

PADEP is in the process of developing a regulatory standard to define “safe fill” under the residual (nonhazardous) waste management regulations in *25 PA Code Chapter 287*. Mitigative measures conducted during the project will be designed to meet these new regulations. If piers are placed in the Monongahela River, the locations selected will need to be tested to determine if the embankment/river bed dredging wastes are characterized as residual or hazardous waste, as defined by PADEP codes (*25 PA Code ss.287.1 and 260.1*). Appropriate sampling methods and analysis will be determined to satisfy all requirements of the PADEP and the USCOE for excavation and disposal.

4.6 Natural Ecological Systems

Natural ecological systems were identified within the project area. These systems were divided into terrestrial and wildlife resources, wetlands, and mining and mineral resources. Natural ecological systems were identified through baseline ecological data, then located and verified through field investigations. The complete methodologies utilized, account of impacts, and necessary mitigation measures are described within the individual resource discussions.

4.6.1 Terrestrial and Wildlife Resources

4.6.1.1 Methodology

Assessment of terrestrial and wildlife resources located within the defined limits of the proposed alternative alignments was conducted through a combination of quantitative and qualitative evaluation techniques. These techniques allowed for the documentation of impacts to ecologically important areas, as well as to terrestrial habitats. Studying impacts to the vast array of terrestrial flora/fauna found within the project area on a species basis was not practical; thus, assessing the habitat in which they live was undertaken. This was a more practical approach that consisted of gathering land use/land cover data to identify areas of potential terrestrial habitat and how it would be affected. In addition, a review of known sources of data, supplemented with limited field work, was conducted. Additional areas of potential terrestrial flora/fauna habitat were identified by the regulatory agencies while conducting inquiries into threatened and endangered species under their jurisdiction within the project area. Impacts to threatened and endangered species were investigated using a species-specific approach and are further discussed in Section 4.8, Threatened/Endangered Species.

Anderson Land Use/Land Cover System

The study first involved the collection of baseline data. Baseline data were collected through the combined use of existing information and field investigation. The *Anderson Land Use/Land Cover Classification System* (Level II) was used to categorize the various land cover types. (See Section 4.14 of this DEIS for maps and additional information on land use and land cover.) The *Anderson Land Use/Land Cover Classification System* was developed to create a standardized classification system consistent with all agency and data applications. Level I is the most generalized category and Level II, while still general, provides an increased level of detail. The land cover maps were prepared using aerial photography and field verified as necessary.

The field verification was completed during the wetland and stream field investigations that took place from February to August 2002. Sixteen Level II Anderson categories were found within the study area. Six Level I land cover categories were grouped from the 16 Level II categories. Of the six Level I categories, it was determined that three would serve as potential terrestrial wildlife habitat. These categories included agricultural land, forest land, and rangeland. Two of the other three categories, developed land and barren land, will not be addressed as terrestrial wildlife habitat because it was determined that the maglev project would not be detrimental to wildlife within these areas. Land use characteristics within these two categories already display an increased level of disturbance to terrestrial wildlife habitat that would not be significantly altered through the implementation of the maglev project. Definitions for each of the six land cover types are outlined below:

- *Agricultural Land* – includes cropland and pasture, orchards, groves, vineyards, nurseries and ornamental horticultural areas, confined feeding operations, and other agricultural land.
- *Forest Land* – includes deciduous forest land, evergreen forestland, and mixed forest land.
- *Rangeland* – includes herbaceous rangeland, shrub and brush rangeland, and mixed rangeland.
- *Developed Land* – includes residential, commercial and services, industrial, transportation, communications, utilities, mixed urban or built-up land, and other urban or built-up land.
- *Barren Land* – includes sandy areas, bare exposed rock, strip mines, quarries, gravel pits, transitional areas, and mixed barren land.
- *Water* – includes streams and canals, lakes, reservoirs, forested and not forested wetlands.

Ecologically Important Areas

Ecologically important areas that may have potential importance to flora/fauna were investigated using resources such as the PADCNr's *Scenic Rivers of Pennsylvania*, PFBC's *Wilderness Trout Streams of 1998*, Pennsylvania Audubon Society's *Important Bird Areas (IBA)*, PGC's game land maps, Western Pennsylvania Conservancy's *Natural Heritage Inventory (NHI)* for Allegheny and Westmoreland counties, and data from SPC. Only areas identified by NHI were located within the project area.

Ecologically important areas identified in the NHI were noted as Biological Diversity Areas (BDA), Landscape Conservation Areas (LCA), and Managed Lands. The definitions, as described by the Western Pennsylvania Conservancy, for BDA, LCA, and Managed Lands are provided below:

- *Biological Diversity Areas (BDA)* – those sites that are recognized as supporting populations of state, national, or globally significant species or natural communities, high quality examples of natural communities or ecosystems, or exceptional native diversity.
- *Landscape Conservation Areas (LCA)* – a large continuous area that is important because of its size, open space and habitats, and although including a variety of land uses, has not been heavily disturbed and, thus, retains much of its natural character.

- *Managed Land* – owned or leased properties that are included in the NHI because of their importance, or potential importance, to the overall maintenance and protection of ecological resources in the county. These properties can be public or private.

The following ecologically important areas are those currently identified and found within an alternative alignment. (See Section 4.8 for a figure depicting ecologically important areas and other related information.)

- *Peregrine Falcon BDA* – listed as a High Significance, Special Species Habitat. A very unique urban habitat that allows for high nesting areas characteristic of this species. More detailed information regarding this species is found in Section 4.8.
- *Allegheny River BDA* – listed as a High Significance, Special Species Habitat. The Allegheny River BDA has been identified by the PFBC as having threatened and endangered fish and mussel habitat. More detailed information regarding the species of the Allegheny River is found in Section 4.8.
- *Ohio River BDA* – listed as a High Significance, Special Species Habitat. The Ohio River BDA has been identified by the PFBC as having threatened and endangered fish and mussel habitat. More detailed information regarding the species of the Ohio River is found in Section 4.8.
- *Plum Creek Valley BDA* – listed as a High Significance, Natural Community. The Plum Creek Valley BDA is a stretch of the Plum Creek Valley between Milltown and Point Breeze that has retained some of its natural qualities. These qualities are unusual due to the amount of development that has occurred in the area. Most of the area is privately owned, however. Dark Hollow Woods Park and Penn Hills Community Park (listed as a Managed Land) are found within the boundaries of the Plum Creek Valley BDA and comprise some of the highest quality sections of the site.
- *Penn Hills Community Park* – listed as a Managed Land. This area is found within the boundaries of the Plum Creek Valley BDA and comprises a high quality section of the site.
- *Montour Run Valley LCA* – listed as a High Significance, Natural Community. The Montour Run Valley LCA is part of the Montour Run Valley between PA Route 60 and Sharon Grade (Hassam) Road. This natural site is rare in this rapidly developing area. Natural characteristics of this site include forested slopes and tributary stream valleys. The site is mostly privately owned and is recovering from logging and previous agricultural activity. Recognized areas of this site include diverse herbaceous flora and an increasing diversity of trees.
- *Large grassland area, found near the PIA Station* – This area was noted by the PGC as a potentially rare or unique habitat due to the possible presence of the Pennsylvania listed, endangered short-eared owl (*Asio flammeus*). Additional information regarding the short-eared owl is found in Section 4.8.

4.6.1.2 Impact Analysis

Impacts to terrestrial and wildlife resources were assessed by studying the habitat within the project area. This approach was more practical than studying the large number of generalized plants and animal species on an individual basis. However, impacts to threatened and endangered species are being investigated using a species-specific approach and are further discussed in Section 4.8.

The impacts to terrestrial habitat were evaluated for each of the alternative alignments. Impacts to terrestrial habitat types were qualitatively assessed within the impact zone for the project. Because of the elevated design of the project, much of the land cover within the impact zone would remain in its present state. Impacts to terrestrial habitat would predominantly occur to forested land for any of the project alternative alignments. Forest fragmentation due to alteration of forested areas is likely. Within the impact zone, direct impacts to terrestrial habitat would occur from pier placement, infrastructure development, cuts, and temporary impacts from construction. Additionally, species within the project area would be affected by intermittent noise and disturbance from the moving maglev vehicles. In addition to habitat impacts, there would be increased avian and bat mortalities from striking the maglev vehicles due to their high speed and relatively low noise levels.

No-Build Alternative

The No-Build Alternative would not directly impact any terrestrial habitat or ecologically important areas. Increased travel on existing roads and highways could result in a variety of transportation problems leading to the need to increase capacity, however. Future projects aimed at addressing the need for increased highway capacity could require the conversion of terrestrial habitat to a transportation use.

Build Alternatives

Section A

The total area within the impact zone for Alternative Alignment A5-North includes 138.27 hectares (341.7 acres). The amount of terrestrial habitat within the impact zone includes 91.91 hectares (227.1 acres) of forested land and 21.81 hectares (53.9 acres) of rangeland. The total area within the impact zone for Alternative Alignment A5-South includes 123.51 hectares (305.2 acres). The amount of terrestrial habitat within the impact zone includes 85.60 hectares (211.5 acres) of forested land and 14.61 hectares (36.1 acres) of rangeland. No agricultural land has been identified within the impact zone for Alternative Alignments A5-North or A5-South.

The total area within the impact zone for roadway improvements for both Alternative Alignments A5-North and A5-South is 8.21 hectares (20.3 acres). The amount of terrestrial habitat within the impact zone for roadway improvements includes 3.24 hectares (8.0 acres) of forested land and 4.65 hectares (11.5 acres) of rangeland. No agricultural land has been identified within the impact zone for the roadway improvements for Alternative Alignments A5-North and A5-South.

Table 4.6.1-1 Land Cover Impacts: Section A

Land Cover Type	A5-North* ha (ac)	A5-South* ha (ac)	Roadway Improvements ha (ac)
Agricultural	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
Forest	91.91 (227.1)	85.60 (211.5)	3.24 (8.0)
Rangeland	21.81 (53.9)	14.61 (36.1)	4.65 (11.5)
Residential	13.07 (32.3)	10.64 (26.3)	0.32 (0.8)
Commercial	3.12 (7.7)	3.84 (9.5)	0.00 (0.0)
Mixed Urban	6.39 (15.8)	6.39 (15.8)	0.00 (0.0)
Barren	1.98 (4.9)	2.43 (6.0)	0.00 (0.0)
Total	138.27 (341.7)	123.51 (305.2)	8.21 (20.3)

Table 4.6.1-1 presents land cover impacts

* Includes PIA and Steel Plaza Stations

by alternative alignment, including the PIA and Steel Plaza stations and associated roadway improvements.

Two ecologically important areas are located within the impact zones for Alternative Alignments A5-North and A5-South. These sites are the Montour Run Valley LCA and the short-eared owl habitat near the PIA station. The alignments would bisect these resources and would reduce the ecological quality of the areas.

Section B

The total area within the impact zone for Alternative Alignment B4-East includes 84.03 hectares (207.6 acres). The amount of terrestrial habitat within the impact zone includes 32.30 hectares (79.8 acres) of forested land and 4.21 hectares (10.4 acres) of rangeland. The total area within the impact zone for Alternative Alignment B4-West includes 71.15 hectares (175.8 acres). The amount of terrestrial habitat within the impact zone includes 23.84 hectares (58.9 acres) of forested land and 3.28 hectares (8.1 acres) of rangeland. No agricultural land has been identified within the impact zone for Alternative Alignments B4-East or B4-West.

The total area within the impact zone for roadway improvements for both Alternative Alignments B4-East and B4-West is 31.60 hectares (78.1 acres). The amount of terrestrial habitat within the impact zone for roadway improvements includes 19.47 hectares (48.1 acres) of forested land and 0.77 hectares (1.9 acres) of rangeland. No agricultural land has been identified within the impact zone for the roadway improvements for Alternative Alignments B4-East and B4-West.

Table 4.6.1-2 presents land cover impacts by alignment, including the Thompson Run station and associated roadway improvements.

Table 4.6.1-2 Land Cover Impacts: Section B

Land Cover Type	B4-East* ha (ac)	B4-West* ha (ac)	Roadway Improvements ha (ac)
Agricultural	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
Forest	32.30 (79.8)	23.84 (58.9)	19.47 (48.1)
Rangeland	4.21 (10.4)	3.28 (8.1)	0.77 (1.9)
Residential	5.71 (14.1)	6.39 (15.8)	2.91 (7.2)
Commercial	3.52 (8.7)	3.89 (9.6)	5.54 (13.7)
Mixed Urban	10.97 (27.1)	10.97 (27.1)	0.00 (0.0)
Barren	27.32 (67.5)	22.78 (56.3)	2.91 (7.2)
Total	84.03 (207.6)	71.15 (175.8)	31.60 (78.1)

**Includes Thompson Run Station*

One ecologically important area is located within the impact zones for Alternative Alignments B4-East and B4-West. This site is the Plum Creek Valley BDA, which includes Penn Hills Community Park. The alignments would bisect this resource and would reduce the ecological quality of the area.

Section C

The total area within the impact zone for Alternative Alignment C2-Mod includes 128.84 hectares (318.1 acres). The amount of terrestrial habitat within the impact zone includes 16.28 hectares (40.2 acres) of agricultural land, 62.05 hectares (153.2 acres) of forested land, and 19.28 hectares (47.6 acres) of rangeland.

The total land cover within the impact zone for Alternative Alignment C5 includes 125.43 hectares (309.7 acres). The amount of terrestrial habitat within the impact zone includes 17.82 hectares (44.0 acres) of agricultural land, 61.44 hectares (151.7 acres) of forested land, and 12.51 hectares (30.9 acres) of rangeland.

The total area within the impact zone for Alternative Alignment C6 includes 136.94 hectares (338.1 acres). The amount of terrestrial habitat within the impact zone includes 14.22 hectares (35.1 acres) of agricultural land, 92.75 hectares (229.0 acres) of forested land, and 9.64 hectares (23.8 acres) of rangeland.

The total area within the impact zone for roadway improvements for both Alternative Alignments C2-Mod and C5 is 1.13 hectares (2.8 acres). The amount of terrestrial habitat within the impact zone for roadway improvements includes 0.93 hectares (2.3 acres) of forested land. There is no agricultural land or rangeland identified within the impact zone for the roadway improvements for Alternative Alignments C2-Mod and C5.

The total area within the impact zone for roadway improvements for Alternative Alignment C6 is 1.82 hectares (4.5 acres). The amount of terrestrial habitat within the impact zone for roadway improvements includes 0.53 hectares (1.3 acres) of agricultural land, 0.77 hectares (1.9 acres) of forested land, and 0.08 hectares (0.2 acres) of rangeland.

Table 4.6.1-3 presents land cover impacts by alignment in Section C, including the Greengate Mall and Toll Route 66/PA Route 136 stations and associated roadway improvements.

Table 4.6.1-3 Land Cover Impacts: Section C

Land Cover Type	C2-Mod* ha (ac)	C5* ha (ac)	Roadway Improvements	C6** ha (ac)	Roadway Improvements
Agricultural	16.28 (40.2)	17.82 (44.0)	0.00 (0.0)	14.22 (35.1)	0.53 (1.3)
Forest	62.05 (153.2)	61.44 (151.7)	0.93 (2.3)	92.75 (229.0)	0.77 (1.9)
Rangeland	19.28 (47.6)	12.51 (30.9)	0.00 (0.0)	9.64 (23.8)	0.08 (0.2)
Residential	20.37 (50.3)	26.45 (65.3)	0.00 (0.0)	14.05 (34.7)	0.36 (0.9)
Commercial	4.58 (11.3)	5.95 (14.7)	0.20 (0.5)	4.86 (12.0)	0.08 (0.2)
Mixed Urban	4.21 (10.4)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
Barren	2.07 (5.1)	1.26 (3.1)	0.00 (0.0)	1.42 (3.5)	0.00 (0.0)
Total	128.84 (318.1)	125.43 (309.7)	1.13 (2.8)	136.94 (338.1)	1.82 (4.5)

* Includes Greengate Mall Station

**Includes Toll Route 66/PA Route 136 Station

There would be no impacts to any ecologically important areas within the impact zones for Alternative Alignments C2-Mod, C5, or C6.

4.6.1.3 Summary

Future projects identified as part of the No-Build Alternatives could impact terrestrial habitat and ecologically important areas.

Although the elevated design of the project would allow much of the land cover within the impact zone to remain in its present state, there would still be impacts to terrestrial habitat. The impacts would predominantly occur to forested land and would likely fragment existing forest compartments. Continued forest fragmentation could have direct impacts to flora/fauna species beyond the project area by reducing the ecological quality of the area.

For Section A, Alternative Alignment A5-South would impact the least amount of terrestrial habitat. For Section B, Alternative Alignment B4-West would impact the least amount of terrestrial habitat. For Section C, Alternative Alignment C5 would impact the least amount of terrestrial habitat.

For Section A, Alternative Alignment A5-North would impact the least amount of ecologically important areas. For Section B, Alternative Alignment B4-East would impact the least amount of ecologically important areas. There are no impacts to ecologically important areas for any of the alternative alignments in Section C.

4.6.1.4 Mitigation

During the development of alternatives for the project, efforts have been made to avoid and minimize impacts to terrestrial habitat. Further efforts to avoid and minimize impacts to habitat and flora/fauna resources will continue throughout the design and construction of the project.

The following courses of action will be considered to offset adverse impacts to terrestrial habitat:

- Continue efforts through final design to avoid and/or minimize terrestrial habitat impacts (e.g., minimize forest fragmentation);
- Revegetate all disturbed areas with indigenous species to minimize invasive species;
- Span wildlife corridors where possible;
- Utilize area disturbed from construction for waste fill material;
- Establish wildlife habitat from waste fill material areas (e.g., plant areas with native grass species beneficial to wildlife);
- Coordinate with PGC regarding a post-construction study to investigate the potential avian and bat mortalities resulting from maglev vehicle strikes; and
- Coordinate with PGC and USFWS to develop a mitigation plan.
- Best management practices will be developed in coordination with the PGC and USFWS and incorporated into both the construction plans and mitigation plan.

4.6.2 Wetlands

4.6.2.1 Methodology

The wetlands investigation for the project was conducted through a phased approach. The two phases were intended to match the level of detail required at each stage of alternative evaluation.

Phase I of the wetlands investigation involved development of wetland mapping from secondary sources. These sources included: USFWS *National Wetlands Inventory Maps*, USDA/SCS *County Soil Surveys*, USDA/SCS state and county hydric soils lists, project area mapping, and aerial and infrared aerial photographs. These data sources were evaluated for the presence of wetlands. Wetland locations and shapes determined from these sources were compiled in GIS for use during field investigations.

Phase II included field investigations of all the alternative alignments. Field investigations included walking the entire study corridor and identifying and delineating wetland resources. Field investigations were conducted within a 91-meter (300-foot) buffer for each alternative alignment, all roadway improvement areas, and each passenger station.

Wetlands were delineated according to the methodology in the USCOE *Wetland Delineation Manual* (Technical Report Y-87-1, 1987). Jurisdictional wetlands were classified according to the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al., 1979). The shapes and sizes of all wetlands were digitized into GIS and depicted on the plates prepared for the project. Wetland field investigations were performed from February to August of 2002.

4.6.2.2 Impact Analysis

Based on the nature of this project, wetland impacts are not expected to be extensive. Because the guideway would be elevated, the vast majority of the wetlands would be spanned. Most wetland impacts would be expected to occur from pier placement and roadway improvements. Temporary impacts from construction are also expected. Because exact locations of piers and roadway improvements are not known at this time, the potential impact zone is being used to provide a consistent means to describe potential wetland involvement.

Because the potential impact zone is as wide as 61 meters (200 feet) in some locations, and the maglev would be elevated on a narrow structure, impacts due to shading were not considered. The amount of shading that could possibly occur beyond the impact zone under these conditions would be limited in extent and duration. In these few locations, shading is unlikely to affect wetland ecology. Representatives of the natural resource agencies agreed with this assessment during preliminary field views of the project's alternative alignments.

Construction activities associated with the project would either temporarily or permanently impact the wetlands existing within the project's impact zones. Impacts to wetland habitats would be minimized to the extent possible. The following paragraphs present the types of impacts the project area wetlands may experience.

Temporary wetland impacts incurred by the project may include disturbance and alteration to the existing vegetation, soils, and hydrology. Wetland vegetation may either be removed or disturbed during project construction. Silt may migrate from exposed areas and enter into wetlands, disrupting vegetation and hydrology. Soil compaction from construction vehicles may influence wetland soils. Hydrology sources may be temporarily altered by items such as silt fencing, temporary roadways, and causeways. Implementing BMPs and an approved E & S Plan would minimize temporary wetland impacts.

Wetland habitats within the project area may receive permanent impacts as a result of construction activities. Hillside excavation in cut areas and pier placement would permanently impact wetlands situated in these areas. Wetland habitat within stream valleys and swales would be permanently impacted by excavation for pier footers. Hydrology sources would be permanently altered by culvert placement, diversion ditches, and storm water management facilities for the project. Construction activities may result in the compaction and removal of wetland soils. Removal of trees from palustrine forested (PFO) wetland habitat would change the wetland system from PFO to palustrine emergent (PEM) and/or palustrine scrub-shrub (PSS) wetland habitat. Permanent impacts to this wetland habitat would occur directly underneath the guideway. However, affected PFO wetland habitat not directly underneath the guideway may revert back to a PFO wetland habitat if left unaltered following construction.

The impact analysis presented in the following paragraphs addresses the wetland impacts by discussing the passenger stations and alternative alignments together and the roadway improvements separately. Impacts were broken down to the basic wetland classifications defined by the USFWS's *Classification of Wetlands and Deepwater Habitats of the United States*. Mixed classification wetlands were recorded as a percentage of each classification within the delineated wetland. These percentages were then divided into the overall acreage for that wetland to obtain single classification acreages presented in the wetland impact tables.

No-Build Alternative

The No-Build Alternative would not directly impact any wetlands. Increased travel on existing roads and highways could result in a variety of transportation problems leading to the need to increase capacity. Future projects aimed at addressing the need for increased highway capacity could impact wetlands in the area.

Build Alternatives

Section A

The impact zone for Alternative Alignment A5-North contains 37 wetlands totaling 1.045 hectares (2.57 acres). Twenty-one wetlands are PEM, three are PFO, and the rest are a combination of two or more of the following classifications: PEM/PSS/PFO/Palustrine Open Water (POW). The potential impact zone for Alternative Alignment A5-South contains 29 wetlands totaling 0.614 hectares (1.51 acres). Seventeen wetlands are PEM, two are PFO, and the rest are a combination of two or more of the following classifications: PEM/PSS/PFO/POW. Roadway improvements for both of the Section A alternative alignments would impact one wetland encompassing 0.004 hectares (0.02 acres). Table 4.6.2-1 presents wetland impacts by alignment, including the vegetative classification, the PIA and Steel Plaza stations, and roadway improvements.

Section B

The impact zone for Alternative Alignment B4-East contains 13 wetlands totaling 0.161 hectares (0.40 acres). Eleven of the 13 wetlands are classified as PEM and two are classified as a combination of PEM/PFO. The potential impact zone for Alternative Alignment B4-West contains seven wetlands totaling 0.124 hectares (0.31 acres). Five of the seven wetlands are classified as PEM and two are classified as a combination of PEM/PFO. Roadway improve-

Table 4.6.2-1 Wetland Impacts: Section A

Alignments and Stations		
<i>Wetland Classification</i>	<i>A5-North ha (ac)</i>	<i>A5-South ha (ac)</i>
PEM	0.332 (0.82)	0.252 (0.62)
PSS	0.277 (0.68)	0.200 (0.49)
PFO	0.122 (0.30)	0.112 (0.28)
POW	0.314 (0.77)	0.050 (0.12)
Area Impacted	1.045 (2.57)	0.614 (1.51)
Wetlands Impacted	37	29
Roadway Improvements		
<i>Wetland Classification</i>	<i>A5-North ha (ac)</i>	<i>A5-South ha (ac)</i>
PEM	0.002 (0.01)	0.002 (0.01)
PSS	0.002 (0.01)	0.002 (0.01)
PFO	0.000 (0.00)	0.000 (0.00)
POW	0.000 (0.00)	0.000 (0.00)
Area Impacted	0.004 (0.02)	0.004 (0.02)
Wetlands Impacted	1	1
Total Area	1.049 (2.59)	0.618 (1.53)
Total Wetlands	38	30

*PEM - Palustrine Emergent
PSS - Palustrine Scrub-Shrub*

*PFO - Palustrine Forrested
POW - Palustrine Open Water*

ments for both of the Section B alternative alignments would impact three PEM wetlands totaling 0.045 hectares (0.11 acres). Table 4.6.2-2 presents wetland impacts by alignment, including the vegetative classification, the Thompson Run station, and roadway improvements.

Section C

The impact zone for Alternative Alignment C2-Mod contains 19 wetlands totaling 0.435 hectares (1.07 acres). Fourteen of the 19 wetlands are classified as PEM. Two wetlands are classified as PFO and three wetlands are classified as PEM/PSS. Roadway improvements associated with the Greengate Mall station for Alternative Alignment C2-Mod would not impact any wetland habitat. The potential impact zone for Alternative Alignment C5 contains 19 wetlands totaling 0.261 hectares (0.64 acres). Sixteen of the 19 wetlands are classified as PEM and three wetlands are a combination of two or more of the following classifications: PEM/PSS/PFO. Roadway improvements associated with the Greengate Mall station for Alternative Alignment C5 would not impact wetland habitat. The impact zone for Alternative Alignment C6 contains 18 wetlands totaling 0.399 hectares (0.99 acres). Ten of the 17 wetlands are classified as PEM and seven wetlands are classified as a combination of PSS/POW. Roadway improvements for the Toll Route 66/PA Route 136 Station associated with Alternative Alignment C6 would not impact any wetlands. Table 4.6.2-3 presents wetland impacts by alignment, including the vegetative classification, Greengate Mall and Toll Route 66/PA Route 136 stations, and roadway improvements.

Table 4.6.2-2 Wetland Impacts: Section B

Alignments and Stations		
Wetland Classification	B4-East ha (ac)	B4-West ha (ac)
PEM	0.145 (0.36)	0.117 (0.29)
PSS	0.000 (0.00)	0.000 (0.00)
PFO	0.016 (0.04)	0.007 (0.02)
POW	0.000 (0.00)	0.000 (0.00)
Area Impacted	0.161 (0.40)	0.124 (0.31)
Wetland Impacted	13	7
Roadway Improvements		
Wetland Classification	B4-East ha (ac)	B4-West ha (ac)
PEM	0.045 (0.11)	0.045 (0.11)
PSS	0.000 (0.00)	0.000 (0.00)
PFO	0.000 (0.00)	0.000 (0.00)
POW	0.000 (0.00)	0.000 (0.00)
Area Impacted	0.045 (0.11)	0.045 (0.11)
Wetlands Impacted	3	3
Total Area	0.206 (0.51)	0.169 (0.42)
Total Wetlands	16	10

PEM - Palustrine Emergent
PSS - Palustrine Scrub-Shrub

PFO - Palustrine Forrested
POW - Palustrine Open Water

Table 4.6.2-3 Wetland Impacts: Section C

Alignments and Stations			
Wetland Classification	C2-Mod ha (ac)	C5 ha (ac)	C6 ha (ac)
PEM	0.325 (0.80)	0.226 (0.56)	0.338 (0.84)
PSS	0.064 (0.16)	0.029 (0.07)	0.053 (0.13)
PFO	0.046 (0.11)	0.006 (0.01)	0.000 (0.00)
POW	0.000 (0.00)	0.000 (0.00)	0.008 (0.02)
Area Impacted	0.435 (1.07)	0.261 (0.64)	0.399 (0.99)
Wetlands Impacted	19	19	18
Roadway Improvements			
Wetland Classification	C2-Mod ha (ac)	C5 ha (ac)	C6 ha (ac)
PEM	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
PSS	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
PFO	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
POW	0.000 (0.00)	0.000 (0.00)	0.000 (0.00)
Area Impacted	0 (0.00)	0 (0.00)	0 (0.00)
Wetlands Impacted	0	0	0
Total Area	0.435 (1.07)	0.261 (0.64)	0.399 (0.99)
Total Wetlands	19	19	18

PEM - Palustrine Emergent
PSS - Palustrine Scrub-Shrub

PFO - Palustrine Forrested
POW - Palustrine Open Water

4.6.2.3 Summary

Future projects addressing the need for increased highway capacity could impact wetlands in the area. Many projects that add highway capacity are included as part of the No-Build Alternative.

Based on the nature of this project, wetland impacts are not expected to be extensive for the build alternatives. Wetlands within the project area are of relatively small size and do not exhibit strong wetland functions and values. Additionally, the maglev system would have minimal impact to each wetland. Thus, unavoidable wetland impacts are not anticipated to adversely affect the overall ecological value of the area.

Because exact locations of piers and roadway improvements are not known at this time, the impact zone is being used to provide a consistent means to describe potential wetland involvement. Therefore, it should be noted that the potential wetland impacts presented are “worst case” and would not be as extensive as presented or as extensive as impacts from a comparable highway project. Efforts to avoid and minimize wetland impacts, such as adjusting the placement of piers and minimizing cut areas where wetlands are situated, would continue throughout the design and construction of the project.

For Section A, Alternative Alignment A5-South would impact the least amount of wetlands, 0.614 hectares (1.51 acres). Alternative Alignment A5-North would impact 1.045 hectares (2.57 acres). The roadway improvements associated with the PIA and Steel Plaza stations would also impact 0.004 hectares (0.02 acres) of wetland habitat.

For Section B, Alternative Alignment B4-West would impact the least amount of wetlands, 0.124 hectares (0.31 acres). Alternative Alignment B-4-East would impact 0.161 hectares (0.40 acres). The roadway improvements associated with the Thompson Run station would also impact 0.045 hectares (0.11 acres) of wetland habitat.

For Section C, Alternative Alignment C5 would impact the least amount of wetlands, 0.261 hectares (0.64 acres). Alternative Alignment C2-Mod would impact 0.435 hectares (1.07 acres) and Alternative Alignment C6 would impact 0.399 hectares (0.99 acres). The roadway improvements associated with the Greengate Mall and Toll Route 66/PA Route 136 stations would not result in any wetland impacts.

4.6.2.4 Mitigation

In accordance with state and federal regulations, wetland impacts are typically mitigated in three subsequent phases referred to as mitigation sequencing. The mitigation sequence is as follows: 1) avoidance of wetland impacts; 2) minimization of wetland impacts; 3) compensation for unavoidable wetland impacts (per Executive Order 11990, PADEP *Chapter 105*, and USCOE/EPA Mitigation MOA). During the development of alternatives for the project, efforts have been made to avoid and minimize impacts to wetlands. Efforts to avoid and minimize wetland impacts, such as adjusting the placement of piers and minimizing cut areas, will continue throughout the design and construction of the project.

All unavoidable wetland impacts will be compensated. Additionally, mitigation for unavoidable wetland impacts will occur through the construction of replacement wetlands. Gen-

erally, the most desirable course of action would be to replace wetlands as close as possible to each area of impact. Due to the small size of some individual wetlands, however, aggregate sites may be pursued.

Mitigation sites will be designed to replace lost principal wetland functions exhibited by the impacted wetlands. Wetland replacement sites will be evaluated and selected in accordance with PADEP *Title 25, Section 105.20a*, using existing site circumstances such as site size, proximity to a reliable hydrology source, site topography, and construction feasibility. Opportunities for wetland creation will be investigated in situations where construction activities expose hydrologic sources in cut areas.

Coordination will be conducted with PADEP, PFBC, PGC, USFWS, USCOE, and the USEPA during the development of the wetland mitigation process and will continue through final design. The USCOE will also need to issue a *Clean Water Act*, Section 404 permit for the proposed project. The DEIS and subsequent FEIS will provide background information for the USCOE in support of the Section 404 permit application, but additional documentation will be required before a permit can be issued.

4.6.3 Mining and Mineral Resources

Historically, southwestern Pennsylvania has been the location of major coal, oil, and natural gas production. Major impacts to mining and mineral resources would specifically include engineering hazards from abandoned surface and underground coal mining, active and abandoned natural gas wells and storage fields, abandoned mine drainage in areas of proposed cuts, and locations of piles of mine spoils and waste. Although not prominent local features, underground mine fires, associated gas emissions, and burning refuse piles are also considered in this evaluation.

4.6.3.1 Coal

Coal has been an active part of western Pennsylvania mining since the early 1800s. Although the majority of economically recoverable coal has been mined from the area, mined-out areas could be affected by construction activities. Areas mined-out below surface and surface-mined coal were investigated. All three sections of the project area are underlain by areas of mined coal seams.

4.6.3.1.1 Methodology

Published sources of mined-out areas of the Pittsburgh Coal seam were consulted for the evaluation of the alternative alignments. Westmoreland County is also the location of mined-out areas of the Upper Freeport and Redstone coals. Major information sources used were mapping from the *Greater Pittsburgh Region Mined Out Areas of the Pittsburgh Coal* (S.E. Cortis, T. B. Alexander, and W.E. Edmunds, 1975); *Pennsylvania Bureau of Topographic Survey, Map 45*; and other mine map sources from the PADEP. The areas within the impact zones were field investigated for any indication of mining or subsidence on the ground surface. No readily apparent mine openings, shafts, major sink areas, or areas of subsidence or mine fires were located in the project area.

4.6.3.1.2 Impact Analysis

No-Build Alternative

The No-Build Alternative would not impact any mining or mined-out areas. Because of the preponderance of past mining operations throughout western Pennsylvania, it is likely that some of the projects included as part of the No-Build Alternative would impact existing mining operations or mined-out areas.

Section A

The PIA station and the proposed maintenance facility would not impact any mined-out areas of the Pittsburgh Coal seam. Subsidence from underground mining would not be likely in this area.

The common portion of Alternative Alignments A5-North and A5-South are undermined by the Pittsburgh Coal Company Moon Run Mine #1 and #3. Depths to the mined-out coal in these areas would be between 0-30 meters (0-100 feet), suggesting that mine subsidence could occur on open ground in these areas, with a very high potential for subsidence from added structures.

The Steel Plaza station would not impact any mined-out areas of the Pittsburgh Coal seam.

Section B

The common portion of Alternative Alignments B4-East and B-4 West would not traverse any areas underlain by, or areas of mined-out, Pittsburgh Coal, other than near the northern entrance to the Gascola property. Alternative Alignment B4-East would traverse the western edge of the mined-out area of the Plum Creek Mine. The exact mine boundary in this area is difficult to determine. Alternative Alignment B4-West is underlain by the former workings of the Plum Creek Mine for nearly its entire length. The depths of the mined-out coal in these areas would be between 0-30 meters (0-100 feet), suggesting that potential mine subsidence could occur on open ground in these areas, with a very high potential for subsidence from added structures.

The Thompson Run station and associated roadway improvements bordering the Plum Creek Mine are underlain by Oak Hill Mine #3. Surficial indicators of mining subsidence could not be identified due to the use of this property as a slag dump and for surface mining of slag waste. The undermined areas are estimated at between 0-30 meters (0-100 feet), providing a strong potential for mine subsidence on this property.

Section C

Alternative Alignment C2-Mod and Alternative Alignment C5, where on common alignment, would impact Oak Hill Mine #3 adjacent to the Pennsylvania Turnpike. These alternative alignments would not impact areas of underground mining until the Pleasant Valley Road area, where both are underlain by the Westmoreland Coal Company mines, Pittsburgh Coal Company Lyons Run Mine, and Penn Manor Mine.

The alternative alignments would be approximately 60 meters (200 feet) to 90 meters (300 feet) above the mined-out areas, providing relatively stable ground. Subsidence would still be possible over the majority of these alignments within Westmoreland County. The Greengate Mall station would not impact any undermined areas of mined-out Pittsburgh Coal.

Alternative Alignment C6 would not impact undermined areas until it meets the Pennsylvania Turnpike near the Irwin interchange. This portion of the alternative alignment to the Arona area is undermined by the mines of the Westmoreland Coal Company. The alternative alignments would be approximately 60-90 meters (200-300 feet) above the mined-out areas, providing relatively stable ground. Subsidence would still be possible for a majority of this alignment.

The Toll Route 66/PA Route 136 passenger station and associated roadway improvements would not impact any undermined areas of mined-out Pittsburgh, Upper Freeport, or Redstone coals. Subsidence from undermining would not be likely at this location.

4.6.3.1.3 Summary

It is likely that some of the projects included as part of the No-Build Alternative would impact existing mining operations or mined-out areas. Alternative Alignments A5-North and A5-South would have an equal amount of impacts to undermined areas. Both Alternative Alignments B4-East and B4-West would impact undermined areas. Alternative Alignments C2-Mod, C5, and C6 would have an equal impact to undermined areas of the Westmoreland Coal Company mines.

4.6.3.1.4 Mitigation

Prior to construction in areas identified as having a high potential for underground mine subsidence, an in-depth subsurface investigation will be conducted to determine the capability of the rock to bear the load of the maglev structures. Investigative borings will be advanced to sufficient depths to penetrate and sample overburden materials above and below the lowest mined seam to be encountered, and determine the existence of previous mine voids and subsidence events. The information will be utilized by mining engineers to calculate and predict the potential subsidence profile of the impacted area. Additional sampling will be conducted to determine special handling or disposal requirements of materials in cut areas of mined-out locations, such as fizz ratings, acidity, neutralization potential, and total sulfur analysis.

4.6.3.2 Oil and Gas Wells

The western Pennsylvania region has historically contained major oil, natural gas, and gas storage fields and pools within the rich Pennsylvanian-aged and Mississippian-aged sandstones. The majority of natural gas and oil production has been abandoned in the area, but small, individual wells are still located in the area.

4.6.3.2.1 Methodology

The locations of all oil and gas wells in the project area were obtained through the Pennsylvania Spatial Data Access database from information recorded by the PADEP. All wells were field investigated for location and entered into the GIS and project mapping. The following

analysis compares the totals of these potential well impacts and compares their occurrences between the various alternative alignments.

4.6.3.2.2 Impact Analysis

No-Build Alternative

The No-Build Alternative would have no immediate impacts to oil and gas wells. Projects included as part of the No-Build Alternative could impact some oil and gas wells in the future.

Section A

Alternative Alignment A5-North would impact four oil and gas wells. Alternative Alignment A5-South would impact three oil and gas wells. Neither passenger station in Section A would impact any oil or gas wells.

Section B

Alternative Alignment B4-East would impact six oil and gas wells. Alternative Alignment B4-West would impact four oil and gas wells. The Thompson Run passenger station would not impact any oil or gas wells.

Section C

Alternative Alignment C2-Mod would impact six oil wells. Alternative Alignment C5 would impact three oil and gas wells. Alternative Alignment C6 would impact 13 oil and gas wells.

Although the Greengate Mall and Toll Route 66/PA Route 136 stations would not impact any oil and gas wells, the associated roadway improvements for the Toll Route 66/PA Route 136 station would impact two oil and gas wells.

4.6.3.2.3 Summary

Although there would be no immediate impacts from the No-Build Alternative, projects included as part of the No-Build Alternative could impact oil and gas wells in the future. Alternative Alignment A5-North would impact one more oil and gas well than Alternative Alignment A5-South. Alternative Alignment B4-East would impact two more oil and gas wells than Alternative Alignment B4-West. Alternative Alignment C6 would have the most impacts to oil and gas wells at 13 of the alternative alignments in Section C.

None of the proposed passenger stations would impact any oil and gas wells. The roadway improvements for the Toll Route 66/PA Route 136 station, however, would impact two oil and gas wells.

4.6.3.2.4 Mitigation

During project construction, any oil or gas wells encountered by the project will be plugged and abandoned according to all applicable PADEP requirements. The potential to

impact abandoned wells during construction will be included in the project Preparedness, Prevention, and Contingency Plan.

4.7 Agricultural Lands

Several state and federal acts and policies have been enacted to protect farmland from conversion to non-agricultural use. Some acts provide incentives to land owners to maintain land in agricultural production. Other acts direct agencies to identify and take into account the adverse effects on agricultural lands and to consider alternative actions that could lessen these adverse effects. The agricultural lands investigation was conducted in accordance with the following state and federal legislation and policies:

- *Federal Farmland Protection Policy Act of 1981 (FPPA)*
- *Pennsylvania Act 100 of 1979, the Administrative Code of 1929*
- *Pennsylvania Act 43, The Agricultural Area Security Law*
- *4 Pa Code Chapter 7, Section 7.301 et seq., Agricultural Land Preservation Policy (ALPP)*

4.7.1 Methodology

Farmlands

For this study, the *Anderson Land Use and Land Cover Classification System* was used to determine the acreage of farmlands within each alternative alignment. Initially, aerial photographs were utilized in conjunction with project engineering mapping to identify lands potentially in agricultural production within the study area. A field reconnaissance was then conducted to verify the potentially productive agricultural land identified on the aerial mapping. Coordination occurred with the county conservation districts, Pennsylvania Department of Agriculture, and NRCS regarding farm lands and operations within the project area. Individual farmer owners and operators were also interviewed as part of the study.

FPPA Farmlands

The purpose of the *Federal Farmland Protection Policy Act of 1981* is “to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural use.” The FPPA classifies farmland as one of the following categories:

- *Prime Farmland* - land which has the best physical and chemical characteristics for the cultivation of agricultural products with a minimum of labor, fertilizer, and pesticides. It does not include land in urban development or land used for water storage.
- *Unique Farmland* - land other than prime farmland that is used for the production of a specific high-value food or fiber crop.
- *Farmland of Statewide Importance* - land other than prime or unique farmland, which has been designated as being of importance for the production of agricultural crops.
- *Farmland of Local Importance* - land other than prime, unique, or of statewide importance, which has been designated by local agencies as containing the best characteristics for the production of agricultural crops.