 2,388 acres in Luzerne County. The RTDF community is found on dry ridgetops containing shallow, sometimes sandy acidic soils on bedrock in this natural area. The PRNA is identified by the county as a priority for conservation in the long-term, as opposed to short- and mid-term conservation priorities that were to be completed within ten years following the master plan approval. This is likely due to the PRNA’s high percentage of private ownership, which limits management strategies to zoning and easements to restrict further development. The boundaries of the PRNA are used for the forestland RSA as it represents the only forested area impacted by the project, and this impact is locally significant for PRNA’s value in maintaining HCA’s drinking water quality and in preserving scenic quality.

The range for impacts to the Indiana bat (federally endangered), northern long-eared bat (federally threatened), and eastern small-footed bat (state threatened) were evaluated based on a rangewide habitat for these species. These species have been severely harmed by the white-nose syndrome (WNS), a fungal disease impacting bats in their hibernaculum during winter. WNS has been confirmed in 31 states and is responsible for killing more than 5.7 million bats in eastern North America (White-Nose Syndrome.org, accessed September 20, 2017). Therefore, an assessment of the cumulative impacts on these protected bat species must consider the full range of the bat and the impact of WNS on their populations. This assessment utilizes the rangewide habitat for the Indiana bat as the bat Resource Study Area (RSA). This range was selected since the range of the northern long-eared bat overlaps with the range of the Indiana bat (eastern half of the United States) and is much more extensive, including Canadian provinces as well as 37

states in eastern and northcentral United States (USFWS, July 26, 2017). In addition, there are no firm population size estimates for the northern long-eared bat (Federal Register 2015), and consultation associated with the Indiana bat mirror that of the northern long-eared bat.

Figure 12. RSA Map



Analysis Time Frame:

The timeframe for the assessment of cumulative impacts for the S.R. 0424, Section 390 Hazleton Beltway Extension Project is defined to be from 1950 to 2038, a range that represents the decline of mining in the RSAs and the S.R. 0424 Beltway Extension project’s design year. The year 1950 is appropriate as it represents a period of steady decline of mining activities since their peak in the 1940s, leaving large abandoned tracts of mined land to either regenerate or be targeted for commercial/industrial development. This past land use left the majority of streams and wetlands degraded, exposing them to acid mine drainage that has resulted in reduced water quality, including lack of aquatic life. It also resulted in the selection of these areas for industrial development through tax incentive programs such as Keystone Opportunity Zones (KOZs).

Within the various RSAs (watersheds, Hazle Township, PRNA), land development is largely the result of CAN DO’s management of the various HIP campuses, as well as the development of the Eagle Rock Resort. According to CAN DO’s website, the success of the Valmont Industrial Park development led CAN DO to purchase the HIP land in 1970, and the opening of industrial

park followed in 1972. By 1999, aerial coverages show the majority of HIP Proper was fully developed and that Humboldt West was in progress; Humboldt North developed later and did not begin to claim tenants until 2008. By 2015, much of the Humboldt Proper and West campuses were fully developed, and fast food restaurants and a hotel were constructed at Humboldt Station. In contrast, the Pagnotti and Cranberry Creek parcels, as well as portions of Humboldt Northwest, were cleared of vegetation during the late 2000s, but these areas were never occupied by tenants and are now in the process of regenerating a vegetative cover. In addition, the Village of Harwood, located in the southeast corner of the S.R. 0924 and I-81 interchange, has remained relatively unchanged since the 1950s, indicating very little pressure for residential growth in conjunction with local economic development. Besides these changes, there has been very little development within the RSAs since mining declined in the 1950s. Further, regional development has been concentrated in commercial and industrial parks where economic development was spurred by tax-based incentives (e.g., KOZ) to develop areas impacted by past mining activities.

The lack of, or slow, growth within and directly adjacent to the RSAs correlates with census data from Luzerne County, Hazle Township, and even the City of Hazleton (Table 11). Despite an increase in the United States and Pennsylvania populations, the county and greater Hazleton area has shown a steady decline since the 1960s, with the exception of Hazle Township, whose population increased by several thousand residents from 1960 to the present day.

Table 11. Summary of Population Trends, 1960 to 2015.

| | 1960 | 1970 | 1980 | 1990 | 2000 | 2010 | 2015 |
|------------------|-------------|-------------|-------------|--------------------|-------------|-------------|-------------|
| United States | 179,323,175 | 203,302,031 | 226,542,199 | 248,709,873 | 281,421,906 | 308,745,538 | 320,090,857 |
| Pennsylvania | 11,319,366 | 11,800,766 | 11,863,895 | 11,881,643 | 12,281,054 | 12,702,379 | 12,802,503 |
| Luzerne County | 346,972 | 342,211 | 343,079 | 328,149 | 319,250 | 320,918 | 318,449 |
| Hazle Township | 7,478 | 7,619 | 9,458 | Data Not Available | 9,000 | 9,544 | 9,563 |
| City of Hazleton | 32,056 | 30,426 | 27,113 | Data Not Available | 23,399 | 25,340 | 24,932 |

The future year of 2038, the project’s design year, was selected as it correlates closely with the Lackawanna and Luzerne Counties’ Long-Range Plan (LLRP) for development and redevelopment through the year 2035 (2012).

Past Projects:

As noted above, the areas defined by the RSAs fall primarily within Hazle Township and the Greater Hazleton Area (GHA). These areas experienced stagnant growth, if not a decline in population, as the mining industry declined after its peak in the 1940s. As a result, few projects occurred outside of CAN DO’s development of industrial and commercial parks (e.g., HIP, Valmont), and aerial photographs confirm an unchanged landscape except where buildings appear on abandoned strip mine lands acquired by CAN DO. CAN DO appears to have largely minimized direct impacts to wetlands and waterways by protecting them in designated Open Space areas; however, impacts to many small wetlands within mine pits were mitigated at two sites in the HIP. Areas within the HIP had regenerated a forest cover when strip-mining ceased,

but they have since been cleared for redevelopment. Forestland south of the railroad within the HCA drinking watershed, and more extensively within the planned PRNA, has largely remained intact except for the land occupied by the active Bonner junkyard.

Current Conditions:

Aquatic resources were identified from an assessment of NWI mapped wetlands within the watersheds. There are currently 106.5 acres and 38.2 acres of NWI wetland (primarily palustrine open water [POW] wetlands associated with mine pits) in the Cranberry Creek and Cross Run watersheds, respectively. In addition, these watersheds contain 36,459.6 linear feet (Cranberry) and 4,903.6 linear feet (Cross Run) of streams.

Utilizing available GIS layers, the PRNA was identified as being 2,388 acres in size in Luzerne County, with approximately 1,738.8 acres of forestland. Twenty-three acres of RTDF were delineated within the investigation corridors of the three reasonable alternative alignments; however, the exact total acreage of RTDF is difficult to estimate in the PRNA without conducting a ground survey. An estimate can be developed based on the ridgetop elevations that correlate with the delineated RTDF within the PRNA. In total, there are 485.3 acreages of ridgetops that correlate with the expected range for RTDF in the PRNA.

According to the Pennsylvania Game Commission (PGC), there are 18 known Indiana bat hibernacula in 11 Pennsylvania counties, the largest of which is located at Canoe Creek Mine (J.D. Hartman Mine) in Blair County (PGC 2010). This hibernaculum supports approximately 90 percent of the Indiana bat population and is located approximately 120 miles from the project study area. The closest hibernacula to the project study area are the Shickshinny and the Glen Lyon mine hibernacula, which are located approximately 15 miles from the study area. These winter hibernacula are protected mines that are listed as Priority 4 sites (i.e., sites that are least important for recovery and long-term conservation of *M. sodalist* due to the observed historic populations of less than 50 bats; USFWS 2007). Studies of the Pennsylvania Indiana bat population show an increase due in part to gating to reduce human disturbance and predation by feral cats, owls, and black snakes during swarming periods. However, WNS has recently become a major threat to cave bat populations (PGC 2010). The 2017 rangewide population for *M. sodalist* is 530,705, with 229 hibernacula in 17 states (USFWS, July 5, 2017). Since 2007, Pennsylvania is one of the largest states experiencing a net loss of Indiana bats, with the population decreasing from 1,015 (2007) to 23 individuals in 2017 (USFWS, July 5, 2017). In regards to the northern long-eared bat, population declines are estimated at 99 percent in the Northeastern United States (USFWS 2016)

Mature forests, which offer habitat for roosting bats in the summer following spring emergence, are critical for both *M. sodalist* and *M. septentrionalis* bat survivorship that were also found to prefer insect-foraging habitat on gentle to moderate south-facing slopes covered by mixed oak and northern hardwood forests (PGC 2010). Protected forests in the county consist of the 8,813-acre Nanticoke tract of the Lackawanna State Forest. In addition, Nescopeck and Ricketts Glen state parks, comprising 3,550 and 13,050 acres in Luzerne County, respectively, and a portion of the 4,548 acres of the Lehigh Gorge State Park, all feature large protected forest habitat that

support the bat habitat requirements. As noted above, no forests are located in the project study area that are actively protected and managed by the state or local municipalities; however, development within the HCA watershed is limited to protect drinking water sources.

Table 12 summarizes the current conditions for each resource within their respective RSAs.

Table 12. Resources' Current Conditions in the RSAs.

| Resource | RSA | Existing Amount in RSA | Current Health in RSA |
|---|---|--|-----------------------|
| Surface Waters (Wetlands/Waterways) | Cranberry Creek and Cross Run Watersheds | Cranberry Wetlands: 106.5 acres Cross Run Wetlands: 38.2 acres Cranberry Streams: 36,459.6 linear feet Cross Run Streams: 4,903.6 linear feet | Good ¹ |
| Forestland | Pismir Ridge Natural Area (PRNA) Boundary (including RTDF: 2,388 acres in Luzerne County) | 1,738.8 acres (PRNA) Approximately 485.3 acres (RTDF) ³ | Good ² |
| Indiana (federally endangered) and northern long-eared bats (federally threatened), and eastern small-footed bat (state threatened) | Indiana Bat rangewide boundary | 530,705 population (2017) | Federally Endangered |

1. Within the project study area, the aquatic resources are either severely degraded by past mining activities or, in the HCA drinking watershed and PRNA, protected from development to maintain a high water quality. Therefore, the overall health of the resources is considered Good.
2. The PRNA has been impacted by strip-mining and now by the HIP development, Bonner Junkyard, off-road vehicle recreation, and utility and roadway right-of-way that fragments the forest. The PRNA also includes a unique woodland type, RDTF, and a maturing forest, yet is primarily privately owned and not formally protected and managed as a state park, forest, or natural area. Therefore, the overall health of the resource is considered Good.
3. Total RTDF acreage is estimated based on areas identified as RTDF during ground surveys and ridgetop areas matching elevation of those confirmed as RTDF by survey. Aerial photographs were reviewed to eliminate any of these proposed areas that did not contact a partial forest cover.

Future Projects and Potential Direct Impacts:

Reasonably foreseeable future projects in the project study area and RSAs are discussed in depth in the Proposed Development and Local Planning section of Appendix C (Section G). CAN DO has been actively trying to develop the remaining lots in the HIP and the newer campuses of North, Northwest, East, and West. For the purposes of this study, only properties that have approved development plans within the RSAs are considered reasonably foreseeable future projects. Therefore, only Humboldt Station and Lot 105 in HIP East have been approved for development, with Lot 105 currently under construction for a 500,000-square foot commercial warehouse/distribution building.

Table 13. Projects in the RSAs on Transportation Improvement and Long Range Transportation Plans.

| Projects in RSAs | Type/Scope | Municipality | Probable Environmental Impact |
|--|---|------------------|--|
| TIP-TYP | | | |
| 1. Interstate 81 and S.R. 0924 Improvement Project #: 108344 | Type: Interchange Improvement, Luzerne County, Hazle Township, Interstate 81 (Exit 143), and S.R. 0924. | Hazle Township | Few – development along already highly impacted transportation corridor and developed parcels. |
| 2. Luzerne RAMP Paving FFY20 Project #: 108344 | Resurface | Hazle Township | None |
| 3. I-81 Cable Median Barrier Project #: 102001 | Safety Improvement | Plains Township | None |
| 4. Luzerne S.R. 0309 Paving Project #: 108787 | Resurface | Hazle Township | None |
| 5. Luzerne S.R. 0424 Paving Project #: 108614 | Resurfacing | Hazle Township | None |
| 6. Luzerne S.R. 0093 Paving Project #: 108801 | Resurfacing | City of Hazleton | None |
| L RTP | | | |
| 1. S.R. 0924 over S.R. 0081 Project#: 9084 (L RTP) | Bridge Preservation | Hazle Township | None |

Proposed future transportation-related impacts in the RSAs are minimal. A review of PennDOT's Transportation Improvement Plan (TIP) database indicates that the majority of Luzerne County's proposed 170 projects listed on the Four and Twelve Year Plans (TYP) are either bridge replacement or resurfacing/restoration projects with minimal new impacts. Only the I-81 and S.R. 0924 Interchange Improvement project could result in any impacts within the RSAs. This project is currently in a planning stage, and impacts would largely be restricted to the existing right-of-way (ROW) and the adjacent developed land of the Humboldt Station and Harwood community, as well as the proposed Pagnotti and Cranberry Creek planned developments.

Direct Impacts and Potential Cumulative Effects:

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.

Table 14 illustrates the anticipated cumulative impacts associated with the proposed projects in the RSAs.

No Build Alternative: Cumulative impacts are those that result from the incremental direct and indirect impact of a proposed action when added to other past, present, or reasonably foreseeable future impacts. Inaction associated with the No Build Alternative will not alleviate traffic congestion, improve safety or access within the GHA, nor result in direct or indirect impacts to natural, cultural, or socioeconomic resources in the project study area. Therefore, existing trends in development would continue, and this alternative would not contribute to any cumulative effects.

No cumulative impacts are anticipated, as there are no direct/indirect impacts.

Build Alternative: Cumulative impacts associated with the build alternatives are the summation of the build alternatives' direct impacts combined with the direct impacts associated with the actions by others. Table 14 illustrates the total anticipated impact on each resource's RSA and that the project would not result in significant cumulative impacts.

Alternative 4 would impact approximately 0.2 acre of wetland, with no stream impacts. **Alternatives 4A and 4A Modified** would result in 3.5 and 1.0 acres of wetland impacts, respectively, and 42 linear feet of stream impacts (Table 14). In addition, the proposed developments and transportation improvements within the watershed RSAs would result in less than 0.3 acre of additional wetland with no stream impacts. Avoidance and minimization efforts of aquatic resources in the HCA watershed have been a major focus of the S.R. 0424 Beltway Extension planning and coordination with the HCA. As a result, the build alternatives avoid all aquatic resources except for wetland areas developed along the utility ROW. These isolated emergent wetlands developed in tire ruts or borrow pits following the installation of the water and gas lines. In addition, the proposed roadway would avoid all Exceptional Value (EV) wetlands that filter and preserve the water quality draining into drinking water wells and the

Figure 13. Transportation and Development Projects in RSAs

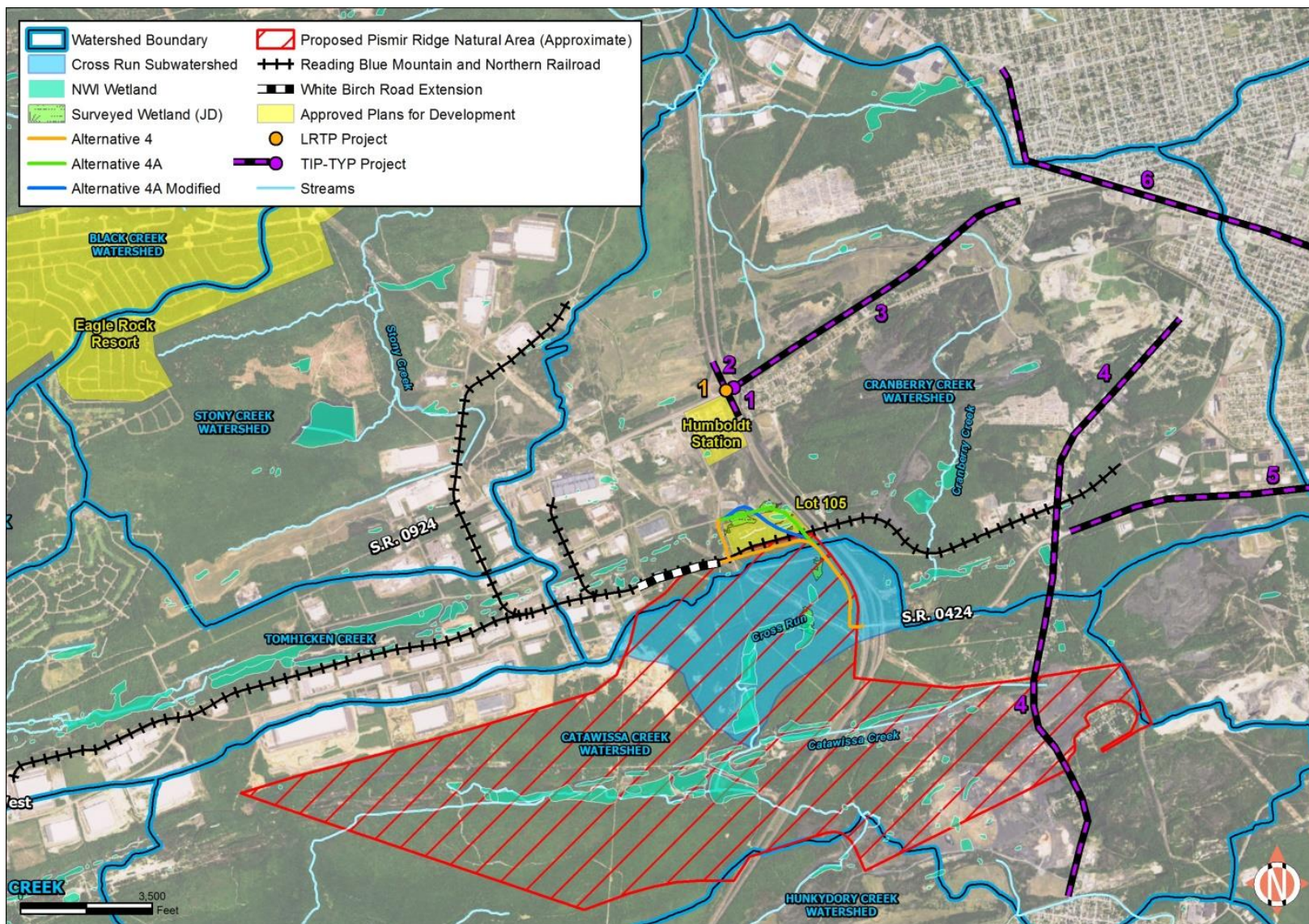


Table 14. Anticipated Cumulative Impacts.

| Resource | Existing Amount in RSA | Anticipated Direct/Indirect Impacts to Resources | | | | | Total Anticipated Impacts (Percent of Existing) | Mitigation Required for Cumulative Impact |
|----------------|---|--|--|---|----------------------------|----------------------------|--|---|
| | | Future Projects | | Proposed S.R. 0424 Hazleton Beltway Extension | | | | |
| | | Commercial/Industrial Development | Transportation Projects in RSAs (TYP/LRTP) | Alternative 4 | Alternative 4A | Alternative 4A Modified | | |
| Surface Waters | Cranberry Creek Watershed Wetlands: 106.5 acres | <0.3 acre | 0 acre | 0 acre | 3.3 acre | 0.8 acre | 0.3 to 3.6 acre (0-3.4%) | No*,** |
| | Cranberry Creek Watershed Streams: 36,459.6 linear feet | 0 linear feet | 0 linear feet | 0 linear feet | 42 linear feet | 0 linear feet | 0 to 42 linear feet (0-0.1%) | No* |
| | Cross Run Wetlands: 38.2 acres | 0 acre | 0 acre | 0.2 acre | 0.2 acre | 0.2 acre | 0.2 acre (0.6%) | No* |
| | Cross Run Streams: 4,903.6 linear feet | None – outside of RSA | None – outside of RSA | 0 linear feet | 0 linear feet | 0 linear feet | 0 linear feet (0%) | No* |
| Forestland | Pismir Ridge NA: 2,388 acres RTDF (Approx.) 508.26 acres | None – outside of RSA | None – outside of RSA | 16.9 acre (RTDF: 5.2 acre) | 12.8 acre (RTDF: 1.1 acre) | 12.8 acre (RTDF: 1.7 acre) | Forestland 12.8-16.9 acre(0.5-0.7%) RTDF: 1.1-5.2 acre (0.2-1.0%) | No* |

| Resource | Existing Amount in RSA | Anticipated Direct/Indirect Impacts to Resources | | | | | Total Anticipated Impacts (Percent of Existing) | Mitigation Required for Cumulative Impact |
|---|--|---|---|---|---|---|---|---|
| | | Future Projects | | Proposed S.R. 0424 Hazleton Beltway Extension | | | | |
| | | Commercial/Industrial Development | Transportation Projects in RSAs (TYP/LRTP) | Alternative 4 | Alternative 4A | Alternative 4A Modified | | |
| Indiana (federally endangered) and northern long-eared bats (federally threatened), and eastern small-footed bat (state threatened) | 530,705 population (Indiana bat, 2017) | No impact anticipated with seasonal restriction on tree removal | No impact anticipated with seasonal restriction on tree removal | No impact anticipated with seasonal restriction on tree removal | No impact anticipated with seasonal restriction on tree removal | No impact anticipated with seasonal restriction on tree removal | No impact | No impact to health of bat populations |

* Cumulative impacts <1% are considered negligible and would not require mitigation.

** Minimization and avoidance measures would be utilized to further limit impacts. Mitigation of direct impacts would be completed as part of permitting for unavoidable impacts.



Mount Pleasant Reservoir. Finally, a closed drainage system would direct roadway runoff from this watershed into detention ponds in Cranberry Creek and then into a borrow pit south of Harwood. This system would reduce traffic-related pollutant loads from affecting HCA's watershed. Wetland mitigation has been developed for previous impacts in the HIP and would be expanded, where possible, to compensate for unavoidable impacts of the build alternatives. Therefore, as the overall impact to aquatic resources is small (e.g., maximum of 2.2 percent of wetland and 0.1 percent of stream in the Cranberry Creek Watershed), and efforts are proposed to offset these direct impacts, the project would not result in cumulative impacts to aquatic resources in either the Cross Run or Cranberry Creek watersheds.

Forestland (including the RTDF community) within the PRNA would be impacted by the build alternative alignments. Specifically, a maximum of 16.94 acres of forest would be cleared (including 5.2 acres of RTDF) as a result of Alternative 4's construction, with fewer impacts associated with the other two alternatives (Table 14). The proposed development and transportation improvements in the region would not impact the forestland RSA, as these projects are located north of the natural area within the HIP campuses or along existing transportation corridors. As a result, no additional impacts are anticipated. The proposed alternative alignments were also moved closer to I-81 to reduce their impact on the HCA watershed; this decision also reduces the overall fragmentation of the forestland as well as reduces impacts to the PRNA's interior. Therefore, as the overall impact to forestland is small (<0.9%) relative to the entire forested PRNA, the project would not result in significant cumulative impacts to forestland resources, including RTDF, in the PRNA.

As noted above, the S.R. 0424, Section 390 Hazleton Beltway Extension Project would require impacts to forestland located within the swarming range of several bat species. These forested impacts are a maximum of 16.9 acres with no impacts associated with proposed development in the project study. In fact, projects approved for development in the HIP are located on land parcels where forest cover has already been removed. Additional approved developments in the Eagle Rock Resort are for residential homes where development has been slow and not related to development of the S.R. 0424 extension. In addition, a bat habitat assessment was completed for these alignments and determined only a few roosting trees were located adjacent to the proposed alignments. No hibernacula will be impacted by the project, and the project would not affect south-facing slopes that are a preferred habitat for foraging bats. As a result, the USFWS and PGC determined that the project will avoid killing or injuring Indiana and northern long-eared bats if PennDOT agrees to cut trees between November 16 to March 31 and retain any shagbark hickory trees, dead and dying trees, and large diameter trees (>12 inches d.b.h.). Therefore, the project would not result in the degradation of bat habitat or overall health of federally endangered or state threatened bat species. In comparison to the 2017 rangewide population for *M. sodalist* (530,705), and similarly to the much larger range of *M. septentrionalis* bats, this project would not have a significant impact on bat populations, nor would the project result in a cumulative impact that further significantly diminishes protected bat species populations in comparison to the harmful effects of WNS.

Minimization/Mitigation:

No additional mitigation is proposed as part of the S.R. 0424, Section 390 Hazleton Beltway extension project. This project would include mitigation for direct impacts associated with the construction of the new roadway. Development within the RSAs would likely require adherence to state and federal rules and regulations and review as part of the environmental permit approval process, including Section 404-Chapter 105 Joint Permit and National Pollution Discharge Elimination System (NPDES) Permits reviewed by the PADEP, USACE, and the Luzerne County Conservation District. These permits require steps to demonstrate the avoidance and minimization of impacts to water resources, forest impacts, and threatened and endangered species, and provide compensatory mitigation for unavoidable impacts.

VI. Public Comment and Agency Coordination

The alternatives evaluation meetings conducted with both public and resource agencies are a critical component of the environmental assessment process. These meetings often reveal new alternatives that meet the project’s purpose and needs or uncover unintended impacts or consequences that render a proposed alternative unsuitable for further study. Table 15 summarizes the efforts to engage the local stakeholders (task force), the general public, and resource agencies during the selection process. These meetings are discussed in Section IV, and more information can be found in the Project Technical File.

Table 15. Public and Agency Coordination Meetings.

| Activity | Date | Purpose/Outcome |
|-----------------------------|------------|--|
| Project Kickoff Meeting | 2/2/2007 | Alternatives, including the No Build Alternative, were screened for meeting the purpose and needs. Alternatives 1, 1A, and 3 were not considered viable options. |
| Task Force Meeting #1 | 6/21/2007 | All alternatives, including the No Build Alternative, were presented to the task force. Alternatives 3A and 4D were identified as potentially reducing impacts to the HCA Watershed. |
| Agency Coordination Meeting | 8/21/2007 | The agencies reviewed all of the alternatives, including the No Build Alternative. Alternatives 4, 4A, 4B, 4C, and 4D were recommended forward for further study. |
| Task Force Meeting #2 | 12/21/2007 | The task force reviewed all alternatives, including the No Build Alternative, as well as recommendations provided by the agencies for further study of Alternatives 4, 4A, 4B, 4C, and 4D. |

| Activity | Date | Purpose/Outcome |
|-----------------------------|------------|---|
| Public Meeting | 6/24/2008 | Alternatives 4, 4A, 4B, 4C, and 4D, as well as the No Build Alternative, were presented to public. The public reviewed Alternatives 3A and 6. |
| Task Force Meeting #3 | 11/5/2009 | The task force reviewed the results of the value planning session, agency coordination meeting, public involvement, and environmental studies completed to date. Modifications to Alternative 4 were also discussed to minimize the impact to the watershed. Alternatives 4 and 4A were recommended for detailed study. |
| Project Field View | 4/28/2014 | During the field view, the project team identified a new alignment (Alternative 4A Modified) along the abandoned railroad alignment in Humboldt East. Alternatives 4, 4A, and 4A Modified were recommended for detailed study. |
| Agency Coordination Meeting | 11/19/2014 | As a result of the project restart, Alternatives 4, 4A, and 4A Modified were presented at the agency coordination meeting. |
| Task Force Meeting #4 | 2/5/2015 | The task force reviewed the results from the Agency Coordination meeting and recommended alternatives for detailed study. Support for Alternative 4 was expressed. |
| Project Team Meeting | 2/24/2015 | The traffic study was discussed, and the project team agreed to consider the connection of Alternative 4 to the White Birch Road Extension. |
| Project Team Meeting | 10/1/2015 | This meeting was held to discuss the results of the traffic study in conjunction with the detailed environmental study to select the preferred alternative. |
| Pre-Application Meeting #1 | 7/14/2016 | This meeting was held to discuss erosion and sedimentation control measures, stormwater management, wetland impacts, proposed mitigation, and previous resource agency coordination for the preferred alternative. |
| Pre-Application Meeting #2 | 1/19/2017 | Permit requirements for the NPDES and Joint permits were discussed with state representatives. Wetland mitigation options were evaluated in the HIP. |

VII. Preferred Alternative

The screening process for this environmental assessment involved multiple phases to collaborate with the project team, the local task force, and the public to identify reasonable alternatives that effectively met the project purpose and needs. In addition, secondary source reviews, field studies, and coordination with resource agencies provided the opportunity to assess the impacts of these reasonable alternatives on environmental, cultural, and socioeconomic resources. Table 16 summarizes the results of the detailed studies.

Table 16. Summary of Impacts for Alternatives Selected for Detailed Study (Alternatives 4, 4A, 4A Modified).

| Resource Type | Potential Resource Impact | Alt 4 – Commerce Dr to S.R. 0424 Interchange | Alt 4A – Forest Rd to S.R. 0424 Interchange | Alt 4A Modified – Forest Rd to S.R. 0424 Interchange |
|---|--|--|---|--|
| Geology | Mine-Related Subsidence | N | Y | Y |
| | Acid-Bearing Rock | N | Y* | Y* |
| | Steep Slopes/Slope Stability Issues | Y | N | N |
| Wetlands | Palustrine Emergent Wetland (PEM) (acres) | 0.2 | 3.5 | 1.0 |
| Waterways | Perennial (linear feet) | 0.0 | 42 | 0.0 |
| T&E Species / Communities of SC | Ridge Top Dwarf-Tree Forest (RDTF) (acres) | 3.7 | 1.1 | 1.7 |
| | Foraging & Roosting Bat Habitat (e.g., Indiana Bat) | Y | Y | Y |
| | Hibernaculum/Rock Outcropping Bat Habitat | N | N | N |
| Public Water Supply – Hazleton City Authority | Wells (Wellhead Protection Area Zone 1) | N | N | N |
| | Reservoir | N | N | N |
| | HCA Property (acres) | 15.6 | 9.6 | 10.4 |
| Engineering Information | Length of New Road (miles) | 1.1 | 1.2 | 1.1 |
| | Approximate Total Cost (million \$) <i>2015 estimates</i> | 14.3 | 14.7 | 14.1 |

Notes: created on 10/28/2015; Y – Resource Present ; N – Resource Not Present

*Potential exists, but would require geotechnical testing to determine actual presence of acid-bearing rock.

Alternatives 4A and 4A Modified pose concerns with their alignments north of the railroad where mining activities have transformed the landscape. Both of these alignments are directly above abandoned subsurface mining activities that could create stability issues associated with subsidence. In addition, it was noted during the November 2014 agency coordination meeting that Alternative 4A Modified would be located in the center of an approximately 33-acre lot where a 500,000-square foot commercial warehouse/distribution building is proposed, creating potential for additional ROW costs. Alternative 4A would also impact this lot, but would remain on the eastern side of the property and avoid the warehouse but impact much of the proposed parking and stormwater management facilities. Since the meeting, grading activities and infrastructure and building construction have commenced.

A project team meeting was held on February 24, 2015, to discuss the Traffic Analysis Report which analyzed options for traffic dispersion within HIP, and what, if any, upgrades might be needed as part of this project within the internal HIP network to ensure acceptable LOS. Three options were discussed.

- Option 1: S.R. 0424 connection at Forest Road without an extension of White Birch Road to Commerce Drive.
- Option 2: S.R. 0424 connection at Forest Road with an extension of White Birch Road to Commerce Drive (by CAN DO).
- Option 3: S.R. 0424 connection at the White Birch Road extension (by CAN DO) and Commerce Drive intersection.

Options 1 and 2 correlate to scenarios involving Alternative 4A and 4A Modified, while Option 3 correlates to a scenario involving Alternative 4.

Following the completion of the traffic study, a project status meeting was held on October 1, 2015, to discuss the findings. This traffic study report indicated that the study area cannot sustain acceptable LOS and capacity in future year (2038) without an extension of S.R. 0424. Based on the construction of the White Birch Road extension, Options 2 and 3 can both provide the required capacity and LOS to extend S.R. 0424 through HIP to S.R. 0924. However, Option 2 would not work as well as Option 3 since its direct connection with Forest Road would subject more traffic to the roadway's reverse curve horizontal geometry (sharp turns). It would also be farther away from the large traffic generators on Oak Ridge Road (southwest of White Birch Road), have an adverse impact to the development of Lot 105 within Humboldt East, and create another at-grade railroad crossing. Option 3 would better accommodate future traffic while limiting at-grade railroad crossings. Therefore, the construction of an extension of S.R. 0424 utilizing the Alternative 4 alignment would minimize impacts to resources within the study area while providing the most effective secondary and emergency access between I-81 and HIP, as well as additional incident management for local roadways.

Preferred Alternative: Alternative 4

Alternative 4 is identified as the Preferred Alternative. The Preferred Alternative would meet the project purpose and needs identified by FHWA and PennDOT for *system linkage, transportation demand, and traffic operations*:

System Linkage and Transportation Demand

The Preferred Alternative would provide access from I-81 and the existing S.R. 0424 Hazleton Beltway into the HIP, providing a direct connection through the industrial park to S.R. 0924 from Commerce Drive, Forest Road, and the White Birch Road extension. This new access would help to accommodate regional growth in the Greater Hazleton Area, in particular within the HIP's Humboldt Station, Humboldt East campus, and Humboldt West campus, as well as Humboldt Northwest; Humboldt North; and the Eagle Rock Resort, Cranberry Creek, and Pagnotti properties adjacent to the I-81 and S.R. 0924 interchange.

Traffic Operations

The Preferred Alternative would provide an additional access to the HIP from I-81 that can serve as an incident management route for accidents along the I-81 or S.R. 0924 corridors in Hazle Township. This additional route should also alleviate local traffic concerns during peak hours for vehicles accessing Eagle Rock Resort and the various commercial and industrial businesses, including the McCann School of Business & Technology located in the HIP.

In addition to addressing the project purpose and needs, the Preferred Alternative would minimize impacts to the environmental and cultural resources with minimal impact to socioeconomic resources. This alternative would avoid or significantly minimize impacts to surface and groundwater resources, avoiding all jurisdictional wetlands, waterways, and drinking water wells or reservoirs in the Mount Pleasant watershed. Coordination with DCNR, the USFWS, and the PGC was undertaken to ensure that there would be no adverse impacts to protected species and impacts to their habitat would be minimized. The Preferred Alternative would have minimal impacts to hazardous waste sites and utilities, while requiring no impacts to environmental justice populations, local communities, or displacement of businesses.

Avoidance and minimization efforts were incorporated into the Preferred Alternative; however, unavoidable impacts would occur as part of project implementation. Table 17 provides 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 the Project Technical File. 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.

Table 17. Summary of Recommended Mitigation for the Preferred Alternative.

| Resource | Effect | Recommended Mitigation |
|--|--|--|
| Regulated Wetlands | 0.2 acre of direct impacts to PEM wetlands (isolated wetlands along utility ROW) | <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. • Implement an approved E&S Control Plan and include Best Management erosion and sedimentation controls. |
| Threatened & Endangered Species (Plants) | Plant species of concern and Woodland Community of Concern (RDTF) | <ul style="list-style-type: none"> • Install orange protective fencing around wetlands, where plant species were observed, prior to clearing and grubbing activities (fencing locations to be identified on the project’s E&S Control Plan). • Limit impacts to RDTF where possible. |
| Threatened & Endangered Species (Plants) | Invasive Species | <ul style="list-style-type: none"> • Clean construction equipment and vehicles before entering the construction site and restrict the use of seed mixes with invasive plant species to prevent the spread of these invasive species. |
| Threatened & Endangered Species (Bats) | Indiana Bat/Northern Long-Eared Bat | <ul style="list-style-type: none"> • Develop construction schedule in compliance with timbering restrictions (cutting only allowed from November 15 to March 31) and prepare Special Provision for timbering time restrictions. • Retention of any shagbark hickory trees, dead and dying trees, and large diameter trees (greater than 12 inches d.b.h.) to serve as roost trees for bats. |
| Wildlife | Migratory Birds | <ul style="list-style-type: none"> • Perform maintenance activities and vegetative clearing between September 1 |

| Resource | Effect | Recommended Mitigation |
|---|--|--|
| | | <p>and March 31 to avoid take of breeding birds, nests, and their young.</p> <ul style="list-style-type: none"> • Develop habitat restoration plan that avoids and minimizes impact to birds. • Use only native plant species. |
| Wildlife | Pollinators | <ul style="list-style-type: none"> • Use pollinator-friendly native wildflower seed mixes and flowering shrubs and trees along roadsides and medians, and judicious mowing and herbicide use when possible to promote pollinator usage. |
| Farmland Protection Policy Act – Farmland | Direct impact to Soils of Statewide Importance and Prime Farmland Soils. | <ul style="list-style-type: none"> • Prepare E&S Control Plan during final design for PS&E Package to minimize the soil erosion. |
| Archaeology | No Effect | <ul style="list-style-type: none"> • NA |
| Utilities | Direct impacts to existing water lines, sewer lines, and gas lines, as well as overhead electrical distribution lines. | <ul style="list-style-type: none"> • Complete additional coordination with utility companies during final design to coordinate relocation or reconstruction of impacted utilities with the design and construction schedule of the project. • Complete additional PA One Call prior to ground disturbance activities. • Complete subsurface utility engineering to determine precise utility locations. |
| Waste Sites | Potential impact to contaminated soils associated with the PPL Harwood Site. | <ul style="list-style-type: none"> • Coordination with the PADEP during construction if waste material at the former PPL Harwood Site would be excavated. If necessary, a Scope of Work Plan would be prepared and provided to the PADEP for approval of the proposed management options (e.g., disposal at an approved permitted facility or reburial on site). • Additional soil sampling may be required. |

| Resource | Effect | Recommended Mitigation |
|-------------------|--|--|
| Geologic Features | Road cut areas would result in large volumes of waste associated with mining practices (acid mine drainage) and acid-bearing rock. Slope stability issues associated with rock cuts. | <ul style="list-style-type: none"> Continued assessment of the potential rock cuts to determine the need for the implementation of rockfall controls. Balancing earthwork to minimize the amount of waste material generated. |
| Stormwater | Management of water quality, in particular, within HCA drinking watershed. | <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: a controlled drainage system that involves curbing, inlets, pipes, lined swales, and detention ponds. Water quality BMPs, such as bioretention areas, infiltration basins, and sediment forebays, would be utilized to treat runoff from the site. |