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NOTICE OF COMPLETION OF

FRESH KILLS PARK DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

Project Identification
CEQR NO. 06DPR002R

SEQRA Classification: Type I

Lead Agency
New York City Department of
Parks & Recreation
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Pursuant to Rules of Procedure for City Environmental Quality Review of 1991 as found in 62 RCNY Chapter 5 and Mayoral Executive Order No. 91 of 1977 (CEQR), and Article 8 of the State Environmental Conservation Law, the State Environmental Quality Review Act (SEQRA) and SEQRA regulations as found in 6 NYCRR Part 617, a Draft Supplemental Environmental Impact Statement (DSEIS) has been prepared for the actions described below. Copies of the DSEIS are available for public inspection at the office of the undersigned. The proposal involves actions by the New York City Department of Parks & Recreation and other involved agencies.

A public hearing on the DSEIS will be held on June 22, 2009 at 7PM at Wagner College, Spiro Hall 2, 631 Howard Avenue, on Staten Island, NY 10301. Written comments on the DSEIS are requested and will be received and considered by the Lead Agency through July 24, 2009.

S/
Joshua Laird, Assistant Commissioner for Planning & Parklands

New York City Department of Parks & Recreation

A. INTRODUCTION

The City of New York, with the New York City Department of Parks & Recreation (DPR) as lead agency, is proposing the East Park Road system within the East Park area of Fresh Kills Park. East Park is approximately 482 acres in size and is City-owned property under the jurisdiction of the New York City Department of Sanitation (DSNY). The boundaries of the East Park are defined to the east by Richmond Avenue and across Richmond Avenue is parkland (LaTourette Park) and commercial uses (e.g., the Staten Island Mall). Main and Richmond Creeks form the boundary to the west and south. Fresh Kills Park was the subject of a comprehensive environmental review that was completed with the Final Generic Environmental Impact Statement (FGEIS) released on March 13, 2009. This Supplemental Environmental Impact Statement (SEIS) was prepared to analyze in greater detail the potential impacts of the Proposed East Park road system, which totals approximately 2 miles of roads across East Park. The project site is located in the southwest portion of Staten Island, within Staten Island Community Board 2.

For many decades over the latter half of the 20th Century, Fresh Kills Landfill operated as the City's principal municipal solid waste landfill, receiving household and municipal solid waste between 1948 and 2001. A state law enacted in 1996 mandated that solid waste landfill operations cease at Fresh Kills Landfill by December 31, 2001; landfilling subsequently ended on March 22, 2001. After that date, Fresh Kills Landfill was temporarily used only for the disposal of materials from the attacks of September 11, 2001. During this time, no other materials were brought to the Fresh Kills. Large portions of Fresh Kills are comprised of four solid waste landfill sections—3/4, 2/8, 6/7, and 1/9. East Park and the proposed East Park roads traverse Landfill Section 6/7. These landfill sections are regulated as Solid Waste Management Units (SWMUs) by the New York State Department of Environmental Conservation (DEC). With the cessation of solid waste disposal operations at Fresh Kills Landfill, final closure and post-closure activities are underway. Final closure design has been approved by DEC and closure construction is underway at Landfill Section 6/7.

Fresh Kills includes not just the landfill sections, but also the lands around the landfill sections, which have facilities once used by DSNY when the site was still receiving solid waste as well as buffer areas from the local community. This land also includes DSNY stormwater management, environmental control, maintenance and monitoring infrastructure, and systems that will remain active for up to 30 years after closure construction is complete. This infrastructure was installed by DSNY in accordance with a design approved by DEC. DEC also regulates activities in these environmental compliance buffer areas around the SWMUs. The portions of East Park that are outside the delineated landfill section include lands to the west between the base of the landfill and the shorelines of Main and Richmond Creeks. These areas are occupied by DSNY haul roads and tidal wetlands along the creeks. To the east, these lands include lands between the base of the landfill and Richmond Avenue. Those lands include DSNY landfill drainage basins and wetlands, as well as a berm and buffer land fronting Richmond Avenue.

The proposed Fresh Kills Park is an extensive park and development project, one of the largest in the history of the City of New York. It is comprised of five key planning areas: North Park, South Park, West Park, the Confluence, and East Park. Upon completion, Fresh Kills Park will be the City's second-largest park (after Pelham Bay Park in the Bronx, which covers 2,765 acres), three times the size of Central Park, will more than double the size of the Staten Island Greenbelt, and will provide seven miles of roads. Park development will occur in multiple phases through 2036 with designs that are expected to evolve over time. This Supplemental Environmental Impact Statement (SEIS) has been prepared to describe and analyze the proposed

East Park Roads component of the Fresh Kills Park project, which is described in greater detail below.

The above-described actions are subject to both City Environmental Quality Review (CEQR) and the City's Uniform Land Use Review Procedure (ULURP). This DSEIS has been prepared in accordance with the *Fresh Kills Park East Park Roads Final Scope of Work to Prepare a Supplemental Environmental Impact Statement* issued on May 29, 2009, Executive Order No. 91 of 1977, CEQR regulations, and follows the guidance of the *CEQR Technical Manual* (October, 2001). The DSEIS was certified as complete on June 5, 2009.

B. PROJECT DESCRIPTION

BACKGROUND TO THE PROPOSED PROJECT

SITE HISTORY

Before solid waste landfilling operations began at Fresh Kills, natural conditions at the project site were almost entirely coastal marsh and creeks. In 1948, to address its increasing solid waste disposal needs, the City of New York opened the Fresh Kills Landfill as part of a network of municipal solid waste landfills that were developed to serve the dual purposes of municipal solid waste disposal and land reclamation. In the decades that followed, Fresh Kills became the City's principal landfill facility for the disposal of collected household and commercial and municipal solid waste and construction and demolition debris. It eventually grew into the largest landfill in the world by the mid-1990s. While the City had a number of operating landfills through the latter half of the 20th century, many were closed as new environmental regulations came into effect. By 1991, Fresh Kills was the City's only operating landfill. At its peak, Fresh Kills received as many as 29,000 tons of solid waste per day.

Landfill operations at Fresh Kills predated the existence of Federal and State regulations pertaining to the design and operation of solid waste landfills. With the promulgation of new federal statutes, such as the Resource Conservation and Recovery Act (RCRA) in the 1970s, federal guidelines were established for the siting, design, operation, closure, and monitoring of landfill. In addition, it required states to perform an inventory of their landfills to determine the level of compliance with the new regulations. Following the passage of the Environmental Conservation Law (ECL) of New York State in 1973, stringent new regulations were adopted governing the state's solid waste landfills. These new regulations included 6 NYCRR Part 360, Solid Waste Management Facilities, signed in 1977. To ensure that landfills throughout the state were in compliance with these new regulations, municipalities were required to apply for permits from DEC for their landfills.

DEC recognized that bringing existing landfills into compliance with new regulations would not occur immediately. To enable the Fresh Kills Landfill to come into compliance with the Part 360 regulations for solid waste management facilities, DEC entered into a consent order that allowed DSNY to continue operating the Fresh Kills Landfill while the City made environmental and operational improvements at the landfill. A review of a Part 360 permit application for Fresh Kills Landfill was subsequently terminated when a state law was passed in 1996 requiring the landfill to cease accepting solid waste by December 31, 2001. As a result, Fresh Kills Landfill continues to be governed by the consent order between DEC and the City of New York (April 24, 1990, as modified DEC Case #022-9001-89-03), which governs landfill closure at the site.

Fresh Kills Landfill received its last barge of solid waste on March 22, 2001. Subsequently, landfill closure construction has proceeded in accordance with a DEC-approved closure plan under the Consent Order. After the World Trade Center attacks of September 11, 2001, the Consent Order was amended by the Governor of New York to temporarily allow placement of

materials from the World Trade Center site. No other materials were brought to Fresh Kills during this temporary suspension of the closure.

PROJECT PURPOSE AND NEED

ADDRESSING THE TRAFFIC NEEDS

Increasing Regional Connectivity

There is an undeniable need to address traffic congestion on Staten Island. Traffic in this part of Staten Island is particularly heavy; moreover, congestion is only expected to increase as western Staten Island continues to develop. In response to growing community concerns regarding local traffic, the City of New York created the Staten Island Transportation Task Force which is multi-agency task force led by representatives from NYCDOT and DCP (also represented are local community boards, representatives, NYSDOT, the MTA and Port Authority). Formed in 2006, the Task Force is charged with exploring multiple short-term and long term opportunities and solutions for improving transportation and circulation across Staten Island. The Staten Island Transportation Task Force has identified the construction of the Fresh Kills Park roads as one of its key recommendations for relieving local traffic congestion in addition to transit, alternative transportation modes, and other road improvement projects that are being implemented and considered for the area.

Minimizing Local Traffic Impacts

Given the lack of operational capacity along Richmond Avenue, it is recognized that alternative travel routes that reduce congestion along Richmond Avenue are needed. During the course of the preparation of the Fresh Kills Park FGEIS (March, 2009) and this SEIS (including the SEIS scoping hearing), numerous comments were put forth by local representatives and the general public with respect to the need for not only including new east/west public roads as part of the Fresh Kills Park project, but expediting construction of these roads. With no public through road across Fresh Kills, there is a major local need for a shorter travel distance across (rather than around) the approximately 4-square-mile, 2,200 acre Fresh Kills site. Fresh Kills currently presents a significant void in the local street grid, and a significant obstacle to local drivers seeking to reach the West Shore Expressway and the regional highway system. While the proposed park would be served by publicly accessible roads for automobile and transit access into the park, the connections to the West Shore Expressway would simultaneously provide a through road across the site, thereby providing some measure of local traffic relief.

By way of background, in 2001, with the official closing of Fresh Kills Landfill, the office of the Staten Island Borough President, through the New York City Economic Development Corporation commissioned a study of alternatives for providing vehicular access across Fresh Kills. Among the findings of that study were that roads through the park could provide traffic relief on local streets. In implementing new east/west connections that would provide access to the West Shore Expressway and a bypass to the congested Richmond Avenue corridor, it was the conclusion of those studies that intersections along Richmond Avenue would experience reductions in vehicular congestion if new roads were to be constructed across Fresh Kills. These improved traffic flows were determined to be directly linked to a shift in traffic patterns from the Richmond Avenue corridor (currently via Arthur Kill Road and Victory Boulevard) to roads across Fresh Kills. Thus, with park roads, not only would congestion be reduced at local intersections, but vehicle miles traveled would be reduced with the potential for accompanying air quality benefits.

Based on that report, it is concluded that proposed roads can reduce overall trip time in the network with both more direct (shorter) travel paths and reduced travel times between points of

origin and destination. Overall, the 2001 report concluded that these benefits would occur at multiple locations in the local travel network, but particularly along Arthur Kill Road, Drumgoole Road West, Richmond Avenue, Richmond Hills Road, and Forest Hill Road.

The proposed park roads would also eliminate the need for vehicles to travel through the quiet residential neighborhoods adjacent to the Fresh Kills Park site.

Lastly, by reducing travel time from the congested Richmond Avenue corridor to the West Shore Expressway, the proposed roads would also provide the benefit of emergency access to and across the site as well as economic and community benefits with improved circulation.

Providing Park Access

Another goal of the proposed park roads is to provide access into the park and to the various uses distributed through the park. The primary roads are designed to provide vehicular access to those uses which will generate the greatest demand, such as the recreational center proposed for the Confluence.

DESCRIPTION OF THE PROJECT SITE

SITE OWNERSHIP

The project site is all City-owned land comprising Block 2520, Lot 1. The property is under the jurisdiction of DSNY.

CURRENT ZONING AND MAPPED PARKLANDS

The proposed East Park has one underlying zoning district, R3-2. This zoning district covers all of Landfill Section 6/7. Open space and recreational facilities are allowed in the R3-2 districts. Where the site is mapped parkland, the zoning designations do not apply. There is also a City special zoning district mapped over a portion of the project site (the waterfront), the City's Natural Area District (NA-1). The NA-1 District connects with the William T. Davis Wildlife Refuge to the north and LaTourette Park to the east. This Special Zoning district was created in the 1970's to preserve the unique natural landscapes and topography of Staten Island.

Portions of the project site are currently mapped as parkland. Although mapped as parkland, the areas are not developed with recreational facilities and are not publicly accessible.

Because the proposed roads would, in part, pass through existing mapped parkland on the project site, a State legislative action was approved for the alienation of parkland along proposed road corridors (Chapter 659 of the 2007 Law, State of New York).

PROJECT SUMMARY

The proposed East Park Roads that are the subject of this SEIS are all located within the East Park planning area of Fresh Kills Park. The proposed project is comprised of three components:

- A modified grading plan for the final cover at Landfill Section 6/7 that would be completed by 2011;
- Completion and operation by 2016 of the Yukon Avenue connection as a two-lane road, crossing Landfill Section 6/7 and connecting on the east with a new intersection at Richmond Avenue; and
- Consideration of various options for the longer-term completion of the East Park Road system, which could include two- or four-lane roads across East Park with new connections at Richmond Hill Road, Yukon Avenue, and Forest Hill Road, or a two-lane loop road

around the base of the landfill with connections at Richmond Hill Road, Yukon Avenue, and Forest Hill Road.

C. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

As stated above, this SEIS has been prepared to provide additional technical analyses related to the proposed East Park road elements of the Fresh Kills Park project. Therefore, many analyses presented in the Fresh Kills Park FGEIS (March 13, 2009) would cover the proposed East Park Roads project with respect to the following environmental analyses: Land Use, Zoning, and Public Policy; Socioeconomic Conditions; Community Facilities; Open Space; Shadows; Historic Resources; Neighborhood Character; Hazardous Materials; Waterfront Revitalization Program; Solid Waste and Sanitation Services; Energy; Transit and Pedestrians; Growth Inducing Aspects; Environmental Justice; and Irreversible and Irretrievable Commitment of Resources.

For these analyses, it is concluded, like the FGEIS, that the proposed project would not have any significant adverse impacts.

A summary of the remaining technical analyses follows.

NATURAL RESOURCES

OVERVIEW

The proposed East Park roads would be a significant road system through the East Park covering a total distance of about two miles.

Certain elements of the proposed roads have the potential to result in significant adverse impacts to natural resources. For example, construction and operation of the proposed park roads to provide a new east-west connection between Richmond Avenue and the West Shore Expressway as well as to provide visitor access to major park facilities would result in significant adverse impacts to wetlands and aquatic habitats due to filling and shading from park roads. Operation of the proposed park roads also has the potential to result in indirect impacts to wildlife due to road operation impacts such as noise and light pollution, as well as impairment of life-cycle requirements, habitat fragmentation and wildlife avoidance response, and the loss of wildlife individuals due to wildlife/vehicle collisions. To minimize and avoid these impacts, measures would be integrated into park road design and management that minimize the potential for adverse impacts to aquatic and terrestrial biota (e.g., monitoring of wildlife/vehicle collisions, providing safe wildlife passages, and modifying roadside landscaping and maintenance.

With the proposed park roads, there are changes in hydrology due to road runoff and changes in the DSNY stormwater management basins; however the volume of runoff generated could be handled on-site, and stormwater management issues could be addressed without any adverse impacts. There would also be the filling of wetlands and the need for a comprehensive mitigation plan. Lastly, there would be impacts related to habitat fragmentation.

Floodplains may increase the amount of roadway within the 100-year floodplain compared to the proposed project. However, neither has a significant adverse impact on the floodplain.

Hydrology and Roadway Pollutants

With the proposed roads include provisions for collecting stormwater through a system of structures and detention basins and treating the runoff through Low Impact Design and best management practices. This would include stormwater collection and treatment from the

perimeter roadways prior to discharge and direct it to the nearest water body or stormwater basin.

Habitat Impacts

Certain segments of roads would be constructed in the same location as the existing landfill haul roads, thereby limiting habitat impacts. However, with certain segments of roads, new roads east of East Park, as well as the increased traffic that would be carried along these corridors, could result in habitat fragmentation impacts. Additionally, placement of traffic closer to water bodies and wetlands could degrade aquatic resources. Thus, mitigation and impact avoidance measures would be necessary (see the discussion below).

Wetlands

Table 1 below shows the potential impacts to wetlands with the proposed project.

Table 1
Potential Impacts to Wetlands (including Aquatic Habitats): Proposed East Park Roads

Project Element	Acreage
Yukon Avenue Connection (4-lane road option)	+/- 0.25 acres (basin B2)
Forest Hill Road Connection to Richmond Avenue (4-lane road option)	+/- 1.10 acres
Richmond Hill Road Connection (4-lane road option)	+/- 4.3 (Basin B1 and wetlands/stream to the north)
Forest Hill Road Connection to Richmond Avenue (2-lane road option)	+/- 0.55 acres
Richmond Hill Road Connection (2-lane road option)	+/- 2.15 acres (Basin B1 and wetlands/stream to the north)
East Park Loop Road Alignment (option) [2]	+/- 1.92 acres

Notes:
[2] This option would also need to be evaluated for potential wetland impacts on wetlands along Main and Richmond Creeks for potential impacts to tidal wetlands due to roads and stormwater management structures.
This table includes all wetlands and aquatic habitats within the East Park Road right of way. These are predominantly freshwater wetlands but could include estuarne wetlands with the Forest Hill Road connection depending further investigation (although this area is not delineated as a DEC tidal wetland based on the current maps.)

INFRASTRUCTURE

INTRODUCTION

As described in the Fresh Kills Park FGEIS, neither the Fresh Kills Park or the East Park Roads would have a significant impact on water supply or wastewater treatment. Therefore, the focus of this SEIS is the potential for impacts on landfill infrastructure. The summary of this analysis is provided below.

LANDFILL INFRASTRUCTURE IMPACT AVOIDANCE MEASURES

It is recognized by DPR that the Fresh Kills Park project is a multi-year, multi-phase project with an obligation to avoid and minimize impacts to landfill infrastructure. Such an approach would protect the functionality of these systems, as well as minimize regulatory review and costs. DPR is committed to minimizing impacts of the project and to that end has developed an extensive assessment of conceptual impact avoidance and mitigation measures. Given that Fresh Kills Landfill is subject to post-closure care monitoring and maintenance requirements; and the proposed project would provide the public with access to the Fresh Kills site, and potential access to the landfill management systems, and park development (particularly the proposed roads) may introduce new loading conditions on the subsurface landfill infrastructure, the following measures are presented as conceptual measures that are expected be taken to avoid impacts to landfill systems and thereby avoid conflicts with post-closure care and maintenance or impacts to public health and the environment.

Leachate Management System

- Install locks at leachate collection well vaults, leachate collection well valve chambers, and associated electronic control panels.
- Install security fences, locked gates (as necessary) and appropriate warning signs around leachate collection well vaults, valve chambers, and associated electronic control panels.
- Install locking manhole covers at manholes located along the leachate transmission forcemain route.
- Install perimeter security fencing around the Landfill Section 6/7 leachate transmission forcemain pump stations (for example).
- Prevent malicious activities or vandalism to leachate management system infrastructure.
- Deploy park grounds keepers and security personnel to deter malicious acts or vandalism. Landfill Gas Management
- Develop project designs with DSNY and DPR coordination to avoid conflicts with the landfill gas management system features.
- Install permeable gas venting layers (i.e., gravel layers) across interceptor venting trenches where park development features would cover the interceptor venting trenches.
- Post signage to inform the public regarding hazards associated with landfill gas.
- Maintain seals on landfill gas vents to prevent escape of landfill gas into the atmosphere.
- Install security fencing and locking gates around landfill gas flare pads.
- Install locking manhole covers on manholes associated with the landfill gas transmission main.
- Provide DPR staff and security personnel with the authority to deter malicious acts of vandalism of landfill gas management system features.

Stormwater Management Systems

Park road elements would alter runoff patterns and increase impervious surface cover. Like the current and future land cover at Fresh Kills, the vegetative cover that is proposed with the project would both control erosion and allow for substantial evapotranspiration. The greatest change in the proposed hydrology at the site would be the introduction of impervious surfaces with the proposed park roads.

To avoid stormwater impacts from increases in impervious surfaces and to protect receiving waters, individual stormwater best management practices (BMPs) would be used to enhance proposed park features and provide water quality treatment and quantity management, particularly for the road runoff.

The stormwater management projects proposed as part of the park would be designed to complement and enhance the aesthetic and ecological aspects of the proposed park, meet the stormwater management objectives, and improve upon the current hydrologic and water quality management provided by the existing stormwater infrastructure. To achieve these goals, the approach would utilize a mix of traditional conveyance and storage measures (including the existing downchutes and large-scale detention basins) and smaller controls selectively located throughout each sub drainage area. By utilizing stormwater controls, runoff flows would also be routed through multiple levels of treatment prior to discharge off the site thereby protecting local water quality. In addition, any modification or reuse of stormwater basins for park-generated stormwater runoff would be subject to the reviews of DSNY and the approval of DEC.

MODIFIED LANDFILL SECTION 6/7 FINAL CLOSURE PLAN (2011)

Landfill Infrastructure

The Modified Landfill Section 6/7 final closure design (Alternative Cove) is consistent with Part 360 design requirements and will meet all performance standards associated with the final closure designs previously used at the Fresh Kills Landfill. The alternative final cover design modifies the landfill final closure grades such that the finished grade of the final cover system is lower than any of the proposed roadway alignments evaluated as part of this project. Because the breadth of final closure regrading and relocation of landfill infrastructure is consistent with any of the potential future roadway designs prepared for the project, the 2011 construction will create two corridors across Landfill Section 6/7 that provide sufficient separation between the project roadways and infrastructure, such that no further relocation of the infrastructure will be necessary to accommodate construction of the 2016 or 2036 project roadway designs.

To accommodate the revised grading under the modified final cover, and in order to ensure that there would be no impacts to landfill infrastructure as a result of this design, measures are proposed that would preserve the integrity of final cover, landfill gas system, stormwater management system and landfill services roads, recognizing that the modified closure design does require limited relocation of some landfill gas extraction wells and headers, and relocation of stormwater channels and culverts (see the discussed below). A summary of the modifications is provided below.

Landfill Gas Infrastructure Modifications.

Three general sections of the landfill gas extraction system are required to be relocated or modified to accommodate the modified closure plan. These areas include: (i) the east side Yukon Avenue corridor; (ii) the west side of the Yukon Avenue corridor; and (iii) the central portion of the Forest Hill corridor.

Post-Closure Care - Service Road Modifications.

The Final Closure Report includes the establishment of multiple gravel service roads across the landfill surface that connect to the existing paved service road that currently encircles landfill Section 6/7.

This modified cover would have limited conflicts with the access road located at the east end of the corridor. To mitigate this encroachment, the service road will be relocated to the north and outside of the Yukon Avenue corridor. Prior to the 2016 project road construction, the Yukon corridor will be a new and usable gravel access road for DSNY use.

Grading.

Revised grading and cover systems are necessary under the modified cover plan.

Stormwater System Modifications, 2011

Minor modifications to the approved stormwater management system would be necessary under this modified plan. These include modified cover types, drainage pipe outlets, channel modifications, relocation of swales, construction of new swales and culverts, and conveyance to the existing stormwater drainage basins. No modifications to the existing stormwater control basins are be necessary to accommodate the 2011 modified closure plan. The existing basins will continue to manage the quantity and quality of stormwater discharged into existing adjacent waterways.

Firewater and Overhead Electric Lines

There are water supply/revised grading conflicts with the existing 8-inch diameter firewater main and overhead electric supply that service the site. To mitigate the firewater main conflict a portion of the existing firewater main will be relocated to a lower elevation, below the modified final cover membrane elevation. To mitigate the overhead electric supply conflict, the electric line will be relocated to the north and east. Details of these modifications are provided in the report "Landfill Section 6/7 Alternative Final Cover Design Report, Fresh Kills Landfill" (Geosyntec for DSNY, June 2009). That report also includes an analysis and discussion of the hydrologic conditions under this modified cover plan

YUKON AVENUE CONNECTION: 2016

Landfill Infrastructure

No further landfill cover modification is needed for the 2016 park road installation. The proposed road segment across the landfill would be developed on top of the previously prepared road embankment. In addition, no additional measures would be necessary relative to the fire and electrical service modifications discussed above for 2011.

For the segment of road between the base of the landfill and Richmond Avenue work would encroach upon the existing service road that provides access to environmental monitoring points located to the north of the alignment. No monitoring points are located within the proposed alignment and therefore no further modifications to the landfill infrastructure would be required.

In the area of the leachate management system slurry cutoff wall a reinforced concrete slab would be installed to distribute the traffic loads and prevent excessive deformation of the top of the cutoff wall. It is expected that the proposed project could be constructed without any impacts to the slurry wall.

Stormwater Management

As part of the roads construction, the existing sediment basins (B1, B2) which receive runoff from the Yukon Avenue roadway would be modified to perform a water quality improvement function. According to the *New York State Stormwater Management Design Manual* (Design Manual), dated April 2008, the existing storm water sediment basins would need to follow the design criteria described below to be converted into a storm water management feature sized to treat the water quality volume.

Post Closure Care/Service Roads

The proposed project would include the necessary turn lanes and gated access points from public roads onto landfill service roads. The gates and turn lanes would allow DSNY personnel access to the site to perform post-closure care, maintenance, and monitoring.

Landfill service roads provide access to various components of the landfill environmental protection systems, which are located throughout the entire Fresh Kills Landfill. Although each of the each of the individual landfill environmental protection systems may only be accessed on a regularly scheduled periodic interval, the combination all the activities associated with multiple system results in a requirement for nearly continuous access throughout the site. Consequently, it is essential to establish dedicated landfill service roads that are separate from the Fresh Kills Park East Park roads system. It is recognized, however, that multi-use paths within the park circulation system are compatible with landfill service road. For instance, service vehicles would travel at low speeds on shared paths, partial blockage of multi-use paths for landfill operational requirements could be done while still accommodating foot or bicycle traffic.

EAST PARK ROAD SYSTEM: 2036

The post-2017 build out for the East Park road system includes consideration of various options for completion of the system. Still under consideration are two- or four-lane roads across East Park with new connections at Richmond Hill Road, Yukon Avenue, and Forest Hill Road, or a two-lane loop road around the base of the landfill with connections at Richmond Hill Road, Yukon Avenue, and Forest Hill Road. This construction would not occur in the near future but the options are presented to better understand the potential benefits and tradeoffs.

Forest Hill and Richmond Hill Road Connections (Four-Lane Road Option)

Forest Hill Road

Landfill Infrastructure. Modifications to landfill infrastructure in order to accommodate the proposed Forest Hill Road Connection across Landfill Section 6/7 would be addressed as part of the 2011 modified landfill cover. Thus, no further modification is needed for the 2036 condition where the proposed road segment across the landfill would be developed on top of the previously prepared embankment. In addition, no additional measures would be necessary relative to the fire and electrical service modifications discussed above for 2011.

For the segment of the Forest Hill Road between the base of the landfill and Richmond Avenue the alignment would encroach upon the landfill gas vent trench. To mitigate these encroachments, a gravel venting layer would be placed above the landfill gas vent trench to ensure a permeable conduit to the surface. Placement of fill soil or pavement over a limited section of the gas vent trench is consistent with as-built conditions along the vent trench. Therefore, the fill placement, along with the permeable layer would not compromise the vent trench's ability to function.

Stormwater. As part of the roads construction, the existing sediment basins (R, C1, and C2) which receive runoff from the Forest Fill Road alignment would be modified to perform a water quality improvement function in the same manner as described for the 2016 basin modifications.

Richmond Hill Road Connection

Landfill Infrastructure. As it negotiates the narrow passage between the DSNY District 2 Garage and the landfill, the proposed road would cover the outlet stream from Basin B1, which requires that a closed drainage system adjacent to Basin A be extended to a location south of the existing DSNY garage. The proposed road would also overlap the landfill cut-off wall at two separate points, for which protective slabs are proposed to shield the cut-off wall from the effects of roadway loads.

In addition, the proposed embankments across Basin B1 would divide the basin. Preliminary analyses indicate that the remaining landfill stormwater basin would be sufficient to meet its functional purpose. Culverts will be added to maintain hydraulic continuity and balance water levels.

For the segment of the Richmond Hill Road Connection between the base of the landfill and Richmond Avenue the alignment would pass near groundwater monitoring wells 154D, 174S, and 153D. The alignment would also pass by gas migration monitoring wells G-44, G-17, G-18, G-46, and G-19. Each of these features would also be protected during construction, but not disturbed.

Stormwater. As described above, the details of the proposed stormwater management system would be developed as each park capital project and segment of road design is further developed. Since the proposed project would be located directly along the coastal waterways of Richmond and Main Creeks, it is not expected that the project would result in any impacts on downstream

flooding. Moreover, runoff is expected to be controlled on-site and would not adversely impact surrounding neighborhoods or open spaces. In addition, to avoid stormwater impacts from increases in impervious surface to the receiving waters, individual stormwater BMPs would be used to enhance proposed park features, and provide water quality treatment and runoff volume control, particularly for the road elements. In sum, by 2036, the proposed project could be expected to manage all increases in site-generated runoff while contributing positively to the local wetlands.

As part of the roads construction, the existing sediment basins (R, C1, and C2) which receive runoff from the Forest Fill Road alignment would be modified to perform a water quality improvement function in the same manner as described for the 2016 basin modifications.

Moreover, runoff is expected to be controlled on-site and would discharge controlled runoff into the coastal waterways of Richmond and Main Creeks; it is therefore not expected that the project would result in any impacts on downstream flooding.

FOREST HILL AND RICHMOND HILL ROAD CONNECTIONS (TWO LANE LANE ROAD OPTION)

Overview

Like the four-lane proposal, the Two-Lane Park Road option constructed a road over the modified Section Landfill 6/7 final cover and the road segments east of Landfill Section 6/7. Therefore, the proposed two-lane-road must also account for these landfill infrastructure conditions and potential conflicts in the same manner as the Four-Lane option. The specific features and systems that may be influenced by the road alignment include: final cover protections and the foundation support properties of the solid waste in the landfill, and protection of the landfill gas, stormwater, and leachate management system.

With regard to the landfill closure cover system, the horizontal extent of the road embankments under this alternative would be greater under the Four-Lane design than this Two-Lane option, and the wider embankments would result in settlement over a larger area. The wider embankments would also apply more weight to the landfill cover system, waste, and underlying soils, which could result in a lower degree of stability and increased stress on the closure system's geomembrane layer. However, it is expected these design issues would be addressed with the proposed modified final cover which is being designed to accommodate the proposed road and would not arise during the actual road construction.

Due to the narrower road width of road in the Two-Lane Park Road Option, this is expected to apply a lesser load to the landfill than the four-lane option. Nonetheless, like the four-lane option, this option would need to be evaluated for potential impacts on Landfill Section 6/7. Like the four lane option, this alignment crosses the southern landfill gas collection header ring at two locations, eight lateral landfill gas collection pipes and passes over one landfill gas extraction well. Like the four-lane option, this alignment requires that landfill gas lines be rerouted through a protective carrier pipe that would protect the pipes from crushing, and allow access to flush the pipes, remove condensate, or if needed remove and replace the pipes. With this alignment, the landfill gas wells are to be either decommissioned or reinstalled outside of the alignment or be provided with a lateral header connection from outside of the roadway.

As with the four-lane option, swales and ditches would be introduced to intercept runoff that would otherwise flow onto the road. Swales would be placed along much of the north edge of the road to intercept mound runoff on the uphill side. A culvert would also be added under the roadway on the west side to convey flows westward toward Basin C2. The length of this culvert under this option is less than that required for the Four-Lane option.

Similar to the Four-Lane option, as the park road descends from the landfill section onto the Forest Hill Road viaduct, the alignment spans over the leachate collection trench and cut-off wall, requiring that one end of the span be placed within the landfill. For the Two-Lane Park Road option, the width of the end pier and mechanically stabilized earth wall is narrower than that under the Four-Lane option.

Likewise, with the appropriate construction-period protection measures, there would not be any impacts on the production of leachate nor would there be hazards for landfill slope stability. With both the proposed four-lane and two-lane park roads, there would be changes in hydrology due to road runoff and changes in the DSNY stormwater management basins; however the volume of runoff generated under this option would be less that under the four-lane option given that there would be less impervious surface area. In addition, given the reduced volume of stormwater, it is expected that under this option, like the four-lane proposal, stormwater management issues could be addressed without any adverse impacts. There are no significant differences between the 2-lane and 4-lane options in terms of impacts or conflicts with the environmental monitoring system.

Additional details with respect to landfill infrastructure impacts are presented below by road segment.

Forest Hill Road

Overview

As with the Four-Lane option, the alignment under the proposed Two-Lane option for the Forest Hill Road segment passes over the landfill. Some of the specific differences between the two-lane park road and the four proposals with respect to landfill infrastructure are described below.

In both the Four-Lane option and this Two-Lane option the design must account for the unusual embankment conditions, as well as the road's influence on continuing landfill post-closure operations. In general, the park road foundation design and analysis of landfill related impacts are similar to those described above.

Landfill Infrastructure

As described above, the modifications to landfill infrastructure in order to accommodate the proposed Forest Hill Road Connection across Landfill Section 6/7 would already be addressed as part of the 2011 Modified Landfill 6/7 Final Cover Plan, Thus, no further modification is needed for the 2036 condition where the proposed road segment across the landfill would be developed on top of the previously prepared embankment. In addition, no additional measures would be necessary relative to the fire and electrical service modifications discussed above for 2011.

Impacts on landfill infrastructure would be somewhat les with this option since the road itself would be narrower. This would result in less road overage and also opens the option to allowing minor changes in road alignment that can further avoid or reduce the

As described above, for the four-lane road option, for the segment of the Forest Hill Road between the base of the landfill and Richmond Avenue the alignment would encroach upon a landfill gas vent trench. Landfill gas migration monitoring point GX-40 is located in the vicinity of the alignment. Therefore, to avoid impacts GX-40 would be flagged and protected from disturbance during construction. To mitigate these encroachments, a gravel venting layer would also be placed above the landfill gas vent trench to ensure a permeable conduit to the surface. Placement of fill soil or pavement over a limited section of the gas vent trench is consistent with as-built conditions along the vent trench. Therefore, the fill placement, along with the permeable layer would not compromise the vent trench's function.

Stormwater

As part of the park road construction, the existing stormwater management basins (R, C1, and C2) which receive runoff from the Forest Hill Road alignment would be modified to perform a water quality improvement function in the same manner as described for the 2016 basin modifications.

Both options cross the leachate management system; however, the Four-Lane design affects an additional length of cutoff wall and leachate collection trench; however, this Two-Lane Park Road option requires less extensive protective measures due to its narrower footprint. Impacts on the landfill gas management system are on the whole relatively minor, but are slightly less for the Two-Lane option.

Richmond Hill Road Connection

Landfill Infrastructure

As it negotiates the narrow passage between the DSNY District 2 Garage and the landfill, the proposed park road would impact the outlet stream from Basin B1. This impact requires that a closed drainage system adjacent to Basin A be extended to a location south of the existing DSNY garage. The proposed road would also overlap the landfill cut-off wall at two separate points, for which protective slabs are proposed to shield the cut-off wall from the effects of roadway loads.

This crossing requires a culvert to maintain its hydraulic function between the basins. Similarly, a pair of multi-barrel culverts is proposed to maintain the hydraulic connection at the north end of Basin B1. In between, the alignment takes up the space of an existing gravel access road leading to groundwater and landfill gas monitoring wells. Protected pullouts are to be provided at each monitoring well. The landfill gas interceptor venting system is also affected along this segment of roadway.

For the segment of the Richmond Hill Road Connection between the base of the landfill and Richmond Avenue, as with the four-lane-road option, the two-lane-road option would pass near groundwater monitoring wells 154D, 174S, and 153D. The alignment would also pass by gas migration monitoring wells G-44, G-17, G-18, G-46, and G-19. Each of these features would be protected during construction, but not disturbed.

In addition, the proposed embankments across Basin B1 would divide the basin. However, preliminary hydrology analyses indicate that the remaining landfill stormwater basin would be sufficient to meets its functional purpose. Culverts would also be added to maintain hydraulic continuity and balance water levels.

Stormwater

As described above, the details of the proposed stormwater management system would be developed as each park capital project and segment of road design is further developed. In addition, to avoid stormwater impacts from increases in impervious surface to the receiving waters, individual stormwater BMPs would be used along the park roads to enhance existing wetlands and basins and to provide water quality treatment and runoff volume control. With these measures in place, by 2036, the proposed project would be expected to manage all increases in site-generated runoff while contributing positively to the local wetlands.

As part of the roads construction, the existing sediment basins (R, C1, and C2) which receive runoff from the Forest Hill Road alignment would be modified to perform a water quality improvement function in the same manner as described for the 2016 basin modifications.

All runoff is expected to be controlled on site and not impact any downstream uses. Since the proposed project would discharge runoff to the coastal waterways of Richmond and Main Creeks, it is not expected that the project would result in any impacts on downstream flooding.

YUKON AVENUE CONNECTION (4 LANE ROAD)

As with the Two Lane proposal described above (2016) , the Yukon Avenue Connecton under the Four Lane option passes over the landfill. Some of the specific differences between the two-lane and the four-lane park road options with respect to landfill infrastructure are described below.

In both the Four-Lane option and this Two-Lane option the park road design must account for the unusual embankment conditions, as well as the road's influence on continuing landfill post-closure operations. In general, the park road foundation design and analysis of landfill-related impacts are similar to those described above and are expected to be addressed as part of the modified final closure design. Among the affected elements along the Yukon saddle are two landfill gas collection laterals, crossing of landfill gas collection headers, covering of a leachate stone trench and a water line. Culverts would also be introduced to maintain drainage conveyance patterns.

As it descends from Landfill Section 6/7, the alignment spans over the leachate collection trench and cutoff wall. This requires that one end of the span be placed within the landfill.

In both the Four-Lane and the Two-Lane park road options, the Yukon Connection traverses the elevated land between Basins B1 and B2.

Both the Four-Lane option and this Two-Lane Park Road option require filling a portion of Basin B1. However, the estimated encroachments into Basin B1 and the wetlands are greater under this four-lane road than that of the 2016 two-lane option, as a result of the narrower width.

LOOP PARK ROAD OPTION (WITH RICHMOND AVENUE CONNECTIONS)

Introduction

As described in greater detail below, with this option, like the above options, there would be some delay in the closure of Landfill Section 6/7. However this delay would be limited to accommodating the Yukon Avenue Connection and not both the Yukon Avenue and Forest Hill Road connections. Like the above option, there would also a need to avoid, minimize, or mitigate landfill impacts from the proposed roads. As with the above options, it is expected these measures could eliminate project impacts.

Under this option, with the appropriate construction period protection measures, there would not be any impacts on the production of leachate nor would there be hazards for landfill slope stability. However, it is recognized that with this option there is a greater need to modify landfill infrastructure at the base of Landfill Section 6/7, including the leachate collection and pumping systems. With the option there are changes in hydrology due to road runoff and changes in the DSNY stormwater management basins; however, unlike the above options, it is expected that the Loop Park Road Option would be expected to use the DSNY basins, as well as the Main Creek and Richmond Creek wetlands for runoff control given the alignment around the entire base of the landfill. Unlike the above options, this option would avoid the filling and associated hydrology impacts on Basins B1 and A as occurs with the Richmond Hill Road segment described above.

Where the proposed above options and this option differ is primarily in the areas of road design and engineering, conflicts with landfill systems, natural resources, and park design. These differences are described in greater detail below.

Pump Stations

As part of the leachate conveyance system there are 14 existing pump stations located on the outboard side of the existing haul road (around Landfill Section 6/7), 13 of which are located in the proximity of this alignment. Due to the lack of adequate space for the proposed roadway section, this roadway alignment alternative does not allow for a shoulder in the proximity of the existing pump stations. The following are potential impacts the roadway proposals may have on the pump stations:

- Roofs of pump stations located adjacent to the traveled-way could carry loading in excess of H-20 from an errant vehicle.
- Maintenance procedures would have to be altered in order for maintenance workers to safely perform their duties at any station located within the traveled-way.
- Gas vents and electrical cabinets could be struck by an errant vehicle, endangering operation of the pump station.

Gas Management System

Active Landfill Gas Collection System

Extraction wells and gas header pipes are unaffected by this option, as they are all located in the interior of the mound and outside of the roadway grading limits.

However, eight condensate tanks for the north would be impacted by this option because they are currently located underneath the existing and proposed roadway. At these locations, equipment, loading, and excavation constraints would be implemented to avoid any damage to the existing gas collection system. In addition, six drip leg vaults lie within the proposed roadway.

Passive Landfill Gas Venting System

In Landfill Section 6/7, a geocomposite gas venting layer with passive vents along the landfill section perimeter is proposed for the southern portion of Landfill Section 6/7. Several of the passive gas vents in this area fall within the southern portion of the landfill section and within the grading limits of this alternative alignment.

On the northern section of Landfill Section 6/7, several gas vents fall within the roadway grading limits. In this case, minor realignment along with other design solutions would need to be addressed to avoid these impacts.

Grading and Drainage

The landfill stormwater management system consists of a series of swales, gabion downchutes, culverts, inlet pipes and control basins. The design intent of this option is to direct the runoff of the last tier/terrace of Landfill Section 6/7 across the roadway pavement by providing a two percent roadway cross-slope. This design is at odds with standard design practice and has the potential to contribute to hydroplaning and icing conditions, because this option would continue to allow some of the surface runoff from the landfill mound to be carried across the roadway surface. However, there are techniques to avoid this impact. Since the drainage area contributing to runoff that crosses the roadway varies through the site, it is recommended that further studies be performed during the design stage.

Final capping of the southern portion of Landfill Section 6/7 (i.e., areas south of Yukon Avenue) has not yet been completed. This may allow for the modification of stormwater management plans to accommodate this option that would reduce the quantity of stormwater runoff flowing across the proposed roadway.

Final capping of the northern portion of the site (approximately defined as those areas to the north of Yukon Avenue) is complete. As a result, impact avoidance on these road segments above could require excavation and backfilling a portion of the landfill cap. These activities could threaten the integrity of the landfill liner, and therefore are not recommended in the northern segment of the road design.

DSNY Maintenance

It is important to note that under this option, maintenance of the Fresh Kills Park leachate pump system would require periodic closure of traffic lanes. The leachate pumps are all located along the outer lane of the Loop Road. This would require periodic capacity reductions from two lanes to one. There are no pumps located along the bidirectional link between the Main Creek and Richmond Creek Bridges. There are also no pumps along the extension of Yukon Avenue.

TRAFFIC AND PARKING

MODIFIED LANDFILL COVER (2011)

While it is assumed that by 2011 the landfill cover in East Park would be modified to create a new embankment, the roads would not be improved as publicly accessible roads. Therefore, this condition does not generate any new traffic pattern or diversions and traffic conditions at the analyzed intersections would therefore be the same as the No Build condition.

YUKON AVENUE CONNECTION (2016)

Road Description

By 2016 it is assumed that a two-lane, two-way publicly-accessible road would cross Landfill Section 6/7 to connect at Yukon Avenue.

Traffic Impacts

Four (4) out of the five (5) analyzed intersections would experience significant adverse traffic impacts under the 2016 Build conditions. Specifically, the four (4) locations include the intersections of Richmond Hill Road at Forest Hill Road and Richmond Avenue, the intersection of Forest Hill Road at Richmond Avenue and the intersection of Yukon Avenue at Richmond Avenue. The weekend PM peak hour would have two (2) impacted intersections, while the remaining four analyzed peak hours would have three (3) impacted intersections each.

COMPLETED EAST PARK ROAD SYSTEM: 2036

Under consideration are a number of options for completion of the East Park Road system. These would include two- or four-lane roads across East Park with new connections at Richmond Hill Road, Yukon Avenue, and Forest Hill Road, or a two-lane loop road around the base of the landfill with connections at Richmond Hill Road, Yukon Avenue, and Forest Hill Road.

Road Description

Under this option, the proposed e project would provide two additional road connections to Richmond Avenue, one at Forest Hill Road and the other at Richmond Hill Road.

Traffic Impacts

In the 2036 Build Conditions, the weekday PM and weekend midday peak hours would have the highest number of impacted intersections with five (5) each. Specifically, the impacted locations include the intersections of Richmond Hill Road and Forest Hill Road, Richmond Hill Road and Richmond Avenue, Yukon Avenue and Richmond Avenue, Forest Hill Road and Richmond Avenue, and Yukon Avenue and Forest Hill Road. The weekday midday and the weekend PM peak hours would have four (4) impacted intersections each. The weekday AM peak hour would have the fewest impacted intersections at three (3). The following provides a discussion of the impacted approaches/movements by intersection.

FOREST HILL ROAD AND RICHMOND HILL ROAD CONNECTIONS: TWO-LANE PARK ROAD OPTION (ALTERNATIVE PARK ROAD WIDTH)

Under this option the East Park Road system would have a similar alignment across Fresh Kills except they would only be two lanes wide. There would also be three connections along Richmond Avenue, at Richmond Hill Road, Yukon Avenue and Forest Hill Road. Since the only difference between this option and the above option is the width of the through road, it is assumed that trip assignments and traffic patterns under this option would be similar to that described above for the four lane wide road. Thus, the traffic impacts presented above for the four lane wide road would also apply to this two lane wide road.

EAST PARK LOOP ROAD OPTION

Under this option, the East Park Road system would have a similar alignment across Fresh Kills except the trips from Richmond Hill Road or Forest Hill Road are assumed to use an East Park Loop Road in order to access the Confluence Loop Park Road and, in turn, the reach connections to the West Shore Expressway (both northbound and southbound). There would also be the Yukon Avenue Connection across Landfill Section 6/7. Thus, under this option there are three connections proposed along Richmond Avenue, at Richmond Hill Road, Yukon Avenue and Forest Hill Road. Since the only difference between this option and the above option is the internal park circulation with the East Park Loop Park Road, it is assumed that trip assignments and traffic patterns under this option would be similar to that described above for both the four lane wide road and the two lane wide road. Thus, the traffic impacts presented above for the four lane wide road would also apply to this East Park Loop Road option.

YUKON AVENUE CONNECTION (FOUR-LANE ROAD OPTION)

This option calls for widening the Yukon Avenue Connection from 2 lanes in the 2016 condition to 4 lanes in 2036 condition. The alignment across East Park would be the same as in 2016, as would the intersection at Yukon Avenue and Richmond Avenue, but the road width within the park would be widened to four lanes. Thus, with this option, neither the Richmond Hill Road or Forest Hill Road connections are provided

Thus, under this scenario, the proposed intersection of Yukon Avenue at Richmond Avenue would handle all of the diverted traffic across Fresh Kills that, under the options described above, is assumed to use Richmond Hill Road or Forest Hill Road.

Traffic Impacts

For 2036 future traffic conditions under this option, four (4) out of the five (5) intersections would experience significant adverse traffic impacts. Specifically, the four (4) locations include the intersections of Richmond Hill Road at Forest Hill Road and Richmond Avenue, the intersection of Forest Hill Road at Richmond Avenue, and the intersection of Yukon Avenue at Richmond Avenue. In the 2036 Build Conditions, the weekday PM and weekend midday peak

hours would have four (4) impacted intersections each, followed by the weekday AM, midday, and weekend PM peak hours with three (3) each.

Parking

The number of project generated trips for the 2016 and 2036 build years would l remain the same as in the FGEIS. Therefore, as described in the FGEIS, there would be no impacts on parking with the proposed project.

NOISE

The proposed project would not result in significant noise impacts from increased traffic or stationary noise sources.

Although noise levels at certain areas within Fresh Kills Park that are immediately adjacent to roadways would be above the *CEQR Technical Manual* noise exposure guideline of 55 dBA $L_{10(1)}$ for outdoor areas requiring serenity and quiet, they would be comparable to noise levels in several other New York City parks, including South Shore Golf Course Park, Arden Heights Woods Park, LaTourette Park, and Willowbrook Park, and would not result in a significant adverse noise impact.

AIR QUALITY

Air quality modeling for the proposed project concluded that the proposed project would not result in any significant adverse air quality impacts on sensitive uses in the surrounding community. The maximum predicted pollutant concentrations and concentration increments from mobile sources with the proposed project would be below the corresponding air quality impact criteria in both 2016 and 2036 (all options). A stationary source screening analysis determined that there would be no potential significant adverse air quality impacts from the proposed park's heating, ventilation, and air conditioning HVAC systems.

CONSTRUCTION

INTRODUCTION

The construction analysis presents the potential impacts of the proposed project with respect to the three phases of analysis: 1) Modified Landfill Section 6/7 Final Cover; 2) Yukon Avenue Connection; and 3) Forest Hill Road and Richmond Hill Road Connections. Where separate analyses are necessary for each scenario, they are presented below.

LAND USE, NEIGHBORHOOD CHARACTER AND OPEN SPACE

In order to minimize impacts on sensitive receptors, construction activities (e.g., staging, storage, operations) would be concentrated in the central portion of Fresh Kills Park. These areas allow for centralized access and re-use of areas previously disturbed that are located away from local communities and existing open spaces and natural areas. Construction staging would not need any off-site locations and construction activities near these neighborhoods and would therefore be limited to constructing the local parks and would be short in duration.

Certain types of construction activities at the periphery of the park (e.g., the road connections at Richmond Avenue) would be potentially noisy for local residents and current parks users at places such as LaTourette Park and some short-term construction activities would also be audible and visible from the local community and park. There are likely to be temporary and localized construction impacts due to construction noise, operation of heavy equipment, construction workers traveling to and from the site, and trucks delivering materials to and removing construction waste from the site. However, the intensity of the off-site impact

decreases with the distance from the site and construction access and traffic corridors would primarily use the West Shore Expressway and internal project site roads to avoid impacts to neighborhoods.

In addition, as discussed below (see "Noise"), pursuant to the New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, the adoption and implementation of noise mitigation plans would be required for project construction. Construction activities typically occur between the periods of 7 AM to 4 PM on weekdays, and not on weekends when the local parks would likely be more fully utilized. As described below under "Traffic and Parking," during construction of the proposed project, no off-site queuing of trucks is expected, and all construction staging would take place within the project site.

In sum, the local neighborhoods would be sufficiently buffered from construction activity. For these reasons, it is concluded that no potential significant adverse construction period impacts on land use or community character would occur with the proposed project.

HISTORIC RESOURCES

Archaeology

Construction excavation may potentially impact subsurface archaeological resources that have been identified at particular locations as part of the Phase 1A Archaeology Study of the site. Mitigation measures are to be instituted prior to construction, but can also be incorporated into the construction bid documents, as long as the work is undertaken before construction proceeds.

Historic Resources

There are no historic resources in the vicinity of the proposed modified cover or roads; thus, the proposed project would not impact any historic resources during construction.

NATURAL RESOURCES

Introduction

No direct impacts to natural resources are expected with the proposed modified landfill cover as this work would occur entirely within the corridor of existing disturbed areas on the landfill. There is the potential for indirect impacts during this construction due to soil erosion and sedimentation. The analysis below largely pertains to the potential for construction period impacts on the segments of road east of Landfill Section 6/7.

Natural Resources Protections

Land Disturbing Activities

Construction would result in the following land disturbance activities:

- Land clearing—removal of existing vegetation or other existing cover material;
- Temporary stockpiling of fill to be used as final cover material;
- Grading and construction of surface drainage systems;
- Installation of infrastructure.

These activities have the potential to impact terrestrial and aquatic resources through:

- Discharge of stormwater to tidal and freshwater wetlands present within the project site;
- Deposition of fugitive dust resulting from grading activities into terrestrial and aquatic landscapes;

- Physical damage to vegetation outside a project area (i.e., above ground portion of the plants and the below ground portion of the tree protection zone for trees identified for retention);
- Direct (i.e., physical removal of plant community or grading of soil, loss of individual wildlife due to collision with or as a result of operation of construction equipment) and indirect (avoidance of landscape due to noise, vehicle traffic, or other human disturbance) loss of landscape; and
- Potential impacts to natural resources as a result of these activities would be minimized through the implementation of measures and guidelines discussed in the following sections.

Measures to Reduce Potential Wildlife Impacts During Construction

Wildlife use of a particular area would be expected to return upon completion of construction and enhancement activities. Moreover, in the long term, the restored and enhanced landscapes proposed for Fresh Kills Park would be expected to benefit wildlife through the introduction of vegetative cover of higher quality and diversity than currently present within much of the project site.

Strategies to limit wildlife impacts as a result of the above construction activities would depend on the duration and extent of the disturbance. Physical barriers at construction and staging areas, such as drift fencing, would be used to restrict movement of ground-dwelling wildlife (i.e., small mammals, reptiles and amphibians). Direct impacts to wildlife would also be reduced by limiting the speed of construction vehicles, and avoiding nighttime construction operations. Additionally, the phasing of the park road development activities over a 30 year period would limit the extent of land disturbance and area of in-water construction activities at a given time, increasing the potential that suitable habitats may be available in other areas of Fresh Kills Park.

Habitat Protection Plan

In addition to the above, a natural resources protection plan would be prepared for each capital construction project. This plan would identify landscapes, trees, sensitive plant communities such as wetlands, and any other communities that have been identified for protection under the proposed project and establishes the necessary protection zones around these resources so as to minimize the potential for adverse direct or indirect impacts.

Clearing of staging areas for roadway construction would also be conducted in a manner consistent with minimizing impacts to large trees (e.g., trees greater than 12 inches in diameter at breast height) that are outside or adjacent to areas proposed for construction disturbance.

Geology, Soils, and Groundwater

Modified Closure Plan

Development of the proposed park road embankment across Landfill Section 6/7 is not expected to result in significant impacts with respect to geology, soils and groundwater. These project elements would be built over the man-made waste mound, Landfill Section 6/7, and would not affect any natural geologic, soils or groundwater conditions.

Landfill leachate is generated by percolation of precipitation through the landfill surface and into the waste material. Considering that approximately 50 percent of the engineered final closure system has already been completed over Landfill Section 6/7, a significant reduction in percolation is expected. Consequently, excavation and relocation of existing waste to accomplish mass grading along the Yukon Avenue and Forest Hill Road corridors, performed using appropriate minimum landfill operating standards, will not increase the volume of leachate required to be managed above the volume previously managed by the system prior to closure construction.

Proposed Park Roads

Development of the proposed park roads is not expected to result in significant impacts with respect to geology, soils and groundwater. The embankment across the landfill for the project would be developed as part of the modified cover plan. Thus, these road segments would be built at or above grade and therefore would not significantly affect local geology soils, or groundwater.

As discussed above, a construction monitoring plan would be implemented to ensure that the construction of the road elements would protect the existing environmental control and monitoring systems at Fresh Kills (i.e., landfill gas and groundwater monitoring systems, stormwater basins). This construction monitoring plan would also ensure that the integrity of the landfill cover remains and that all systems are functioning during road construction, thereby minimizing the potential for adverse impacts to the environment.

Floodplains

Neither the development of the modified closure plan or the park roads would impact floodplains. The area of the modified closure is above the floodplain and the road alignments are generally outside the 100-year floodplain with limited exceptions (e.g., the connection at Richmond Hill Road).

Wetlands

Implementation of erosion and sediment control measures described above for each park road element would minimize the potential for significant adverse impacts to both water quality and aquatic resources during construction.

In addition, it is expected that all activities in wetlands (both tidal and freshwater) would require permits for activities in wetlands. This would include permits for tidal wetlands and protection of water, as well as permits from the ACOE for activities in waterways and wetlands. For all build years, construction erosion and sedimentation measures, established in accordance with the site SWPPP will be used to control impacts to stormwater runoff during construction. A description of construction period impacts follows.

Modified Landfill Closure (2011). Embankment construction activities across Landfill Section 6/7 would not have any direct impacts on wetlands. Any indirect impacts would be related to changes in water quality.

Yukon Connection (2016). Construction of the proposed two-lane Yukon Avenue Connection would not result in any direct adverse impacts to wetlands.

Completed East Park Road System (2036)

Forest Hill Road Connection (Four-Lane Road)

The Forest Hill Road Connection under this option crosses over a portion of the freshwater/estuarine wetland system on the east side of Section 6/7. This road segment would impact about 1.3 acres of wetlands. It is anticipated that the crossing of this wetland would be accomplished with a viaduct or box culvert structure. For all of these wetlands areas, the loss of wetland acreage would be mitigated by the creation of wetland acreage elsewhere in Fresh Kills Park.

Richmond Hill Road Connection (Four-Lane Road)

This road segment under this option would directly disturb about 4.25 acres of freshwater wetlands. In addition to this direct construction impact, there would be the potential for additional impact due to construction activities within the wetlands and DSNY basins.

Mitigation for this impact is summarized below under "Impact Avoidance Measures and Mitigation."

Forest Hill Road Connection (Two-Lane Road)

This road segment under this option would directly disturb about 1.2 acres of wetlands. In addition to this direct construction impact, there would be the potential for additional impact due to construction activities within the wetlands themselves. Mitigation for this impact is summarized below under "Impact Avoidance Measures and Mitigation."

Richmond Hill Road Connection (Two-Lane Road)

This road segment under this option would directly disturb about 2.15 acres of wetlands. In addition to this direct construction impact, there would be the potential for additional impact due to construction activities within the wetlands and DSNY basins. Mitigation for this impact is summarized below under "Impact Avoidance Measures and Mitigation."

Yukon Avenue Connection (Four-Lane Road)

This road segment under this option would directly disturb about 0.25 acres of wetlands in the DSNY Basins B1 and B2. In addition to this direct construction impact, there would be the potential for additional impact due to construction activities within the wetlands and DSNY basins. Mitigation for this impact is summarized below under "Impact Avoidance Measures and Mitigation."

East Park Loop Road and Richmond Avenue Connections

This park road option would directly disturb about 1.92 acres of wetlands. In addition to this direct construction impact, there would be the potential for additional impact due to construction activities within the wetlands. Mitigation for this impact is summarized below under "Impact Avoidance Measures and Mitigation."

Aquatic Resources

The project site contains wetlands including ponds, stormwater basins and emergent wetlands. It is a critical component of the project construction practices to avoid impacts to these natural systems, not only for the purposes of avoiding impacts to natural resources and water quality, but also for the purposes of avoiding siltation impacts to the existing DSNY stormwater basins. In order to avoid these impacts, the proposed project includes a "Conceptual Site-Wide Erosion and Sediment Control Plan." This plan establishes the guidelines by which each phase of project construction, though implementation of the proposed techniques, would avoid impacts to natural features and in-place stormwater management systems. Implementation of these techniques would be ensured not only by DPR, but through the SPDES General Permit requirements (see description above), since most capital projects are expected to cover at least 1 acre.

Each proposed stormwater management plan would be designed to meet the requirements of a SPDES Individual Permit as well as Article 17 of the New York State Environmental Conservation Law and the Federal Clean Water Act. The Plan has also been designed to meet the standards of the *New York State Stormwater Design Manual* (DEC, 2003) and the New York State Standards and Specifications for Erosion and Sediment Control (DEC, 2005).

DEC would need to review and approve State Pollutant Discharge Elimination (SPDES) permits for stormwater discharges associated with road construction activities. Each permit would require the road construction project to prepare a stormwater pollution prevention plan (SWPPP) and erosion and sediment control plan (ESCP).

The SWPPP would be implemented by the site contractor for the purposes of minimizing erosion and sediment impacts on receiving waters and natural resources associated with the

project construction. A conceptual site-wide ESCP was developed to present conceptual erosion and sediment controls that may be used during construction (see FGEIS, March 2009).

Certain elements of park construction would require activities in the water. Given the high degree of mixing in the Fresh Kills waterways, any temporary increase in suspended sediment resulting from in-water construction activities is expected to be localized and dissipate within a short distance of the project activity. In the majority of cases these activities are also quite limited in duration (1-2 weeks) and impacts would cease upon completion of the in-water (sediment disturbing) activity. Therefore, although temporary short-term disturbances to aquatic habitats and suspended materials in the water column may occur, in-water construction activities would not be expected to result in significant adverse impacts on water quality or aquatic biota during construction. Similarly, any contaminants released to the water column as a result of sediment disturbance would not be expected to result in significant short-term or long-term impacts on water quality in Main or Richmond Creeks.

While localized increase in suspended sediment may cause fish to temporarily avoid the area around where piles or other in-water structures are being installed, the affected area would be expected to be small. Similar suitable landscapes would be available for use by fish to avoid the area of in-water construction.

Potential impacts to natural resources as a result of construction activities could be minimized through implementation of the following:

- Measures to minimize increases in turbidity and suspended sediment in the water column, and to capture floating debris during sediment removal and grading activities, and installation of in-water structures. Examples of measures to be considered include silt curtains and coffer dams. Measures would be selected on the basis of on-site conditions and consultation with DEC and the USACE.
- Implementation of measures to stabilize the wetlands enhancement areas as necessary during planting, such as the use of biodegradable/geosynthetic erosion control mats or revegetation mats.
- If necessary, implementation of measures that may restrict or limit the construction activities in water or sensitive landscapes during certain seasons.

In addition, it is recognized that all construction activities within open waters or other wetlands are subject to the review and approval of DEC and ACOE and federal natural resource agencies through the permitting process that would further identify and implement these and other protection measures necessary to protect water quality and sensitive landscapes.

Significant Coastal Fish and Wildlife Habitat

Construction of the proposed modified closure plan and park roads would not be expected to conflict with the Fresh Kills Significant Coastal Fish and Wildlife Habitat. During construction, with the proposed construction protection measures in place, the tidal creeks of this designated landscape would continue to provide spawning and nursery opportunities for anadromous, estuarine, and resident fish, and would continue to be used by wading birds, waterfowl, shorebirds, raptors and passerines. In addition, all proposed in-water activities would be subject to permitting by the DEC and USCOE for the purposes of protecting wetlands and water quality and would require the input of the DOS with respect to coastal policies and protection of significant coastal fish and wildlife landscape. Each capital park project would be reviewed on an individual basis as part of its permit review. For these reasons, it is concluded that the proposed project would not conflict with this designation during construction.

During construction, the tidal creek systems of Main and Richmond Creeks would continue to provide spawning and nursery landscape for anadromous, estuarine, and resident fish, and would continue to be used by wading birds, waterfowl, shorebirds, raptors, and passerines. In addition, no indirect impacts to water quality and the Significant Coastal Fish and Wildlife Habitat are anticipated during construction.

Terrestrial Resources

Modified Closure Plan (2011)

The modified cover closure construction would essentially occur on top of the landfill in areas currently disturbed by an interim cover and proposed to be disturbed under the approved cover plan in the No Build condition. Thus, it is concluded that construction of the modified cover closure would not have any impacts on terrestrial resources.

Yukon Avenue Connection (2016)

Construction of the Yukon Avenue Connection across Landfill Section 6/7 would occur on a developed embankment. It would not have any direct impacts on terrestrial resources.

For the segment between the based on the landfill and Richmond Avenue, there would be limited direct impacts (i.e., clearing and physical removal of plant community or grading of soil within the roadway alignments, loss of individual wildlife due to collision with or as a result of operation of construction equipment) and the potential for indirect impacts (avoidance of habitats due to noise, vehicle traffic, or other human disturbance) to wildlife. The proposed project has been designed to minimize direct clearing impacts to the extent possible by utilizing existing disturbed corridors, such as the Yukon Connection, thereby limiting impacts to terrestrial resources. Thus, clearing of resources in this road segment would be minimized and not significant.

While certain wildlife individuals may avoid undisturbed landscapes in the vicinity of road construction due to noise, vehicle traffic or increased human activity, this is also not expected to be a significant impact in this area.

Completed East Park Roads (2036)

Construction of the Forest Hill Road Connection across Landfill Section 6/7 would be on an interim trail and meadow cover maintained as part of the modified final closure. This segment of road would therefore not have any direct impacts on terrestrial resources.

The segment of the Forest Hill Road Connection between the base of the landfill and east to Richmond Avenue would occur with in an area of wetlands (see the discussion above) and terrestrial habitats including the Richmond Avenue berm and wetlands. The proposed park road segment would be directed through woodlands along the berm and in the southern end of the 0.5 acre forested area, resulting in removal of few large trees (i.e., greater than 12 inches diameter at breast height) in this vicinity. The small loss of landscaped habitat associated with the roadway construction would not result in significant adverse impacts to wildlife resources.

Construction of the Richmond Hill Road Connection also has the potential to result in direct impacts (i.e., clearing and physical removal of plant community and soil grading) as well as potential loss of individual wildlife due to collision with or as a result of operation of construction equipment as well as indirect impacts (avoidance of habitat due to noise, vehicle traffic, or other human disturbance). However, construction of the Richmond Hill Road Connection would require minimal impacts on terrestrial resources in its alignment along the Richmond Avenue berm. This small loss of habitat associated with the road construction would not result in significant adverse impacts to wildlife resources.

Completion of the East Park Loop Road would also not be expected to have any impacts on terrestrial resources since it largely would follow an alignment of built DSNY haul road surfaces. Thus, it would not impact any terrestrial resources.

Threatened or Endangered Species

Construction under the modified closure plan, the Yukon Avenue Connections, or the Completed East Park Roads would not result in significant adverse impacts to colonial waterbird nesting activity on Isle of Meadows, or inhibit the re-establishment of such activity in the future. Barn owls have nested on bridges in the vicinity of Richmond Creek in recent years. None of the analysis scenarios would impact these species. Thus, it is concluded that construction of the East Park Roads would not have any impacts on threatened or endangered species.

HAZARDOUS MATERIALS

Development of the modified closure cover and the proposed park roads would involve excavation and disturbance of the existing on-site soils as part of construction activities. This could result in temporary increases in exposure pathways for workers and nearby residents. To avoid this impact, preventative measures would be undertaken to protect the safety of the workers and local residents as well as the larger environment for areas where construction activity has the potential to encounter areas of contamination. To this end, the environmental issues with respect to hazardous materials conditions as identified at the project site during the current and previous environmental studies (see also the Fresh Kills Park FGEIS) would be remediated prior as part of the road construction.

To that end, prior to construction, site investigations for hazardous materials would be performed (as necessary) and a site-specific Construction Health and Safety Plan would be prepared. With these proposed measures in place, the health and safety of construction workers and the visiting public would be protected from adverse environmental conditions during construction.

INFRASTRUCTURE

Modified Closure Construction (2011)

Overview

As part of the 2011 build-out, grading of the Landfill Section 6/7 surface prior to closure construction would be required. Grading would disturb: (i) existing landfill cover soils; (ii) stormwater diversion berms, which are constructed with clean soil fill; and (iii) existing waste material. To avoid impacts from these activities, a series of operational procedures and protection measures would be implemented which are similar to those being used for the on-going Section 6/7 landfill final closure construction. These procedures would also be used during the Modified Landfill Section 6/7 Closure construction including those that pertain to waste disruption (cut) activities associated with the 2011 modified closure plan.

It is assumed during this phase of construction that runoff from the landfill would continue to be directed towards the existing stormwater management basins. To the extent possible, construction runoff outside of the landfill footprint would also be directed towards the existing basins. Where this is not possible, temporary stomwater runoff controls will be implemented in accordance with the individual SWPPPs prepared for each build year construction activities.

The relocation of landfill gas header and lateral collection pipes would be accomplished by the contractor in coordination with the DSNY landfill gas system operator. In general, temporary connections that span the work area between ends of the pipes, or between laterals and the wells would be constructed prior to making any system modifications. The landfill gas system

performance would be monitored and checked by the system operator following temporary connections and following completion of the work to ensure appropriate operation.

Landfill Settlement

As waste degrades during the post-closure period, Landfill Section 6/7 will settle. This settlement will create the need for planned and unplanned maintenance of environmental protection systems. The anticipated settlements are not expected to necessitate future disturbance of landfill material.

During 2011 and 2016 construction periods, the public would not be permitted within the landfill area or project area. Therefore, no increased public exposure is anticipated during these construction periods.

Nuisance and Vector Management

It is recognized that grading, which is necessary to achieve the alternate design embankment elevations, will encounter waste. The associated excavations and onsite waste relocation activities have the potential to create odor nuisances and, attract vectors. However, these issues also exists as part of the work necessary to construct the final cover as described in the Final Cover Report. Consequently, specifications to establish acceptable construction procedures and mitigation techniques are also provided in the current technical specifications; specifically, Specification 02224, Solid Waste Relocation.

Inclement Weather

Inclement weather such as heavy rains, snow, ice conditions, high winds, or extreme temperatures may impact on the construction operations. Additional procedures would be implemented to ensure that inclement weather would not have adverse construction impacts.

Litter and Debris Control

During waste relocation activities a litter and debris control program will be implemented at the site to collect and prevent windblown litter and debris.

Dust Control

A dust control program will be implemented at the facility.

Vector Control

Vectors such as birds, rodents, and insects can be attracted to putrescible wastes exposed during the relocation activities. Measures such as the application of soil cover over waste to reduce the access to putrescibles; implementation of good housekeeping measures during waste relocation activities to eliminate conditions that could attract vectors; making sure that waste transporting vehicles at the site are covered; and limiting the working area to minimize the area of exposed waste will be taken.

During the waste relocation operations, the work areas will be inspected for infestation by insects and rodents once per week. Should vectors become a problem during waste relocation activities, control measures specific to the identified problem will be proposed to NYSDEC. Approved control measure will be implemented.

Odor Control

Odors from the waste relocation activities will be controlled primarily through continual operation of the Landfill Gas Management System and by applying soil cover, as previously described.

Chemical odor suppressants, as described in current Technical Specification 02224 may be used to control odors. Odor control materials will be used in accordance with manufacturer recommended procedures.

Noise Control

Noise from waste relocation operations could be a nuisance under certain circumstances, such as during off-hour operations. Routine measures would be implemented to limit noise problems.

Yukon Avenue Connection (2016)

With the 2011 modified landfill closure in place, the proposed Yukon Avenue Connection would not require any additional modifications to landfill infrastructure for the segment of road crossing the landfill.

For the segment of road between the base of the landfill and Richmond Avenue work would encroach upon the existing service road that provides access to environmental monitoring pointes located to the north of the alignment. No monitoring points are located within the proposed alignment and therefore no further modifications to the landfill infrastructure would be required.

Completed East Park Road System (2036)

With the 2011 Modified Closure Construction in place, the proposed Forest Hill Road Connection would not require any additional modifications to landfill infrastructure for the segment of road crossing the landfill.

For the segment of the Forest Hill Road between the base of the landfill and Richmond Avenue the alignment would encroach upon the landfill gas vent trench. To mitigate these encroachments, a gravel venting layer would be placed above the landfill gas vent trench to ensure a permeable conduit to the surface. Placement of fill soil or pavement over a limited section of the gas vent trench is consistent with as-build conditions along the vent trench. Therefore, the fill placement, concoction with the permeable layer would not compromise the vent trenches ability to function.

For the segment of the Richmond Hill Road Connection between the base of the landfill and Richmond Avenue the alignment would pass near groundwater monitoring wells 154D, 174S, and 153D. The alignment would also pass by gas migration monitoring wells G-44, G-17, G-18, G-46, and G-19. Each of these features would be protected during construction, but not disturbed.

SOLID WASTE

The proposed project would require new construction across generally unbuilt land. It is not expected that significant demolition debris would be generated by any of the construction phases. It is expected that solid waste from construction would consist primarily of construction debris and packaging from new construction materials brought onto the site. All construction waste would be handled by private carters who would haul the materials and dispose of the materials in full accordance with the applicable regulatory requirements. In addition, there would be the recycling of cut trees and vegetation for use as park mulch. The City has an active program to reduce solid waste generated by construction sites.

ENERGY

Energy impacts due to construction are primarily a result of the energy required to manufacture, deliver, and install the materials at the construction site. This type of energy is known as the

embodied energy of the material. Embodied energy is expended extracting the raw materials, manufacturing and fabricating the product, handling and transporting them to the site, and placing the materials in the roadway. Approximately 70 percent of the energy embodied in new construction is attributable to the manufacture of the basic construction materials and components. The remaining embodied energy is divided among direct fuel purchases, wholesale and retail trade, business and professional services, transportation of materials furnishings, and construction machinery and equipment. Almost all (approximately 99.5 percent) of the embodied energy is consumed before the material reaches the construction site. Construction of the proposed project over the course of 30 years is not expected to have a significant impact on energy demands for the City or region.

TRAFFIC AND PARKING

Introduction

Construction of the proposed park roads would generate traffic in the study area, including construction workers commuting by car and construction trucks making deliveries to and from the project site and the delivery and removal of soil with the greatest volumes of delivery occurring with the enhancement importation of base soils and road building materials.

Project-generated construction trips would occur due to construction trucks delivering soils and equipment, delivery of materials, and construction workers commuting to the job site. The truck activities are expected to be distributed evenly throughout the day, while the construction worker trips would likely be concentrated in two peak time periods—the early morning arrival period between 6:00 and 7:00 AM and the early afternoon departure period between 3:00 and 4:00 PM. During the work day, some discretionary travel may also take place (e.g., lunch), but the number of trips is likely to be substantially lower than the peak hour levels. The principal means of access to the site are expected to be the West Shore Expressway (regional), including the mainline and service roads which would be used to then access the project's internal service roadways.

Worker and Truck Trips

Construction activities would generate a modest amount of traffic during the peak hours during both the construction of the proposed park elements and the proposed roads. In addition, construction workers generally arrive before the peak morning commuter peak traffic period and depart before the peak afternoon commuter peak traffic period, with limited weekend work. Therefore, these vehicle trips generally do not affect the local traffic network. In addition to the worker commutes, there would also be trucking activity associated with the delivery and removal of soils (particularly the delivery of soils), and there would also be the delivery and removal of materials during the demolition of buildings, the construction of buildings, and the construction of the proposed bridges and viaducts. Given the size of the project site, it is expected that the delivery of all soils and materials that are expected to be necessary for the proposed project could reach the site via the West Shore Expressway and once on site could reach the work location for that particular phase of construction via the internal roadways, thus minimizing impacts on the surrounding neighborhood.

These truck movements would be spread throughout the day and would vary depending upon the period of construction. However, it is expected 70 to 100 trucks per day, or about 10 per hour, would be providing deliveries to the site during the more intense periods of construction, particularly with respect to the importation of soil. Truck deliveries would be dispersed over the day with few occurring in the peak hours.

Regarding worker vehicles, conservatively assuming that all workers would travel to the site via automobile as single occupants, the daily trip generation would be about 50 to 100 vehicles

during the more intensive periods of construction. With the proposed direct access to the West Shore Expressway that would provide access to central parking facilities, these trips would require limited use of local roads during peak periods. It is therefore expected that construction vehicle traffic from the proposed park would not significantly impact local roads. As stated above, most of the trips associated with construction would not coincide with the traditional commuter peak travel hours. Construction workers typically arrive between 6:00 and 7:00 AM and leave between 3:00 and 4:00 PM. This minimizes the likelihood of any significant increase in peak period traffic congestion due to construction.

Traffic Maintenance During Construction

With the proposed construction program, access to the project site would be gate-controlled and some streets may be temporarily closed or have lane closures at the periphery of the site for the construction of new intersections (e.g., the re-construction at the intersections along Richmond Avenue), as well as the installation of utility connections (e.g., water, sewer, gas, electric) at the periphery of the site. During these limited periods of construction impact, major roads, such as Richmond Avenue, would have at least one lane open to traffic at all times. The temporary and limited closure of travel lanes is an unavoidable temporary impact on the local traffic network.

In addition, nighttime construction may be considered at high traffic locations along Richmond Avenue in order to minimize disruption to traffic. This would be a consideration at final design and proposed (if appropriate) as part of the construction approval process with NYCDOT and NYSDOT.

Parking

The surrounding area contains primarily open spaces and low-density residential uses that generate little on-street parking demand traffic throughout the day. However, it is expected that parking would be provided on the project site in order to avoid any impacts on local on-street parking conditions. Thus, during the proposed construction period, parking demand in the vicinity of the project site would be similar to existing levels. As discussed above, with limited exceptions such as the construction of the small neighborhood parks, all construction worker vehicle parking is expected to be accommodated in the central staging areas.

AIR QUALITY

Introduction

Construction activities have the potential to impact local air quality as a consequence of emissions from stationary on-site equipment, emissions from construction vehicles on site and traveling to and from the site, as well as emissions from worker vehicles.

The construction of the proposed project would be subject to Local Law 77 of 2003; thus the potential for particulate emissions would be controlled by required emission controls and ultra-low sulfur diesel (ULSD). In addition, it is acknowledged that as a longer-term construction project there will continue to be advances in air pollution control for construction equipment, as well as turnover and replacement with newer vehicles and equipment that would further reduce emissions from construction vehicles.

City regulations would require all project contractors to reduce particulate matter emissions to the extent practicable by employing relatively new equipment including diesel oxidation catalysts (DOCs). As stated above, the construction activities would all be subject to New York City Local Law 77, which requires the use of Best Available Technology (BAT) for equipment at the time of construction.

Fugitive Emission Sources

Fugitive emissions can result from land clearing operations, such as excavation, hauling, dumping, spreading, grading, compaction or wind erosion and traffic over unpaved areas. The proposed project would require soil importation and filling, excavation, site grading, and repaving. With the exception of truck traffic, no construction activities would occur adjacent to residential areas. At the project site, there are substantial buffers between the project site and local sensitive receptors (even the commercial receptors are separated by a wide heavily traveled road, Richmond Avenue), and recognizing that fugitive dust generated by construction activities consists of relatively large-size particles that settle on the ground within a short distance from the construction activity, fugitive dust emission impacts on the surrounding community should not be significant.

Moreover, because fugitive dust is a common impact of construction, it is also regulated under New York City's code. During construction, all appropriate fugitive dust control measures—including watering exposed areas and using dust covers for trucks—must be used to satisfy Section 1402.2-9.11 of the New York City Air Pollution Code.

Increases in concentrations of particulate matter are difficult to quantify accurately because of the difficulty in determining total emissions and the wide range of size of the particles emitted. However, since much of the fugitive dust generated by construction activities consists of relatively large-size particles, that dust would settle to the ground within a short distance of the construction site and would not adversely affect nearby residential areas or community facilities. In addition, dust-control procedures, including stabilization of exposed areas, the frequent watering of affected areas, and the use of dust covers for trucks, would be required as part of the construction contract documents so that only minimal increases in ambient concentrations of particulate matter would occur.

Because contaminated materials exist in some project areas, more extensive dust control measures and perhaps monitoring would be employed when contaminants in soils are identified. When construction occurs in these areas, it expected that a health and safety plan would be developed specifically designed to reduce the risk to the public and construction workers at particular sites where contaminated materials may be present and may also include a monitoring plan, where necessary.

Mobile Source Emissions

Gaseous hydrocarbon and NO_x emissions from construction equipment, private vehicles on construction workers, and delivery vehicles at the construction sites would not be expected to impact local air quality. The small localized increases in hydrocarbon and NO_x emissions during the construction process caused by these sources would be insignificant when compared with total regional levels of these pollutants. Thus, these increases are expected to have a negligible effect on regionwide concentrations of photochemical oxidants.

Odors and Methane

Modified Final Cover

For the 2011 modified cover, it is assumed that there would be cut and fill activities across the two segments of the proposed embankment across the landfill (one at Yukon Avenue and the other at Forest Hill Road). Excavation is expected to require some relocation of waste materials as part of the 2011 build-out that could create the potential for increased waste and landfill gas odor. To manage and mitigate potential negative impacts from odors leaving the site the following mitigation measures will be employed: continuous observation of site conditions and odor at the work site; cessation of activities if unsatisfactory conditions exist; application of

commercial odor suppressants; and placement of temporary cover material over exposed waste between work shifts.

The relocation of waste could also increase the potential for methane and other volatile organic emissions from the landfill. The landfill currently operates a landfill gas management system to collect methane and other gaseous compounds to generate electricity by applying a vacuum to the landfill via vertical wells drilled into the waste. The cut and fill operations for road base across the landfill will require modification of the landfill gas collection wells and piping. To manage and mitigate potential negative impacts for methane emissions leaving the site, the following mitigation measures will be employed: use of temporary piping within the construction zone to maximize the collection of landfill methane from existing wells within the cut and fill operation; daily adjustment of landfill gas collection wells adjacent to the cut and fill operation to maximize the application of vacuum to undisturbed portions of the landfill; placement of temporary cover material over exposed waste between work shifts.

Fugitive methane generated by construction activities would be widely disbursed within a short distance of the construction site and would not adversely affect nearby residential areas or community facilities. In addition, methane-control procedures cited above, including frequent adjustment of vacuum, the use of temporary piping to minimize the period when individual landfill gas collection wells are not connected to a vacuum, and the use of cover materials over the waste every day would be required as part of the construction contract documents so that only minimal increases in ambient concentrations of methane would occur.

Because methane, under certain circumstances, can cause a safety hazard in the immediate vicinity of the cut and fill operation, methane monitoring would be employed in the immediate vicinity when waste is exposed. When construction occurs in these areas, it expected that a health and safety plan would be developed specifically designed to reduce the risk to construction workers at particular sites where methane may be present. The health and safety plan would include a monitoring plan, where necessary. This health and safety monitoring will provide verification that no impacts to nearby residential or community areas are occurring.

Park Road Connections: 2016 and 2036

With the embankment in place, no additional disturbance of the landfill cover would be necessary. Thus it is not expected that construction of the road final grade and finishes would result in any significant odor or methane impacts. Consequently, landfill gas and waste odors will be managed by the continuous operation of the landfill gas extraction and collection system.

NOISE

Impacts on community noise levels during construction can result due to noise from construction equipment operation and from construction vehicles and delivery vehicles traveling to and from the site. Noise levels caused by construction activities would vary widely, depending on the phase of construction and the location of the construction relative to receptor locations. Typically, the most significant noise associated with construction is jackhammers and pile driving. The impact of noise would be based the result of individual project construction phases and sequences and the location of each phase of construction relative to the project site boundaries; the particular construction tasks with in each phase, including the types and number of construction equipment specific to each task, recognizing that the construction of the road would progress geographically. For example, the use of jackhammers is expected to be very limited, perhaps for the breaking of pavement to provide utility connections at select locations.

In addition, pile driving (or drilling) would occur, but also at select locations for the construction of the viaducts and crossings for the Yukon Avenue, Forest Hill Road and Richmond Hill Road

connections; however, these activities are well removed from the local neighborhoods. Pile activity nearer local neighborhoods would be limited to lighter and shorter duration activity, such as the construction of a small dock in North Park.

Noise levels associated with the construction of the proposed project would be subject to the noise emission source controls of the recently revised New York City Noise Control Code. This code specifies maximum sound pressure levels at receiving properties (designated by octave band levels). The *CEQR Technical Manual* also provides guidance for examining the incremental noise impacts, and comparisons with NYCDEP's external Noise Exposure Guidelines. Finally, the City of New York's Zoning Resolution sets octave band limits for the lot line of a property. Construction equipment is also regulated by the Noise Control Act of 1972.

The New York City Noise Control Code, as amended December 2005 and effective July 1, 2007, requires the adoption and implementation of a noise mitigation plan for each construction site, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM, and sets noise limits for certain specific pieces of construction equipment. Construction activities occurring after hours (weekdays between 6 PM and 7 AM and on weekends) may be authorized in the following circumstances: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of city agencies; (iv) construction activities with minimal noise impacts; and (v) where there is a claim of undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts and/or financial considerations. It is not anticipated that extended hours (7:00 AM through 6:00 PM) would be needed for construction of the proposed project on a regular basis.

Noise from construction activities and some construction equipment is regulated by not only the New York City Noise Control Code but also by the EPA. The EPA requirements mandate that certain classifications of construction equipment meet specified noise emissions standards.

Construction Noise Impact Assessment

Construction activities for the proposed project would be expected to result in increased noise levels. As discussed above, the City has recently updated its Noise Control Code (effective July 1, 2007). Thus, the construction associated with the proposed project would be subject to the requirements of the new City Noise Control Code. Outlined below is a list of source controls noise reduction measures that may be proposed to meet those noise reduction requirements.

Given the type of construction that is expected with the proposed project, limited use of higher noise generating equipment is expected since most activities would occur in areas not previously covered by paved surfaces. In most cases these types of impacts would be related to the installation of utility connections, or street connections at Richmond Avenue or Arthur Kill Road, for example. Construction of the road would largely take place on the interior of the site and would not require any substantial use of jackhammers or pavement breaking equipment. Although elevated noise levels are considered a nuisance and would be intrusive at times to local residents, these impacts would be short-term and are not considered a significant adverse impact.

As described above, all construction equipment and vehicles must also meet the City, State, and Federal regulatory requirements regarding noise emissions, and construction activities would be limited to weekdays between the hours of 7:00 AM and 6:00 PM.

Based on the above, it is concluded that construction period noise emissions would be limited to the extent practicable and performed in accordance with all local, State and Federal laws and practices. The proposed project would also make use of the project site to avoid impacts on the surrounding neighborhoods and sensitive receptors. Thus, it is concluded that although short-

term noise impacts would be selected for certain capital projects, the overall construction noise impact of the proposed project should not be significant.

Vibration

Vibrations generated by construction activities, generally within one thousand feet of existing buildings, may be perceptible or potentially damaging to structures. No blasting would be performed as part of the proposed project; however, pile driving, or drilling, may be performed. In general, vibratory levels at a receptor are a function of the source strength (which in turn is dependent upon the construction equipment and construction methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations which spread through the ground and decrease in strength with distance. Vehicle traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels, unless there are irregular road surfaces. With the exception of the case of fragile, historically significant structures or buildings, generally construction activities do not reach the levels that can cause architectural or structural damage, but they can achieve levels that may be perceptible and annoying in building very close to a construction site. Since no blasting is proposed the greatest vibration activity is expected to travel a distance at no more than two hundred feet (pile driving). Thus, vibrations are not expected to affect local residences**.** As necessary, impact avoidance and pre-construction inspection would be made for the protection of landfill infrastructure and where necessary, alternative means of installing support piles, including drilling, may be preferred (see also the discussion above under "Landfill Protections During Construction).

PUBLIC HEALTH

Potential construction period public health impacts due to air and noise pollutant emissions can stem from construction equipment and construction vehicles. Of particular concern is the potential for diesel emissions with particulate matter from construction-related activities to impact public health (such as increasing asthma rates). In response to those concerns, as described above, the City has adopted Local Law 77, which would result in significant reductions in air pollution from construction equipment throughout New York City and including the proposed project.

Considering that a significant reduction in percolation would occur with approximately 50 percent of Landfill Section 6/7 having an engineered final cover system in place during the 2011 build-out, it is concluded that construction activities associated with the proposed Modified Landfill Section 6/7 Modified Closure, performed using appropriate minimum landfill operating standards, would not increase the volume of leachate required to be managed above the volume managed prior to closure construction. Likewise, the construction of the proposed roads would take place on prepared embankment and off the landfill and therefore would not increase the volume of leachate required to be managed above the volume managed prior to closure construction.

With the odor protection measures in-place during the construction of the modified Landfill Section 6/7 cover and embankment in place and no additional disturbance of the landfill cover for the proposed roads, it is not expected that construction of the proposed project would result in any significant odor or methane impacts.

Odor and methane emissions are closely related because odor causing compounds are emitted with methane from landfill gas. Therefore, odor protection measures in combination with measures designed to maintain collection of methane during the construction of the modified Landfill Section

6/7 cover and embankment will address potential methane emissions. As a result, it is not expected that any significant methane impacts will result from the proposed construction activities.

It is also expected that construction contracts would include provisions for a rodent (e.g., mouse and rat) control program as appropriate. Before the start of construction, the contractor would survey and bait the appropriate areas and provide for proper site sanitation. During the construction phase, as necessary, the contractor would carry out a maintenance program. Coordination would be maintained with appropriate public agencies. Only EPA- and DEC-registered rodenticides would be permitted, and the contractor would be required to perform rodent control programs in a manner that avoids hazards to persons, domestic animals, and non-target wildlife. Public health issues related to hazardous materials are discussed above.

For all the above reasons, it is concluded that with proposed impact avoidance and protection measures in place, no public health impacts would occur during the three phases of project construction.

PUBLIC HEALTH

While municipal solid waste landfills are well documented as potential sources of pollution, environmental control and management and techniques, such as those practiced at Fresh Kills, including landfill leachate treatment and gas collection and treatment as well as stormwater management, coupled with regular groundwater and air monitoring significantly reduce environmental impacts, facilitate the timely identification of potential problems associated with the control management systems, and thus minimize the transmission of pollutants to humans along the known exposure pathways. The existing environmental protection infrastructure at Fresh Kills includes an active landfill gas collection system complete with underground piping to collect the gas and direct it to the landfill gas recovery plant or flares, as well as leachate and stormwater control systems and an extensive monitoring and maintenance program.

These in-place protections will continue to operate for at least 30 years, and will be protected and maintained during the park and road construction phases and as the park becomes accessible to the public, it is expected that it will be necessary to implement additional measures to both protect the landfill infrastructure (e.g., protections and replacement of infrastructure due to the construction of roads and park facilities, restricting public access, and increased monitoring of air and water conditions) and to ensure that as areas of the proposed park become publicly accessible, they do not present a public health risk or safety concern. Therefore, continued coordination between DPR and DSNY related to implementing these measures as well as the completion of closure construction and the post-closure landfill monitoring and maintenance activities is vital not only to the proposed project, but also to the successful completion of the City's post-closure monitoring and maintenance obligations with respect to Fresh Kills Landfill.

Critical to the conclusions of this public health analysis are the existing environmental controls, protections, and monitoring at Fresh Kills Landfill. DSNY has installed a final cover protection that encapsulates the waste layer and physically isolates it from the environment above, along with an extensive network of environmental controls to capture leachate and landfill gases. DSNY will implement a comprehensive maintenance and monitoring program that will be in-place for at least 30 years. Additional measures necessary for park development include a new layer of clean soils, and additional measures that would make access to the park safe with respect to public health protections for park users and DPR personnel.

The environmental control infrastructure associated with the closed landfill mounds includes leachate management, landfill gas management, and final cover/drainage systems. The new measures presented below for the proposed park are intended to provide additional protections

with respect to allowing public access onto the site. These measures include additional infrastructure protections, monitoring, training, and signage, for example. A detailed evaluation was performed as part of this SEIS to evaluate the future conditions with respect to air quality, groundwater, surface water, and sediments/soils and the potential contaminant pathways and possible public health effects. The principal conclusions of that analysis are summarized below:

- Air emissions: air emissions from local stationary sources including the landfill environmental control infrastructure would not be expected to result in any significant adverse air quality impacts to the public.
- Groundwater: while contaminated groundwater is known to exist within the boundaries of the project area, the analysis performed as part of the FGEIS found that it does not pose a significant public health risk to park users. This is based on the fact that groundwater is not currently, nor is it envisioned in the future, to be utilized as a supply of potable water. Leachate treatment systems for the closed landfill mounds will continue to be operational with the proposed park and roads. Local groundwater is not expected to pose a risk to park users due to the lack of direct exposure pathways. Mitigation measures include the periodic sampling of monitoring wells associated with the closed landfill, in accordance with applicable permit requirements, as this data can facilitate the identification and correction of potential problems associated with the environmental control infrastructure associated with the landfill.
- Surface water: the proposed roads would entail limited possible uses and potential public health exposures associated with surface water use. As stated above, surface waters in the vicinity of the proposed project are neither designated for use as potable waters nor are they expected to be used in that way for the foreseeable future. In addition, no proposed use assumes use of the surface water for irrigation. The proposed project would not result in an exposure pathway related to surface water.
- Sediments: Sediments are another potential public health risk in that they serve as sinks for many environmentally persistent contaminants including PCBs, pesticides, toxic metals, and other anthropogenic pollutants. Measures to avoid public health impacts from sediments include design and management elements that would limit potential interactions between sediments and users with the proposed project. For example, no major dredging projects are proposed with the road projects.
- Site testing: Site testing is recommended as capital projects move forward and individual capital projects would develop a testing program based on areas where soil/ground water disturbance may be proposed. Based on site-specific project designs and individual testing protocols, remediation, if necessary, may be proposed to avoid impacts.
- Soils: The park and road development process envisions use of soils that meet the various criteria contained in 6 NYCRR Part 375 standards appropriate to the specific capital project and program elements for the proposed project. Soils imported to the park and for road construction and used for final soil cover would also be analyzed to verify that they meet the criteria for the park and roads which would be developed on a case by case basis using Part 375 as a guide.

For the reasons stated above, it is not expected that the proposed project would result in any public health impacts.

D. ALTERNATIVES TO THE PROPOSED PROJECT

A number of alternatives to the proposed Fresh Kills Park plan were examined, as follows:

- The No Action Alternative, which assumes no park roads in East Park;
- Alternative Phasing (Reconstructed Final Cover)-Four Lane Road;
- Alternative Phasing (Reconstructed Final Cover)-Two Lane Road;
- Alternative Alignment: Richmond Hill Road Connection (west of Landfill Section 6/7);
- Alternative Alignment: East Park Loop Road Modified Proposal;
- A one lane East Park Loop Park Road;
- Limited Action Alternative.

NO ACTION ALTERNATIVE

The No Action Alternative assumes that the proposed East Park roads are not implemented. With the No Action Alternative, there would be no delay in the closure of Landfill Section 6/7. There would also be no need to avoid, minimize or mitigate impacts; however, with the proposed project these measures can eliminate project impacts. What the No Action Alternative would not achieve are the project's goals and objective with respect to improving local traffic circulation, providing connectivity across Fresh Kills Landfill, and minimizing the impacts of the proposed Fresh Kills Park project on local streets.

Like the proposed project this alternative would not have any impacts on odors or air emissions either during construction or operation. Likewise, there would not be any impacts on the production of leachate nor would there be hazards for landfill slope stability. Nor would there be any changes in runoff patterns at the site or the hydrology of the current DSNY systems. With the proposed project there are changes in landfill hydrology; however it is expected that the proposed project could address these stormwater management issues without any adverse impacts to the landfill or upstream or downstream locations and without any water quality impacts. There would also not be any filling of wetlands under this alternative; while these impacts occur with the proposed project they can be addressed through a comprehensive restoration and wetlands mitigation program. Lastly, under this alternative, there would not be any impacts related to habitat fragmentation. With the proposed project these impacts would need to be addressed through road design, particularly with the Forest Hill Road Connection.

ALTERNATIVE PHASING (RECONSTRUCTED FINAL COVER)

Under this alternative, the currently approved closure design proceeds without the alternate closure design to construct the embankments for the future roads, and any work required for future East Park Road access and connections therefore need to be implemented following closure of Section 6/7.

The approved final cover system for Section 6/7 is described in the report entitled *"Fresh Kills Landfill, Section 6/7. Final Cover Design Report"* dated January 2001 by Malcom Pirnie, Inc. (Final Cover Report). The City of New York has proposed an alternate closure design that would coordinate the current closure construction with the proposed development of the Freshkills Park and its road system, allowing for the possibility of connection to park programs and the West Shore Expressway. This alternate closure is described in Geosyntec's draft report "Landfill Section 6/7 Alternative Final Cover Design Report, Fresh Kills Landfill, Staten Island, New York," dated January 2009, (Alternative Final Cover Report).

The Alternate Final Cover Report describes the following required activities to implement an alternative final cover design:

- Surcharge fill placement and removal;

- Waste relocation as necessary to establish base grades within the road corridors;
- Modification to landfill gas (LFG) collection wells and header piping in the vicinity of the road corridors;
- Modification to stormwater management system to allow storm water to flow across the road corridors to existing basins B2, C1 (north and south) and R;
- Installation of final cover.

As stated above, the alternative phasing option involves the closure of Section 6/7 under the currently approved closure design without coordinating the work with the Alternate Final Cover Report. Therefore, portions of previously completed final closure work, including geosynthetic cap materials, cover soils, LFG piping, and stormwater management features, would be removed or modified in order to implement the alternative final cover design work. As a result, the alternative phasing will increase the consumption of nonrenewable resources (petroleum and construction materials), and create additional waste and air emissions associated with construction activities as compared to implementing the proposed development in conjunction with closure of Section 6/7.

With this Alternative Phasing, there would be no delay in the closure of Landfill Section 6/7. However, it is assumed that at some future date given the local need for traffic solutions and the need for vehicular access into the propose park, the landfill cover would be redesigned and reconstructed. Like the proposed project, under this alternative there would also a need to avoid, minimize or mitigate impacts from the proposed roads. As with the proposed project, it is expected these measures could eliminate project impacts, although for the landfill crossing segment these mitigative measures would be more costly since they would have to be retrofitted into the cover system. This alternative would achieve the project's goals and objective with respect to improving local traffic circulation, providing connectivity across Fresh Kills Landfill, and minimizing the impacts of the proposed Fresh Kills Park project on local streets; however it would expected with this alternative there would be a greater time delay for this remedy.

Like the proposed project this alternative would not likely impact odors or landfill air emissions either during construction or operation, although the techniques to implement such measures as a retrofit are expected to be more complicated and costly. Likewise, with the appropriate construction period protection measures, there would not be any impacts on the production of leachate nor would there be hazards for landfill slope stability. With the proposed project, as under this alternative there are changes in hydrology due to road runoff and changes in the DSNY stormwater management basins; however it is expected that this alternative, like the proposed project, could address the stormwater management issues without any adverse impacts to landfill system hydrology or water quality. There would also be the filling of wetlands under this alternative and the need for a comprehensive mitigation plan like the proposed project. Lastly, there would be similar impacts related to habitat fragmentation with the proposed roads and the need for design measures to minimize these impacts as well.

ALTERNATIVE PHASING (RECONSTRUCTED FINAL COVER)-TWO LANE ROAD

This section analyzes the environmental impacts of an alternative phasing in which the currently approved closure design proceeds with the alternate closure design but only to accommodate an embankment wide enough to accommodate a two lane road, and that any work required to widen the embankment to accomodate four-lane roads for future East Park Road access and connections therefore needs to be implemented following closure of Landfill Section 6/7. It is similar to the above presented alternative; however this alternative assumes that the landfill cover is modified at this time for an embankment wide enough to accommodate a two lane road

only, but would need to be modified for a four lane road at a late date. This assumes that once the Yukon Avenue Connector (for example) is operating and demand exceeds capacity, the final cover would then be modified to widen the road.

The differences between modifying the landfill at this time to potentially accommodate a 4 lane park road as compared to the modifications that would be necessary for a two lane road are quite limited. For example, the estimated volume of cut necessary to provide the road embankment is only 37,000 cubic yards less in creating a two land road embankment at this time (if the 4 lane is necessary at a later date, the ultimate total is the same). This reduction is primarily due to reducing the limits of grading on the east-facing side of the landfill. In addition the gravel road surface area of the two lane road option would be only half of the surface area needed for the four-lane option.

The estimated volume of cut necessary to provide the road embankment for Forest Hill Road would be reduced by an estimated 17,000 cubic yards. The change is even less significant than at Yukon Avenue. The extent of the grading changes at Forest Hill are controlled by the vertical road profile and extend past the road corridor to the south in order to maintain a minimum 4 percent cover system slope. Consequently, narrowing of this road corridor has less of an effect than along Yukon Avenue. The number of impacted gas wells would be reduced from 4 to 3 if the 2-lane option is selected. The gravel road surface area of the 2 lane road option would be only half of the surface area needed for the 4-lane option.

Otherwise, the physical changes with respect to the landfill under either a modification for a four lane road or a two lane road are quire similar. On the Yukon Connector, the impacted gas wells, gas header line, and stormwater features, firewater line and overhead electric lines would be the same. Along the Forest Hill Road Connector, the impacted gas headers and lateral pipes, stormwater management features, would not change regardless of the option selected.

In addition, assuming that at later date the two lane road needs to be widened, but that the final cover installed at this time cannot accommodate that widening, this alternative phasing would have similar impacts to that discussed above for the four lane road alternative. These are significant adverse impact that can be avoided. Added material that would need to be moved at a later date would also result in the generation of about 500 tons of non-recyclable waste materials, about 12,500 truck trips for delivery of equipment and materials, and the consumption of over 217,000 gallons of diesel fuel for transportation and construction at a later date. It would also cause major traffic disruptions on operational roads to the extent that such a retrofitting would be highly impractical at that time. It is therefore concluded that the alternative phasing option would also result in avoidable impacts to air quality and road congestion to Staten Island Borough residents.

This alternative, like the proposed project, would not have any impacts on air emissions, odor emissions, leachate generation, or landfill slope stability.

ALTERNATIVE ALIGNMENT: RICHMOND HILL ROAD CONNECTION (WEST OF LANDFILL SECTION 6/7)

This alternative examines the potential impacts of a roadway alignment for the Richmond Hill Road Connection that extends around the west side of Landfill Section 6/7 rather than passing over the Landfill via the “Yukon Saddle” and heading north along Richmond Avenue berm and crossing the stormwater basins and wetlands to reach the intersection of Richmond Hill Road at Richmond Avenue. Three specific corridors were considered along this alignment: 1) a placement off the landfill (outside the solid waste management unit area boundary); 2) a placement on the existing landfill service road; and 3) a placement up the higher elevation of the

landfill. This Alternative Road Alignment would have impacts similar to the proposed project in many respects, including traffic conditions at this intersection of Richmond Hill Road at Richmond Avenue, which is a long-term proposal for the project and is in the 2036 analysis year. However, there are specific differences with respect to road geometry, landfill conflicts, environmental impacts, and park conflicts.

With the Alternative Alignment Richmond Hill Road, there would be some delay in the closure of Landfill Section 6/7, similar to the proposed project. Like the proposed project there would also a need to avoid, minimize or mitigate impacts from the proposed roads, although the need for mitigation would extend to the tidal wetlands northwest of Landfill Section 6/7 under this alternative (i.e., the wetlands along Main Creek). As with the proposed project, it is expected these mitigation measures could eliminate wetland impacts. This alternative would similarly achieve the project's goals and objectives with respect to improving local traffic circulation, providing connectivity across Fresh Kills Landfill, and minimizing the impacts of the proposed Fresh Kills Park project on local streets.

Like the proposed project this alternative would not be expected to have any impacts on odors or air emissions either during construction or operation. Likewise, with the appropriate construction period protection measures, there would not be any impacts on the production of leachate nor would there be hazards for landfill slope stability. With the proposed project as under this alternative there are changes in hydrology due to road runoff and changes in the DSNY stormwater management basins; however the runoff generated under this alternative would use less of the DSNY basin, but more of the more Main Creek wetlands for stormwater runoff discharge given the alignment of the park road with this alternative. Thus, in addition to the proposed road, stormwater management under this alternative could impact more of the Main Creek tidal wetlands. This alternative would therefore also require filling/disturbing the Main Creek wetlands rather than only the engineered wetlands east of Landfill Section 6/7 as occurs under the proposed project. Thus, this alternative would require a more comprehensive wetland mitigation plan than the proposed project and would have to address the filling and disturbance impacts of the tidal wetlands along Main Creek. Lastly, there would be impacts related to habitat fragmentation with the proposed roads, including impacts in the alignment segment northwest of Landfill Section 6/6 and near the Main Creek/William T. Davis Wildlife Refuge complex.

Like the proposed project, under this Alternative Road Alignment it is assumed that the project site would be developed as a park with proposed access roads. The benefits expected to result from the proposed project—including the creation of a 2,163-acre regional park and public access to the waterfront—would also be realized under this alternative. Neither the proposed project nor the alternatives would have an impact on socioeconomic conditions or community facilities. Both would provide significant open space benefits as well as benefits for urban design and visual resources. Neither would have shadow impacts or impacts on historic architectural resources. Both have the potential to impact archaeological resources, which would have to be addressed as the project designs are advanced in order to determine if specific areas of archaeological impact could occur and if any field research is necessary. Neither significantly adversely impact neighborhood character. Hazardous materials impacts would be similar, although a somewhat greater intensity of construction would occur with the proposed project as compared to the Two-Lane Park Road Alternative. This additional construction is not expected to greatly affect the project's need to comply with all applicable City, state, and federal requirements to eliminate the potential for any impacts from hazardous materials, including on-site testing of soils, as necessary.

Both would be generally consistent with New York City waterfront revitalization program policies. Most importantly, the development of a public park on the project site would be consistent with the borough and City goals for revitalizing and providing public access in the coastal zone. Under both the four-lane proposal and this alternative, the increased demands on solid waste and sanitation services would be similar and neither this alternative nor the proposed project would result in increases to the degree that there would be significant adverse impacts on these services. Likewise, the increased demands on energy systems would be smaller than those under the proposed project, but neither this alternative nor the proposed project would cause significant adverse impacts on utilities. While a greater intensity of construction would occur with the proposed project as compared with this alternative, as it relates to the roads, like the proposed project this additional construction would be closely monitored and would occur in compliance with all applicable state and federal requirements to minimize any public health impacts. In addition, other requirements of the proposed project with respect to public health protections would also be provided to protect public health. Traffic volumes would be the same, thus the traffic impacts would be similar, as would the impacts on air and noise conditions. Impacts on transit and pedestrians would also be similar. With the proposed project, there would be no unavoidable adverse impacts. All impacts of the proposed project would be avoided or mitigated.

Where the proposed project and this alternative differ is primarily in the areas of road design and engineering, conflicts with landfill systems, natural resources, and park design.

ALTERNATIVE ALIGNMENT: EAST PARK LOOP ROAD MODIFIED PROPOSAL

Based on a design review of the East Park Loop Road option, a modified alignment was developed with a revised conceptual design that proposes an alternative alignment which reduces the number of nonstandard features for the 35 mph design speed, while still maintaining the design intent of that option, where feasible. This alternative also includes recommendations that minimize and/or mitigate impacts and conflicts with landfill features.

For instance, this modified alternative includes a revised horizontal alignment which accounts for the typical roadway sections and eliminates nonstandard curve radii and horizontal stopping sight distances identified in the analysis of this alternative. The maximum safe operating speed is reduced to less than 35 mph at approaches to intersections at multiple locations. The roadway alignment presented in this modified alternative does not conflict with any drip leg vaults as does the above-described alternative.

This modified alternative recommends a revised vertical alignment which coincides with the revised horizontal alignment. The vertical profile is improved, however there are nonstandard and undesirable features which remain in this alternative. There are 34 locations where longitudinal grades are less than the desirable minimum of 0.50 percent. Existing vertical grades breaks remain at many locations. While these break are in accordance with the 4.0 percent maximum per NYCDDC standards, they exceed the AASHTO maximum grade break criteria of 0.62 percent at 59 locations. Vertical curves are provided where possible to smooth out alignment transitions. There are four vertical curve locations which have nonstandard stopping sight distance or headlight sight distance.

This modified alternative proposes a number of solutions to eliminate adverse and nonstandard drainage conditions which exist in the East Park Loop Road option. In the northern section of the loop, riprap stormwater collection points or shallow inlets are provided every 50 feet behind gabion walls, with 8-inch HDEP outletting drains installed beneath the roadway. This alternative would have the capacity to completely drain surface runoff at all locations.

In the southern section of East Park Loop Park Roads, where landfill capping has not been completed, drainage options include installation of a perforated underdrain along the top of the landfill cap with 4-inch HDPE outlets to the roadway pavement at either a gabion wall or riprap ditch spaced every 150 feet. These alternatives do not have the capacity to drain the entire roadways, and does not direct runoff away from the roadway surface. However, another alternative involves installation of a 3-foot riprap strip adjacent to the shoulder and allowing it to percolate into a subsurface crushed-stone trench with 8-inch PVC outlet pipes spaced every 100 feet on center. Outlet pipes would discharge on the opposite side of the road. This alternative would provide adequate capacity to completely drain surface runoff in all parts of the southern section for the 10-year design storm, and is recommended for locations with relatively large drainage areas.

There are maintenance concerns regarding the underdrain systems. If underdrain systems were to become clogged, the roadway drainage would be compromised. These systems would have to be designed with maintenance of utmost importance to reduce the potential for icing and hydroplaning.

Impacts under this alternative with respect to landfill closure delays, minimizing, avoiding and mitigating environmental impacts, addressing the traffic need; odors and air emissions; production of leachate; hazards for landfill slope stability; generation of runoff; adverse impacts on wetlands and wildlife; and habitat fragmentation would be similar to the East Park Loop Road option analyzed in this SEIS. Based on the design, it would have less of a potential for impacts on landfill infrastructure.

This alternative would fill slightly more acres of wetlands than the East Park Loop Road option; however, it would fill fewer acres of wetlands than the 4-lane option. It is, however, noted that the wetlands impacted by this alternative might be considered higher-value resources than those impacted by the proposed project, since they are more naturally occurring wetlands both west of Landfill 6/7 and at the Forest Hill connection across the wetlands. This alternative may also increase the amount of roadway within the 100-year flood plain.

This alternative also recommends lighting on park roads to improve safety.

ONE LANE EAST PARK LOOP ROAD ALTERNATIVE

This modified alternative alignment was developed with a revised conceptual design that is identical in alignment to the East Park Loop Road option, the except being that a single-lane loop roadway is proposed around Landfill 6/7, rather than the two-lane loop road. This alternative has been included to determine if there are lesser impacts to wetlands and effects on DSNY's maintenance of leachate pump stations.

This alternative alignment retains the nonstandard roadway features identified in the East Park Loop Road Alignment, which includes horizontal curvature, adverse superelevation rates, nonstandard sight distances, and retains the undesirable vertical profile. Stormwater runoff from the mound would be directed across the roadway surface, with no provisions for subsurface drainage. No roadway lighting or fire protection are provided for this alternative.

Impacts under this alternative with respect to landfill closure delays, minimizing, avoiding and mitigating environmental impacts, addressing the traffic need; odors and air emissions; production of leachate; hazards for landfill slope stability; generation of runoff; adverse impacts on wetlands and wildlife; and habitat fragmentation would be similar to the SIBPO Alternative Alignment presented above. Based on the design, it would have less of a potential for impacts on landfill infrastructure.

While the East Park Loop Road option (modified loop road proposal discussed above) require the temporary closure of the right lane of the roadway during DSNY leachate pump station maintenance operations, this alternative would allow maintenance and access in a widened right shoulder of the roadway. Installation of a traffic signalization system for the right lane closure would not be required.

For this alternative, differential settlement between the pavement of the existing haul road and the widened portion outside of the haul road may be less of a concern, since the joint between existing and new pavement would be located in the right shoulder of the roadway rather than at moving travel lanes.

This alternative would directly impact somewhat less acres of wetlands than the East Park Loop Road option and fewer wetland acres than the 4-lane option. It is, however, noted that the wetlands impacted by this alternative might be considered higher-value resources than those impacted by the options, since they are more naturally occurring wetlands.

LIMITED ACTION ALTERNATIVE

This alternative examines the potential impacts of using the modified landfill cover proposed only for recreational purposes and without the construction of the proposed East Park roads and is included in response to comments received from New York State Department of Environmental Conservation. In this alternative the modified closure plan would then allow for two informal trails across the landfill that would connect on the east and west with the proposed multi-purpose loop road around the base of the Landfill Section 6/7 which is proposed with East Park. There would also be parking proposed at the western trial heads, near the Confluence Loop Road. Impacts under this alternative with respect to landfill closure delays. Minimizing, avoiding and mitigating environmental impacts; addressing the traffic need; odors and air emissions; production of leachate; hazards for landfill slope stability; generation of runoff; adverse impacts on wetlands and wildlife; and habitat fragmentation would be similar to the No Action Alternative presented above.

As compared to the proposed project, this Limited Acton Alternative would require a similar delay in the closure of Landfill Section 6/7 since the landfill closure would be modified, although it would not provide the proposed roads. Thus, unlike the proposed project, there would be no need to avoid, minimize or mitigate impacts; however, with the proposed project these measures can eliminate project impacts. What the Limited Action Alternative would not achieve are the project's goals and objective with respect to improving local traffic circulation, providing connectivity across Fresh Kills Landfill, and minimizing the impacts of the proposed Fresh Kills Park project on local streets. Rather, it would only provide more trail connections across the park.

Like the proposed project this alternative would not have any impacts on odors or air emissions either during construction or operation. Likewise, there would not be any impacts on the production of leachate nor would there be hazards for landfill slope stability. Unlike the proposed project, there would not be any changes in runoff patterns at the site or the hydrology of the current DSNY systems. With the proposed project there are changes in landfill hydrology due to the proposed roads; however it is expected that the proposed project could address these stormwater management issues without any adverse impacts to the landfill or upstream or downstream locations and without any water quality impacts. There would also not be any filling of wetlands under this alternative; while these impact occur with the proposed project they can be addressed through a comprehensive restoration and wetlands mitigation program. Lastly, under this alternative, there would not be more limited impacts related to habitat fragmentation.

With the proposed project these impacts would need to be addressed through road design, particularly with the Forest Hill Road Connection.

E. IMPACT AVOIDANCE MEASURES AND MITIGATION

The potential for significant adverse impacts to occur in each of the analyzed technical areas has been summarized above. In many cases the proposed project has developed impact avoidance measures that have been written into the project design. Where significant impacts have been identified that extend beyond these impact avoidance measures, or where mitigation requires the approval of other agencies, in accordance with the *CEQR Technical Manual*, mitigation measures have been recommended and are presented below.

IMPACT AVOIDANCE MEASURES

LANDFILL PROTECTIONS

Considering that the proposed project would provide the public with the opportunity to more closely approach the surface features associated with the leachate management system, and that park road development may induce new loading conditions on the subsurface features, the following preliminary conceptual measures would avoid impacts to public health and the environment:

- Develop park road designs that do not adversely affect the leachate control systems or final cover stability;
- Demonstrate that any changes to the site meet established performance standards of the landfill infrastructure and that the requirements of the post-closure care monitoring and maintenance plan are not compromised by the proposed design;
- Provide instrumentation to monitor for any deformations in the leachate control systems and cutoff wall that would provide data to the New York City Department of Sanitation (DSNY) if any park elements are adversely affecting the cutoff wall;
- Install locks at leachate collection well vaults, leachate collection well valve chambers, and associated electronic control panels.
- Install security fences, locked gates and appropriate warning signs around leachate collection well vaults, valve chambers, and associated electronic control panels.
- Install locking manhole covers at manholes located along the leachate transmission forcemain route.
- Install perimeter security fence around the Fresh Kills Leachate Treatment Plant and around the Landfill Section 6/7 leachate transmission forcemain pump station.
- Bar malicious activities or vandalism inflicted upon leachate management system infrastructure, park development will not increase the amount of leachate generated, or adversely affect the function of the electrical-mechanical systems as currently designed.
- Provide park grounds keepers and security personnel to deter malicious acts or vandalism of leachate management system features.

With respect to the landfill gas management system, the following measures would avoid impacts to public health and the environment:

- Develop park road project designs with DSNY and the New York City Department of Parks and Recreation (DPR) coordination to avoid conflicts with the landfill gas management system features.

- Redesign and retrofit existing landfill gas extraction well heads and passive gas vents for placement within securable subsurface vaults.
- Install permeable gas venting layers (i.e., gravel layers) across interceptor venting trenches where park development features would cover the interceptor venting trenches.
- Post signage to inform the public regarding hazards associated with landfill gas.
- Maintain seals on landfill gas vents to prevent escape of landfill gas into the atmosphere.
- Install security fencing and locking gates around landfill gas flare pads and around the landfill gas purification plant.
- Install locking manhole covers on manholes associated with the landfill gas transmission main.
- Provide DPR staff and security personnel with the authority to deter malicious acts of vandalism of landfill gas management system features.

With respect to the stormwater management systems, the following measures would avoid impacts to public health and the environment:

- Place surcharge loads over waste prior to final cover construction to induce and accelerate settlement.
- Install monitoring equipment to measure strain in the landfill cover system geosynthetic materials.
- Develop on-mound program features that minimize the use of large loads, or designing features that use lightweight fill.
- Develop landscape features to discourage park users from entering drainage channel.
- Post signage that informs park users that the stormwater management basins are not publicly accessible (until so designed) and that entry into stormwater culverts is prohibited.
- Provide DPR personnel with the authority to deter malicious acts or vandalism of final cover and stormwater management features.

Security Protections

In addition, since public access would be permitted onto to site, security measures would be necessary to protect important landfill infrastructure. Among the landfill structures that would need to be physically separated from landfill systems are the:

- Leachate control plant;
- Gas collection and treatment plant;
- Flare stations; and
- Above-ground transformers and pumping stations.

Soils and Public Health

While the site is not subject to regulation under 6 NYCRR Part 375, the Soil Cleanup Objectives offer guidance. Given the diversity of existing conditions on the site, the varying hydrology of wetland landscape areas, and the wide range of uses proposed for the site, project-by-project review of soil standards would likely result in selection of various soil criteria being applied over the site based on the proposed programming and the individual capital project. This “project by project” approach is also advised by the New York City Department of Health and Mental Hygiene (NYCDOHMH).

NATURAL RESOURCES

There are a number of elements of the project that could be proposed to avoid impacts on natural resources. These include the following.

- Nighttime Lighting. Careful design and planning of lighting arrays would minimize many significant adverse impacts associated with proposed project in relation to wildlife activity.
- Park Roads and Habitat Fragmentation. Operation of the park roads has the potential to result in long-term adverse impacts and compromise natural resources benefits in areas where it passes through proposed landscape enhancement areas, or areas where existing plant communities would be retained. Design measures that would minimize the potential for roadways to result in significant adverse impacts to aquatic resources include:
    - Collection and treatment of stormwater runoff from roadways.
    - Low impact roadway management techniques including landscaped corridors and screening.
    - Road-side maintenance using Integrated Pest Management Plan (IPM) strategies prepared for the park to minimize the potential for adverse effects to stormwater runoff quality.
    - Maintenance of a hydrologic connection between existing wetlands and surface water bodies using viaducts where feasible; and culverts designed to facilitate movement of aquatic organisms, and to minimize impairment of flow pattern.
    - Implementation of a roadway operations and maintenance plan that includes alternative strategies for de-icing and other techniques.

In addition, Measures that would minimize the potential for park roads to result in significant adverse impacts to terrestrial wildlife include the following:

- Incorporating measures to avoid potential impairments to wildlife movement in the areas identified above by incorporating wildlife underpass features into culverts constructed under the park roads to maintain stormwater drainage and flow patterns, or separate wildlife underpass features where feasible.
- Using viaducts where feasible to minimize impairment of wildlife movement under roadways.
- Incorporating wildlife crossing warnings into roadway signage.
- Monitoring wildlife/vehicle collisions to identify the need for additional measures (e.g., speed reduction) to minimize wildlife losses and adverse effects to motorist safety due to collisions.
- Using vegetation that does not attract wildlife in roadside landscaping and keeping vegetation adjacent to the road low to provide wildlife with an unobstructed view of oncoming traffic.
- Establishing vegetative screens along roadway to reduce traffic noise in certain landscape enhancement areas.

INFRASTRUCTURE

To avoid stormwater impacts from increases in impervious surfaces and to protect receiving waters, individual stormwater best management practices (BMPs) would be used to enhance provide water quality treatment and quantity management for the road runoff.

TRAFFIC AND PARKING.

To avoid future impacts at all the locations that would provide access to the project site and to ensure proper traffic patterns and intersection designs are implemented, DPR will continue to coordinate with NYCDOT. Specifically, DPR commits to providing NYCDOT and NYSDOT with all roadway plans associated with the construction of the through-traffic roads connecting Richmond Avenue with the West Shore Expressway for review.

TRANSIT AND PEDESTRIANS.

Between 2016 and 2036, all park road connections with Richmond Avenue are assumed to be completed. It is expected that in 2036, with the full build-out of the park roads (and Fresh Kills Park), NYCT could either create new bus routes to accommodate the park-generated transit demand (especially on the weekend summer months) or could amend the existing bus routes to include new stops within the park boundaries or at the park perimeter (e.g., along Arthur Kill Road). This could potentially include service from other boroughs that could access the site via the regional highways (i.e., the West Shore Expressway), as well as augmented local service that is provided along Richmond Avenue and could be extended into the park.

CONSTRUCTION

Measures to avoid impacts during construction would include coordination with DSNY Closure Activities at Landfill Sections 6/7 and 1/9; protection of DSNY infrastructure during construction; use of a Construction Protection Plan to protect the Sleight Family Cemetery; a Stormwater Pollution Prevention Plan; strategies to limit wildlife impacts, including a Site-Specific Erosion and Sediment Control Plan (ESCP) and a Natural Resources Protection Plan; a Construction Monitoring Program; use of a Construction Health and Safety Plan; performing environmental surveys during construction in accordance with applicable federal, state, and local regulations and guidelines; minimizing solid waste during construction; maximizing use of regional roads during construction, possible barging of soils, and possible nighttime construction to avoid traffic impacts; use of Ultra Low Sulfur Diesel fuel, electric engines, and new equipment and locating large emission sources away from sensitive uses, implementation of dust control measures to avoid air quality impacts during construction; and shielding noisy equipment from local neighborhoods, proper maintenance of construction equipment, and general adherence to the City Noise Control Code to avoid noise impacts during construction.

PUBLIC HEALTH PROTECTIONS

As the details of the public access plan are developed, it is expected that the modifications for the post closure monitoring and maintenance plan or an additional monitoring plan developed by DPR may be necessary.

MITIGATION MEASURES

The measures below are presented as mitigation measures as they require additional regulatory approvals or are outside the jurisdiction of DPR to implement.

EROSION AND SEDIMENTATION (2011 CONSTRUCTION PERIOD)

With the proposed modified cover plan, there are projected increases in pollutant loading that are a worst case condition in that it assumes the installation of full width road embankment material (i.e. 60 feet wide) across Landfill Section 6/7. In fact, measures could be taken reduce the width of the temporary gravel road and to provide appropriate sedimentation and erosion control measures, including stabilizing the corridors with vegetation. Between this DSEIS and the FSEIS, DPR and DSNY will examine potential measures to reduce this level of interim pollutant loading which is primarily due to sedimentation and erosion. These measures will be presented in the FSEIS.

ARCHAEOLOGICAL RESOURCES (2036)

No impacts to archaeological resource would occur in the 2011 or 2016 phases. To understand the potential for archaeological impacts from park road development activities, a Phase 1A study prepared for this project was performed. It was the conclusion of that analysis that portions of the project site are sensitive for precontact and historic period archaeological resources. As the design for individual capital road projects progresses, in order to avoid or to mitigate these impacts, it is recommended that individual construction projects be reviewed by an archaeologist to determine if the project could impact any archaeologically sensitive areas identified in the Phase 1A archaeological documentary study. If it is determined that impacts are possible, further investigation such as Phase 1B archaeological testing would be necessary to identify the presence or absence of archaeological resources. The Phase 1B would be designed in consultation with LPC and procedures for evaluating and reporting the field results would be approved by LPC. If Stage 1B testing indicates the presence of archaeological resources, further mitigation involving avoidance of artifacts and/or data recovery would be undertaken to mitigate any adverse impacts to the maximum extent practicable.

NATURAL RESOURCES

The Fresh Kills Park Plan intends to protect and enhance the condition and value of the wetland systems currently present and proposed future conditions, while offsetting the adverse impacts to wetlands resulting from construction of park roads and bridges. The proposed East Park Roads project would have impacts on wetlands only in the later phase with the completion of the East Park Road system. (No direct impacts to wetlands would occur in the 2011 or 2016 phases.) This include activities that would impact wetlands as either direct impacts (e.g., filling a portion of the wetlands for the Richmond Hill Road Connection), or indirectly (e.g., shading from Forest Hill Road connections viaduct, changes in hydrology, habitat fragmentation).

Overall, the Fresh Kills Park project, and the East Park elements, are proposed to include substantial wetland and upland enhancement projects for the purposes of improving the overall ecological values of the project site. These include extensive wetland improvement projects that call for enhancement of tidal wetlands (i.e., *Spartina* and mixed marsh enhancement along tidal creeks), freshwater wetland expansion and enhancement (i.e., palustrine scrub shrub and forested wetlands) and possible freshwater wetland creation (i.e., conversion of detention basins to wetland features).

There are numerous wetland mitigation opportunities at Fresh Kills Park. Therefore, as design moves forward, the selected long term East Park Road options can include a number of mitigation strategies that are tailored to the impacts and mitigation opportunities specific to that option. In no case would there be any remaining unavoidable or unmitigated adverse wetland impacts from the proposed roads.

TRAFFIC AND PARKING

A number of intersections in the study area would experience significant traffic impacts as a result of vehicular traffic generated by the proposed project in the 2016 and 2036 analysis years (no traffic mitigation is necessary for the 2011 analysis year). A description of that mitigation is provided below.

2016 Analysis Year

Four (4) out of the five (5) analyzed intersections would be impacted under the 2016 Build Conditions. A traffic mitigation plan was therefore developed to address these impacts. For the 2016 analysis year, the proposed mitigation measures would eliminate the majority of the traffic impacts that are expected with the proposed project. The remaining intersections would have lane groups that would remain unmitigated.

2036 Analysis Year

Recognizing that there are multiple build condition options, with the three connections proposed along Richmond Avenue, recommended mitigation measures for each roadway option were examined. A traffic mitigation plan was developed to address traffic impacts that were identified.

For the 2036 analysis year, the proposed mitigation measures would eliminate a number of the traffic impacts that are expected with the proposed project. The remaining intersections would have lane groups that would remain unmitigated.

F. UNAVOIDABLE ADVERSE IMPACTS

The proposed project would result in significant adverse traffic impacts at a number of study area intersections. Traffic mitigation measures would be employed at individual intersections to mitigate the adverse significant traffic impacts. The proposed mitigation measures consist of standard traffic capacity improvement measures, such as lane restriping, signal timing modifications and installation of new traffic signals at unsignalized intersections. However, even with these measures in place, some of the study area intersections would not be completely mitigated in the future conditions back to the No Build conditions. DPR will continue to explore additional mitigation measures for these intersections between the DSEIS and FSEIS.

S/

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cc: See attached.

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