

A. INTRODUCTION

This chapter examines a number of alternatives to the proposed Fresh Kills East Park Roads. In accordance with the Final Scope of Work issued in May 2009, this analysis considers the following alternatives:

- 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.

In developing these alternatives, it was the objective of DPR to provide in this chapter a full range of alternatives for the proposed project that particularly addressed certain key technical areas, including natural resources (with a focus on wetlands and habitats), potential landfill impacts, (which could have indirect impacts on water resources and public health, for example), traffic and circulation air quality, and noise. In accordance with New York City Environmental Quality Review (CEQR)/State Environmental Quality Review (SEQR), these impacts are compared with the proposed project and its environmental impacts, as well as the alternatives ability to make the project sponsors goals and objectives. To that end, the alternatives evaluated in this chapter included multiple alternatives with respect to road impacts and alignments, and the evaluation and comparison of impacts with the proposed project.

This alternatives analysis first examines the No Action Alternative. This alternative is required under CEQR/SEQR for all environmental impact statements. Under this alternative, it is assumed that the proposed East Park Roads project does not move forward, but that the Fresh Kills Park project does move forward as presented in the FGEIS (March 2009).

The second and third alternatives assume that the final cover is installed under the approved plan and the DPR would need to then retrofit that completed cover to construct roads at a later date.

The fourth alternative, the Alternative Road Alignment (west of Landfill Section 6/7) assumes that the Richmond Hill Road Connection (a 2036 project) is constructed along the west side of Landfill Section 6/7 rather than along the eastern alignment that is presented as the proposed project.

The fifth alternative involves some minor adjustments to the East Park Loop Road option which could potentially reduce impacts to landfill infrastructure. The sixth alternative assumes that the East Park Loop Park Road can be reduced in width to one lane.

Lastly, this analysis assumes a Limited Action Alternative. That alternative essentially assumes no roads or active recreational facilities at Fresh Kills.

As described in greater detail in Chapter 1, “Project Description,” the proposed East Park Roads project is composed of three components:

- A modified grading plan for the final cover at Landfill Section 6/7;
- Completion 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 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.

B. NO ACTION ALTERNATIVE

DESCRIPTION

The No Action Alternative assumes that the proposed East Park roads are not implemented. This alternative essentially reflects conditions discussed as the “Future Without the Proposed Project” in Chapters 2 through 21 through the analysis years 2011, 2016 and 2036. This analysis compares conditions under the No Action Alternative to conditions with the proposed project through 2036.

OVERVIEW OF IMPACTS

As described in greater detail below, 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. A more detailed analysis of this alternative follows.

LAND USE, ZONING AND PUBLIC POLICY

Under the No Action Alternative, it is assumed that East Park is built in 2016, but not the proposed roads. Closure construction is assumed to be completed by 2011 under the approved

plan. This would include the installation of final cover on the landfill mounds and continuation of all environmental control and monitoring systems.

There are a number of projects that are expected to take place in the study area under the No Action Alternative. These projects include roadway improvements, commercial, residential, and hotel construction, and industrial projects. It is also assumed that the Fresh Kills Park project moves forward under this alternative.

Under this alternative, the benefits to local land use that are expected to result from the proposed action—including new road access across Fresh Kills including access to the West Shore Expressway and the proposed park—would not be realized. This alternative would also not attain the stated project or City goals (e.g., the Staten Island Transportation Task Force) to improve traffic conditions in western Staten Island. This alternative would also not implement the goals and plans of the Office of the Staten Island Borough President to provide road access across Fresh Kills, and would not meet the important park circulation goals.

SOCIOECONOMIC CONDITIONS

As stated above, under this alternative no roads connections from Richmond Avenue to the West Shore Expressway would be developed. Through the 2016 and 2036 analysis years, the study area would see increases in both the residential population and employees in the future without the project. Neither the proposed action nor the No Action Alternative would displace populations, employees, or businesses. However, the project’s goals of creating providing new vehicular access that would support existing and future residential neighborhoods and commercial uses near the project site would not be realized under this No Action Alternative as they would with the proposed project.

COMMUNITY FACILITIES

Under the No Action Alternative, the proposed roads would not be constructed. Thus the benefits of providing an emergency through road connection between Richmond Avenue and the West Shore Expressway would be foregone. These benefits are provided with the proposed project.

OPEN SPACE

Under the No Action Alternative, the 2,163-acre Fresh Kills Park would be constructed; however there would not be the added vehicular access would only be provided via the West Shore Expressway. Therefore, under the No Action Alternative, although open space acreage would be greater and there would not be impacts on open space as there are with the proposed project, the Fresh Kills Park project would be less accessible to park users, vehicles, and public transit.

SHADOWS

In both No Action Alternative and the proposed project, there would not be any shadow impacts with respect to the proposed roads.

HISTORIC RESOURCES

Under the No Action Alternative, it is assumed that the project site would remain part of the East Park and no park road development would occur. Therefore, no potential impacts to

Fresh Kills Park East Park Roads SEIS

archaeological resources would also occur. With the proposed project, it is recommended that individual construction projects be reviewed by an archaeologist to determine if the project could impact locations that were identified in the Phase 1A archaeological documentary study (see FGEIS) as possessing moderate, moderate to high, or high sensitivity for pre-contact or historic-period archaeological resources.

With respect to architectural resources, in both No Action Alternative and with the proposed project there would not be any impacts on historic resources with respect to the proposed roads.

URBAN DESIGN AND VISUAL RESOURCES

Under the No Action Alternative, it is assumed that the visual enhancements associated with the construction of the proposed park would occur but the proposed roads would not be created. IN contrast, the proposed project would create new block forms and streetscapes fronting on Richmond Avenue. However, given that Richmond Avenue is a heavily traveled throughfare, this is not expected to be a significant impact of the proposed project with respect to visual character.

NEIGHBORHOOD CHARACTER

The No Action Alternative would not provide the benefits to the neighborhood associated with the proposed project, namely the improved vehicular circulation and removal of Fresh Kills as an impediment to neighborhood circulation.

NATURAL RESOURCES

Neither the No Action Alternative nor the proposed project would result in significant adverse impacts on water quality. In general, implementation of Fresh Kills Park would not result in significant adverse impacts to terrestrial or aquatic natural resources. The clearing of natural resources within the project site corridor would not be expected to result in any significant natural resources impacts, with the exception of wetlands that would be mitigated. Therefore, under this alternative the filling of wetlands (about 5.5 acres) would not occur. However, there would also not be the opportunity for substantial wetland mitigation that could be implemented by the proposed project as a result of the wetland impacts. It is expected that the mitigation could more that compensate for the impacts of the proposed project.

Thus, under this alternative, upland and wetlands along the proposed road corridor would continue to evolve. There would also not be the need for the habitat fragmentation impact avoidance measures of the proposed project with respect in particular to the Forest Hill Road Connection.

HAZARDOUS MATERIALS

In the No Action Alternative, it is assumed that landfill closure would be completed in accordance with approved DSNY closure plans with oversight by the New York State Department of Environmental Conservation (DEC). It is expected that closure construction at Landfill Sections 6/7 is completed by 2011. Without the proposed project, the East Park project is expected to move ahead, but nor road development is expected on the project site through the 2016 and 2036 analysis years. The potential remediation of contamination along in proposed road corridors would therefore only take place only if contamination were encountered during soil disturbance as part of park development. Overall, in the No Action Alternative there would

be less extensive remediation of hazardous materials than would be associated with the future with the proposed project.

While a greater intensity of construction would occur with the proposed project as compared to the No Action Alternative, this additional construction would be closely monitored and would occur in compliance with all applicable state and federal requirements to eliminate the potential for any impacts from hazardous materials.

WATERFRONT REVITALIZATION PROGRAM

Both the No Action Alternative and the proposed project would comply with the City's WRP although in the absence of the proposed roads there would be less opportunity for the general public to reach the waterfront.

INFRASTRUCTURE

Under the No Action Alternative, it is assumed that the final closure construction of all the Landfill Sections 6/7 would be completed by 2011, with continued monitoring and maintenance through 2036. DSNY would continue to operate and manage the Fresh Kills Landfill environmental control systems, along with implementation of the monitoring and maintenance programs. The leachate collection and containment system and landfill gas management system would continue to operate after landfill closure as required by DEC.

Under the No Action Alternative, there would not be the increased need to modify the landfill infrastructure as part of the Modified Landfill Section 6/7 Final Closure Plan. However, with the measures proposed by the project, this modification in infrastructure can be achieved without any significant adverse impacts. Thus, neither this alternative nor the proposed project would have impacts on landfill infrastructure.

Under the No Action Alternative, there would not be the increased stormwater runoff or the need to modify DSNY stormwater basins. However, with the measures proposed by the project, these modifications could be achieved without any significant adverse impacts on stormwater management. Thus, neither this alternative nor the proposed project would have impacts on stormwater management infrastructure.

In both the No Action Condition and with the proposed project there would not be any impacts on air emissions, odor emissions, leachate generation, or landfill slope stability.

SOLID WASTE AND SANITATION SERVICES

Neither the No Action Alternative nor the proposed project would have impacts on solid waste or sanitation services. Neither the proposed project nor this alternative would have an impact with respect to the City's Solid Waste Management Plan.

ENERGY

Neither the No Action Alternative nor the proposed project would have impacts on energy.

TRAFFIC AND PARKING

Under the 2016 FGEIS No Build Conditions (which assumes general background growth and future developments without Fresh Kills Park and the proposed park roads), four (4) out of the five (5) intersections analyzed for the SEIS would experience congestion during one or more

Fresh Kills Park East Park Roads SEIS

analyzed weekday and weekend peak hours. Similarly, under the 2036 FGEIS No Build Conditions, all five (5) of the intersections analyzed for the SEIS would also experience congestion during one or more analyzed weekday and weekend peak hours.

As described in the above sections, the SEIS No Action Alternative future conditions assume Fresh Kills Park is built without the proposed East Park roads. As a result, in addition to the future general background growth and developments as assumed under the FGEIS, the No Action future conditions under this alternative would also include the project generated trips by Fresh Kills Park. Therefore, the five (5) analyzed intersections under the 2016 and 2036 SEIS No Action Alternative future conditions would experience further congestion.

In addition, under this alternative, local traffic conditions would not be relieved. Also, the only means of access to the Confluence area of the park would be via the West Shore Expressway which would exacerbate traffic conditions along this corridor as well as along the streets at the periphery of the park, including Richmond Avenue, Arthur Kill Road, Travis Avenue and Victory Boulevard. In the absence of the proposed East Park roads, hundred of peak hour vehicle trips would have to use these roads in order to access the park from the West Shore Expressway. Thus, this alternative would not achieve the purpose and need goals of the project with respect removing the Fresh Kills property as an obstacle to connectivity, improving local traffic circulation, and minimizing the impact of the proposed park on local traffic circulation.

Neither the proposed project nor this alternative would impact parking.

TRANSIT AND PEDESTRIANS

The proposed project would not adversely impact transit and pedestrian conditions. Rather, it would provide the opportunity for bus transit service into and across the Fresh Kills Park, Under this alternative these benefits would be foregone.

AIR QUALITY

With respect to mobile sources, no violations of the National Ambient Air Quality Standards (NAAQS) are predicted to occur under either the No Action Alternative or the proposed project.

NOISE

Under the proposed project no project impacts would occur at local sensitive receptors. Thus, conditions under this No Action Alternative would be similar to the proposed project.

CONSTRUCTION

Since the No Action Alternative would entail only the development of the park, this alternative would not generate as much construction activity or disruption as the proposed project. Construction-related impacts on archaeological resources would not occur, though with the proposed project, measures would be put in place during construction to mitigate that impact.

The No Action Alternative would not have the construction-related noise and traffic of the proposed project. However, neither this alternative nor the proposed project would result in significant adverse impacts on air quality, noise, traffic, or transit during construction. The No Action Alternative would also not have the impacts related to the project with respect to wetlands, in particular the wetlands impacts under the Forest Hill Road and Richmond Hill Road Connections or the need for the related protection measures during construction.

PUBLIC HEALTH

In the No Action Alternative, it is assumed that landfill closure will be completed in accordance with approved DSNY closure plans with oversight by DEC. It is expected that closure construction at Landfill Sections 6/7 will be completed by 2011. The leachate collection and containment system and landfill gas management system will continue to operate after landfill closure as required by DEC. Without the proposed project, only the development of East Park is expected on the project site through the 2016 and 2036 analysis years.

While a greater intensity of construction would occur with the proposed project as compared to the No Action Alternative, this additional construction would be closely monitored and would occur in compliance with all applicable state and federal requirements to minimize any impact from hazardous materials. It is expected that with the proposed project's protection measures in place, no impacts would occur with respect to public health.

IMPACT AVOIDANCE AND MITIGATION

Under the No Action Alternative, there would not be the need for impact avoidance related to the proposed roads or the significant impacts of the proposed project (e.g., traffic, wetlands) that require mitigation. However, similar impact avoidance and mitigation measures would be necessary for the proposed Fresh Kills Park project.

UNAVOIDABLE ADVERSE IMPACTS

The No Action Alternative would not have any unavoidable adverse impacts. The proposed project would have limited unavoidable adverse traffic impacts.

C. ALTERNATIVE PHASING (RECONSTRUCTED FINAL COVER— FOUR-LANE ROAD))¹

DESCRIPTION

This section analyzes the environmental impacts of an alternative phasing in which the currently approved closure design proceeds without the alternate closure design, 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).

¹ This analysis would apply to an alternative that would require modifying the landfill cover in order to widen the road embankment from 38 feet (two lanes) to a 60-foot-wide (four lanes wide).

Fresh Kills Park East Park Roads SEIS

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. A description of the impacts associated with each identified activity is described below.

OVERVIEW

As described in greater detail below, 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 an 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. A more detailed analysis of this alternative follows.

EVALUATION OF IMPACTS

SURCHARGE FILL PLACEMENT AND REMOVAL

Effort required for this task includes importation and placement of soils followed by their removal after surcharge consolidation occurs (typically in a matter of less than 3 months). The volume of surcharge soils needed to consolidate waste beneath the roadway corridors would remain unchanged regardless of the status of closure for Section 6/7. However, the coordination of the alternative design with closure construction will allow closure cover soils to serve as surcharge fill and then later be used as cover soil during closure construction. This coordination will reduce the total importation of soils to the site and thereby reduce air emissions associated with truck and heavy equipment operation. Based on the calculated volume of 250,000 yd³ of surcharge fill from the Alternative Final Cover Report, this represents over 20,000 truck trips. Assuming surcharge fill is obtained from borrow sources 20 miles from the site, this represents over 160,000 gallons of fuel consumption (at an average 5 mpg) for transportation alone which could be avoided if the alternative final cover design is coordinated with Section 6/7 closure.

WASTE RELOCATION

The Alternative Cover Design Report estimates that approximately 130,000 yd³ of waste will require relocation in order to implement the alternative final cover design. While the volume of waste requiring relocation would remain unchanged with the alternative phasing option, the effort and consumption of materials required to manage the waste would dramatically increase. This is because once Section 6/7 is closed, DSNY will have to strip large areas of previously completed final cover in order to relocate waste elsewhere in Section 6/7. Assuming the relocated waste could be placed at an average depth of 8 ft, this would require the removal of over 10 acres of final cover. The additional waste will also change the final contours of Section 6/7, requiring additional effort to relocate landfill gas (LFG) and stormwater management features. The removal of the previously completed closure cover and modification to the LFG management system will increase the potential for odors and air emissions from the landfill. The removal of closure cover would also disturb previously vegetated areas and increase the risk of downstream sedimentation.

LANDFILL GAS PIPING

LFG header pipe must be constructed at a minimum three percent slope when placed over waste to provide proper drainage of LFG condensate over time. Under the existing closure design, LFG header pipes are being installed without regard to the proposed development. Therefore, under the alternative phasing option, LFG header piping will have to be relocated in the vicinity of the road corridors, and will likely also require relocation of several hundred feet LFG header back to a high point in the pipe in order to re-establish the minimum slope required for the entire length of header pipe. Therefore, effort would be required to relocate header pipe which could have been installed only once. This will result in wasted materials due to relocation damage, importation of additional cover soils, and additional emissions from heavy equipment as compared to constructing the Alternative Final Cover Report design initially. In addition, relocation of LFG header piping will result in temporary disruption and reduced efficiency of the LFG management system. This would result in the loss of energy generation from the Fresh

Fresh Kills Park East Park Roads SEIS

Kills LFG to energy facility as well as the increased potential for odor and LFG emissions from the landfill.

STORMWATER

The current stormwater management directs stormwater through the roadway corridors to stormwater basins B2, C1 (North and South), and R. Modifying this system after final closure will require relocation of the stormwater conveyance structures and associated adjustment of final closure grades necessary to allow gravity flow of stormwater to the ponds. In order to achieve this, areas outside of the immediate vicinity of the roadway corridor will require the removal and replacement of final cover. This will result in wasted materials due to relocation damage, importation of additional cover soils, and additional emissions from heavy equipment as compared to constructing the Alternative Final Cover Report design initially. In addition, the re-disturbance of vegetated areas resulting from the modification of the stormwater management system would increase the risk of downstream sedimentation, including potential impacts to freshwater and tidal aquatic habitats and the need for expanded mitigation.

CLOSURE COVER REPAIR

The total area of disturbance from the Alternative Final Cover Report has been identified as 25.7 acres. The alternative phasing option would require the removal closure cover from the 25.7 acre area to implement the proposed development. As described under waste relocation above, an additional 10 acres of closure cover would have to be removed and replaced for waste relocation, raising the total area of closure cover that would have to be removed and replaced to approximately 35.7 acres. Geosynthetic closure cover materials cannot be reused once they are removed. Therefore, based on the area to be reconstructed, this work would create over 900 tons of waste from geosynthetic materials alone. Assuming approximately half of the soils previously used for closure cover could be recovered for reuse (the rest would be lost due to contamination with wastes) alternative phasing would require approximately 50,000 yd³ of additional soil importation. Besides road congestion and wear from approximately 4,100 truck trips required to transport the cover soil (assuming the cover soil is obtained from borrow sources 20 miles from the site), this represents over 32,000 gallons of fuel consumption for transportation alone which could be avoided if the alternative final cover design is coordinated with Section 6/7.

Using conservative estimates, construction of the alternative cover design after closure of Section 6/7 will require a minimum of 180 working days using 6 pieces of heavy equipment. Based on a typical fuel usage of 3 gallons per hour for each piece of equipment, this represents over 25,000 gallons of fuel consumption for construction equipment which could be avoided if the alternative final cover design is coordinated with Section 6/7.

SUMMARY OF IMPACTS

Based on the analysis herein, using an alternative phasing will result in the generation of at least 900 tons of non-recyclable waste materials, add over 25,000 truck trips on Borough roads for delivery of equipment and materials, and result in the consumption of over 217,000 gallons of diesel fuel for transportation and construction. It can therefore be concluded that the alternative phasing option will result in significant impacts to air quality and road construction to Staten Island residents. This alternative, like the proposed project, would not have any impacts on odor emissions, leachate generation, or landfill slope stability.

D. ALTERNATIVE PHASING (RECONSTRUCTED FINAL COVER-EXPANDED TWO-LANE ROAD)¹

DESCRIPTION

This section analyzes the environmental impacts of an alternative phasing in which the currently approved closure design proceeds without the alternate closure design, and any work required for future East Park Road access and connections therefore would need 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 a two-lane road only, but would need to be modified for a four-lane road at a later 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 four-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-lane road embankment at this time (if the four-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 four to three if the two-lane option is selected. 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.

Otherwise, the physical changes with respect to the landfill under either a modification for a four lane road or a two lane road are quite 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 impacts 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

¹ This analysis would apply to an alternative that would require modifying the landfill cover in order to widen the road embankment from 38 feet (two lanes) to a 60-foot-wide (four lanes wide).

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 residents.

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

E. ALTERNATIVE ALIGNMENT: RICHMOND HILL ROAD CONNECTION (WEST OF LANDFILL SECTION 6/7)¹

INTRODUCTION

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. As described in greater detail below, 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. As described below, 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 that are described below.

OVERVIEW OF ENVIRONMENTAL IMPACTS

As described in greater detail below, 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

¹ Details on the design and evaluation of this alternative are presented in the “Conceptual Alternatives Road Report,” Arup et al., September, 2007.

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 more natural 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. A more detailed alternatives analysis follows.

GENERAL ENVIRONMENTAL IMPACTS

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. The differences

between the proposed alignment along the eastern corridor for the Richmond Hill Road Connection and this alternative are described in greater detail below.

DESCRIPTION OF ALTERNATIVES AND IMPACTS OF THREE ALIGNMENT CORRIDORS WEST OF LANDFILL SECTION 6/7

An assessment of the major impacts related to three alternative roadway corridors under this alternative follows. These alternative alignments include off-landfill, on landfill service road, and up landfill slope.

OFF-LANDFILL PLACEMENT

The off-landfill alignment avoids significant interaction with the landfill infrastructure. In developing the off-landfill option the roadway was placed outside and as near the landfill cutoff wall as possible, at an elevation above the 100-year flood level, with conceptual allowances for drainage. In the western corridor, an off-landfill road would have to be constructed on a berm in the wetlands or on structure, as there is only a narrow strip of land between the landfill perimeter and open water. Much of this section of Main Creek includes tidal wetlands that have been mapped by DEC, that have been mapped as part of the National Wetlands Inventory, requiring a U.S. Army Corps of Engineers (ACOE) permit, and designated as significant coastal fish and wildlife landscape by the New York State Department of State (NYS DOS). All three agencies would be involved in the review of any impacts to these designated areas, DEC and ACOE in a permitting capacity. This alignment would be costly to construct as either a two-lane or four-lane Park Road and would have the following impacts:

- It is estimated that the alignment could impact up to 14 acres of land area below the 10-foot contour line as currently surveyed. This would include activities such as filling and grading in both tidal wetlands and tidal wetland adjacent areas, interrupting mapped high marsh, intertidal marsh, and some formerly connected wetlands linked hydrologically and ecologically with the William T. Davis Wildlife Refuge to the North.
- A portion of the roadway would be constructed within existing tidal wetland areas, which would require review by NYSDOS and permitting by DEC and ACOE. Assuming about half of this area (7 acres) is tidal wetlands, mitigation under the Tidal Wetlands Act and State Environmental Quality Review (SEQR) may require 24 to 32 acres of new or substantially improved tidal wetlands. Under the two-lane alignment this potential impact reduces to 11 acres of impacted tidal wetlands adjacent area (estimated at 5 to 6 acres of tidal wetlands), or an estimated mitigation area of 15 to 24 acres. In either case, from a natural resource perspective, an alignment with less impact on tidal wetlands would be much preferred.
- If there are other viable alternatives without substantial wetland impacts, it may be difficult or impossible to get permits for this alignment.
- Soft soils within the tidal wetland area would likely not provide an adequate foundation for embankment roadway construction without engineering modifications such as overexcavation and replacement, and sheet pile bulkheads.
- A significant volume of fill would need to be imported to achieve a finished roadway elevation above the 100-year flood elevation; alternatively, construction of the roadway on a pile-supported viaduct would be costly.

- Placing the roadway on water's edge restricts park visitors' contact with Main Creek. Without massive wetland filling in addition to that for the roadway, a waterside pedestrian/bike path would not be possible in this scenario.
- No creek-side space would be available for a landscape buffer that would provide landscape, filter road runoff to reduce wetland impacts, and reduce the visual prominence and noise of the road.

The impacts associated with the two-lane alternative only differ from those of the four-lane alternative in degree. The roadway would be about two-thirds and the base of the embankment approximately three-fourths as wide, but would principally result in the same impacts.

ON-SERVICE ROAD PLACEMENT

This road location on the landfill section slope was selected to alleviate a significant portion of the shoreline and wetland impacts cited above, as well as avoiding major impacts on the landfill cover, and to provide a strong, compacted road base that minimizes the depth of municipal solid waste under the road. In developing this alternative, the outside edge of the proposed roadway was designed to generally coincide with the outside edge of the service road, to avoid placing the leachate system chambers, manholes, vents, and their frequently used access covers within the pavement area. Given that the existing perimeter service road is about 20 feet wide, and typically fitted between sloping sides, both the four-lane and two-lane versions, which are approximately 60 and 40 feet wide, extend well outside the existing paved footprint and its plateau. The greater width is obtained by raising the new road surface to where its inside edge meets the side of the landfill without cutting into the landfill cover, which would necessitate reshaping extensive portions of the mound slope.

The consequence of raising the roadway profile is that this placement would still intrude into the environmentally sensitive creek shore and would cause disruption to landfill infrastructure and long-term operations as follows:

- To avoid cutting into the landfill cover, up to 10 feet of fill would need to be placed above the existing service road surface to achieve a finished roadway that integrates properly with the existing slope, with the necessary stormwater management provisions.
- Existing leachate collection and pumping station enclosures would need to be vertically extended to meet the final grade elevations and traffic bearing covers installed.
- The top of the leachate cutoff wall would need to be protected and hardened to alleviate the load from the overlying roadway fill.
- Should repairs to the leachate trench and cutoff wall become necessary, the high overlaying embankment will severely hamper access. In addition, such interventions would result in disruption and potential closure of the Park Road.
- The existing service road would be eliminated and landfill maintenance vehicles and activities would have to share the road with park users and commuters. Even with the addition of auxiliary pavement, the slower movements and stoppages of maintenance vehicles are likely to cause friction with faster vehicles and safety concerns. A separated maintenance road is not feasible, as it would not be able to access the critical infrastructure lying in the area of the cut-off wall.

Fresh Kills Park East Park Roads SEIS

- Auxiliary accommodations for parking and filling of over-the-road tanker trucks used to collect landfill gas condensate would need to be incorporated into the design. Special precautions for protecting landfill maintenance personnel from roadway traffic would need to be implemented during periodic maintenance of the leachate pumps or electrical systems.
- Placing the roadway on the service road still results in intrusion into the wetland buffer and diminishes the opportunity for a waterside pedestrian/bike path.
- Minimal space would be available for the landscape buffer and filtration of road runoff.

Again, the impacts associated with the two-lane alternative differ from those of the four-lane alternative in degree. The narrower roadway would not require as high an embankment over the existing service road, reaching a height of 6 feet above the leachate trench, nor extend as far laterally.

UP-LANDFILL PLACEMENT

In this alignment, the road is placed higher up on the landfill sections west slope so that the road embankment does not impinge on critical perimeter landfill infrastructure features. Since the slope of the roadway embankment and that of the Landfill Section 6/9 are similar (at approximately 33 percent), development of useful alignment, profile, and cross sections required the testing of several side slope locations. The placement depicted was chosen because it rests on a shelf that is wide enough not to cause the new roadway embankment to chase the downhill side with fill onto the service road, nor to cut into the uphill side up to the next plateau. These constraints were considered important because this part of the landfill will already have met final closure requirements by the time of road construction.

While this placement avoids impacts on the Main Creek shore, the service road, and the leachate collection/cutoff wall system, it places the road far up on the Landfill Section, with projected elevations near elevation 90, a deeper waste strata of the landfill, and with the potential to have the following effects on the environment and the landfill systems:

- Placement of the roadway at this elevation may reduce the short-term slope stability factor of safety below the generally recommended value of 1.5.
- Waste deposits could be expected to settle several feet due to mechanical compression and future decomposition, and require additional up front capital cost to mitigate impacts.
- Foundation improvement techniques would be necessary to stabilize this waste prior to road construction. Even with preventive measures, more variability in settlement following foundation improvement could be expected due to the inability to reach and treat lower strata.
- The stabilization treatments would likely require a significant amount of energy or resources (i.e. more compaction effort, greater surcharge thickness, deeper drilling for stone columns) in attempting to better improve the long-term performance of material lower in the profile.
- Areas of the east mound adjacent to the western corridor completed closure construction in 2007 and 2008. To ensure the integrity and performance of the landfill cover system, areas already experiencing landfill closure construction would need to be deconstructed prior to foundation improvement and reconstructed as a part of the roadway.

- The deconstruction and reconstruction of the cover system would require that an area as wide as the roadway grading, plus an additional 25 feet on each side of the grading limits, be cleared of cover soils, and that the geomembrane be cut at a location approximately 5 to 10 feet inside of the area that has been uncovered to apply roadway foundation improvements and modify the gas system. The geomembrane's cut edge would need to be cleaned and protected during roadway foundation improvement and base grading.
- The roadway position on the landfill would conflict with landfill gas wells and with header and lateral collection lines. Modifications to the gas system features along the western slope of east mound would be necessary to accommodate roadway construction.
- After settlement or compression of the waste, soil backfill and regrading will be needed to restore surface integrity. In reconstructing the cover, the gas vent layer (under membrane composite) will be replaced by overlapping the new composite with the existing material, the new membrane must be placed and welded, tested, certified, and accepted by DEC. Similarly, the drainage layer geotextile or composite (above the membrane) will be replaced by overlapping with the existing material and the barrier solids (roadway embankment material) placed. Reconstruction of the geomembrane cover welds will likely be made using extrusion welds, which are more difficult to construct and test for continuity than fusion welds typically made along the edges of new geomembrane panels.

WEST ALIGNMENT SUMMARY

All three west alignments described above were proven to have significant impacts, to be problematic and undesirable in comparison to eastern alignment proposed in this GEIS for the following reasons:

- The on-landfill alignment pushes the road well up Landfill Section 6/7, interfering with views from the North Park and William T. Davis Wildlife Refuge, a condition that runs counter to the park goal of leaving this northern primarily for passive park uses.
- The 9- to 14-foot rise of the landfill service road scenario above the existing perimeter features significantly impacts upon landfill infrastructure and would compromise DSNY landfill maintenance and operations.
- The on-landfill alignment rises to approximately elevation 90, traversing some of the thickest, most unconsolidated layers of waste that are presently being capped. This will result in significant initial and long-term settlement that will not adequately respond to preloading and other foundation improvement measures. Initial construction and the large initial settlement will require cap removal and reconstruction. Differential settlement would continue in the longer term, resulting in undesirable levels of degradation for both the road and the landfill, requiring excessive intervention.
- The off landfill alignment would result in significant impacts on tidal wetlands and natural resources of Main Creek and William T. Davis Wildlife Refuge as well as views and experiences from North Park and William T. Davis Wildlife Refuge.

F. ALTERNATIVE ALIGNMENT: EAST PARK LOOP ROAD MODIFIED PROPOSAL¹

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 has been included in this SEIS as a response to comments received from DEC, and 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.

¹ This alternative was presented in the *Fresh Kills Landfill Evaluation of Roadway Alternative in East Park Draft Report*, prepared by URS Corporation for the New York City Department of Design and Construction (February 2009). It is a modification of the alternative submitted by the SIBPO as part of the DGEIS comments.

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.

G. 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.

H. 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 (see Figure 22-1). 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 trail 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 Action 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 provide more trail connections across the landfill.

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.

I. ALTERNATIVE PHASING (RECONSTRUCTED FINAL COVER-EXPANDED TWO LANE ROAD)¹

DESCRIPTION

This section analyzes the environmental impacts of an alternative phasing in which the currently approved closure design proceeds without the alternate closure design, and any work required for future East Park Road access and connections therefore would need 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 a two-lane road only, but would need to be modified for a four-lane road at a later 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 four-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-lane road embankment at this time (if the four-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 four to three if the two-lane option is selected. 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.

Otherwise, the physical changes with respect to the landfill under either a modification for a four lane road or a two lane road are quite 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 impacts 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

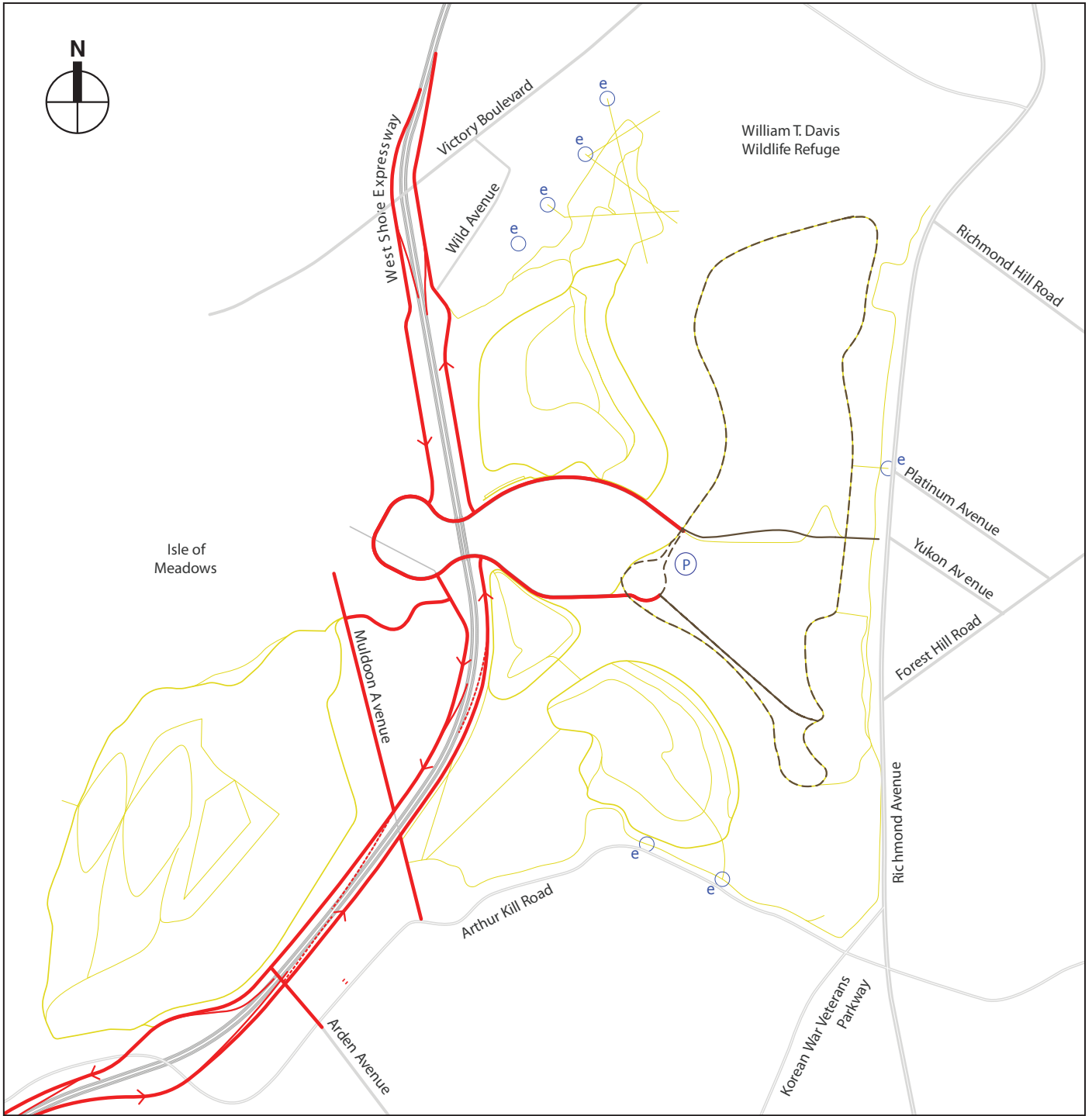
¹ This analysis would apply to an alternative that would require modifying the landfill cover in order to widen the road embankment from 38 feet (two lanes) to a 60-foot-wide (four lanes wide).

Fresh Kills Park East Park Roads SEIS

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 residents.

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

*



- Park Roads/West Shore Expressway
- - - Trails/Paths/DSNY Service Roads