

ES. Executive Summary

ES.1. INTRODUCTION

This Environmental Impact Statement (EIS) describes the environmental implications and proposed mitigation measures associated with the implementation of the proposed Glassboro-Camden Line (“proposed GCL” or “proposed project”), which would introduce new passenger rail service between the City of Camden in Camden County and the Borough of Glassboro in Gloucester County.

This EIS has been prepared in accordance with New Jersey State Executive Order No. 215 (EO215) (1989), which requires State departments, agencies, and authorities to prepare and submit to the New Jersey Department of Environmental Protection (NJDEP) an Environmental Assessment or EIS to disclose the environmental effects of major construction projects. Projects with both construction costs in excess of \$5 million and land disturbance in excess of five acres, which includes the proposed GCL, are categorized as Level 2 projects and are subject to the preparation of an EIS. This EIS therefore provides the basis upon which NJDEP will ultimately identify any potential adverse environmental impacts that could be expected from implementation of the proposed project; identify any NJDEP permits, regulatory requirements, or approvals applicable to the proposed project; and provide recommendations regarding the advancement of the proposed project.

The following executive summary provides a brief synopsis of the EIS, including a general description of the proposed project, an overview of the affected environment prior to the implementation of the proposed project, and a summary of any resultant environmental consequences. Potential avoidance measures and mitigation, unmitigated impacts, and alternatives to the proposed project are also discussed herein.

ES.2. PROJECT DESCRIPTION

The proposed GCL would introduce new passenger rail service between the City of Camden in Camden County and the Borough of Glassboro in Gloucester County, expanding public transportation throughout an approximately 18-mile corridor in Southern New Jersey and providing a viable alternative to existing automobile dependency. The proposed GCL would expand on existing passenger rail service in New Jersey and would rely on light rail vehicles similar to vehicles operating on the New Jersey Transit (NJ TRANSIT) River LINE. The proposed GCL is sponsored by the Delaware River Port Authority (DRPA), Port Authority Transit Corporation (PATCO), and NJ TRANSIT.

The proposed GCL would restore passenger rail service in a corridor that historically provided adjacent and surrounding communities with passenger rail service; although the passenger rail service is no longer in operation today, much of the corridor is characterized by rail infrastructure and activity, as it is currently occupied by Conrail freight operations. By being located primarily within an existing railroad right-of-way (ROW), the proposed GCL would minimize property acquisition and take advantage of an underutilized transportation corridor. Given that much of the GCL corridor is currently owned and operated by Conrail for freight services, several improvements and modifications to the GCL corridor related to Conrail

operations have been incorporated into the conceptual design of the proposed GCL to allow for shared use of the corridor between the existing and planned Conrail freight operations and the proposed GCL passenger service operations.

The proposed GCL would traverse eleven communities including the City of Camden, Gloucester City, Brooklawn Borough, Westville Borough, the City of Woodbury, Woodbury Heights Borough, Wenonah Borough, Deptford Township, Mantua Township, Pitman Borough, and the Borough of Glassboro. The proposed GCL would provide 14 new transit stations, including five “walk-up” stations, four “moderate park-and-ride” stations, and five “park-and-ride” stations. In general, this new transit service would operate at-grade, but some portions would be grade-separated by viaducts carrying the rail infrastructure over existing roads and waterways. Four quadrant gated crossings would be used at at-grade roadway crossings along the GCL corridor.

ES.2.1. Licenses, Permits, and Certifications

As detailed in Table ES.2-1, “NJDEP Permits and Approvals,” and described below, the proposed project would require permits and approvals from NJDEP Division of Land Resource Protection, NJDEP Division of Parks and Forestry, the Bureau of Water Allocation, the Bureau of Surface Water, and the Bureau of Non-Point Pollution Control. The specific permits and approvals that would be required by the proposed GCL are described herein.

Table ES.2-1: NJDEP Permits and Approvals

NJDEP Division	Permit/Approval
Division of Land Resource Protection	Individual Freshwater Wetlands Permit
	Section 401 Water Quality Certificate
	Flood Hazard Area Permit
	Waterfront Development Permit
	Stormwater Management Plan Review and Approval
	Tidelands conveyance
Division of Land Resource Protection - Endangered & Threatened Species Unit	Scientific Collecting Permit
Division of Parks and Forestry	Reforestation Plan Approval
Bureau of Water Allocation	Well Permit
Bureau of Surface Water*	Short Term <i>De Minimis</i> NJPDES Discharge to Surface Water Permit
	General Remediation Cleanup Permit
Bureau of Non-Point Pollution Control	General Permit for Construction Activities (5G3)
Note: * Only one of the two permits associated with the Bureau of Surface Water would potentially be required, depending on whether the surface water discharge contains pollutants at levels exceeding applicable standards.	

Source: GCL Project Team 2020

As over one acre of wetland impacts are anticipated, a NJDEP Individual Freshwater Wetlands Permit would be required to address impacts and compensatory mitigation requirements for wetlands and wetland transition areas, including protection of threatened and endangered species habitat in accordance with the New Jersey Freshwater Wetlands Protection Act. A Section 401 Water Quality Certificate would be issued in conjunction with the NJDEP Individual Freshwater Wetlands Permit.

Portions of the proposed GCL alignment would be located within floodplains and riparian zones; therefore, a NJDEP Flood Hazard Area Permit would be required to address impacts and compensatory

mitigation requirements to riparian zones, including protection of threatened and endangered species habitat under the New Jersey Flood Hazard Control Act. Additionally, a NJDEP Waterfront Development Permit is mandated for activities within tidally-influenced waters and, as such, would be required to address impacts to applicable coastal zone policies, including protection of Special Areas such as threatened and endangered species habitat in accordance with the New Jersey Coastal Zone Management Rules.

As the proposed GCL would contain over a quarter acre of impervious surfaces, a NJDEP Stormwater Management Plan Review and Approval would be required for the protection of water quality and flood control in accordance with the New Jersey Stormwater Management Rules. The proposed GCL would also involve permanent use of tidal waters not previously conveyed, therefore necessitating tidelands conveyance.

The proposed GCL would likely require additional survey work for rare mussel species as part of preliminary engineering to develop an Impact Avoidance Plan. This survey work would require Scientific Collecting Permit issued by NJDEP.

A NJDEP Reforestation Plan Approval would be required to allow for the replacement of forest in accordance with the New Jersey No Net Loss Compensatory Reforestation Act as tree removal on State owned or maintained lands would exceed a half acre.

Any dewatering wells or dewatering well points which are 25 feet or more in total depth or are six inches or more in borehole diameter that may be required by the proposed GCL would require a Well Permit issued by the Bureau of Water Allocation and Well Permitting.

New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Surface Water permit would be required for any surface water discharge during construction. Either the Short Term De Minimis NJPDES Discharge to Surface Water Permit or General Remediation Cleanup Permit would be pursued depending on eligibility as described in Section ES.2.1.1, "NJDEP Preliminary Review."

As the construction of the proposed GCL would disturb more than one acre of land, a General Permit for Construction Activities from the Bureau of Non-Point Pollution Control would also be obtained prior to construction.

The GCL Project Team has been in coordination with the following NJDEP departments/bureaus throughout the development of the proposed project:

- Office of Permit Coordination and Environmental Review
- Division of Land Resource Protection (formerly Land Use Regulation)
- Historic Preservation Office
- Office of Natural Lands Management
- Division of Fish & Wildlife
- Division of Air Quality
- Division of Parks and Forestry
- Green Acres Program

In addition to NJDEP, the proposed project is also subject to U.S. Army Corp of Engineers (USACE) review. All relevant permits, approvals, and agency reviews would be obtained following the completion of this EIS.

ES.2.1.1. NJDEP Preliminary Review

As part of initial and ongoing coordination between the GCL Project Team and NJDEP, the technical reports detailing the analyses, methodologies, impact determination, and proposed mitigations supporting this EIS were provided to NJDEP for comment. Based on the comments received from the preliminary review of the materials presented herein, the GCL Project Team acknowledges that the proposed GCL would be subject to the requirements identified below and that the actions and continued coordination summarized in this section would be required prior to and/or concurrent with the construction of the proposed project.

Division of Land Resource Protection

Approvals from the NJDEP Division of Land Resource Protection would be required for any future activities that would result in disturbances to flood hazard areas, riparian zones, freshwater wetlands and/or transition areas, tidal waterways, or upland waterfront development areas.

Division of Land Resource Protection – Endangered and Threatened Species Unit

Survey work and the composition of an Impact Avoidance Plan is likely to be required for rare mussel species within Newton Creek, Big Timber Creek, and Little Timber Creek. Survey work for freshwater mussels would be conducted seasonally, from May 1st through September 15th, and no survey activity would commence until the proposal survey protocol is reviewed and approved by NJDEP in writing. A valid Scientific Collecting Permit, issued by NJDEP, would be required to conduct survey work.

Division of Parks and Forestry

A NJDEP Reforestation Plan Approval would be required to allow for the replacement of forest in accordance with the New Jersey No Net Loss Compensatory Reforestation Act as tree removal on State owned or maintained lands would exceed a half acre.

Division of Fish & Wildlife (NJDFW)

Regarding additional species identified in the June 19, 2020 NJDEP response, Attachment 1, “Natural Resources Technical Report,” noted the following related to the Eastern Pond Mussel and the Tidewater Mucket identified in Section 4.5.2.3, “Freshwater Mussels.”

Eastern Pond Mussel (Ligumia nasuta)

State Status: *Threatened*

Status in Natural Resources Study Area: *Eastern Pond Mussels are found in the Cooper River, and an unnamed tributary to the Delaware River located approximately 1.5 miles south west of Big Timber Creek. These waterbodies occur to the north and west of the natural resources study area.*

Tidewater Mucket (Leptodea ochracea)

State Status: *Threatened*

Status in the Natural Resources Study Area: *The Tidewater Mucket has been observed in the Delaware River and the Cooper River. These water bodies are located north and west of the natural resources study area.*

This data was obtained through previous coordination with NJDEP Fish & Wildlife starting in 2014. If either species is identified in the Creeks listed, additional minimization measures would be evaluated during

preliminary design. If it is determined that there are sightings within the project waterways, Section 4.7.5.4, "Riparian Zones," of Attachment 1, "Natural Resources Technical Report," would be revised.

Within Section 4.7.5.2, "Submerged Vegetation Habitat," of Attachment 1, "Natural Resources Technical Report," Wild Celery has been added as a Species of Special Concern and its habitat noted. Wild Celery grows in fresh non-tidal and fresh to slightly brackish tidal waters around the world, usually in areas where the water is 2.75 to six feet deep. Wild celery prefers coarse soil that is silty or sandy, is more tolerant of murky, nutrient-rich waters, and withstands waves better than other bay grasses.

Within Section 4.6, "Species of Special Concern," of Attachment 1, "Natural Resources Technical Report," the Little Brown Bat and Tricolored Bat has been added to Table 8, "Species of Special Concern." Measures to reduce impacts to bat habitat will be implemented as part of preliminary engineering.

Coordination with NJDFW would be required to determine measures to limit or avoid impacts to all species within the project area that are under their purview.

Bureau of Water Allocation and Well Permitting

Permits and approvals may be required for construction-related dewatering activities from the Well Permitting and Water Allocation Permitting sections in the Bureau of Water Allocation and Well Permitting. An approved Well Permit would be required for dewatering wells or dewatering well points which are 25 feet or more in total depth or are six inches or more in borehole diameter. All drilling activity would be performed and completed by a New Jersey licensed well driller of the proper class. If construction-related water use (including horizontal directional drilling, well, and/or trench dewatering) would be required at rates exceeding 70 gallons per minute pumping capacity from a single source or combination of sources in the same municipality, then that activity would be regulated. Any necessary approvals would be sought prior to construction with information gained during preliminary engineering.

Bureau of Surface Water Permitting

A New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Surface Water Permit would be required for any surface water discharge during construction (i.e., dewatering; pipe integrity testing, etc.). If the discharge does not contain pollutants at levels exceeding applicable standards, the Transcontinental Gas Pipeline Company (Transco) may be eligible for a B7 - Short Term *De Minimis* NJPDES discharge to surface water permit. Eligibility is determined by running a pollutant scan in which the data can be collected up to a year in advance of the discharge. However, if the discharge contains pollutants at levels exceeding applicable standards, Transco would be required to obtain a BGR – General Remediation Cleanup permit. Any necessary approvals would be sought prior to construction with information gained during preliminary engineering.

New Jersey Historic Preservation Office

As part of initial and ongoing correspondence between the GCL Project Team and the New Jersey Historic Preservation Office (NJ HPO), NJ HPO was provided the opportunity to comment on the proposed project beginning in 2010. NJ HPO and the GCL Project Team have agreed to the project's area of potential effects (APE) and the list of properties to be surveyed. NJ HPO provided a cursory review of sample intensive level survey forms prepared by the GCL Project Team but will await the final submission of all the intensive level survey forms for formal review. In 2017, a review noted new project elements, including replacing the Red Bank Avenue Bridge and a new bridge over Mantua Creek. NJ HPO has received various Phase I archaeological and architectural cultural resource surveys, but a full identification-level survey has not been completed to date while project elements continue to be modified in conceptual engineering designs. Once formal plans are submitted and all National Register of Historic Places-eligible and/or -

listed historic and archaeological resources within the APE have been identified and impacts evaluated, NJ HPO will work with the applicant and lead permit, regulatory office, and/or Federal agency to avoid, minimize, and/or mitigate any adverse effects to historic properties.

Bureau of Mobile Sources

Heavy duty equipment used for construction would be required to adhere to No Idling regulations, including not idling for more than 15 minutes above 25 degrees Fahrenheit. Any and all light duty vehicles on the premises during construction would not idle for more than three minutes. Heavy duty equipment used for construction and demolition would be required to minimize idling whenever possible. As air emissions from construction would be insignificant, all medium- and heavy-duty equipment used for construction would be required to meet the EPA Tier 4 non-road emission standards and would use Ultra Low Sulfur Diesel (ULSD) fluid when applicable.

Green Acres Program

Impacts to 11 parkland resources encumbered by Green Acres and located along the GCL corridor would result from temporary construction activities and/or from the permanent operation of the proposed GCL. NJDEP can pursue the temporary impacts administratively; any permanent impacts (via fee or easement conveyance) would constitute a diversion/disposal of parkland requiring prior Green Acres review and NJDEP Commissioner and State House Commission approval.

Coordination with Green Acres would be required to determine measures to limit or avoid impacts to Green Acres encumbered properties or, if necessary, to discuss initiating the diversion/disposal application process with the local unit.

Office of Natural Lands Management

A comprehensive survey to locate the previously identified shingle oaks—as well as the potential presence of other shingle oaks within the Wenonah Ravine Natural Heritage Priority Site—will be conducted prior to permitting activities, within the approved survey window. Coordination with the Office of Natural Lands Management (ONLM) would be required to determine measures to limit or avoid impacts to the shingle oaks.

Bureau of Non-Point Pollution Control

As the proposed GCL would disturb more than one acre of land, a Construction Activity Stormwater General Permit would be obtained prior to construction in order to minimize pollutant discharge to surface waters from construction activities.

ES.3. ENVIRONMENT PRIOR TO THE IMPLEMENTATION OF THE PROJECT

ES.3.1. Introduction

This section describes the affected environment for the GCL, a proposed 18-mile expansion of transit service in Southern New Jersey that would traverse 11 communities between the City of Camden (Camden County) and the Borough of Glassboro (Gloucester County), primarily parallel to the existing Conrail freight corridor between Camden and Glassboro. The proposed project would provide 14 new transit stations, including 12 “walk-up” stations and two “park-and-ride” facilities.

The regional study area of the proposed GCL consists of the entire Delaware Valley Regional Planning Commission (DVRPC) region, comprised of four counties in New Jersey and five counties in Pennsylvania. The proposed GCL would provide service to the City of Camden, Gloucester City, Westville Borough, the City of Woodbury, Woodbury Heights Borough, Wenonah Borough, Mantua Township, Pitman Borough, and the Borough of Glassboro.

The existing conditions in the affected environment for the proposed GCL are summarized below in sections ES.3.2, “Natural Resources,” ES.3.3, “Man-Made Resources,” and ES.3.4, “Human Resources.”

ES.3.2. Natural Resources

- Geological and Soil Characteristics** – The proposed GCL is located within the New Jersey Inner Coastal Plain physiographic province consisting of marine-deposited quartz and glauconite sands, silt, and clay. The geological and soil characteristics the natural resources study area (a ¼-mile radius around the proposed GCL) contains 46 soil types—two soil types in Camden County and 44 in Gloucester County—which are described in detail in Attachment 1, “Natural Resources Technical Report.”
- Land Form and Hydrological Features** – Comprehensive wetland delineation for a study area within a 200-foot radius around the proposed GCL (wetland delineation study area) identified thirty-two water resources within the proposed GCL corridor, including five State open waters (three with a freshwater wetland fringe), nineteen freshwater wetlands, four coastal wetlands, and four ditches. Surface waterbodies identified within the wetland delineation study area include FW2-NT and FW2-NT/SE2 classifications, which are further described below. The wetland delineation study area crosses twelve 100-year Federal Emergency Management Agency (FEMA) floodplain areas associated with various watercourses in the GCL corridor and is located in the Coastal Plain sole-source aquifer. Coastal Zone Special Areas, described in Attachment 1, “Natural Resources Technical Report,” would apply to the project as there are also tidally-influenced waterways located in the project area. With regards to farmlands, 12 farmland parcels were identified within the natural resources study area, all of which are located in Mantua and one of which consists of a permanently preserved 28-acre farm.
- Biological Resources** – Plant communities that occur within the natural resources study area (a ¼-mile radius around the proposed GCL) include deciduous forest, evergreen forest, mixed forest, deciduous forested wetlands, emergent wetlands, old-field, agriculture, and maintained land. Within the natural resources study area, there are three Natural Heritage Priority Sites and both confirmed and potential vernal pool habitats mapped along specific creeks that are described further below. With respect to wildlife in the natural resources study area, there are four Federally-listed threatened species and two Federally-listed endangered species that may occur within the natural resources study area, as well as six State-listed threatened species and eight State-listed endangered species; 17 additional species of concern may also occur within the natural resources study area.

ES.3.3. Man-Made Resources

- Land Use and Zoning** – Primary land uses along the proposed alignment in the Camden County portion of the corridor are dense residential and commercial development, which is generally consistent with development patterns found throughout the northern portion of the county.

Land uses in Gloucester County tend toward more single-family residential areas, with wooded lands predominating in the west and south of the GCL corridor. The land use patterns in the Gloucester County portion of the corridor are generally more developed along the proposed GCL alignment than the rest of the county. Zoning in the vicinity of the proposed stations varies by station, but generally consists of medium- and high-density residential uses, various commercial uses, and light industrial uses; zoning is described further in Section 2.3.2, “Land Use and Zoning.”

- **Hazardous Materials** – An Environmental Data Resources Inc. DataMap Environmental Atlas report and additional data from NJDEP identified a total of 380 sites containing known or potential environmental areas of concern (AOCs) within a 300-foot radius from the GCL corridor, which are described in Attachment 4, “Hazardous Materials Technical Report.”
- **Transportation** – The primary freeway spine in the study area is I-676/I-295/I-76 – generally known as the North-South Freeway—which serves as a key approach to both the Walt Whitman and Benjamin Franklin bridges over the Delaware River into Pennsylvania. To determine existing traffic conditions, an initial screening of roadways and key intersections near the GCL corridor was conducted, and a total of 42 intersections were subsequently selected for a detailed traffic analysis, the results of which are summarized below. Most roadways adjacent to or approaching proposed station areas were found to be either suitable for most cyclists or most adult cyclists and were determined to have appropriate pedestrian accommodations; the results of this inventory exercise are found in Attachment 5, “Traffic Analysis Technical Report.” With regards to transit, major routes within the existing transit network in the transportation study area (a ½-mile radius around the proposed GCL) include the PATCO Speedline, NJ TRANSIT River LINE, NJ TRANSIT Atlantic City Line, River LINE Ferry service, NJ TRANSIT Bus services, and local shuttles.

ES.3.4. Human Resources

- **Cultural Resources** – There are 11 historic districts and six historic individual properties within the APE (see Section 4.1, “Determination of Area of Potential Effect,” of Attachment 7, “Cultural Resources Technical Report,” for information on the determination of the APE); five of the properties have been listed in the National Register and State Register, and 12 of the properties have been determined eligible for listing in the National Register and State Register. Additionally, 11 historic properties—six individual historic properties and five properties that contribute to eligible historic districts—have been recommended eligible for listing in the National Register. With regards to archaeological resources, a series of Phase IA archaeological surveys determined that a total of 19 locations would require Phase IB investigations, but further information is required for a complete evaluation of both architectural and archaeological resources, as outlined in Section 2.4.2, “Cultural Resources.”
- **Socio-Economic Conditions** – The existing socio-economic conditions with respect to population, housing, and employment were considered at three geographic levels: the county, the GCL corridor, and the station areas. Overall trends in the GCL corridor are slightly inconsistent with trends observed in each county as a whole regarding population, housing, and employment. An assessment of these socio-economic characteristics is provided in Section 2.4.3, “Socio-Economic Conditions,” and in Attachment 3, “Man-Made Resources Technical Report.”
- **Neighborhood Character** – The GCL corridor would travel through various neighborhoods, populations, and land uses including high- to low- density residential and commercial, industrial, historic communities, suburban communities, and rural lands. The ½-mile study area for the

assessment of neighborhoods includes all neighborhoods, cities, boroughs, and townships located adjacent to the GCL corridor; individual neighborhood characteristics are described in detail in Section 2.4.4, “Neighborhood Character.”

- **Environmental Justice** – As described below, 18 of the 26 neighborhoods in the GCL corridor include communities of concern. The majority of environmental justice communities, both low-income and minority, are concentrated in the northern portion of the environmental justice study area (as any census tract partially or wholly within ½ mile of the proposed alignment for the GCL), in and around the City of Camden. Further, 13 of the 15 transit-dependent neighborhoods are within the City of Camden, while the remaining two are located in Gloucester City and Woodbury.
- **Community Facilities** – Community services and facilities located within the GCL corridor include 91 religious institutions, 36 schools, 12 government facilities, nine police departments or stations, seven fire departments or stations, six libraries, two medical centers, and one YMCA facility. The highest concentration of community facilities is clustered in and around the City of Camden, particularly the more densely developed areas. Religious institutions, schools, government facilities, libraries, and police and fire departments were all found throughout the neighborhoods and community services study area.
- **Safety and Security** – Public safety within the GCL corridor is provided by the police departments, fire departments, and emergency response units of the municipalities along the corridor. NJ TRANSIT and DRPA/PATCO provide law enforcement on transit vehicles for current transit services, including those that utilize the existing Walter Rand Transportation Center (WRTC), as well as at other transit stations and at park-and-ride lots. Additional safety and security measures include station and vehicle surveillance, on-board video cameras, roving fare inspection, blue light emergency phones located throughout platforms and facilities, and passenger assistance non-emergency phones located on platforms.
- **Parkland** – A total of 93 existing parkland resources were identified within the parklands study area, along with five multi-use trails. Of the 93 parkland resources, a total of 57 are in municipalities that have accepted Green Acres funding and are therefore encumbered by Green Acres’ restrictions and compensation requirements. Additional information on existing parklands and multi-use trails, as well as legal and regulatory requirements, are provided in Section 2.4.8, “Parkland,” and in Attachment 9, “Parklands Technical Report.”
- **Aesthetic Features** – Urbanized areas characterize Camden County and much of northern Gloucester County, while the southern extent of Gloucester County is characterized by large expanses of natural areas, such as wetlands, wooded areas, and waterbodies, as well as farmland. However, these general land use and development patterns are not as readily apparent within the immediate vicinity of the proposed project where residential communities and light industry have historically developed alongside passenger service that had previously been provided in this rail corridor. The project area is generally void of scenic vistas; it is a distinct part of the landscape, but it is visible primarily from adjacent properties, beyond which views are generally interrupted by intervening buildings, highway infrastructure, and trees.
- **Air Quality** – The proposed project is within the Southwest Zone, one of five distinct climate regions in New Jersey, which has the highest average daily temperatures in the State and, without sandy soils, tends to have relatively high nighttime minimum temperatures. This region is characterized by comparatively little precipitation, its prevailing southwest winds, and a notably long growing season. The air quality data collected at monitors near and within the project’s

study area for the years 2014-2016 demonstrate that, with the exception of O₃, all pollutants monitored are below the applicable National Ambient Air Quality Standards (NAAQS).

- **Noise and Vibration** – Twenty-seven representative measurement sites were identified within the GCL corridor and were chosen as receptors for the noise impact assessment. Seventeen of these 27 sites are in communities where there would be a likelihood of increased noise exposure from daily project-related service operations, which could be related to their proximity to the proposed track and at-grade crossings.

ES.4. ENVIRONMENTAL CONSEQUENCES

ES.4.1. Introduction

Environmental consequences, as summarized here, are those “effects” and “impacts” that may reasonably be expected with implementation of the proposed GCL. Consideration is given specifically to whether and how the operation or construction of the proposed GCL may result in changes (or “effects”) to its context of natural, human, and man-made environs and whether the value of such resources may be substantially diminished as a result (“adverse effects”). Effects are determined and described, in general, by comparing the conditions anticipated in the future with the proposed project to the conditions in the future were the project not implemented, thus resulting in a description of “change” attributable to the proposed project.

Such effects, or changes to the environment, are then considered in terms of whether they might be expected to be permanent (typically associated with the long-term presence of infrastructure and long-term operations of the proposed GCL) or temporary (typically associated with construction-period activities and lasting no more than, and often much less than, the duration of the construction period). It is worth noting, that construction-period activities, even if they themselves might be temporary, may result in permanent effects as well as temporary effects. Finally, the degree and extent to which notable aspects of the natural, manmade, and human environs, as outlined in EO215, might be changed, is reflected in terms of “significance,” i.e., a “significant” effect (or “impact”) to a resource is one where a change to a resource so diminishes its function, utility, or value that it warrants consideration of mitigation to avoid or protect that particular resource against a change of that magnitude. Where significant adverse effects (impacts) are predicted, mitigation is recommended.

Summaries of the analyses supporting the determination of environmental consequences are outlined in sections ES.4.2, “Natural Resources,” ES.4.3, “Man-Made Resources,” and ES.4.4, “Human Resources.” The consequences to environmental features anticipated to result from the temporary construction of the proposed GCL are discussed in Section ES.4.5, “Construction Impacts.” The potential for adverse impacts resulting from the cumulative impact of individual effects to multiple environmental resources is presented in Section ES.4.6, “Cumulative Effects.” Lastly, the partial and full acquisition of properties to accommodate the physical features and construction activities of the proposed project is discussed further in Section ES.4.7, “Acquisitions.”

ES.4.1.1. Existing and Future Conditions Without the Proposed Project

Existing conditions in the affected environment for the proposed GCL are summarized in Section ES.3, “Environment Prior to the Implementation of the Project,” and described further in Chapter 2, “Environment Prior to the Implementation of the Project.”

The future conditions without the proposed project consist of current transportation conditions plus any additional improvements to the roadway and transit systems that have already been authorized and would be completed by 2040, the ridership forecast year for the proposed project. It also includes any significant land development expected to occur along the GCL corridor before the 2040 forecast year.

Under the No-Action condition, no significant changes or expansion would occur related to existing transit services in the region, including the PATCO Speedline, NJ TRANSIT River LINE, NJ TRANSIT Atlantic City Line, River LINE Ferry service, NJ TRANSIT Bus services, and local shuttles. These services would continue to operate, and modest improvements to rail and bus services would occur on an as-needed basis. Transit ridership in the region would be expected to grow moderately, reflecting the limited projected population and employment growth in Camden County and planned maintenance of current transit service levels. Further, existing transit services would generally be maintained and see stable ridership, while traffic and congestion levels would increase in the future without the proposed GCL.

ES.4.1.2. Summary of Operational Impacts (Permanent Infrastructure)

Operational impacts to natural, man-made, and human resources that would result from the implementation of the proposed GCL are described below. However, no unmitigated significant adverse impacts are expected to occur as a result of the proposed GCL. Chapter 4, “Avoidance Measures and Mitigation,” contains an in-depth description of mitigation, and avoidance measures that are proposed or would be considered during preliminary engineering and incorporated into project design as appropriate to further minimize potential adverse project effects, and best practices to be incorporated throughout construction and operation of the proposed GCL.

ES.4.2. Natural Resources

- **Geological and Soil Characteristics** – Approximately 63.74 acres of potential acid-producing soil (APS) would be disturbed during construction, and approximately 4.6 acres of farmland soils used for agricultural purposes would be affected by the proposed GCL; the significance of these disturbances will be determined in coordination with the NJDEP.
- **Land Form and Hydrological Features** – The proposed GCL would require new or widened rail bridge structures across three streams, resulting in impacts to approximately 0.46 acres of tidally-influenced waters. While the proposed GCL would minimally encroach onto flood hazard areas and riparian zones on regulated waters, it would potentially affect several wetland areas, which are described in detail in Section 3.2. 3, “Land Form and Hydrological Features.”
- **Biological Resources** – Impacts to plant communities total approximately 67.6 acres, including forest, agriculture, and old field communities. The proposed GCL would result in the loss of approximately 1.59 acres of forested habitat within the Wenonah Ravine Natural Heritage Priority Site, which includes habitat for several listed species. Three Federally-listed species and six State-

listed threatened and endangered species may be affected by the proposed GCL as a result of loss or alteration to documented or suitable habitat.

ES.4.3. Man-Made Resources

- **Land Use and Zoning** – The proposed GCL would alter existing land uses at several proposed station locations throughout the GCL corridor and in the City of Camden and the Borough of Glassboro, where full and partial parcel acquisitions would be undertaken to accommodate new rail alignment. However, use of the existing Conrail ROW and the location of the new section of alignment along I-676 in Camden by the proposed GCL would minimize property acquisition and displacements. Given that the proposed alignment is primarily located on or along existing railroad rights-of-way, the proposed project would not substantially change the current land uses within the vicinity of the proposed GCL.
- **Hazardous Materials** – There are 380 known or potential environmental AOCs within 300 feet of the limit of disturbance (LOD), many of which are at the outer boundaries of the 300 foot radius; implementation of the proposed GCL likely would not result in impacts to these AOCs. However, construction efforts may result in impacts to the thirty-four sites that were identified on or adjacent to the proposed LOD. These sites would require further investigation prior to construction in order to confirm contamination would not be encountered.
- **Transportation** – Most impacts related to the proposed GCL would be localized on the streets, at-grade crossings, and selected signalized intersections adjacent to or in the immediate proximity of the proposed GCL. Major roadways that parallel the proposed GCL would see reductions in traffic volumes, while at-grade crossings could potentially have significant impacts on the roadway network adjacent to the proposed GCL. Further, although approximately 376 existing public and private parking spaces would be displaced by the proposed GCL, the project area would experience a net increase in parking spaces. Non-motorized travel options—walking and cycling—would be viable at the large majority of the proposed stations and are further discussed below. The proposed GCL would generate approximately 11,000 new transit trips daily, and existing freight operations would be unaffected.

ES.4.4. Human Resources

- **Cultural Resources** – Continued ongoing consultation with NJ HPO is necessary to determine impacts to both historic architectural and archaeological resources. Should the effect analysis or Phase IB archaeological surveys result in the project having an adverse effect on one or more historic properties or eligible archaeological sites, a Memorandum of Agreement (MOA) would need to be prepared to outline minimization and mitigation measures.
- **Socio-Economic Conditions** – Implementation of the proposed GCL would result in significant, positive development and redevelopment impacts in land use throughout the 18-mile corridor and, therefore, would not result in impacts to socioeconomic conditions. As discussed further in Section 3.4.3, “Socio-Economic Conditions,” a total of 74 parcels throughout the GCL corridor would be fully or partially acquired due to implementation of the GCL, resulting in the relocation of businesses and employees. However, the construction and operations and maintenance (O&M) efforts necessitated by the proposed GCL would support jobs and employment compensation, the details of which are described below.

- **Neighborhood Character** – Given that the proposed GCL would run within an existing rail corridor, the proposed project would not physically divide neighborhoods, reduce access to, or disrupt the cohesion of existing communities. The proposed alignment would also not be likely to alter neighborhood boundaries or the setting in which these neighborhoods exist, and access to neighborhoods would not be severed. However, noise and vibration impacts would occur in some areas.
- **Environmental Justice** – Impacts to communities of concern are minimal compared with the proposed GCL's benefits to the larger environmental justice populations, including increased accessibility, a new mode choice, and reduced travel times along the corridor. While the impacts described below do represent impacts on communities of concern, including low-income, minority, and transit-dependent populations, they do not represent a disproportionate impact in these communities. Therefore, the proposed GCL would not result in a disproportionately high concentration of impacts of a disproportionate magnitude on potential environmental justice communities.
- **Community Facilities** – Approximately 164 community facilities have been identified within the GCL corridor, the majority of which would experience a positive impact that increased access to transit and transportation choices would offer. As discussed below, the Bethlehem United Church of Christ (Glassboro) would experience potentially negative impacts from the proposed project in terms of a full acquisition of a parcel on this existing church site. Further, it is not anticipated that the proposed GCL would cause an increase or decrease in the demand for local law enforcement services.
- **Safety and Security** – It is not anticipated that the proposed GCL would cause an increase or decrease in the demand for local law enforcement services. Further, NJ TRANSIT and DRPA would use a combination of design, public education, and operations measures to lower the potential for crime and to minimize potential conflicts among trains, people, and other vehicles.
- **Parkland** – Although the project remained within the existing rail ROW whenever possible, the proposed GCL would directly affect 10 parkland resources, all of which are encumbered by Green Acres' restrictions and compensation requirements and are described in detail below. Steps were taken to minimize the anticipated effects, such as altering drainage, retaining, and fill plans to minimize encroachment on parkland resources. Overall, the proposed GCL is expected to improve access to parkland resources and multi-use trails, particularly for zero-car households.
- **Aesthetic Features** – Existing passenger railway near the WRTC and elevated I-676 highway infrastructure comprise the proposed GCL's northern end, and historic railway corridor its southern end; therefore, the proposed GCL would introduce no new corridor element to the aesthetic features study area (a 1,000-foot radius around the proposed GCL). No significant adverse effects to the aesthetic character of the landscape would be associated with proposed stations, with the exception of Wenonah Station and Pitman Station. Views to these two proposed stations from adjacent streetscapes and neighboring residential properties may be increased, which may result in an adverse effect to the aesthetic character of the residential streetscapes in the immediate vicinity of the proposed station. Further, the addition of new VMF infrastructure, equipment, and rail cars to the Woodbury VMF site would constitute a change in the overall aesthetic character of the property that would result in a significant and adverse change to the landscape.

- **Air Quality** – The proposed GCL is predicted to have a negligible effect on greenhouse gas (GHG) emissions. The GCL is predicted to generally produce no meaningful regional mobile source air toxics (MSAT) effects; the proposed GCL would reduce regional vehicle miles traveled (VMT) and would utilize light diesel multiple unit (DMU) trainsets, which emit fewer pollutants than the typically used heavy DMU trainsets. The proposed GCL is not predicted to cause or exacerbate a violation of the NAAQS for CO, NO₂, or PM_{2.5}. However, the Glassboro VMF could have the potential for harmful emissions associated with spray painting, so it is recommended that the spray booths should be located as far away from residential land uses as possible.
- **Noise and Vibration** – Severe noise exposure is expected to be experienced at 177 single family residential dwellings; moderate noise exposure is projected to occur at 577 single-family residential dwellings. Further, moderate noise impacts are expected to occur at residential properties adjacent to the proposed VMFs located in the communities of Woodbury Heights and the Borough of Glassboro.

ES.4.5. Construction Impacts

Impacts resulting from construction activities associated with the proposed GCL typically occur temporarily during the construction period; however, it should be noted that construction activities may affect the environment in such a way that preconstruction conditions would not be restored following the construction of the proposed GCL (i.e. impacts resulting from construction in some cases may be permanent, as described herein). All construction activities, including construction staging and lay-down areas, would occur within the Construction Limits of Disturbance, which has been used to analyze all construction impacts. Construction impacts are summarized below and described in more detail in Section 3.5, “Construction Impacts.”

- **Transportation** – In the City of Camden, existing NJ TRANSIT River LINE service would be disrupted during construction of tracks at various locations discussed further below; the construction of a third track would also result in impacts to the operation of WRTC. Temporary construction impacts to existing bus service in the study area would be relatively minimal. Temporary lane closures and road closures would be required during construction primarily in Camden and at locations along the line where grade crossing improvements and roadway modifications are required. Additionally, some parking spaces within the GCL corridor—primarily in locations where parking is adjacent to, or already encroaches, on Conrail ROW—would be temporarily unavailable during construction. The primary effects to pedestrian facilities are in the vicinity of stations where construction of station infrastructure would require portions of existing sidewalks to be temporarily closed or removed.
- **Parkland** – All ten of the parklands affected by the physical elements of the proposed GCL would also be affected by construction activities, and an additional three parkland resources would be affected only by construction activities, resulting in impacts to a total of 13 parkland resources. In general, construction impacts would be temporary, and affected parklands would be restored to pre-construction conditions; however, as discussed in Section 3.4.8, “Parkland,” and Section 3.5.3, “Parkland,” in some cases preconstruction conditions would not be able to be fully restored due to the removal or modification of mature landscaping, trees, or park features/facilities.
- **Air Quality** – Construction-related effects of the proposed GCL would be limited to temporarily increased fugitive dust and mobile source emissions during construction, which are described in

detail in Section 3.5.4, “Air Quality.” Further, State and local regulations regarding dust control and other air quality emission reduction controls would be followed.

- **Noise** – As discussed in Section 3.5.5, “Noise,” instantaneous noise levels during construction are difficult to predict. However, track-related construction would move continuously along the corridor and, therefore, the duration of exposure to track-construction-related noise at any one property would be limited.
- **Vibration** – Though the overall length of construction for the proposed GCL is expected to be approximately 36 months, it is anticipated that disturbances at most individual vibration sensitive receptor locations would likely last for a substantially shorter period of time. The duration of potential exposure to construction-related vibration at any one property would be limited, especially with the use of equipment such as air compressors, rubber-wheeled vehicles, hydraulic loaders, and other light equipment.

ES.4.6. Cumulative Effects

This section addresses the cumulative effect of the direct impacts associated with the proposed GCL. For the purposes of this analysis, cumulative effects are defined as those that could result from the proposed project, plus any foreseeable actions in the same timeframe in the same areas.

The key criteria for cumulative effects analyses is whether or not adverse effects identified in each of the environmental analysis categories, plus any foreseeable actions in the same timeframe in the same areas, would be appreciably more severe or greater in magnitude than those that would be experienced in other areas.

The adverse effects anticipated to result from the proposed GCL would be considered minimal compared with the proposed GCL’s benefits to populations within the GCL corridor, including increased accessibility, a new mode choice, and reduced travel times. While these do represent potentially adverse impact in and of themselves, the combination of them taken together would not comprise a new or distinct effect. Therefore, it can be determined that no potential for cumulative effects would result from the proposed GCL.

The identified adverse impacts are capable of being mitigated and are expected to be reduced significantly with appropriate measures. These measures are outlined in Chapter 4, “Avoidance Measures and Mitigation.”

ES.4.7. Acquisitions

The proposed GCL would require the *de minimis* acquisition of 139 properties, the partial acquisition of 31 properties, and the full acquisition 46 properties to accommodate the physical features and construction activities of the proposed project. It is assumed that the project sponsor prior to construction of the proposed GCL would continue to develop design refinements that would minimize property acquisitions and relocations to the extent practicable. For acquisitions and displacements that cannot be avoided, the project sponsor prior to the construction of the proposed GCL would identify and provide the appropriate payment, compensation, and/or relocation for acquired properties. These acquisitions are summarized in Section 3.7, “Acquisitions,” and are detailed in Attachment 12, “Acquisitions and Displacements Technical Report.”

ES.5. AVOIDANCE MEASURES AND MITIGATION

ES.5.1. Natural Resources

In response to potential impacts to natural resources, best management practices (BMPs) and avoidance mitigation measures, such as minimizing site disturbance, restoring temporary impact areas, seasonal restriction on construction activities, and soil erosion and sediment control have been proposed to avoid and/or mitigate potential effects. Minimizing site disturbance would include reducing the clearance of vegetation within habitat of a Federally or State-listed species and Natural Heritage Priority Site; locating staging and stockpiling areas outside of sensitive habitat areas; and implementing appropriate BMPs such as exclusion fencing to exclude construction access beyond designated LOD. Restoring temporary impact areas would include revegetating temporary impact areas using native species; developing and implementing a reforestation plan; and providing alternative nest structures for affected species such as the American kestrel. Seasonal restriction on construction activities includes avoiding in-water work between March 1 and June 30 to avoid impacts to Atlantic and Shortnose Sturgeon and other anadromous fish species; avoiding tree clearing from March 15 to August 15 to avoid impacts to the Barred Owl, Red Shouldered-Hawk, and other migratory birds; and avoiding tree clearing from April 1 to August 31 to provide protection for the northern long-eared bat. Soil erosion and sediment control would include implementing appropriate soils erosion and sediment control measures; implementing appropriate storm water management measures; and implementing measures to manage APS, such as conducting testing to determine the extent of APS within the LOD prior to land clearing or grading activities, minimizing exposure of APS to the maximum extent practicable during construction, and by developing and implementing an APS management plan to contain and remediate APS exposed during all stages of construction.

ES.5.2. Man-Made Resources

- **Land Use, Zoning, and Public Policy** – Zoning changes may be required in the vicinity of the Cooper Hospital, Woodbury Heights, Sewell, and Glassboro stations areas. Although none of the changes identified would significantly change the overall land use composition of the GCL corridor, stations would be designed with consideration given to maintaining or improving, as appropriate and practical, the relationships between station sites and their respective surrounding land uses.
- **Hazardous Materials** – As construction efforts may result in impacts to the 34 AOCs that were identified on or adjacent to the proposed LOD, the proposed GCL would be assigned a Licensed Site Remediation Professional (LSRP) in order to be compliant with NJDEP’s Site Remediation Reform Act (SRRRA), N.J.S.A. 58:10C-1 et seq. requirements, including the Technical Requirements for Site Remediation (TRSR) found at N.J.A.C. 7:26E. A Materials Management Plan (MMP) would be prepared to handle contaminated media during construction, site restoration to prevent exposure to remaining contamination and, after construction, the LSRP would submit a final report to NJDEP within 180 days of completion to document that the rules and guidance were followed.
- **Traffic Analysis** – Mitigation is proposed for seven potential roadway impacts: Haddon Avenue at MLK Boulevard in the City of Camden, 6th Street/Garage at MLK Boulevard in the City of Camden, Broadway at MLK Boulevard in the City of Camden, South Railroad Avenue in Gloucester City, Olive Street Grade Crossing in Westville, Mullica Hill Road (U.S. 322) Grade Crossing in the

Borough of Glassboro, and Bowe Boulevard Grade Crossing in the Borough of Glassboro. Proposed mitigation strategies include a variety of improvements, such as signal timing adjustments and intersection relocations. Mitigation would be required where the level-of-service (LOS) between the 2040 No-Action condition and the 2040 future with the GCL meets thresholds for significant impacts. No intersections outside of Camden meet this threshold except for the intersection of E. Red Bank Avenue and N. Evergreen Avenue in Woodbury, where LOS drops from D to E during the 2040 P.M. peak; however, the increase in overall intersection delay at this location is seven seconds, and the change in LOS is due to the No-Action condition delay being close to the threshold between LOS D and LOS E. As a result, no mitigation beyond signal timing optimization at this intersection is recommended. All three signalized intersections in Camden, which are included in the VISSIM analysis area, are complex due to existing signal pre-emption for the NJ TRANSIT River LINE. Potential impacts at intersections outside of the VISSIM analysis area were often mitigated with signal optimization; however, this was not possible and was ineffective at the three signalized Camden intersections, particularly during proposed peak-hour GCL service. The westbound right-turn movement at the MLK Boulevard intersections with Haddon Avenue and with Broadway would operate with unacceptable LOS. In addition, in order to operate both the existing NJ TRANSIT River LINE and the proposed GCL through the VISSIM analysis area, changes to the signal timing and pre-emption cycles are needed.

- **Transit Analysis** – PATCO Speedline would see an increase in ridership as a result of the proposed GCL. Several possible strategies exist for accommodating this increased ridership, including accommodating the additional ridership with some additional standing and potential crowding on trains (such an approach would require a more detailed analysis based on current ridership levels and capacity); PATCO trains could be lengthened to eight cars bringing passenger loading densities below current levels even with the introduction of GCL riders; and PATCO train frequencies could be increased to accommodate more riders, moving from 12 to 15 trains per hour over the Benjamin Franklin Bridge.

ES.5.3. Human Resources

- **Cultural Resources** – Impacts to cultural resources are pending ongoing consultation with NJ HPO, as well as future Phase 1B Investigation. Should an adverse effect be identified on one or more historic properties, an MOA would be prepared outlining minimization and mitigation measures to be completed within an agreed-upon period of time.
- **Safety and Security** – Although, the proposed GCL is not anticipated have a significant effect on safety and security, safety and security plans, programs, and measures would be developed for the proposed GCL as the project moves into Preliminary Engineering and Final Design phases. Safety and security programs and measures would be incorporated into the proposed GCL and would be comparable to those of NJ TRANSIT and DRPA's existing programs. These programs and measures are designed to adapt and respond to public concerns and questions regarding safety issues related to specific conditions that may occur throughout the system, including issues identified in public comments. These safety and security measures, particularly as they relate to local law enforcement, station platforms and park-and-ride facilities, rail safety, vehicular safety, bicycle safety, pedestrian safety, operational provisions, and training and education provisions, will continue to be developed and refined by NJ TRANSIT and DRPA in consultation with the public and corridor jurisdictions during final design and operations planning.

- **Parklands** – The proposed GCL would potentially result in impacts to 13 parks during operations and/or construction. Triangle Park in Camden, Thompson Street and Lane Avenue Park in Gloucester, and Green Street Play Area in Woodbury would have more than 10 percent of its total parkland parcel affected by the proposed GCL, constituting a major disposal or diversion under the Green Acres regulations. As such, the project sponsor prior to construction of the proposed GCL would need to coordinate with the applicable jurisdiction, which would serve as the applicant to Green Acres, to secure the proposed change in the resource’s use, which would include agreements on leasing and compensation. All trees removed would be replaced. The proposed GCL would result in minor disposals or diversions (less than five percent of the parkland parcel) of Sherman Neighborhood Play Lot in Gloucester, Glassboro High School in Glassboro, Glassboro Sports Complex in Glassboro, Woodbury Lake Park in Woodbury Heights, Veterans’ Park in Woodbury Heights, and Woodbury Heights Elementary School in Woodbury Heights. As these parks are under the Green Acres regulations, the project sponsor prior to construction of the proposed GCL would need to coordinate with the applicable jurisdiction, which would serve as the applicant to Green Acres, to secure the proposed change in the resource’s use, which would include agreements on leasing and compensation. All trees removed would be replaced. Construction activities would affect 0.02 acres of the 65.78-acre Wenonah Lake Park in Wenonah, 0.01 acres of the 3.37-acre Cedar Field in Wenonah, a 0.06-mile segment of the Mantua Creek Trail, and a 0.04-mile segment of the Bowe Park in the Borough of Glassboro, none of which are subject to Green Acres regulations and requirements. Potential mitigation and/or remediation measures would be explored with the applicable jurisdiction as part of preliminary engineering efforts. As the intended use of Triangle Park in Camden (i.e., passive recreation) would be fully compromised once the proposed GCL and its associated Cooper Hospital Station are in operation, the project sponsor would need to identify candidate replacement land nearby that could house a permanently relocated Triangle Park. The project sponsor prior to construction of the proposed GCL would also be responsible for providing the park’s owner, the City of Camden, with a level of compensation necessary to facilitate both the acquisition of the new site and either the physical relocation of the elements that constitute Triangle Park to the new site or the development of new features that functionally transform the new site into a public park.
- **Aesthetic Features** – The project sponsor prior to construction of the proposed GCL will work with municipalities to make sure that the removal of mature trees in the vicinity of Wenonah Station and Pitman Station would be mitigated through careful landscaping of station sites. Further, as part of design and engineering efforts, the project sponsor prior to construction of the proposed GCL will work with municipalities to make sure that appropriate mitigation measures are employed to minimize adverse impacts to aesthetic features in the vicinity of the Woodbury Heights VMF. While views of this site would be partially obscured by existing trees and fencing, further mitigation and design measures would be coordinated with the Borough of Woodbury Heights so that visual impacts at this location can be mitigated to the extent practicable.
- **Noise from Future Transit Operations** – Noise mitigation measures for the proposed GCL require all the following recommended actions: 1) Specifying that the trains chosen to run on the GCL corridor be designed to support wheel skirts on the outside body of the train; 2) Specifying undercar design modifications that provide shielding and acoustical absorption treatment to the train vehicles’ undercar components to reduce propulsion noise; 3) In areas of sharp turns, specifying onboard automated wheel-rail friction modification systems that would eliminate or significantly reduce wheel-squeal noise to a level where it would no longer cause an annoyance;

and 4) Maintaining the present design of the GCL track system to Federal Transit Administration (FTA) Class 4 standards.

- **Vibration from Future Transit Operations** – Estimated vibration levels from GCL operations were projected to be below the FTA 72 VdB impact threshold at all locations throughout the corridor; therefore, no vibration mitigation measures are necessary for operations. However, vibration levels were projected to approach the 72 VdB impact threshold level at sites M03 (56 South Railroad Avenue, Gloucester City); M06 (926 Washington Avenue, Woodbury); M10 (870 East Atlantic Avenue, Sewell); and M15 (Girard House #14, Rowan University, Glassboro). As the proposed GCL advances, vibration impacts at these sites could warrant additional evaluation and require a “Detailed Vibration Impact Analysis,” consistent with the requirements identified in the FTA Manual, to determine if a vibration impact would occur. If an impact remains likely, then vibration mitigation would be considered. For example, the installation of ballast mats below the track ballast layer could provide anywhere from five VdB to 10 VdB vibration reduction at certain frequencies. This type of mitigation would likely provide that vibration generated from trains traveling at higher travel speeds would not exceed the FTA impact criteria.

ES.5.3.1. Construction Impacts

- **Transportation** – Mitigation measures for transportation-related construction impacts would include mitigation for public transportation, roadway traffic, parking, and pedestrian and bicycle facilities. Mitigation for public transportation would include coordination with the service operators of local bus, WRTC, or NJ TRANSIT River LINE service to minimize the disruption to existing transit service, encouraging night time construction in Camden to avoid impacts to light rail service, and the planning of temporary detours to accommodate the expansion of grade crossings in Woodbury and Glassboro. Mitigation for roadway traffic include options to minimize disruptions by encouraging weekend and night time closures rather than full temporary closure at critical locations, establishment of detours to provide drivers with alternate routes, drafting a construction schedule that confirms adjacent grade crossings are not under construction at the same time, and construction staging to maintain access throughout the area. Mitigation for parking would require the Operating Agency or Authority coordination with stakeholders and local businesses affected by the temporary loss of parking spaces, loading zones, or access to loading zones to identify alternate or temporary facilities and accommodations. Mitigation for pedestrian and bicycle facilities could include temporary sidewalk detours and alternate bike routes, to the extent possible maintain pedestrian access, and where it is not possible to maintain pedestrian circulations, alternate detour routing with appropriate signage would be designated.
- **Air Quality** – To minimize the amount of construction dust generated, site preparation should minimize land disturbance; use watering trucks to minimize dust; cover trucks when hauling dirt; stabilize the surface of dirt piles if they are not removed immediately; use windbreaks to prevent accidental dust pollution; limit vehicular paths and stabilize temporary roads; and pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet from where such roads and parking areas exit the construction site to prevent dirt from washing onto paved roadways. During construction, trucks should be covered when transferring materials; dust suppressants should be used on unpaved travel paths; unnecessary vehicular and machinery activities should be minimized; and dirt track-out should be minimized by washing or cleaning trucks before leaving the construction site, or alternatively, to pave a few hundred feet of the exit road just before entering the public road. Post-construction any disturbed land not used should

be re-vegetated; unused material should be removed; dirt piles should be removed; and all vehicular paths created during construction should be re-vegetated to avoid future off-road vehicular activities. To minimize the amount of mobile-source emissions generated during construction, every effort should be made during construction to limit disruption to traffic, especially during peak travel hours.

- **Noise and Vibration** – Prior to the construction of the proposed GCL, specification documents and performance standards would be established for construction equipment to reduce noise associated with the construction activities. The proposed GCL would comply with local noise ordinances, in accordance with its own performance standards. Performance standards would also be established for construction equipment to reduce vibration associated with the construction activities. Control measures would be implemented to reduce or eliminate, to the extent feasible, the potential for vibration-related impacts to humans and damage to buildings. It is expected that a vibration mitigation plan would be prepared when more details regarding construction operations are known

ES.5.3.2. Acquisitions

The need for property acquisition was reduced and/or avoided to the extent possible in the development and refinement of the proposed GCL. It is anticipated that the project sponsor prior to the construction of the proposed GCL would be responsible for providing payment, compensation, and/or relocation for affected properties as applicable. See Section 4.6, “Acquisitions,” and Attachment 12 “Acquisitions and Displacements Technical Report,” for further information regarding mitigation acquisitions and displacements.

ES.6. UNMITIGATED IMPACTS

No unmitigated significant adverse impacts are expected to occur as a result of the proposed GCL. However, there may be potential impacts associated with Natural Resources, Hazardous Materials, Cultural Resources, and Transportation which would be determined in consultation with the appropriate agency with jurisdiction (NJDEP, NJ HPO, etc.). It is currently expected that any impacts identified through these consultations would be fully mitigatable, as described in Chapter 4, “Avoidance Measures and Mitigation.”

ES.7. ALTERNATIVES

Alternatives to the proposed GCL include the No-Action Alternative, in which the GCL is not built, the 13 New Stations Alternative, in which the GCL is constructed with the omission of a station in the Borough of Wenonah, as well as previously considered alternatives, which were evaluated prior to the selection and refinement of the proposed GCL. As proposed, all impacts would be fully mitigated with the proposed GCL; therefore, a separate No Impact Alternative is not proposed. None of the alternatives to the proposed GCL would satisfy the purpose and need of the proposed project and, as such, are not acceptable as a viable option to the proposed action.