Chapter 17 Construction Effects

This chapter describes the anticipated construction elements and techniques, provides an estimated construction schedule, and assesses the potential for short-term impacts during construction of the Build Alternative. The No Action Alternative would not entail any construction activities and is therefore not discussed in this chapter. The Build Alternative construction techniques described herein are based on current conceptual engineering design and the project team’s past experience on similar projects. The contractor’s means and methods ultimately utilized for the Build Alternative may vary based on the final design and the Design-Build contractor; however, this analysis provides a reasonable worst-case scenario for assessing environmental Design-Build impacts and mitigation measures.

17.1 CONSTRUCTION ELEMENTS AND TECHNIQUES

The construction of the Build Alternative is described in this section. In general, equipment required for construction would include light and heavy trucks, backhoes, bulldozers, graders, cranes, air compressors, welding machines, foundation pile-driving equipment, directional drilling equipment, and power hand tools.

17.1.1 Preferred Alternative Project Component A – Main Facility

As stated in Chapter 2, “Project Alternatives,” HCIA has prepared approximately 126 acres of the Koppers Koke Site for development by elevating the site to meet NJ TRANSIT’s Design Flood Elevation (DFE) to comply with New Jersey’s Uniform Construction Code (UCC) and other relevant requirements (Department of Consumer Affairs [DCA] 2013). As a result, no site clearing would be required on the Main Facility site. Based on a review of geotechnical boring data (as described in Chapter 13, “Soils and Geology”), blasting at the Main Facility site would not be required. The general construction steps at the Main Facility would be as follows:

- Procurement of specialized long-lead equipment, such as turbines;
- Mobilization of construction equipment;
- Limited site grading activities to obtain the elevations determined by the overall Project site plan;
- Construction of the Main Facility building foundation—including pile driving to rock, using a double-casing technique to prevent migration of contaminated materials (as discussed later in this chapter), and forming and casting concrete floor slabs and equipment pads;
- Installation of major facility components (turbines, storage tanks, pumps, transformers, generators, boilers, solar panels, and all other related facility equipment)—these components would be delivered to the site by river barge, truck, or rail, and installed on the concrete pads;

- Steel erection and building construction to house the turbines and other equipment;
- Installation of the substation switchgear yard equipment;
- Construction and installation of all the structures and equipment for the SFCs;
- Construction of stormwater detention basin and sitewide stormwater collection and drainage system;
- Construction and installation of all the structures and equipment for the solar facility;
- Underground duct bank construction for the installation of utility cables and feeders;
- Installation of sanitary sewer and water supply connections to municipal services; and
- Construction of the natural gas pipeline to the Main Facility.

NJ TRANSIT would install the sanitary sewer and water supply connections from the Main Facility site to the nearby connection points on the Kearny Peninsula. Standard utility cut and cover methods would be used for this work, except where the utility line would pass through delineated wetlands, in which case the line would be directionally drilled under them to avoid impacts. The utility line installation would be expected to last three to six months.

The entire construction period at the Main Facility (from mobilization to commissioning) is anticipated to be approximately 48 months. The pile driving phase at the Main Facility is estimated to last 12 months. However, as discussed in the sections below, there are no sensitive receptors for noise and vibration near the Main Facility site. A temporary floating access easement would be secured for construction access from the river and sheet pile wall.

17.1.2 Preferred Alternative Project Component B – Natural Gas Pipeline Connection

Construction on the six-acre parcel would include installation of a metering station and other infrastructure to an approved and coordinated design with the natural gas supplier. The gas supply pipeline and associated aboveground installations at the six-acre parcel would be designed and constructed in accordance with the USDOT regulations in 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, and other applicable federal and state regulations. Among other design standards, 49 CFR 192 specifies pipeline material selection; minimum design requirements; protection from internal, external, and atmospheric corrosion; and qualification procedures for welders and operations personnel. Anticipated construction equipment would include light and heavy trucks, backhoes, bulldozers, graders, cranes, air compressors, welding machines, foundation pile driving equipment, directional drilling equipment, and power hand tools. It is expected that work on Preferred Alternative Project Component B would last approximately four to eight months and would be completed during the construction of Preferred Alternative Project Component A.

17.1.3 Preferred Alternative Project Component C – Electrical Lines to Mason Substation

Preferred Alternative Project Component C would include the installation of an electrical line system from the Main Facility to Mason Substation. This DEIS evaluated two methods for installation of electrical lines that extend from the Main Facility to Mason Substation: electrical lines installed on monopoles (up to 220 feet high); and electrical lines installed via underground cables in duct banks. The three design options evaluated were 1) all electrical lines installed overhead on monopoles; 2) all electrical lines installed underground in duct banks; and 3) a combination of using overhead (monopoles) and underground (duct banks) options. The third design option was selected as the preferred design option based on various site-specific factors, such as access, site constraints, localized geology, areas of known contamination and documentation/survey of existing utilities (both overhead and underground). Construction impacts to existing utilities may result in interruptions to public utilities and/or transportation service delays and therefore, the project is being designed to avoid these interruptions.

The monopoles would be installed 150 to 1,200 feet apart. For monopoles with a diameter greater than four feet, at each monopole location four drilled shafts roughly two feet in diameter and up to 95 feet deep would be augered with permanent steel casings. The reinforcing steel cage would then be placed atop the shafts and concrete would be casted using the tremie method. After the concrete cures, the monopole towers (delivered pre-fabricated in sections) would be installed on top of the concrete foundations with an anchor bolt ring previously cast into the shaft. For monopoles with a diameter less than four feet, at each monopole location a single drilled shaft roughly 3.5 to 5 feet in diameter and up to 95 feet deep would be augered with a permanent steel casing. The reinforcing steel cage would then be placed atop the shaft and concrete would be casted using the tremie method. After the concrete cures, the monopole towers (delivered pre-fabricated in sections) would be installed on top of the concrete foundations with an anchor bolt ring previously cast into the shaft. Necessary equipment would include a larger drilled shaft auger with rock socket core barrel capacity, service crane(s), and multiple deliveries of concrete trucks from a nearby concrete batching plant. The stringing of the electrical lines on the cross arms and insulators of the new monopoles would be the final step.

To install electrical lines within new duct banks, the first step would be trenching along the proposed route, to a minimum approximate depth of 36 inches. Materials removed during trenching would be reused on-site where permissible or disposed of offsite at appropriate regulated facility. Multiple conduits would then be installed within the trench using a conduit support system prior to the casting of the concrete. Concrete would then be cast within the trench, and electrical wire would be inserted through the conduits of the duct bank using previously installed pull strings. Necessary equipment would include material delivery vehicles (flat beds), excavating equipment, cranes, and concrete delivery trucks.

Preferred Alternative Project Component C would likely be completed within nine months; the sequencing of all electrical line installations would be concurrent with construction of the Main Facility.

17.1.4 Preferred Alternative Project Component D – Electrical Lines and New Kearny Substation

The electrical line from the Main Facility to the new Kearny Substation would be constructed in the same manner as described above for Preferred Alternative Project Component C. The same design options were evaluated for installation of the electrical lines, and the third design option (i.e., the combination of using monopoles and underground duct banks options) was selected as the preferred design option. The decommissioning of Amtrak's Substation No. 41 would be scheduled after the construction of the new Kearny Substation. Amtrak's Substation No. 41 provides the region with power essential to sustaining reliable and necessary transportation along the Northeast Corridor. To maintain continuous passenger rail services, the new Kearny Substation would be entirely operational before Substation No. 41 can be decommissioned. The cutover in services between the existing and new substations would be closely coordinated with Amtrak to ensure that there were no service disruptions. Construction activities within Cedar Creek Marsh South would be governed by state and federal regulatory permits to minimize adverse impacts to natural resources, as discussed more in the sections below. While the exact construction methods for the new Kearny Substation may be adjusted to comply with such permits, this analysis assumes a likely sequence of construction activities. The major steps required to construct the new Kearny Substation would likely include:

- Procurement of substation equipment;
- Pile driving of concrete piers to support the elevated platform;
- Construction of an elevated platform on the concrete piers to support the new equipment;
- Erection of new structural steel framework;
- Installation of substation housekeeping pads and equipment;
- Cutover of circuits from the existing Substation No. 41 to the new Kearny Substation; and
- Removal of all equipment from existing Substation No. 41, and appropriate disposal of retired components. Some lattice structures at the existing Substation No. 41 would remain for routing of new electrical lines.

Construction equipment that would likely be on-site include light and heavy trucks, material delivery vehicles (flat beds), service crane(s), air compressors, welding machines, foundation pile driving equipment, concrete delivery trucks, and power hand tools. The entire construction period at the new Kearny Substation is anticipated to be approximately 24 months. The existing Amtrak access road would be used to transport materials to the site. Pile driving would occur during a four to six-month period. As discussed in the sections below, there are no sensitive receptors near the new Kearny Substation.

17.1.5 Preferred Alternative Project Component E – Electrical Lines and New NJ TRANSITGRID East Hoboken Substation

This DEIS evaluated three methods for installation of electrical lines (design options are categorized below), that extend from the Main Facility eastward to Henderson Street Substation (except for Hackensack River Crossing and Bergen Tunnels segments): electrical lines installed on monopoles (maximum of 220 feet in Kearny, maximum of 65 feet in Jersey City with an exception at the Hackensack River crossing); electrical lines installed via underground cables in duct banks, and attachment to existing infrastructure (e.g., HBLR elevated tracks and bridges), where possible. The monopole and duct bank construction techniques are discussed above. Attachment to existing infrastructure (e.g., existing HBLR bridge) would include the installation of a galvanized steel Unistrut on an external bridge girder, with typically three conduits attached to it using stainless steel connection hardware. One conduit would house 15kV power cables, one would house fiber optic communications cables, and the other would be installed as a spare for power cables. The three design options evaluated were: 1) all electrical lines installed overhead on monopoles; 2) all electrical lines installed underground in duct banks; and 3) a combination of using overhead (monopoles) and underground (duct banks) options as well as attachment to existing infrastructure. The third design option was selected as the preferred design option based on various site-specific factors, such as access, site constraints, localized geology, areas of known contamination and documentation/survey of existing utilities (both overhead and underground). Construction impacts to existing utilities may result in interruptions to public utilities and/or transportation service delays and therefore, the project is being designed to avoid these interruptions.

The electrical lines extending from the Main Facility to the new NJ TRANSITGRID East Hoboken Substation would entail a combination of new monopoles and new duct banks. From Project Component A to the Hackensack River, installation of monopoles and duct banks would be the same as described in the sections above, with monopoles up to 220 feet tall.

To cross the Hackensack River along the Morris & Essex Line, the electrical line would be installed either: (1) aerially via one new monopole on each bank of the Hackensack River up to 220 feet tall approximately 50 feet north of the existing Lower Hack Bridge; (2) via a submarine cable resting on the Hackensack River bottom; or (3) directionally drilled underneath the Hackensack River sediments. The aerial crossing is the preferred design option. If it is determined that the monopoles by an aerial crossing of the Hackensack River cannot be constructed to support the new electrical line, either the submarine cable or directional drilling methods would be used. This determination will be made in later design phases, by the Design-Build-Commission (DBC) contractor. The submarine cable method, if selected, would entail installation of an approximately 12-inch cable directly below the Lower Hack Bridge. The cable would be routed to the river bottom via directional drilling from the shoreline down to the river bottom to avoid shoreline impacts. Within the Hackensack River, the new 12-inch diameter cable would rest on the river bottom and eventually become covered through the natural siltation process. The directional drilling method would entail drilling at each riverbank to install the cable completely underneath the river bottom. Either of these methods would take up to two months. As stated in the sections below, this work would be scheduled in coordination with the appropriate permitting agencies to avoid adverse impacts to aquatic resources within the Hackensack River, if required.

After crossing the Lower Hack Bridge, the electrical line would proceed along the existing Morris & Essex Line (through monopoles or duct banks or a combination) until the western portal of the existing Bergen Tunnels. The installation process for the monopoles would be the same as that described above, but the monopole heights would be no taller than 65 feet, so the footing would be proportionately smaller and shallower (e.g., 6-foot diameter, with a 70-foot foundation depth). The line would be installed within a new duct bank in the south Bergen Tunnel. This duct bank will be an interior (aboveground) concrete duct bank constructed within the south tube from pre-cast ducts, lowered from the street level at two openings, dollied into place, and grouted together. This construction activity would not be noticeable to riders on the trains. Upon exiting the eastern portal, the electrical line would be installed on a riser to a new monopole, which would cross the Morris & Essex Line on monopoles (up to 65 feet tall) until reaching the new NJ TRANSITGRID East Hoboken Substation.

The construction of the new NJ TRANSITGRID East Hoboken Substation would include the installation of a concrete slab and/or modular unit, switch gear, transformers, and other equipment. Construction at this location is expected to last approximately 2 to 3 months. From the new NJ TRANSITGRID East Hoboken Substation, one electrical line would proceed to the new Henderson Street Substation (the substation is being replaced by NJ TRANSIT under a separate contract to support non-traction power loads for the Hoboken facilities and wayside power). This line would be a combination of new monopoles and duct banks or attached to the existing HBLR infrastructure, as described above. Also, from the new NJ TRANSTIGRID East Hoboken Substation, electrical lines would be installed to support HBLR.

17.1.6 Preferred Alternative Project Component F – Connection to HBLR South

Preferred Alternative Project Component F would entail the construction of an elevated platform and two enclosed natural gas-fired emergency generators and storage modules (i.e., the nanogrid) that would be housed on it at the HBLR Headquarters on Caven Point Avenue. The nanogrid would be capable of producing the necessary power for the southern portion of the HBLR. Some measure of stored energy is also anticipated in the form of batteries or flywheels to help smooth out the instantaneous load profile of the HBLR traction loads. These emergency generators and storage modules are expected to be installed on an elevated platform estimated at 7 feet above ground surface to comply with NJ TRANSIT's DFE, discussed below. The elevated platform would be approximately 20,000 square feet and the emergency generators would be 10-14 feet tall, bringing the tallest point of the nanogrid less than 25 feet above nominal ground surface. Existing natural gas connections at the HBLR Headquarters facility would be used to supply the nanogrid engines. A combination of aerial and underground electrical lines on new monopoles less than 40 feet tall (4 feet diameter and 20-foot foundation depth) or duct banks within the NJ TRANSIT-owned property would connect the emergency generators to HBLR.

17.1.7 Preferred Alternative Project Component G – HBLR Connectivity

Preferred Alternative Project Component G includes installation of approximately 14.4 miles of new electrical lines from the new NJ TRANSITGRID East Hoboken Substation to substations along the HBLR to provide power to the entirety of the HBLR. As discussed above for other electrical line installation, this DEIS evaluated three methods for installation of electrical lines along the HBLR: electrical lines installed on monopoles (up to 39 feet); electrical lines installed via underground cables in duct banks; and attachment to existing infrastructure (e.g., HBLR elevated tracks and bridges), where possible. The three design options evaluated were 1) all electrical lines installed overhead on monopoles; 2) all electrical lines installed underground in duct banks; and 3) a combination of using overhead (monopoles) and underground (duct banks) options as well as attachment to existing infrastructure. The third design option was selected as the preferred design option based on various site-specific factors, such as access, site constraints, localized geology, areas of known contamination and documentation/survey of existing utilities (both overhead and underground). Construction impacts to existing utilities may result in interruptions to public utilities and/or transportation service delays and therefore, the project is being designed to avoid these interruptions.

Construction activities would remain within the existing HBLR right-of-way. The monopoles would be installed 80 to 200 feet apart. Monopoles would be installed via the same process as described above for other Project Components, but the monopole heights would be no taller than 39 feet, so the footing would be proportionally smaller and shallower (e.g., 4-foot diameter, with a 20-foot foundation depth). The monopoles would be installed via drilled shafts with permanent steel casings. The duct banks would entail underground concrete-encased cables at a maximum of five feet below ground surface. The duct banks would be located within the railroad right-of-way and designed to protect the electrical cables from water damage and electrical or physical stress. All underground cables would be insulated for wet or dry conditions and suitable for continuous submersion.

Temporary construction access may be needed. All workers assigned to construction activities along the HBLR will be required to attend NJ TRANSIT’s HBLR safety training. Since the construction of Preferred Alternative Project Component G would proceed in a progressive manner, disruptive construction activities would not occur in any one location for an extended period of time (i.e., two weeks). Construction will occur concurrently with the remainder of the proposed Project and support a 2024 commissioning.

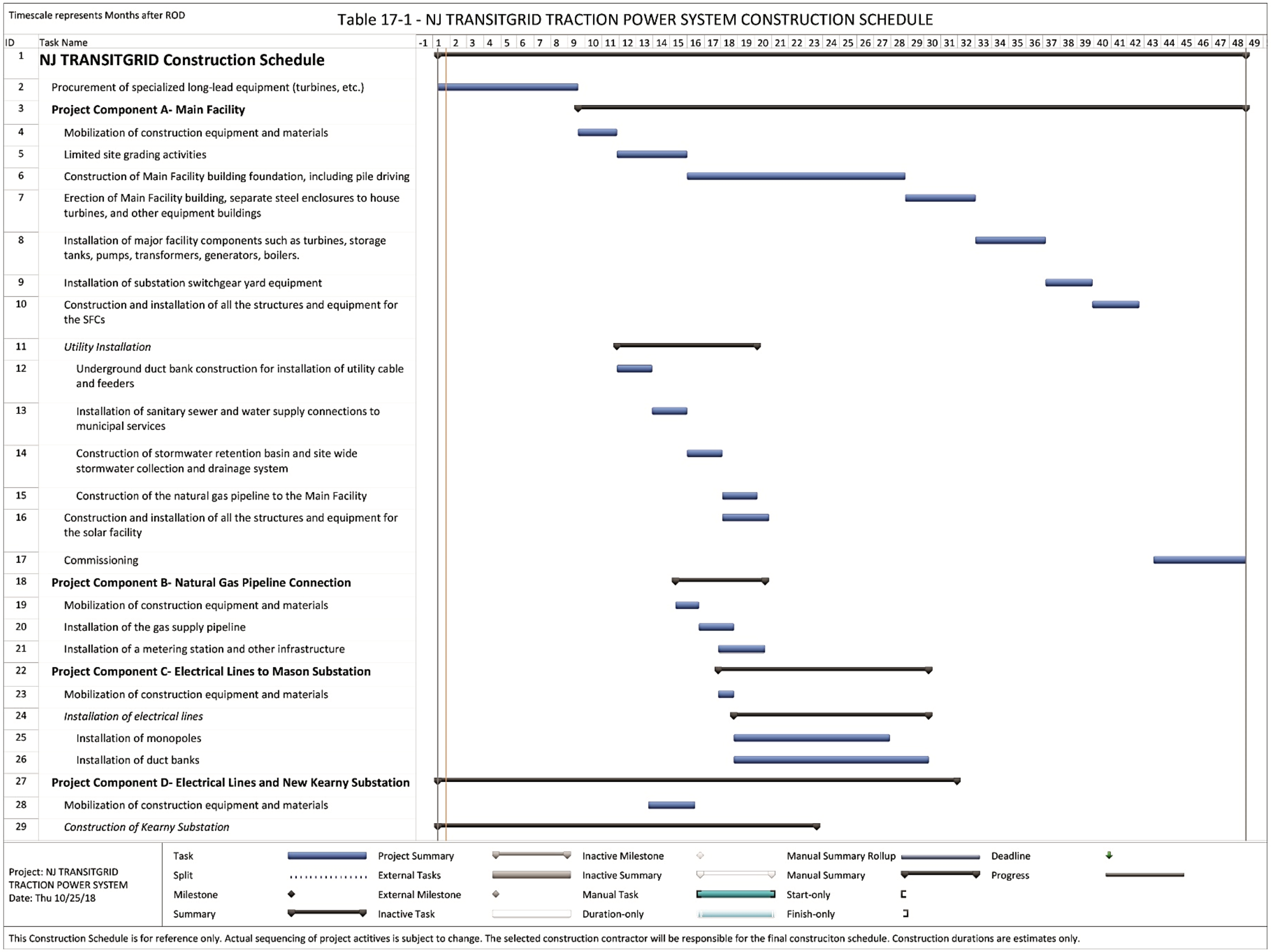
Construction equipment would be visible from certain locations. Any diesel emissions generated during construction would be short-term as a result of the temporary operation of construction equipment, which would use Tier 4-compliant engines to reduce emissions. These sources would not be expected to generate significant emissions and would only occur sporadically. Construction activities associated with Preferred Alternative Project Component G would be limited to daytime hours and would temporarily cause elevated noise levels that may be audible to nearby receptors such as residences, schools, or libraries. Once construction activities are completed, noise and vibration levels would return to preconstruction conditions. NJ TRANSIT would adhere to local noise ordinances to the maximum extent practicable. No significant adverse noise impacts would be expected to occur from the construction of Preferred Alternative Project Component G.

17.2 CONSTRUCTION STAGING, SEQUENCING, AND SCHEDULING

The exact contractor work hours would be determined in subsequent project phases; however, since much of the Build Alternative area is industrial, it is expected that two or three daily work shifts may occur in some locations. Amtrak and NJ TRANSIT own numerous properties and rights-of-way throughout the proposed Project area, which would be used for employee parking and staging areas. It is therefore not anticipated that any private property would be acquired for construction staging, access, or parking. Construction of several major project elements (such as the Main Facility, the new Kearny Substation, the new NJ TRANSITGRID East Hoboken Substation, the nanogrid, and the electrical line installation) would be completed concurrently. Including commissioning, the total construction schedule is expected to be approximately 48 months. See **Table 17-1** for anticipated sequencing of major construction activities.

Timescale represents Months after ROD

Table 17-1 - NJ TRANSITGRID TRACTION POWER SYSTEM CONSTRUCTION SCHEDULE



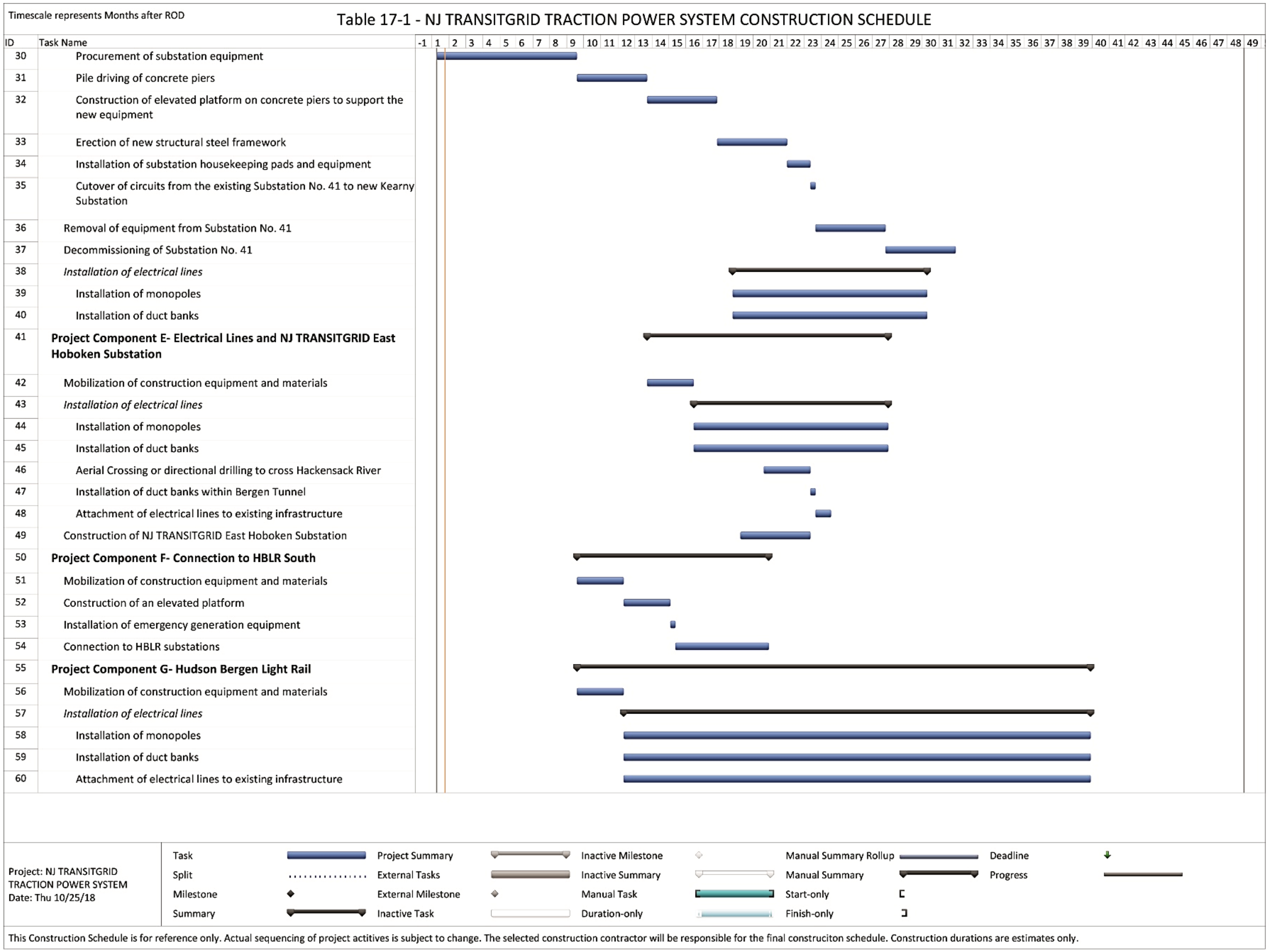
ID	Task Name
1	**NJ TRANSITGRID Construction Schedule**
2	Procurement of specialized long-lead equipment (turbines, etc.)
3	**Project Component A- Main Facility**
4	Mobilization of construction equipment and materials
5	Limited site grading activities
6	Construction of Main Facility building foundation, including pile driving
7	Erection of Main Facility building, separate steel enclosures to house turbines, and other equipment buildings
8	Installation of major facility components such as turbines, storage tanks, pumps, transformers, generators, boilers.
9	Installation of substation switchgear yard equipment
10	Construction and installation of all the structures and equipment for the SFCs
11	*Utility Installation*
12	Underground duct bank construction for installation of utility cable and feeders
13	Installation of sanitary sewer and water supply connections to municipal services
14	Construction of stormwater retention basin and site wide stormwater collection and drainage system
15	Construction of the natural gas pipeline to the Main Facility
16	Construction and installation of all the structures and equipment for the solar facility
17	Commissioning
18	**Project Component B- Natural Gas Pipeline Connection**
19	Mobilization of construction equipment and materials
20	Installation of the gas supply pipeline
21	Installation of a metering station and other infrastructure
22	**Project Component C- Electrical Lines to Mason Substation**
23	Mobilization of construction equipment and materials
24	*Installation of electrical lines*
25	Installation of monopoles
26	Installation of duct banks
27	**Project Component D- Electrical Lines and New Kearny Substation**
28	Mobilization of construction equipment and materials
29	*Construction of Kearny Substation*

Project: NJ TRANSITGRID TRACTION POWER SYSTEM
Date: Thu 10/25/18

This Construction Schedule is for reference only. Actual sequencing of project actitives is subject to change. The selected construction contractor will be responsible for the final construciton schedule. Construction durations are estimates only.

Timescale represents Months after ROD

Table 17-1 - NJ TRANSITGRID TRACTION POWER SYSTEM CONSTRUCTION SCHEDULE



ID	Task Name
30	Procurement of substation equipment
31	Pile driving of concrete piers
32	Construction of elevated platform on concrete piers to support the new equipment
33	Erection of new structural steel framework
34	Installation of substation housekeeping pads and equipment
35	Cutover of circuits from the existing Substation No. 41 to new Kearny Substation
36	Removal of equipment from Substation No. 41
37	Decommissioning of Substation No. 41
38	*Installation of electrical lines*
39	Installation of monopoles
40	Installation of duct banks
41	**Project Component E- Electrical Lines and NJ TRANSITGRID East Hoboken Substation**
42	Mobilization of construction equipment and materials
43	*Installation of electrical lines*
44	Installation of monopoles
45	Installation of duct banks
46	Aerial Crossing or directional drilling to cross Hackensack River
47	Installation of duct banks within Bergen Tunnel
48	Attachment of electrical lines to existing infrastructure
49	Construction of NJ TRANSITGRID East Hoboken Substation
50	**Project Component F- Connection to HBLR South**
51	Mobilization of construction equipment and materials
52	Construction of an elevated platform
53	Installation of emergency generation equipment
54	Connection to HBLR substations
55	**Project Component G- Hudson Bergen Light Rail**
56	Mobilization of construction equipment and materials
57	*Installation of electrical lines*
58	Installation of monopoles
59	Installation of duct banks
60	Attachment of electrical lines to existing infrastructure

Project: NJ TRANSITGRID TRACTION POWER SYSTEM
Date: Thu 10/25/18

This Construction Schedule is for reference only. Actual sequencing of project actitives is subject to change. The selected construction contractor will be responsible for the final construciton schedule. Construction durations are estimates only.

17.3 ENVIRONMENTAL EFFECTS OF CONSTRUCTION

17.3.1 Land Use

The lengthiest construction activities would occur in industrial areas, including at the Main Facility site (Preferred Alternative Project Component A) and at the new Kearny Substation (Preferred Alternative Project Component D), which are far removed from residential and other sensitive land uses. Construction of the electrical lines and the new NJ TRANSITGRID East Hoboken Substation would take place within existing transportation rights-of-way or easements. Staging areas and construction employee parking areas would be accommodated within existing NJ TRANSIT and Amtrak properties and other transportation rights-of-way. Measures to control noise, dust, and other intrusive activities are described in the sections below. The construction activities would not have any significant adverse impacts on surrounding land uses.

17.3.2 Community Facilities

The Main Facility site and the new Kearny Substation are located in industrial areas. The community facility closest to the Main Facility site is the Hudson County Sheriff's Office at 555 Duncan Avenue in Jersey City, approximately one mile away. The community facility closest to the new Kearny Substation is the Kearny Fire Department Station 4, approximately 1.3 miles away. There are 11 community facilities within the 500-foot study area from the electrical line routes (excluding those that fall within 500 feet of the Bergen Tunnel alignment), including two schools, two fire departments, one hospital, one cemetery and five parks. The electrical line installation work would occur within the existing transportation rights-of-way. The work would be performed in a linear fashion and activities would not be occurring for a sustained period of time in any given location. Where Preferred Alternative Project Component E travels through the Bergen Tunnel, all construction activities would be conducted in the interior of the tunnel (i.e., threading electrical lines through newly installed pre-cast conduits). While some increases in noise levels may be noticeable at certain locations along Preferred Alternative Project Component E —such as near the Hoboken Fire Department Engine Company 1/Ladder Company 2 near Hoboken Yard—these increases would be temporary and of short duration and would not affect routine activities. No community facilities are located within the footprint of Preferred Alternative Project Component G. Those located within the 500-foot study area are described in Chapter 4, "Community Facilities." These include places of worship, daycare facilities, schools, fire departments, health care facilities, cemeteries, and more. The construction activities of Preferred Alternative Project Component G would entail the installation of monopoles and electrical lines within an existing transportation right-of-way and would not adversely affect community facilities located near the existing HBLR. The Build Alternative would not result in significant adverse impacts to community facilities during the construction period.

17.3.3 Visual Quality

Some aspects of the proposed construction activities would be visible to the public. Rail passengers and motorists traveling through Kearny (e.g., along the New Jersey Turnpike and Northeast Corridor) would be able to observe the construction activities. Construction of the electrical line routes, including those for Preferred Alternative Project Component G along the HBLR, would be visible to workers, residents, and passers-by in those areas. Nevertheless, none of the construction activities or equipment would block sensitive views or significantly adversely affect any viewer groups. All changes in views due to construction activities would be limited and temporary and of short duration. Construction sites would be properly maintained, and in some areas, temporary construction fencing may be constructed for safety and visual purposes. The proposed Project would not result in significant adverse impacts to visual and aesthetic resources during the construction period.

17.3.4 Socioeconomic Conditions

No temporary or permanent business displacements or relocations would be required for construction of the Build Alternative. The construction activities would not affect typical operations of or access to local businesses. Construction of the Build Alternative would generate short-term economic benefits from the creation of temporary construction jobs, the wages paid to construction workers, and the indirect economic activity generated from the direct expenditures in the regional economy. Benefits would accrue to the businesses providing goods and services to construction workers as well as those providing the materials used in construction. The Build Alternative would not result in significant adverse impacts to socioeconomic conditions during the construction period.

17.3.5 Air Quality

Construction-related air quality effects include the potential for increased fugitive dust from on-site equipment activities, transportation of construction materials, and vehicular exhaust emissions from material delivery and hauling trucks, construction equipment, and workers' private vehicles. Dust generated from on-site construction activities would be controlled through the application of water or foam, consistent with the state permit conditions that would apply to such activities. Examples of air quality control measures that would be implemented include:

- Requiring non-road diesel engines to adhere to Tier 4 emission standards;
- Limiting vehicle idling times to less than three minutes on diesel powered engines and posting signage regarding the idling limits;
- Limiting operating speeds of on-site equipment;
- Implementing appropriate dust control measures for stockpiles; and
- Ensuring that haul trucks use designated truck routes designed to minimize impacts on sensitive receptors.

A dust monitoring program, including visual and active monitoring of airborne Particulate Matter 10 micrometers or less (PM_{10}) and dust control measures, would be developed and implemented during construction earthwork activities at the Main Facility site to reduce the potential for off-migration of contaminants and to protect worker health. These measures would ensure that the construction activities would not result in significant adverse impacts to air quality.

17.3.6 GHG Emissions

A temporary increase in GHG emissions would result from the construction of the Build Alternative. GHG emissions generated during construction would be limited and short-term, resulting from: on-site non-road construction engines; on-road trucks and worker trips; and indirect emissions from extracting, producing, and transporting construction materials and fuels. NJ TRANSIT would encourage its contractors to reduce construction-period GHG emissions by maximizing the use of local materials suppliers, evaluating the feasibility of biodiesel for diesel non-road engines, designating efficient transportation routes for deliveries and worker trips, and adhering to the air quality control measures enumerated in the Air Quality section above. No significant adverse impacts to GHG emissions would result from the Build Alternative's construction.

17.3.7 Historic Resources

The potential for the construction of the Build Alternative to directly impact historic architectural and archaeological resources is described in Chapter 9, "Historic Resources," and Appendix C, "Historic Resources." During construction, special precautions would be taken for construction activities that would occur in close proximity to above-ground historic resources. The contractor would be required to prepare a Construction Protection Plan for aboveground historic structures that are located within 90 feet of construction to identify how the resource would be protected. To avoid adverse impacts on archaeological resources, additional work would be performed in consultation with the terms of the Programmatic Agreement (PA); a draft PA is included in this DEIS. During the geotechnical investigation completed in fall 2017, a representative sample of the soil borings were monitored under the oversight of a qualified archaeologist. The results of the soil borings will be reviewed by a qualified geoarchaeologist to determine depths of fill and identify intact buried land surfaces with potential for archaeological resources. The results of these reviews will inform the design process to better understand the archaeological sensitivity of the areas to be affected. The potential for adverse effects to archaeological resources would then be re-evaluated. If the potential for adverse impacts is identified, appropriate mitigation measures would be developed through ongoing consultation with NJHPO, which could include subsurface archaeological testing to identify the presence or absence of archeological features, or archeological monitoring during construction. The construction-period monitoring and mitigation measures outlined in the draft PA would ensure that no significant adverse impacts to archaeological resources occur from the Build Alternative's construction. Due to the NJHPO's finding of an adverse effect on several historic architectural resources, mitigation measures, as described in the draft PA, would be implemented prior to the start of construction.

17.3.8 Traffic and Transportation

VEHICULAR TRAFFIC

During the construction period for the Main Facility (Preferred Alternative Project Component A), the Build Alternative would result in a minor increase in vehicular traffic, including workers traveling to and from the work site during shift changes and deliveries of equipment and materials. This increase in volume would be temporary, and since the project site is located in an area with superior access to the regional highway and roadway network, impacts to overall transportation would be negligible. Based on current usages of these highways and roadways, they would still be expected to operate well within their capacity. For installation of monopoles and duct banks, off-street parking would be available for construction workers on NJ TRANSIT and Amtrak properties and other transportation rights-of-way. Existing NJ TRANSIT and Amtrak access points would be used to access the construction sites. During construction of some monopoles close to road intersections (especially for Preferred Alternative Project Component G), and during the installation of the electrical lines to the new monopoles, some brief interruptions of road traffic may be required. These will be permitted by and coordinated with the New Jersey Department of Transportation (NJDOT) and Local traffic authorities, and would require appropriate warning signage and possibly flaggers to direct traffic. No significant adverse impacts to traffic would result from the Build Alternative's construction.

COMMUTER AND INTERCITY RAIL

Work along the existing railroad rights-of-way would be closely coordinated with NJ TRANSIT and Amtrak to ensure continued passenger rail operations throughout the duration of construction. Some limited and planned service disruptions may be required to accommodate the construction activities; however, these would be infrequent and managed to minimize disruption to commuters. These would require flaggers to control train movement past the monopole or duct bank installation sites if they were in close proximity to active rails. However, these restrictions would be temporary in nature, and would change locations as the construction progressed. The cutover in power from the existing Substation No. 41 to the new Kearny Substation would be planned to ensure no interruption to traction and non-traction power. As a result, no significant adverse impacts to rail operations would result from the Build Alternative's construction.

AIR TRAFFIC

Due to the proximity of the proposed exhaust stacks and monopoles in Kearny, NJ, to the Newark Liberty International Airport, consultation with the Federal Aviation Administration (FAA) was conducted regarding any potential impact to air traffic from their installation. As discussed in Chapter 10, "Traffic and Transportation," FAA requested that NJ TRANSIT complete FAA's online Notice Criteria Tool prior to commencement of construction. The plans for the proposed stacks and monopoles will be reviewed by FAA's Obstruction Evaluation process. Since the proposed stack heights are 150 feet, and the proposed monopole heights are shorter than other existing infrastructure in the project area, the proposed Project would not create any new obstacles nor have an impact on air traffic. Monopoles will be approved by and registered with FAA prior to construction and will include FAA designated lighting if required.

17.3.9 Noise and Vibration

The Build Alternative has the potential to temporarily increase localized ambient noise levels during construction. Prior to the initial start-up, the steam turbine at the Main Facility would require steam blows to remove debris. Steam blowing is used to remove any debris that may have settled within the steam turbine during manufacturing of the steam turbine. The steam blows would be controlled and occur during the daytime for approximately two to four weeks depending on the number of blows that are required to meet the cleanliness requirements of the steam turbine vendor. The typical sequence time is five minutes per blow and 30 to 60 minutes between blows to re-fill the drums, heat the water, and re-pressurize the system. The steam blows would be expected to generate a noise level near 115 dBA at three feet from the steam vents. The NJDEP standard for noise at industrial receptors is 75 dBA. Noise from the steam blow would be expected to be reduced to 75 dBA at a distance of approximately 400 feet from the equipment. Because this is a short-term event, this noise level would not significantly impact the nearby business or operations at industrial properties.

The noisiest construction activity would be the pile driving phases at the Main Facility and new Kearny Substation, which would last approximately twelve months. The foundation for the nanogrid (Preferred Alternative Project Component F) may also require pile driving. While noise generated from pile driving would be audible at surrounding properties, no noise-sensitive receptors are located near the Main Facility site or new Kearny Substation. The closest sensitive receptor to the Main Facility is a residential neighborhood in Jersey City which is located 0.7 miles away. Sensitive receptors are located within close proximity to the HBLR Headquarters facility where the nanogrid would be constructed. Nevertheless, the proposed location of the nanogrid at the facility would be more than 600 feet from any sensitive receptor. Pile driving activities are expected to produce noise levels of approximately 100 dBA at 50 feet. At 600 feet from the source, the noise level would be 71 dBA, which is 19 dBA below the OSHA 8-hour exposure limit and meets the NJDEP standards for industrial sources. This is about the sound level of a noisy restaurant. At a distance of 0.7 miles, the noise level would be 54 dBA, which is moderately annoying, but quieter than the level of conversational speech. If pile driving is required at Preferred Alternative Project Component F, it would exceed the residential noise standard of 65 dBA for locations within approximately 1,000 feet (0.2 miles), so construction times would need to be restricted to within the hours of 7:00 am and 7:00 pm on weekdays, 9:00 am and 7:00 pm on Saturdays, and no pile driving activity would be allowed on Sundays.

Additionally, pile driving produces vibrations which can be perceptible to people and animals more than one thousand feet away. However, the energy associated with noise and vibrations declines logarithmically with distance from the source. For heavy pile driving, vibrations are not troublesome to people at distances over 200 feet. The nearest sensitive receptors are more than 3,000 feet away from the construction site at the Main Facility (Preferred Alternative Project Component A) and new Kearny Substation (Preferred Alternative Project Component D). However, since some aquatic life is much more sensitive to vibrations than humans, coordination with USFWS and NMFS will ensure that migration and spawning windows for threatened and endangered species and special species of interest will be avoided, as appropriate. For the nanogrid (Preferred Alternative Project Component F), sensitive receptors (i.e., residences) are approximately 600 feet from the proposed construction site, which may require pile driving for the foundation. The vibrations at this distance would be below the threshold at which they would be perceived as troublesome, and this location is greater than a mile from the Hudson River, so no impacts to aquatic organisms would be anticipated from pile driving activities there.

Construction of monopoles and duct banks to install the electrical lines would entail some noise-generating activities, including excavation and boring with an auger, producing noise that would be audible to nearby residents and workers. This electrical line work would, however, proceed sequentially along each rail line and construction would not be sustained in any given location for an extended period of time (i.e., up to two weeks in one location). Local noise ordinances comply with NJDEP Noise Control Standards (7 N.J.A.C. § 29), which state that between 7:00 AM to 10:00 PM, repeating noise levels should not exceed 80 dBA and impulsive noise levels should not exceed 50 dBA. More information on municipal noise standards are presented in Chapter 11, "Noise and Vibration." Based on the typical construction equipment and methods proposed, vibration levels at sensitive receptors in the study area are expected to be well below levels that cause cosmetic and structural damage. Any special pre-construction surveys and/or crack monitoring needed for aboveground historic structures would be identified as part of the Construction Protection Plans discussed in the "Historic Resources" section above. With adherence to these measures, no significant adverse noise or vibration impacts would result from the construction of the Build Alternative.

17.3.10 Natural Resources

As described in Chapter 12, "Natural Resources," the majority of the project area is unvegetated and contains little to no natural resources. Construction activities would, however, increase the potential for erosion and sedimentation. To avoid impacts to adjacent natural resources—such as Cedar Creek Marsh South and the Hackensack River—NJ TRANSIT would develop and implement a Soil Erosion and Sedimentation Control (SESC) Plan and utilize best management practices (BMPs). BMPs would include the use of silt curtains on land and turbidity booms in-water within the construction area to prevent sediment migration, as well as hay bales around the perimeter of construction in close proximity to wetlands. The proposed Project would be subject to several federal, state, and local permits that are intended to protect natural resources, including wetlands, groundwater, water bodies, forests, threatened/endangered species, and more. Such permits contain extensive conditions pertaining to construction activities, including use of BMPs such as those listed above, as well as water pumps, frac tanks and monitored and maintained filter bags. The respective permit conditions will also guide project staging and construction/site management. The BMP measures that would be in place during construction would eliminate the risk of downstream sedimentation or groundwater contamination. NJ TRANSIT would ensure compliance with all permit conditions.

For Preferred Alternative Project Component D, pile driving activities for the new Kearny Substation and auger drilling for the new monopoles would impact the waterbottom of the Cedar Creek Marsh South, as well as displace any fishes and aquatic organisms therein. However, as described in Chapter 12, "Natural Resources," since the area of the Cedar Creek Marsh South to be used for Preferred Alternative Project Component D is hydrologically restricted from the Hackensack River, the habitat value is low relative to other more connected portions of the Cedar Creek Marsh to the north. According to the NOAA Essential Fish Habitat (EFH) Mapper (NOAA 2017), the area has no EFH, no Habitat Areas of Particular Concern (HAPC), and no Essential Fish Habitat Area (EFHA) protected from fishing.

During pile driving for the Main Facility building and during monopole installation groundwater would be encountered. Piles would be installed using a double/multi-casing that will prevent spread of existing contaminated groundwater at the Main Facility site. For monopoles, each shaft (as described above) would be drilled with permanent steel casings. Reinforcing steel cages would be placed atop the shafts and concrete would be casted using the tremie method to avoid contamination to groundwater along the proposed Project corridor. In addition, a Stormwater Management plan in conformance with §7 N.J.A.C. 8 will be developed to include BMPs during construction to prevent any stormwater runoff migration to groundwater. Measures will include silt fences, hay bales, and water pumps to ensure a separation between the construction area and groundwater.

As stated above, if the preferred alternative of an aerial crossing of the Hackensack River is not possible, Project Component E may include installation of a submarine cable across the Hackensack River bottom or a directionally drilled cable. Either activity would require several federal and state permits and close coordination with natural resource protection agencies, including but not limited to USACE, USCG, NMFS, and NJDEP, to minimize potential impacts to natural resources. The water bottom on which the cable will be laid upon the river bed is identified as EFH for summer flounder and Atlantic herring, and migratory habitat for shortnose Atlantic sturgeon, and winter flounder. The cable could impact EFH by displacing a minor amount of water bottom habitat during construction (approximately 2,000 square feet) but will not restrict passage or migratory movement for any species of marine life. Coordination with NMFS would ensure that construction would be completed during specified work windows to minimize impacts to these species, outside of migration and breeding timeframes. Based on a 10/25/18 email correspondence with Karen Greene (Greene Karen, 2018a, Greene Karen, 2018b), Mid-Atlantic Field Offices Supervisor, NOAA-NMFS, "There is no seasonal in-water work limits for summer flounder… we have not had any targeted recommendations for that species in the Hackensack River." Generally, other regional aquatic species that can be given consideration for moratoriums or seasonal restrictions are anadromous fishes from March 1 to June 30 and Winter flounder from January 1 to May 31 (see Appendix D). As required in the NJDEP and USACE's standard permit conditions, project construction will adhere to regulatory guidelines, seasonal restrictions and utilize BMPs to minimize and avoid any adverse impacts to aquatic species or water quality. Project Component E would be scheduled to be compliant with such seasonal work restrictions.

A USACE Section 10/404 and NJDEP WFD permit would be procured to allow the described cable crossing if submarine cable or directional drilling is selected. As conditions of the NJDEP and USACE permit approvals, wetland mitigation is anticipated, and will be completed by purchasing wetland mitigation bank credits from a state and federally approved mitigation bank. Either Kane Mitigation Bank or MRI-3 Mitigation Bank will be utilized. See Chapter 12, "Natural Resources," for additional information on mitigation. Soil erosion and sediment control measures will be in place throughout construction to reduce adverse impacts to the Hackensack River due to the submarine cable installation, including turbidity barrier and silt curtains.

All other construction activities would take place within existing transportation ROW, which is already disturbed, and has little or no natural resource value. With adherence to these measures and remaining within existing ROW corridors, no significant adverse impacts to natural resources would result from the construction of the Build Alternative.

17.3.11 Soils and Geology

For construction of the Main Facility, additional clean source fill material may be required to establish appropriate site topography and drainage, and to back fill specific areas requiring excavation. All fill material that is proposed to be imported and placed on existing soil areas would meet NJDEP's Alternative and Clean Fill Guidance, dated December 2011, as discussed in Chapter 14, "Contaminated Materials." Also discussed in Chapter 14 is a Materials Management Plan that would be prepared to address management of contaminated soils encountered during construction. Work within soil exposed areas would employ required SESC and BMP measures.

Under the Build Alternative, construction activities such as compaction and pile driving would be temporary. These activities do not have the potential to induce earthquakes in the study area. Because of the low magnitude of potential seismic activity, and the distance from the faults, the Main Facility is not expected to be impacted by earthquakes.

17.3.12 Contaminated Materials

As discussed in Chapter 14, "Contaminated Materials," construction of the Build Alternative has the potential to expose historic fill or contaminated soil and/or groundwater at several sites throughout the project corridor. With the implementation of the protocols that would be followed for the handling, storage, transport and disposal of contaminated materials, construction of the Build Alternative would not result in significant adverse impacts related to contaminated materials.

Construction plans and specifications for all project components would provide procedures for stockpiling, testing, loading, transportation, and proper disposal of the excavated materials requiring off-site disposal. A LSRP-approved RAWP Amendment with Materials Management Plan (MMP) would be prepared, as would a Health and Safety Plan (HASP) to minimize exposure of contaminated materials to workers and the public (see Chapter 16, "Safety and Security").

Any material excavated during utility installation, facility foundation construction, installation of foundations for monopoles, and excavation for duct banks would be characterized to classify the material for disposal (e.g., as hazardous or non-hazardous contaminated waste, petroleum-contaminated wastes, historic fill containing construction and demolition debris, or uncontaminated soils). Waste characterization sampling would be completed in accordance with the requirements of the waste disposal facilities, as well as adhere to local, state, and federal regulations. The waste material would be temporarily stored or stockpiled at the site with appropriate soil and sediment control measures and away from the streams and drains to prevent impacts to human health and the environment. Licensed waste haulers or transporters would be used to transport materials to the waste disposal facilities with appropriate permits and in accordance with local, state, and federal regulations. The licensed disposal facility would be selected based on the type of waste (i.e., construction and demolition waste, contaminated soil, or hazardous waste).

Dewatering could be required during excavations for utilities, facility foundation construction, and installation of foundations for monopoles. Dewatering would be conducted in accordance with applicable local and state requirements. Liquids from the dewatering of any boreholes or excavations would be temporarily stored in frac tanks or pumped directly into a truck for off-site disposal at a regulated facility. If required, dewatering mitigation measures would include settlement or filtration of pumped water to reduce turbidity, discharge control, and other measures to reduce the potential for short-term construction-related impacts.

Minimal soil disposal from the Koppers Koke Site is expected for the 26 acres of Preferred Alternative Project Components A and B. Any Processed Dredge Material (PDM) that is removed during construction activities would be used to grade areas of low elevation at the site. The majority of Preferred Alternative Project Components A and B would be covered with improvements or clean fill cap. Clean fill material that is imported would meet NJDEP's Alternative and Clean Fill Guidance, dated April 2015. There are no buildings to be demolished; however, existing electrical lines, poles or towers and utilities may need to be removed or altered during construction. All construction debris would be surveyed, tested (if necessary), and disposed of at a licensed facility if found to contain any contaminants above the NJDEP levels.

Specific construction methods would be employed to prevent migration of contaminants at Preferred Alternative Project Components A and B. Any subsurface activities on the Main Facility (Preferred Alternative Project Component A) will have a single casing when the meadow matt layer is penetrated for drilling or pile driving through the PDM and fill layers. Double casing will be required when the varved clay layer is penetrated for deeper borings or piles. The outer casing will be advanced with an auger drill bit or pile driving. The auger will also be utilized for the double casing method where the borehole or pile will be advanced deeper into the varved clay layer and then mud rotary or pile driving will be utilized to advance through the stiff varved clay layer for accessing the till layer and bedrock. Any water generated during dewatering activities would be stored in fractionation tanks or pumped directly to trucks for off-site disposal in accordance with local and federal regulations. In areas where the final cap is disturbed, the site restoration would be equally protective. Construction plans and specifications would provide procedures for stockpiling, testing, loading, transportation, and proper disposal of excavated materials requiring off-site disposal. Construction of Preferred Alternative Project Component A would not affect current remediation activities, including the existing Dense Non-Aqueous Phase Liquid Interim Remedial Measure (DNAPL IRM) system for coal tar DNAPL, capillary break for chromite ore processing residue (COPR), and pump and treat system at the Standard Chlorine Chemical Company (SCCC) site.

Electrical lines for Project Components C, D, and E would be installed through new monopoles and underground duct banks below ground surface. Monopoles through industrial Kearny to Cedar Creek Marsh South would be a maximum of 220 feet in height with a foundation consisting of four two-foot concrete piles cast in augered holes. The foundation depth for these foundation piles would be 95 feet below ground surface. Options for crossing the Hackensack River include an aerial crossing approximately 50 feet north of the Lower Hack Bridge (preferred option), a submarine cable laid on the river bottom, and a directionally-drilled cable below the river bottom. Through Jersey City and Hoboken for Preferred Alternative Project Component E along the Morris & Essex right-of-way, monopoles would be 65 feet in height with a 48-inch diameter foundation, with the exception of one monopole (maximum 220 feet) on the east bank of the Hackensack River for aerial crossing of the river. The foundation depth for the 65-foot-tall monopoles would be 50 feet below ground surface. Underground duct banks would be to a maximum of five feet below ground surface. Material excavated during monopole or duct bank installation would be treated as described above.

It is anticipated groundwater would be encountered during installation of the new monopoles and underground duct banks. Monitoring wells that have been installed at the Koppers Koke Site have measured groundwater ranging from approximately three feet below ground surface to 21 feet below ground surface. These measurements were taken by Beazer, Field & Technical Services, LLC during quarterly monitoring in February 2016. Any water generated during dewatering activities would be treated as described above.

At the HBLR Headquarters, the emergency generators and stored energy that would make up the nanogrid would be installed on an elevated platform estimated at 7 feet above ground surface to comply with NJ TRANSIT's DFE. The proposed platform is anticipated to be approximately 20,000 square feet and the emergency generators would be 10-14 feet tall, bringing the tallest point of the nanogrid less than 25 feet above nominal ground surface. Natural gas connections are already in place at the HBLR Headquarters facility. A combination of aerial and underground electrical lines on new monopoles less than 40 feet tall or duct banks within the NJ TRANSIT-owned property would connect the emergency generators to HBLR.

The platform for the emergency generators would be supported by one of two foundation systems: either a foundation of piles driven to refusal or the excavation of a shallow mat to a maximum depth of five feet below ground surface. Based on the records review and past/current land use, it is anticipated that contaminated materials could be encountered during construction of the platform for the nanogrid. Any excavated materials would be treated as described above. If needed, dewatering at the site would also be conducted as described above.

For Preferred Alternative Project Component G, the NJ TRANSIT HBLR was issued a Conditional No Further Action (NFA) letter by NJDEP for the HBLR Linear Construction Project (LCP) on May 3, 2012. Construction plans would provide procedures for stockpiling, testing, loading, transportation, and proper disposal of the excavated materials requiring off-site disposal. An MMP would be prepared as would a Health and Safety Plan (HASP) to minimize worker and public exposure to historic fill materials. Material excavated during the installation of monopoles for Preferred Alternative Project Component G would be treated as described above.

17.3.13 Utilities

Aside from the utility extensions to the Main Facility site (discussed above) and the natural gas pipeline connections at Preferred Alternative Project Components A and B, utilities in the project area would not be affected during construction. All necessary agreements for the water supply and sanitary sewer connections would be executed with the appropriate entities to define the responsibility for and coordination of the construction and operation of these utilities to minimize impacts to existing utilities when new connections for the Main Facility are made. Construction impacts to existing utilities may result in interruptions to public utilities and/or transportation service delays and therefore, the project is being designed to avoid these interruptions. Therefore, construction of the Build Alternative would not result in significant adverse impacts to utilities.

17.3.14 Safety and Security

Construction of the Build Alternative would require operation of heavy construction equipment near operating railroads, and safety risks are inherent in this type of work. However, construction-related hazards would be effectively minimized through compliance with all applicable federal and state occupational safety and health standards to ensure the safest practices are being enforced. Adherence to these standards, and applicable National Electrical Safety Code regulations and utility design and safety standards, would protect construction workers and the public from unacceptable risks. As there are many aspects of construction that will be performed on or near active rail lines, all contractors would be instructed to attend mandatory Roadway Worker safety training as required and furnished by the rail line operators, including NJ TRANSIT, Amtrak, HBLR and utility operators such as PSE&G.

During construction, a construction HASP based on industry standards for accident prevention would be implemented by NJ TRANSIT's contractors. Contractors would be required by contract to comply with the construction health and safety program, which would include site security measures. Key elements of the HASP would include:

- Responsibilities of construction team and subcontractors;
- Job site rules and regulations;
- Emergency response procedures;
- Amtrak, NJ TRANSIT, and HBLR requirements for work within rights-of-way (railroad safety training, flag protection, etc.);
- Safety inspections and audits;
- Medical services and first aid;
- Safety meetings, employee training, and communications, including a hazard communications program and a review of procedures when performing high risk tasks;
- Personal protective equipment;
- Standard construction procedures; and
- Accident investigation and reporting.

Construction would occur primarily in locations that are not accessible to the general public. The HASP would identify how the Main Facility site and other project component sites would be secured—such as fencing and locked gates at access points. The HASP would address on-site contamination and would be prepared in accordance with OSHA regulations for Hazardous Waste Operations and Emergency Response (HAZWOPER) (29 CFR § 1910.120 [2013]), OSHA construction safety requirements (29 CFR § 1926 [2013]), and other applicable regulations and guidelines. The HASP would describe in detail the site-specific health and safety procedures to minimize exposure of contaminated materials to workers and the public. The HASP would include specifications for training of appropriate personnel, monitoring for the presence of contamination (e.g., buried tanks, drums or other containers), sludges or soils that show evidence of potential contamination (such as discoloration, staining, or odors), and approved response plans. Appropriate PPE would be provided to workers during subsurface activities. As indicated above, a dust monitoring program would be established in appropriate locations to protect worker health.

Additionally, for Preferred Alternative Project Component G, because the HBLR has many at-grade roadway crossings that are accessible to the general public, special consideration will be required for construction activities in these areas. Signage, temporary fencing, and additional instruction to construction workers will be needed to maintain the safety of both construction workers and the public. These procedures will be included in the HASP as well.