DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FINDING OF NO PERMANENT SIGNIFICANT IMPACT
RECORD OF DECISION

Location

John F. Kennedy International Airport (JFK)
Queens County, New York

Introduction

This Finding of No Significant Impact/Record of Decision (FONSI/ROD) sets out the Federal Aviation Administration's (FAA) consideration of environmental and other factors for Airport Layout Plan (ALP) approval and federal financial assistance for the Reconstruction of Runway 13L-31R project at John F. Kennedy International Airport (JFK). This FONSI/ROD is based on the Final Environmental Assessment (EA) for the *Reconstruction of Runway 13L-31R and Associated Taxiways Project* prepared by the Port Authority of New York and New Jersey (PANYNJ), dated November 2018.

Project Description

The Proposed Action includes the following:

- Reconstruction and widening of the existing asphalt Runway 13L-31R (10,000 ft long x 150 ft wide) with concrete (10,000 ft long x 200 ft wide);
- Rehabilitation and widening of all crossover taxiway fillets to Runway 13L-31R to meet Airplane Design Group (ADG) VI standards;
- Pavement modifications at Taxiway YA, including shoulder and erosion pavement at the east end of Runway 13L-31R, south of the Runway 31R entrance;
- Realignment of a portion of Taxiways U, V and the corresponding intersection of Taxiways U/V/A/B;
- Construction of a new High Speed Exit (HSE) taxiway between Taxiways V and W for Runway 31R landings;
- Replacement/upgrade of the drainage and electrical (lighting) systems, signage, and foundations;
- Installation of new pavement markings;
- Implementation of a temporary flight procedure for arrivals to Runway 13R while Runway 13L-31R is closed during construction; and
- Construction of a temporary concrete batch plant at the former JFK Hangar 7 site and a back-up concrete plant adjacent to Building 208.

The Proposed Action would not change any other portions of the airfield runways or taxiways.

Proposed Agency Actions

The FAA actions involved in the implementation of the Proposed Action include the following:

a. Unconditional Approval of the JFK ALP to reflect all components of the Reconstruction of Runway 13L-31R project at JFK described above, pursuant to 49 U.S.C. §40103(b) and §47107(a)(16); and determination of the effects of this project upon the safe and efficient utilization of navigable airspace pursuant to 14 C.F.R. Parts 77 and 157 and 49 U.S.C. §44718;

b. Determination under 49 U.S.C. §§40101(d)(1) and 47105(b)(3) as to whether the Proposed Action maintains and enhances safety and security, and meets applicable design and engineering standards set forth in FAA Advisory Circulars;

c. Determinations concerning funding through the Federal grant-in-aid program authorized by the Airport and Airway Improvement Act of 1982, as amended (recodified at 49 U.S.C. §47107) and/or approval of an application to use Passenger Facility Charges (PFCs) under 49 U.S.C. §40117 (this FONSI/ROD does not determine eligibility or availability of potential funds);

d. Determination under 49 U.S.C. §44502(b) that the subject airport development is reasonably necessary for use in air commerce or in the interests of national defense;

e. Continued close coordination with the Port Authority of New York and New Jersey, the City of New York and appropriate FAA program offices, as required, for safety during construction (14 C.F.R. Part 77);

f. Approval of appropriate amendments to the JFK Airport Certification Manual (ACM), as required, pursuant to 49 U.S.C. §44706; and

g. Designation of controlled airspace and revised routing, including navigational aids and temporary changes to flight procedures discussed within the Environmental Assessment and publication of temporary new arrival procedure RNAV (GPS) Y RWY 13R (14 C.F.R. Part 71).

Purpose and Need

As discussed in Section 1 of the Final EA, the purpose and need for the Proposed Action is to: replace deteriorating Runway and Taxiway pavement to maintain a state of good repair; improve and widen pavements to meet current FAA design standards; and improve safety and operational efficiencies overall as well as to accommodate all Aircraft Design Group VI (ADG-VI) aircraft operations without restrictions.

Alternatives

As discussed in Section 2 of the Final EA, in addition to the No Action alternative, alternative materials were considered for the Runway reconstruction portion of the project and alternative alignments were considered for the Taxiway and HSE improvements.

For the Runway reconstruction portion of the project, an alternatives evaluation was performed to compare Alternative A (rehabilitation using asphalt) with Alternative B (reconstruction using concrete). The evaluation found that reconstruction of the Runway with concrete has several advantages over rehabilitating the Runway with asphalt pavement. Reconstructing the Runway with concrete would increase the useful life of the pavement from 10 to 40 years. Increasing the runway pavement's useful life by an additional 30 years would reduce the need for future recurring runway closures to conduct routine maintenance and emergency repairs, along with the need to assign flights to other runways during such closures. Reconstructing the Runway with concrete would allow for a shorter runway closure duration (330 non-consecutive days of closure plus 94 days of operational restriction for asphalt versus 229 consecutive days for concrete). The shorter runway closure period minimizes both the disruption to JFK aircraft operations and the temporary noise and construction impacts.

For the Taxiway and HSE improvements portion of the project, an alternatives evaluation was performed to compare several alignment options. The proposed alignments that are part of the Proposed Action are being pursued because of their ability to achieve ADG Group VI Standards and increase operational efficiencies.

The Proposed Action was selected for implementation after evaluation of all alternatives. Each alternative was assessed to determine its ability to meet the overall project purpose and need; environmental impacts and technical, operational and cost factors were also considered.

Temporary RNAV (GPS) Y RWY 13R Procedure

To facilitate implementation of the Proposed Action, Runway 13L-31R would be closed for construction during the Spring, Summer, and Fall of 2019. Accordingly, the aircraft that would normally use Runway 13L-31R will be reassigned to JFKs other three runways, (Runways 4L-22R, 4R-22L, and 13R-31L). Because of this, a new temporary flight procedure will be implemented for Runway 13R arrivals to mitigate reductions in the operational capacity of JFK in the event that certain marginal weather conditions (such as low cloud ceilings and/or low visibility) occur during the construction period. The temporary flight procedure would be used when there are sustained winds above 22 knots from the southeast and the ceiling is below 1,200 feet or visibility is less than 3 miles. The temporary flight procedure would only be used during the construction period and would be terminated after completion of the Proposed Action. (See Sections 1.4, 4.1.2 and Appendix C of the Final EA.)

Discussion

The attached Final EA with Appendices addresses the effects of the Proposed Action on the human and natural environment, and is made part of this Finding. The following impact analyses provide highlights of the more thorough analyses presented in the Final EA.

Noise

A noise study was conducted (See Sections 3.3.1 and 4.2 and Appendix C of the Final EA) to evaluate potential permanent impacts associated with the implementation of the Proposed Action and potential temporary impacts that may occur during the construction period. The FAA's Aviation Environmental Design Tool Version 2d (AEDT 2d) was used to develop DNL 65, 70, and 75 dB contours as well as noise sensitive site DNL values for all modeling

scenarios. The scenarios modeled were No Action, Alternative A (asphalt) and Alternative B (concrete). Contours and noise sensitive site DNL values were developed and disclosed in accordance with FAA Order 1050.1F, FAA Order 5050.4B, and the 1050.1F Desk Reference.

The DNL values resulting from each modeling scenario demonstrate that post construction, implemeting either Alternative A (asphalt) or Alternative B (concrete) would not result in a significant noise impact when compared to the No Action Alternative (not accounting for the continued deterioration of Runway 13L-31R, discussed below and in Section 4.2.2 of the Final EA).

However, during construction while 13L-31R would be temporarily closed, aircraft arrivals and departures would be reassigned to JFKs other three runways. The new temporary flight procedure would also be used during the construction period for arrivals to Runway 13R during certain poor weather conditions. The AEDT 2d model was used with the operational assumptions included in Table 4-2 of the Final EA to analyze the noise exposure during construction. At the conclusion of construction, the runway utilizations will return to their prior usage.

The temporary changes in runway usage during construction would expose some noise sensitive sites to DNL 65 dB and higher, but would also lower the noise exposure for some noise sensitive sites to below DNL 65 dB. During construction of the Proposed Action, temporary changes in noise exposure would impact nonresidential noise-sensitive sites as follows (See Section 4.2.3 of the Final EA):

- 27 noise sensitive sites that are below the DNL 65 dB under the No Action Scenario would be exposed to DNL 65 dB or higher during construction of the Proposed Action.
- 16 noise sensitive sites would no longer be exposed to the DNL 65 dB level when compared to the No Action levels.

There are no reasonable runway operations available to avoid the temporary noise impacts of the construction while maintaining efficient operations at JFK with the remaining runways. Given that the nature of the noise impacts is temporary and that no significant noise impacts are anticipated when comparing the No Action Alternative to the constructed Proposed Action, permanent mitigation measures are not warranted.

The reconstruction of Runway 13L-31R and rehabilitation of associated taxiways is needed because the pavement is deteriorating. It is anticipated that the frequency of emergency repairs on Runway 13L-31R and its taxiways would increase, as would the frequency of Runway closures, if the Preferred Action is not implemented. Eventually, continual deterioration would make Runway 13L-31R unusable and demand for the three remaining runways would increase with longer-term impacts to noise exposure for surrounding communities.

However, it is important to note that despite the noise impacts being temporary, consideration was given to possible means to reduce the temporary noise impacts. This consideration led to

the evolution of the Proposed Action. As is discussed above in the Alternatives section, the alternatives analysis found that reconstruction of the Runway with concrete would increase the useful life of the pavement from 10 to 40 years thereby reducing the need for future recurring runway closures to conduct routine maintenance and emergency repairs, along with the need to assign flights to other runways during such closures. Reconstructing the Runway with concrete would allow for a shorter runway closure duration (330 days for asphalt versus 229 days for concrete). The shorter runway closure period minimizes the temporary noise impacts. All possible means to minimize the temporary noise effects have been considered.[1] As this discussion indicates, there are no prudent and feasible actions available to further minimize the anticipated effects of the Proposed Action. Following the completion of construction of the project, the aircraft operations at JFK will resume on a four-runway configuration and the noise contours will return to their current state.

Temporary changes to runway use have occurred consistently over the years during the normal course of airport maintenance and operational requirements. However, they have not involved a closure of this duration. Because of the amount of time the Proposed Action would take to complete (229 days), the PANYNJ will provide updates to both its Noise Office website and main website to provide updates on the progress made on the reconstruction of Runway 13L-31R as it occurs.

Environmental Justice

As a result of the temporary shift in the DNL 65 dB noise contour exposure during construction, portions of four Census Tracts within identified Environmental Justice Communities (to the east and west of JFK) would experience a temporary noise reduction (noise exposure would be below DNL 65 dB). However, portions of four other Census Tracts with Environmental Justice Communities (Census Tracts 4098 and 4104 in Nassau County and 660 and 682 in Queens County) would experience a temporary noise increase (DNL 65 dB or higher) during temporary construction for the Preferred Alternative.

No additional Environmental Justice communities would be impacted by noise from the Proposed Action during construction or at the conclusion of construction. Therefore, no permanent significant adverse impacts to Environmental Justice populations are anticipated as a result of project implementation. (See Section 3.3.7 and 4.8 of the Final EA.) The communities that would experience temporary noise impacts during construction of the Proposed Action shall be informed by the PANYNJ of runway usage and progress of the construction through the PANYNJ Noise Office website: http://www.panynj.gov/airports/aircraft-noise-information.html. In addition to the resources on the Noise Office webpage, information on expected runway usage during construction of the Proposed Action will be made available to the public on PANYNJ website to enable the affected public to anticipate Airport operations for the day. Additionally, periodic reports on construction status shall be posted on the PANYNJ website so that the public is informed of progress of the Proposed Action.

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[1] A Part 150 Noise Compatibility Study is currently underway at JFK, which may provide noise reduction opportunities to residences around the airport. Additional information can be found at http://panynjpart150.com/JFK_homepage.asp.

Air Quality

Section 176(c) of the Clean Air Act (CAA), as amended in 1990, (42 U.S.C. §7521-7554) requires that Federal actions conform to the appropriate Federal or State air quality implementation plans in order to attain the CAA's air quality goals. Section 176(c) states: "No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan."

JFK is located in Queens County, which is currently designated by the US Environmental Protection Agency (EPA) as being moderate nonattainment for ozone (O_3) and as a maintenance area for particulate matter ($PM_{2.5}$). Therefore, an air emissions analysis was performed for the construction phase of the Proposed Action; an operational inventory was not necessary since the Proposed Action would not result in changes to aircraft operations or fleet mix at JFK.

The air quality analyses (See Sections 3.3.2 and 4.3 of the Final EA) demonstrate that construction and implementation of the Proposed Action would not cause an increase in air emissions above the applicable *de minimis* thresholds established by the General Conformity Rule in 40 C.F.R. Part 93, §93.153, and a General Conformity Determination is not required. Additionally, pursuant to FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4B, Airport Environmental Handbook, no further analysis with respect to General Conformity is needed.

Accordingly, the Proposed Action conforms to the New York State Implementation Plan (SIP) and the CAA. Additionally, the operation of the Proposed Action would not create any new violation of the National Ambient Air Quality Standards (NAAQS), delay the attainment of any NAAQS, nor increase the frequency or severity of any existing violations of the NAAQS.[2] Means and measures to reduce or minimize project-related emissions, such as a reduced number of construction days and the use of a temporary an on-site concrete plant, are also incorporated into the Proposed Action. Based on the above, since the Proposed Action is unlikely to result in a pollutant concentration that would exceed NAAQS, implementation of the Proposed Action is not likely to result in significant adverse impacts to air quality.

Coastal Zone Management and Floodplains

JFK is located within the designated New York State Department of State (NYSDOS) Coastal Zone Management Area (CZMA). Accordingly, any work undertaken within the CZMA is subject to consistency with the New York State CZMA. On January 22, 2018, the NYSDOS determined that the Proposed Action meets its consistency concurrence criteria for determining whether the Proposed Action is consistent with the approved Coastal Zone Management Plan. (See Appendix F, page F-11). Based on the current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), the Proposed Project is not located within the 100-yr floodplain. Accordingly, implementation of the Proposed Action is not likely to result in significant adverse effects to the NYSDOS CZMA or floodplains. (See Section 3.3.4 and Appendix F of the Final EA.)

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[2] On November 14, 2018, the Environmental Protection Agency published a Proposed Rule in the Federal Register proposing to reclassify numerous areas of the country, including the New York-North New Jersey-Long Island area, as Serious Nonattainment for NAAQS.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions were evaluated (see Section 4.10 of the Final EA) for the potential for cumulative impacts on affected resources. Emissions from on-site construction equipment and on-road construction-related vehicles, as well as dust generating construction activities have the potential to affect air quality. Noise impacts can also occur from the use of concrete trucks and delivery trucks as well as non-road equipment such as excavators, backhoes, and loaders during construction. However, use of such equipment would be temporary and short-term and would not be needed once the construction is complete.

An analysis of the cumulative effects of the Proposed Action in combination with past, present, or reasonably foreseeable future projects JFK is presented in the Final EA and supports the conclusion that adverse cumulative impacts are not likely to result from implementation of the Proposed Action.

Summary of All Impact Categories

The Final EA addresses all environmental impact categories, as required by FAA Orders 1050.1F, 5050.4B, and the Desk Reference for Airports Actions. Impact categories such as air quality; biological resources; climate; coastal resources; DOT Section 4(f) resources; farmlands; hazardous materials, solid waste, and pollution prevention; historical, architectural, archaeological, and cultural resources; land use; natural resources and energy supply; noise and noise-compatible land use; socioeconomics, environmental justice, and children's environmental health and safety risks; visual effects; water resources; and cumulative impacts were considered during preparation of and analyses for the Final EA. It is the FAA's finding that the proposed action will not have any significant permanent impacts on any of the above noted categories.

Coordination with the General Public

A Notice of Availability of the Draft EA and Notice of Public Information Sessions at Queens Library at Peninsula in Rockaway Beach, Queens County, New York and the Crowne Plaza Hotel in Jamaica, Queens County, New York, was published in the following papers on or during the week of September 27, 2018: *Daily News* (Queens), *Greek National Herald*, *Newsday*, and *Sing Tao Daily*, *El Especialito*, *Queens Chronicle*, *Queens Courier*, *Queens Gazette*, *Queens Ledger*, *Queens Times Ledger*, and *Queens Tribune*. A Notice of an Additional Information Session was published in the aforementioned newspapers on or during the week of October 6, 2018 to notify the public of an Information Session that had been added at the Cradle of Aviation Museum in Garden City, Nassau County, New York.

The Draft EA was made available for review at JFK Administration Building 14 and at the PANYNJ headquarters office in Manhattan. The document was also available for review on the Port Authority's website at *http://www.panynj.gov/about/studies- reports.html*. The review and comment period was from September 27, 2018 to October 29, 2018. Public Information Sessions were also held during the review and comment period on October 15, 16, and 17, 2018.

Comments were received from various interested parties and primarily focused on aircraft noise. All comments have been considered and addressed in the Final EA. None of these

comments, when considered individually or aggregately, resulted in significant changes to the Proposed Action. (See Section 5 and Appendices H and I of the Final EA.)

Conditions/Mitigation Measures

1. Construction contract specifications developed for the projects shall contain the provisions of FAA Advisory Circular 150/5370-10F, "Standards for Specifying Construction of Airports," Item P-156, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control; and Advisory Circular 150/5320-5D, "Airport Drainage Design."

2. All required regulatory permits shall be obtained prior to construction of the Proposed Action, including a construction stormwater State Pollutant Discharge Elimination System permit when applicable.

3. The communities that would experience temporary noise impacts during construction of the Proposed Action shall be informed by the PANYNJ of runway usage and progress of the construction through the PANYNJ Noise Office website: http://www.panynj.gov/airports/aircraft-noise-information.html. In addition to the resources on the Noise Office webpage, information on expected runway usage during construction of the Proposed Action will be made available to the public on PANYNJ website to enable the affected public to anticipate Airport operations for the day.

4. Periodic reports on construction status shall be posted on the PANYNJ website so that the public is informed of progress of the Proposed Action.

Consistent with applicable orders, policies and guidance, including Council on Environmental Quality (CEQ) Guidance, dated January 14, 2011, "Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact" under NEPA, the FAA understands that the PANYNJ will undertake the necessary actions to ensure that the above conditions and/or mitigation measures are undertaken and that it will monitor the implementation and effectiveness of such measures. In some instances, the above conditions are required as a result of coordination and agreement. They do not necessarily reflect impacts that require mitigation to meet FAA standards pursuant to FAA Order or guidance. As with all projects subject to NEPA, should any conditions change or impacts be discovered that require further NEPA analysis, the FAA will require that a separate analysis, review and decision be conducted.

Federal Agency Findings

In accordance with all applicable laws, the FAA makes the following findings for the Proposed Action based on all appropriate information and analyses contained in the Final EA:

A. **The Proposed Action is reasonably consistent with existing plans of public agencies for development of areas surrounding the airport. (49 U.S.C. §47106(a)(1)).** The FAA is satisfied that the Proposed Action is consistent with plans (existing at the time the Proposed Action is approved) of public agencies for development of areas

surrounding the airport based on coordination efforts with public agencies as indicated in Appendices E, F, and G of the Final EA.

B. **The interest of the communities in or near where the Proposed Action may be located were given fair consideration. (49 U.S.C. §47106(b)(2)).** The FAA is satisfied that the interests of the communities in or near where the Proposed Action will be located were given fair consideration as demonstrated by the Final EA, including Appendix H, Public Notices and Appendix I, Comments and Responses.

C. **The FAA has given this Proposed Action the independent and objective evaluation required by the Council on Environmental Quality (40 C.F.R. Section 1506.5).** The FAA's review and ultimate decision process included the FAA's rigorous exploration and objective evaluation of reasonable alternatives and probable environmental consequences, regulatory agency and Native American consultations, as required, and public involvement. FAA furnished guidance and participated in the preparation of the Final EA by providing input, advice and expertise throughout the planning and technical analyses, along with administrative direction and legal review. FAA has independently evaluated the Final EA and takes responsibility for its scope and content.

D. **The Proposed Action will conform to the State Implementation Plan (SIP) in accordance with Section 176 of the Clean Air Act (CAA) and its amendments (42 U.S.C. §7506(c)).** JFK is located in Queens County, which is currently designated by the US Environmental Protection Agency (EPA) as being in moderate nonattainment for ozone (O_3) and as a maintenance area for particulate matter ($PM_{2.5}$). The Proposed Action conforms to the New York State Implementation Plan and complies with the Clean Air Act Section 176(c)(1). The Proposed Action would not: cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. Specifically, the Proposed Action's total construction emissions, based on specific emissions calculations, are below the *de minimis* thresholds established by the General Conformity Rule (40 C.F.R. Parts 51 and 93) and therefore, would conform to the SIP. According to FAA Order 1050.1F and the Desk Reference for Airports Actions, no mitigation is necessary and further analysis is not required to comply with the CAA or NEPA. In summary, although the Proposed Action is taking place in a nonattainment area, the FAA determined that project emissions would be below *de minimis* thresholds under General Conformity requirements. Therefore, a Conformity Determination is unnecessary and significant adverse impacts to air quality would be unlikely. The requirements of the General Conformity Rule have been met as discussed in Section 4.3 and Appendix A of the Final EA.

E. **There are no disproportionately high and adverse environmental effects on minority and/or low-income populations that would result from the Proposed Action. (Executive Order 12898) (U.S. DOT Order 5610.2(a)).** Environmental Justice concerns are addressed in Section 4.8 of the Final EA. An Environmental Justice assessment was conducted to determine if a disproportionate share of the Proposed Action's potential impacts would be borne by low-income and/or minority populations.

An evaluation of population statistics for the adjacent communities JFK Airport shows that there are 28 census tracts that would be considered Environmental Justice Communities. During construction of the Proposed Action, portions of four Census Tracts with Environmental Justice Communities (Census Tracts 4098 and 4104 in Nassau County and 660 and 682 in Queens County) would experience a temporary noise increase (DNL 65 dB or higher) during construction. Additionally, four of the 28 Census Tracts with Environmental Justice Communities (to the east and west of JFK) would experience a temporary noise reduction (noise exposure would be below DNL 65 dB). Temporary impacts would be reversed at the conclusion of construction and historical use of Runway 13L-31R would be restored. There are no disproportionately high and adverse environmental effects on minority and/or low-income populations that would result from implementation of the Proposed Action.

F. **Executive Order (EO) 11988 has been followed and complied with as required. The EO directs federal agencies to reduce the risk of flood loss, minimize the impacts of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains.** The Final EA contains analyses that address whether the Proposed Action would be a "significant floodplain encroachment," as defined in FAA Order 1050.1F and EO 11988. A "significant encroachment" on the floodplain would not occur because: the probability of loss of human life is low; the Proposed Action would be designed to minimize future extensive damage or costs; and there would be no notable adverse impacts on the floodplain's natural and beneficial features. The appropriate and currently valid Flood Insurance Rate Maps (FIRMs) were consulted and they are included in the Final EA. The FAA is satisfied that the Proposed Action would not be a significant encroachment on Floodplains; there is no feasible and prudent alternative that would avoid the floodplain; and the implementation of the Proposed Action would comply with all the requirements of EO 11988.

G. **The Proposed Action is consistent with the New York State Coastal Zone Management Program in accordance with the CZMA, as amended (16 U.S.C. §1451-1464).** JFK is located within a designated New York State CZMA. As indicated in Appendix F-11 of the Final EA, the NYSDOS, on January 22, 2018, determined that the Proposed Action meets its consistency concurrence criteria required to make a determination that a proposed project is consistent with the approved Coastal Zone Management Plan. There would be no significant adverse impacts to the NYSDOS CZMA as result of the Proposed Action and the NYSDOS concurs with the consistency determination for the Proposed Action.

Decision and Order

The FAA recognizes its responsibilities under the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality's (CEQ) implementing regulations, and the FAA's own directives. Recognizing these responsibilities, I have carefully considered the FAA's goals and objectives in relation to the various aeronautical aspects of the *Reconstruction of Runway 13L-31R and Associated Taxiways Project* as discussed in the Final EA and I have used the environmental process to make a more informed decision. This review included the purpose and need to be served by this Proposed Action and alternative means to achieve them. This review has also included consideration of the environmental impacts of these alternatives,

and the mitigation and conditions necessary to preserve and enhance the human environment. This decision is based on a comparative examination of environmental impacts, operational factors, and economic factors for each of the alternatives. The Final EA provides a fair and full discussion of the impacts of the Proposed Action. The NEPA process included appropriate planning and design for avoidance and minimization of impacts, as required by NEPA, the CEQ regulations, other special purpose environmental laws, and appropriate FAA environmental directives and guidance.

The FAA has determined that environmental and other relevant concerns presented by interested agencies and the general public have been addressed in the Final EA. The FAA believes that with respect to the Proposed Action, there are no outstanding environmental issues within FAA jurisdiction to be studied or NEPA requirements that have not been met. In making this determination, the FAA must decide whether to approve the federal actions necessary for Project implementation. FAA approval signifies that applicable federal requirements relating to airport development planning have been met and permits the PANYNJ to proceed with development and possibly receive funds for eligible items. Not approving these actions would prevent the PANYNJ from proceeding with this airport development.

After careful and thorough consideration of the facts contained herein and subsequent to my review of the Final EA and all of its related materials, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101 of NEPA and other applicable environmental requirements and will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(C) of NEPA.

This decision does not constitute a commitment of funds under the Airport Improvement Program (AIP); however, it does fulfill the environmental prerequisites for future AIP funding determinations associated with AIP-eligible project components (49 U.S.C. §47107).

Similarly, this decision neither grants approval to use Passenger Facility Charges (PFC) nor constitutes a commitment of PFC approval. This decision fulfills the environmental analysis prerequisites for future PFC determinations. The FAA will review any future PFC application upon receipt from the PANYNJ and the FAA will make funding decisions in accordance with the established procedures and applicable statutory requirements (49 U.S.C. §40117).

Accordingly, pursuant to the authority delegated to me by the Administrator of the FAA, I find that the actions summarized in this FONSI/ROD are reasonably supported and approved. I hereby direct that action be taken together with the necessary related and collateral actions, to carry out the agency actions noted above. Specifically:

1. Unconditional Approval of the JFK ALP to reflect the Reconstruction of Runway 13L-31R project at JFK, pursuant to 49 U.S.C. §40103(b) and §47107(a)(16), and determination of the effects of each of the components comprising the Proposed Action as described above, in the Final EA, and all associated materials upon the safe and efficient utilization of navigable airspace pursuant to 14 C.F.R. Parts 77 and 157 and 49 U.S.C. §44718;

2. Determination under 49 U.S.C. §§40101(d)(1) and 47105(b)(3) that the proposed project meets applicable design and engineering standards set forth in FAA Advisory Circulars;

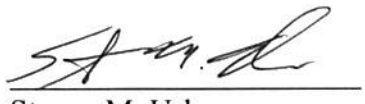
3. Determinations concerning funding through the Federal grant-in-aid program authorized by the Airport and Airway Improvement Act of 1982, as amended (recodified at 49 U.S.C. §47107) and/or approval of an application to use Passenger Facility Charges (PFCs) under 49 U.S.C. §40117 (this does not determine eligibility or availability of potential funds);

4. Determination under 49 U.S.C. §44502(b) that the airport development is reasonably necessary for use in air commerce or in the interests of national defense;

5. Continued close coordination with the PANYNJ, the City of New York and appropriate FAA program offices, as required, to ensure safety during construction (14 C.F.R. Part 77);

6. Approval of appropriate amendments to the JFK Airport Certification Manual (ACM), as required, pursuant to 49 U.S.C. §44706; and

7. Designation of controlled airspace and revised routing, including navigational aids and temporary changes to flight procedures discussed within the Environmental Assessment and publication of temporary new arrival procedure RNAV (GPS) Y RWY 13R (14 C.F.R. Part 71).

Approved:  11/29/18

Steven M. Urlass
Airports Division Manager
Federal Aviation Administration
Eastern Region

Date

Right of Appeal

This FONSI/ROD presents the Federal Aviation Administration's findings and final decision and approvals for the actions identified, including those taken under the provisions of Title 49 of the United States Code, Subtitle VII, Parts A and B.

Any party having a substantial interest may appeal this order to the United States Court of Appeals for the District of Columbia Circuit or in the court of appeals of the United States for the circuit in which the person resides or has its principal place of business, upon petition filed within 60 days after entry of this order in accordance with 49 U.S.C. §46110.

Any party seeking to stay the implementation of this ROD must file an application with the FAA prior to seeking judicial relief, as provided in rule 18(a) of the Federal Rules of Appellate Procedure.

Reconstruction of Runway 13L-31R and Associated Taxiways Project

John F. Kennedy International Airport

FINAL ENVIRONMENTAL ASSESSMENT

NOVEMBER, 2018

PREPARED FOR
Federal Aviation Administration

SPONSORED BY
The Port Authority of New York and New Jersey

PREPARED BY
VHB Engineering, Surveying and Landscape Architecture, P.C.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J IL-S
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Reconstruction of Runway 13L-31R and Associated Taxiways Project

John F. Kennedy International Airport

FINAL Environmental Assessment

PREPARED FOR

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November 2018

This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the Responsible Federal official.

MARIE C JENET Digitally signed by MARIE C JENET Date: 2018.11.29 12:20:30 -05'00'

Responsible FAA Official

November 29, 2018
Date

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1. Purpose and Need

This chapter describes the *Reconstruction of Runway 13L-31R and Associated Taxiways Project* (Proposed Project or Proposed Action) and its location at John F. Kennedy International (JFK) Airport (see **Figure 1-1, Project Location**). Project background, the purpose and need for the Proposed Project, and the required approvals for its implementation are provided as well.

1.1 Introduction

The Port Authority of New York and New Jersey (Port Authority) operates JFK through a lease agreement with the City of New York that extends through 2050. JFK is designated a large hub primary commercial service airport by the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS). The designation is due to its percentage of total United States passenger enplanements.[1] In 2016, 58.9 million annual passengers and more than 1.3 million tons of cargo passed through JFK. The expanse of JFK's operating activities, as the fifth busiest commercial service airport in the United States in 2016, provides a significant boost to the local economy.[2] According to the Port Authority's 2016 *Airport Traffic Report*, JFK employed 37,000 people and had a $43.6 billion impact on the local economy.[3]

JFK is located on Jamaica Bay in the eastern section of Queens County, within New York City. JFK is bounded by Jamaica Bay to the southeast and southwest. Neighboring communities include Lindenwood and Howard Beach to the west, South Ozone Park, Rochdale, and Springfield Gardens to the north, South Valley Stream to the northeast, and Brookville, Rosedale, Woodmere, Cedarhurst, and

1 Report to Congress – National Plan of Integrated Airport Systems 2017 – 2021, Federal Aviation Administration, September 30, 2014.

2 Calendar Year 2015 Revenue Enplanements at Commercial Service Airports, Federal Aviation Administration, July 17, 2016.

3 *Airport Traffic Report 2016*, Port Authority of New York and New Jersey, April 14, 2017.

0 3,200 6,400 Feet

Sources: NYS Orthos-imagery (2016)

Project Area

JFK Airport Boundary

1 John F. Kennedy International Airport

2 JFK Expressway

3 Nassau Expressway/Rockaway Boulevard

4 Van Wyck Expressway

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Figure 1-1
Project Location Map

Inwood to the east. Connections to JFK include an AirTrain JFK elevated railway and major roadway connections, such as the Van Wyck Expressway (U.S. Interstate Highway 678), JFK Expressway, Belt Parkway (State Highway 27), Conduit Avenue, and Rockaway Boulevard.

JFK has six terminals in the Central Terminal Area (CTA) and four runways as shown in **Figure 1-1** and noted below.

- Runways 13L-31R and 13R-31L (southeast to northwest direction)
- Runways 4R-22L and 4L-22R (northeast to southwest direction)

The Proposed Project will require the approval, by the FAA, of a change to the Airport Layout Plan (ALP).[4] The Port Authority will also seek FAA approval to use federal funding through the FAA's Airport Improvement Program (AIP). Therefore, as a result of both federal actions by the FAA, this Proposed Project is subject to the National Environmental Policy Act (NEPA). As a requirement of NEPA, Federal agencies must analyze and disclose the potential environmental impacts associated with a project, including any mitigation measures, which will be reviewed and considered by the appropriate regulatory agencies and interested parties. The FAA has determined that the preparation of an Environmental Assessment (EA) is required for this Proposed Project

This EA has been prepared to describe and assess the consequences to the human and natural environment that may result from the implementation of the Proposed Action. This document discloses the direct, indirect, and cumulative impacts that will result from this Proposed Action. It is compliant with NEPA requirements, the Council on Environmental Quality (CEQ) Regulations 40 CFR 1500 and 1508, and FAA Orders 5050.4B *NEPA Implementing Instructions for Airport Actions* and 1050.1F *Environmental Impacts: Policies and Procedures.*

4 Advisory Circular 150-5070 and the ALP checklist.

1.2 Organization of Chapters

The EA is organized as follows:

- Chapter 1 – Purpose and Need
- Chapter 2 – Alternatives Analysis
- Chapter 3 – Affected Environment
- Chapter 4 – Environmental Consequences
- Chapter 5 – Public Involvement
- Chapter 6 – List of Preparers
- References
- Appendices

1.3 Project Background

The Port Authority is investing in infrastructure improvements at Runway 13L-31R that focus on a Proposed Action with three components:

1. Replace deteriorating Runway 13L-31R asphalt pavement with concrete, widen the runway from 150 to 200 feet width, and improve/widen associated taxiway fillets[5] along select taxiway intersections (see **Figure 1-2, Runway 13L-31R Preferred Alternative**).

2. Realign Taxiways U, V and the corresponding intersection of Taxiways U/V/A/B.

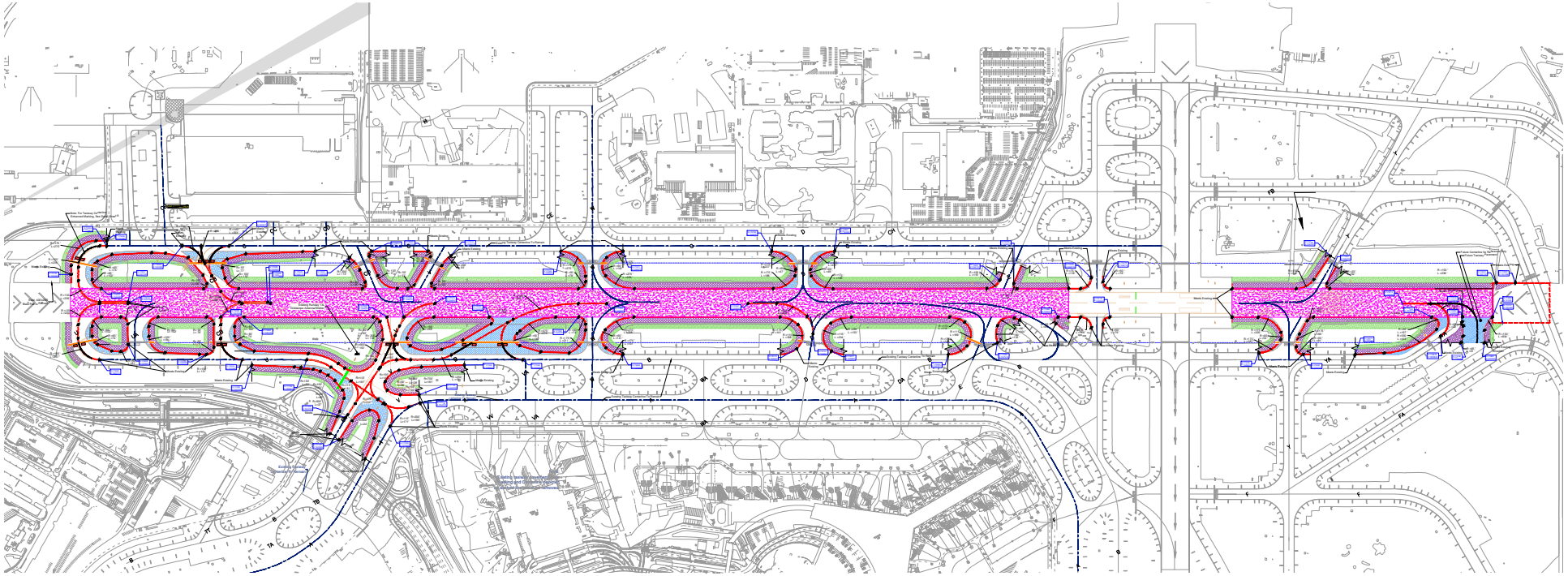
3. Construct a new High-Speed-Exit (HSE) taxiway.

Runway 13L-31R is a 10,000-foot-long and 150-foot-wide east-west runway on the north side of JFK. Nearly 50% of JFK's arrivals occur along Runway 13L-31R. For aircraft arrivals, the landing distances for Runways 13L and 31R are 9,093 feet and 8,486 feet, respectively, with an Instrument Landing System (ILS) supported with an Approach Lighting System (ALS) at both ends of the Runway. Runway 13L has two additional visual aids for landing aircraft: Precision Approach Path Indicator (PAPI) and a Lead-in Lighting System (LDIN).

Runway 13L-31R is constructed of asphalt concrete composition that is grooved to enhance safety. Runway lighting is currently High Intensity Runway Lighting (HIRL), Centerline Lighting (CL), and Touchdown Zone Lighting (TDZ) for both Runways 13L and 31R. Runway 13L has an Approach Lighting System with Sequenced Flashing Lights (ALSF2) and Runway 31R has a Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALSR).[6]

5 A taxiway fillet provides for ample curve and fillet radii for aircraft turning movement to and from a runway.

6 JFK International Airport, *Final 14 CFR Part 150 Noise Exposure Map Report*, April 2017.



100 500 2500ft

0 250 1000

New Taxiway Pavement

New Shoulder Pavement

New Erosion Pavement

New Concrete Runway

Proposed Taxiway Shoulder Edge

Proposed Taxiway Edge Marking

Proposed Taxiway Centerline Marking

Pavement Markings To Be Removed

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Figure 1-2
Runway 13L-31R Preferred Alternative

Source: The Port Authority of NY & NJ John F. Kennedy International Airport Rehabilitation of Runway 13L-31R, on-file VHB, May 2018

A series of taxiways connect Runway 13L-31R to the CTA, cargo areas, Fixed Base Operator (FBO) facilities, and general aviation areas. The primary Taxiways of U, B, C, and YA run parallel to Runway 13L-31R and have connectors that link to Runway 13L-31R (see **Figure 1-1**). Taxiways along Runway 13L-31R are 75 feet wide, with 25-foot aircraft-rated shoulders, and 40-foot erosion control pavement on each side. Directional information for aircraft taxiing is provided by an illuminated sign system.[7]

1.4 Description of the Proposed Action

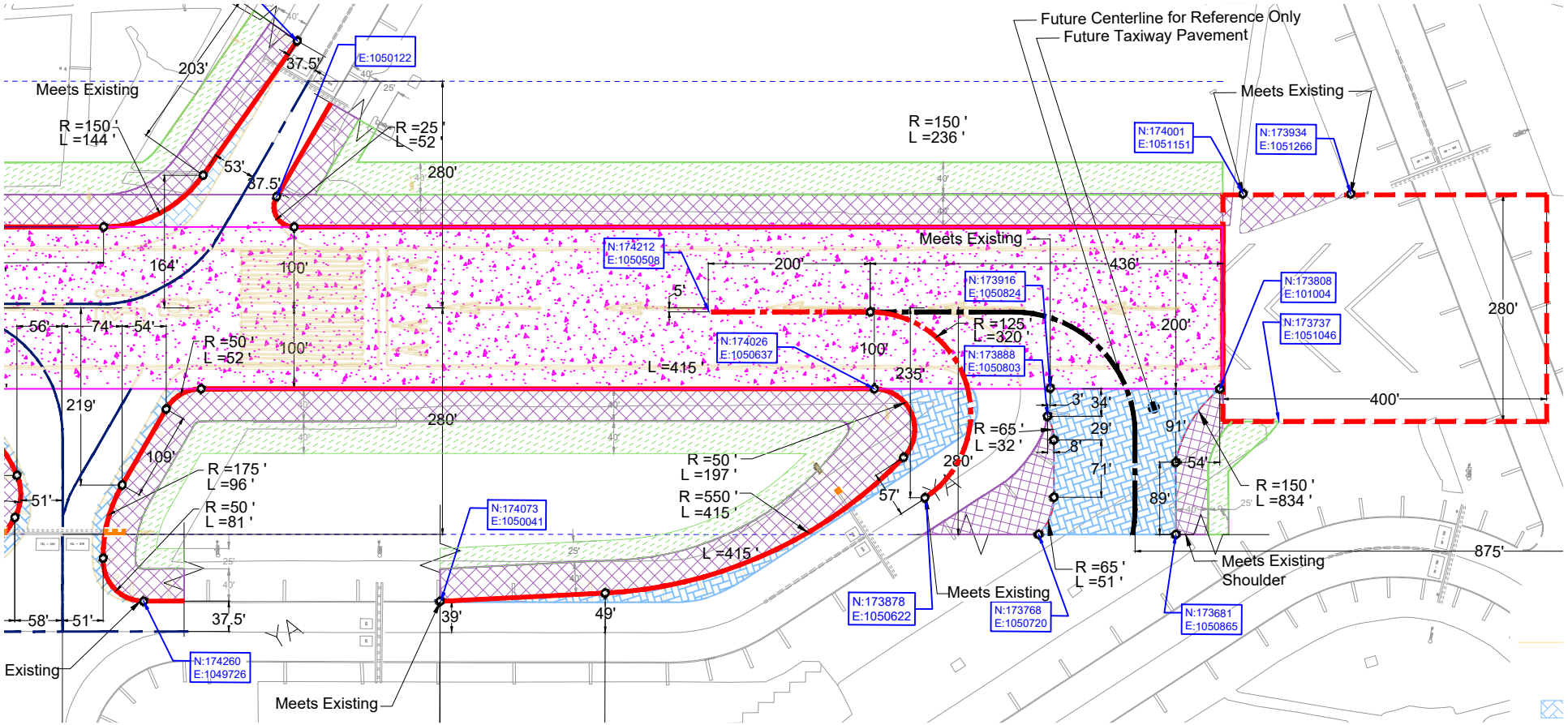
The Proposed Action for this Project includes three components:

(1) The first component includes the replacement of Runway 13L-31R asphalt with concrete, widening the Runway and improving and widening associated taxiways. In 2015, 1,150 feet of Runway 13L-31R at the intersection of Runway 4L-22R was reconstructed in concrete and widened to 200 feet. As part of the Proposed Action, the asphalt pavement on the remaining 8,850 feet of Runway 13L-31R would be replaced with concrete and the width of the Runway would be increased from 150 feet to 200 feet. The concrete pavement would be 18 inches thick on a 2-inch asphalt leveling course and accompanied by 40-foot shoulders and 40-foot erosion pavement. By widening the Runway to 200 feet, it would meet the FAA's Airplane Design Group VI (ADG VI) standards[8] and provide unrestricted access for ADG VI aircraft on Runway 31R. In addition, associated taxiway pavement would be rehabilitated and taxiway fillets would also be improved and widened with new taxiway, shoulder, and erosion pavement to meet ADG VI standards. At Runway 31R, new taxiway, shoulder, and erosion pavement would be added to Taxiway YA to the south of the Runway 31R entrance (see **Figures 1-2** and **1-3, Taxiway YA**).

During construction, two temporary concrete plants would be installed near the work site to minimize the need for concrete trucks to travel between the work site and off-site concrete plants. One concrete plant would be used during construction and the other plant would be installed at the Airport as a back-up in the event that the primary plant experiences unanticipated disruptions. The second plant has the capacity to support the Proposed Project in the event of an emergency primary plant failure. The temporary concrete plants would be located at the former Hangar 7 site and the site adjacent to Building 208 (back-up plant) (see **Figure 1-4, Anticipated Location of Concrete Plants**). Both sites were used previously as temporary concrete plants to provide concrete production for the Runway 4L-22R

7 Runways at JFK Airport, Port Authority of New York and New Jersey, http://www.panynj.gov/air-cargo/jfk-runways.html.

8 Airplane Design Group (ADG) is defined in FAA Advisory Circular 150/5300-13. The FAA groups aircraft types are among six groups based on wingspan and tail height. ADG VI aircraft have a wingspan of 214' to 262' and tail height of 66' to 80'.



0 50 100 250 500ft

- New Taxiway Pavement
- New Shoulder Pavement
- New Erosion Pavement
- New Concrete Runway
- Proposed Taxiway Shoulder Edge
- Proposed Taxiway Edge Marking
- Proposed Taxiway Centerline Marking
- Pavement Markings To Be Removed
- Taxiway AGL To Be Designed By Others

Source: The Port Authority of NY & NJ John F. Kennedy International Airport Rehabilitation of Runway 13L-31R and Associated Taxiways, on-file VHB, May 2018.

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Figure 1-3
Taxiway YA

0 3,200 6,400 Feet

Sources: NYS Orthos-imagery (2016)

- Project Area
- JFK Airport Boundary
- Former Hangar 7 On-Site Concrete Plant
- Building 208 Backup Concrete Plant

1. John F. Kennedy International Airport
2. JFK Expressway
3. Nassau Expressway/Rockaway Boulevard
4. Van Wyck Expressway

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Figure 1-4
Anticipated Location of Concrete Plants

reconstruction and Runway 13R-31L reconstruction projects. Both sites were recently used as stockpile areas. There would be no need for additional site prep for either location. Seventy-five percent (75%) of the construction concrete would come from these on-site concrete plants and 25% from a local concrete plant off-Airport.

While Runway 13L-31R is closed during construction, FAA would implement a new temporary flight procedure to accommodate the flow of aircraft with one less runway. Additionally, arrivals and departures to Runway 13L-31R would be reassigned to Runways 13R, 31L, 4L, 4R, 22L, and 22R. More detailed information about the new temporary flight procedure and the reallocation of operations (including changes in noise impacts associated with a shift in runway usage during construction of the Proposed Project) can be found in Section 4.2 Noise of this EA.

(2) The second component of the Proposed Project would be the realignment of Taxiways U, V and the corresponding intersection of Taxiway U/V/A/B. Currently, there is a Runway 13L ILS Glideslope on the north-west corner of the intersection where Taxiways U and V intersect with Taxiways U/V/A/B. According to the FAA's ADG VI standard, there should be a 193' separation from the taxiway centerline of Taxiway U and intersection of Taxiways U/V/A/B to the Runway 13L ILS Glideslope. However, there is only 137 feet of separation between the ILS Glideslope and the centerline of Taxiway U and only 138 feet of separation from the ILS Glideslope to the centerline of the Taxiways U/V/A/B intersection. The Proposed Action would increase the distance from the existing Runway 13L ILS-Glideslope to the centerlines of Taxiways U and V and the intersection of Taxiways U/V/A/B centerline. The separation between the Runway 13L ILS-Glideslope and the centerline of Taxiways U and V would increase to 167 feet and 170 feet, respectively. This would increase the distance of the corresponding intersection of Taxiways U/V/A/B centerline to 168 feet from the Runway 13L ILS-Glideslope (see **Figure 2-4, Taxiway U Realignment Alternative D**). Because the increased separation between the taxiway centerline and the Runway 13L ILS Glideslope would not meet the FAA's ADG VI standard of 193', FAA approval of a Modification of Standard would be required.

In addition, the Runway 13L ILS-Glideslope equipment would be adjusted to account for the elevation increase of Runway 13L-31R. Pursuant to FAA AC 150/5300-13A, the elevation of a runway within 25% of its length from each end shall remain unchanged. Currently, Runway 13L-31R does not meet this requirement. The elevation increase will address this substandard condition. The elevation of the previously constructed intersection of Runways 13L-31R and 4L-22R dictates the proposed profile and elevation of the Proposed Action. All intersecting taxiways will be graded to meet the Runway elevation.

(3) The third component of the Proposed Project would be the construction of a High-Speed-Exit (HSE) taxiway between Taxiways V and W connecting to Runway 13L-31R. The HSE taxiway would be approximately 5,400 feet from the Runway 31R Landing (Displaced) Threshold.

Overall, the Proposed Action is anticipated to be constructed in one construction phase between April 1, 2019 and November 15, 2019 and includes the following work:

- Replace and widen Runway 13L-31R asphalt with concrete;
- Widen and construct full-depth pavement for crossover taxiway fillets;
- Provide new taxiway, shoulder, and erosion pavement for Taxiway YA (see **Figure 1-3**);
- Realign Taxiways U, V and the corresponding intersection of Taxiways U/V/A/B;
- Construct a new HSE taxiway between Taxiways V and W;
- Replace electrical (lighting) systems;
- Upgrade signs and foundations;
- Provide new pavement markings;
- Upgrade drainage system;
- Adjust FAA Electronic and Visual Aid systems;
- Implement new temporary flight procedure for Runway 13R while Runway 13L-31R is closed during construction; and
- Provide a temporary concrete batch plant at the former JFK Hangar 7 site and a back-up concrete plant adjacent to Building 208.

Additional details on the replacement/upgrade to the electrical system, signs and foundations, pavement markings, and drainage systems along Runway 13L-31R, as well as adjustment to the FAA Electronic and Visual Aid System at the intersection of Taxiways U/V/A/B are provided below.

Electrical (Lighting) Systems. To ensure a state-of-good-repair for Runway 13L-31R, various electrical systems would be upgraded. Runway edge, threshold, and TDZ lights at both ends of the Runway, as well as centerline lighting would be replaced/upgraded (see **Figure 1-5a and 1-5b, Electrical**). In addition, taxiway lead-off lights, new homeruns to the electrical switch house, and guard bar lights would be replaced. Lastly, the Runway 31R MALSR and the Runway 13L ALSF-2 (in-pavement) infrastructure would be replaced and portions of the above-ground infrastructure of these facilities would be replaced and/or reconfigured/adjusted. All runway and taxiway lighting, except for runway edge lights, would use LED fixtures to enhance energy efficiency.

Signs and Foundations. Signage and foundations within the Proposed Project area would be replaced. The depth of impact for the sign foundations and supports would range from 2 to 4 feet. Signage would include standing and above surface signs that are both lighted. The standing signs would be either single face or double face and include directions and taxiway designations.

Pavement Markings. A series of pavement markings would be applied to Runway 13L-31R (see **Figure 1-6, Pavement Markings**). Pavement markings indicate directions of a curve and taxiway/runway designations. For the Runway, chevrons, demarcation bars to denote runway ends, runway edge markings, a runway centerline marking, and displaced threshold arrowheads would be replaced. In addition, 5.75 feet wide displaced threshold tail markings, 10 feet wide runway threshold bar markings, 6 feet wide touchdown zone markings, runway holding position markings, and 30 feet wide aiming point markings would be added after pavement reconstruction is completed. For the taxiways, shoulder markings, centerline markings, runway holding position markings with reflective glass beads, and taxiway edge markings would also be replaced.

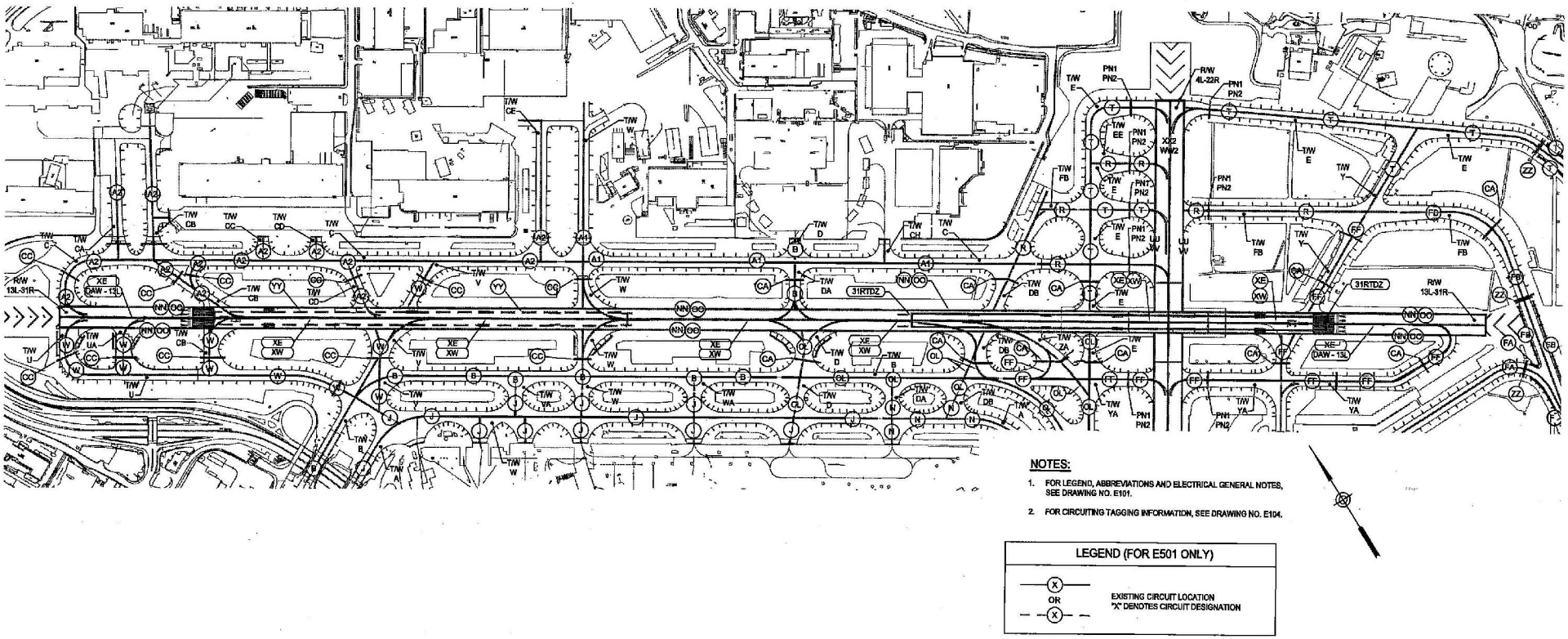
Drainage System. Surface runoff from Runway 13L-31R currently drains to catch basins on either side of the Runway. The east half of Runway 13L-31R drains to outfalls #17A and #22 and the west half drains to outfall #10 (see **Figure 1-7, Stormwater Zones and Outfalls**). These drainage areas would be maintained post construction and are in accordance with the New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual. Infiltration trenches[9] are also planned for this Proposed Project. They would be located throughout the Runway and taxiway areas along the new erosion pavement highlighted in **Figure 1-2** and connected to various catch basins.

FAA Electronic and Visual Aid Systems. The Instrument Landing System (ILS) and Approach Lighting System (ALS) located at both ends of Runway 13L-31R would remain. The two additional visual aids for landing aircraft, a Precision Approach Path Indicator (PAPI) and a Lead-in Lighting System (LDIN) at Runway 13L would remain as well. However, the existing Runway 13L FAA ILS Glideslope and localizer facility at the northwest corner of the intersection of Taxiways U/V/A/B would be adjusted to account for an elevation increase to Runway 13L-31R. The angle of the Runway 13L FAA ILS equipment, including antenna, would be adjusted.

1.5 Project Purpose and Need

Each of the three primary components included in the Proposed Action has an independent purpose and operational need, which collectively add to the improved operation of Runway 13L-31R.

9 An infiltration trench is used to manage stormwater runoff, prevent flooding and downstream erosion, and improve water quality in an adjacent river, stream, lake or bay.



Not to Scale

Source: The Port Authority of NY & NJ John F. Kennedy International Airport Rehabilitation of Runway 13L-31R and Associated Taxiways Contract No. JFK-164.020, 50% Submission, September 29, 2017, on-file VHB, 10/27/17.

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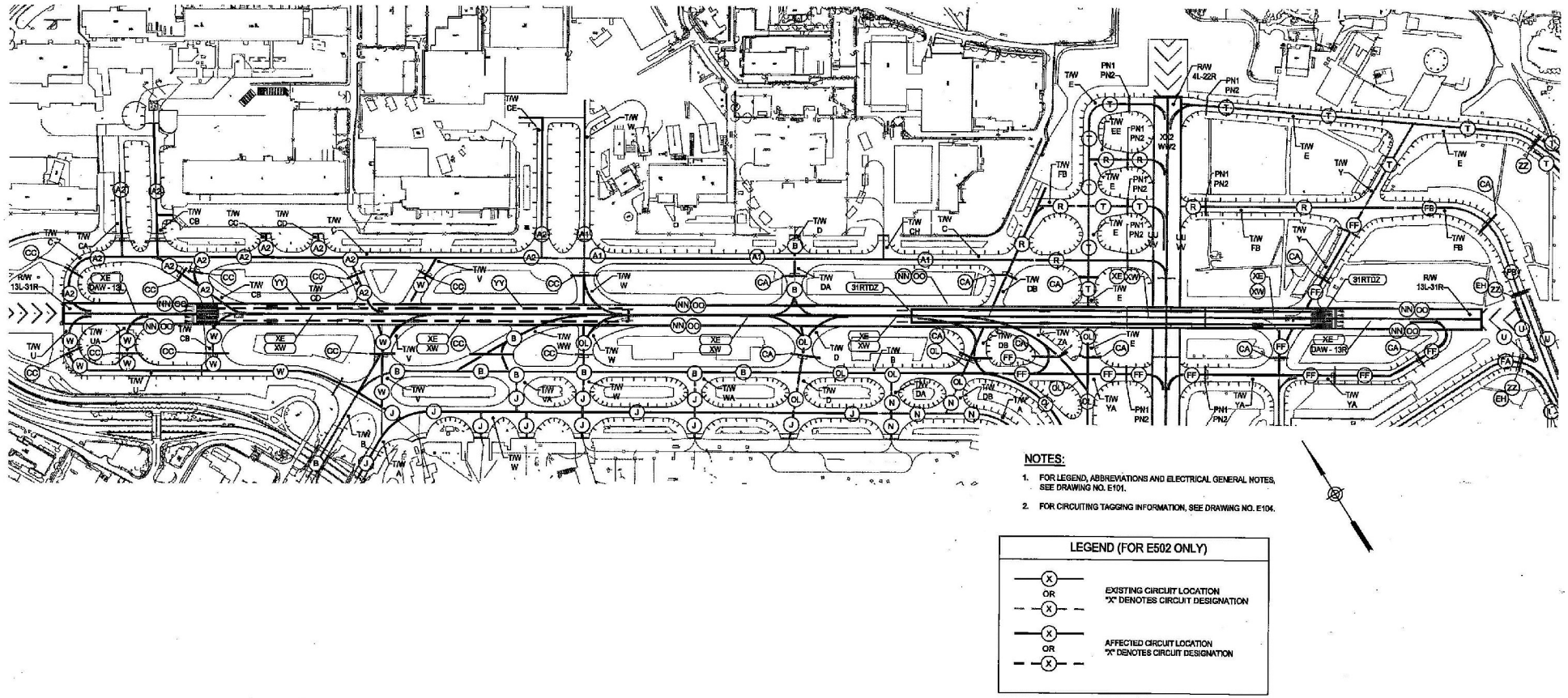
Figure 1-5a
Existing Overall Lighting Circuit Map



Not to Scale

Source: The Port Authority of NY & NJ John F. Kennedy International Airport Rehabilitation of Runway 13L-31R and Associated Taxiways Contract No. JFK-164.020, 50% Submission, September 29, 2017, on-file VHB, 10/27/17.

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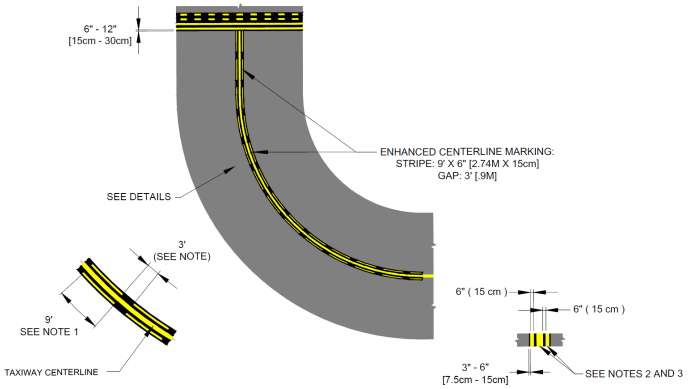
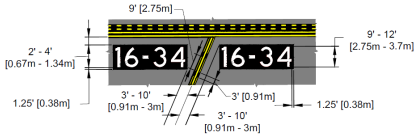
Figure 1-5b
Final Overall Lighting Circuit Map

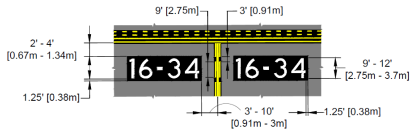


NOTES:
1. THE DASHED LINES DIMENSIONS ARE TAKEN ALONG THE CENTER OF THE TAXIWAY CENTERLINE
2. DASHED LINES FOR THE ENHANCED TAXIWAY CENTERLINE MARKING ARE 6 INCHES (15 CM) IN WIDTH AND SEPARATED 6 INCHES (16 CM) FROM THE TAXIWAY CENTERLINE. THIS APPLIES TO BOTH 6 INCHES (15 CM) AND 12 INCHES (30 CM) TAXIWAY CENTERLINE MARKINGS.
3. THE TAXIWAY CENTERLINE MARKINGS MAY BE SHIFTED LEFT OR RIGHT TO AVOID INTERFERENCE WITH TAXIWAY CENTERLINE LIGHTS.

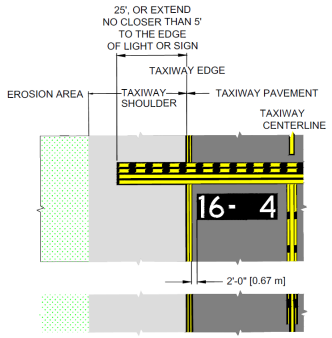
DETAIL A: TYPICAL ENHANCED TAXIWAY MARKING SPACING
N.T.S.



PATTERN 1



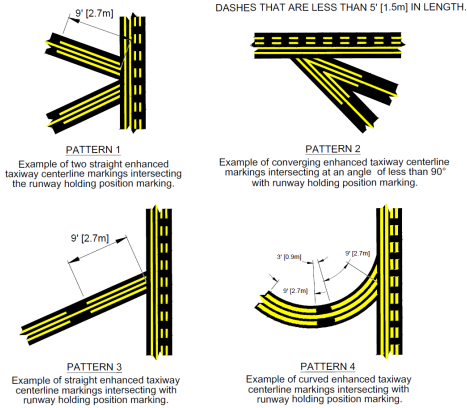
PATTERN 2
Surface painted holding position signs for taxiway widths greater than 35 feet (10.5 m)



PATTERN 3
Enhanced runway holding position markings on taxiways

DETAIL C: ENHANCED RUNWAY HOLDING POSITION MARKINGS AND HOLDING POSITION SIGNS ON TAXIWAYS
N.T.S.

PARTIAL INNER DASHES INCLUDED BECAUSE THEY EXCEED 5 FEET IN LENGTH. ACCEPTABLE TO OMIT ANY DASHES THAT ARE LESS THAN 5' [1.5m] IN LENGTH.



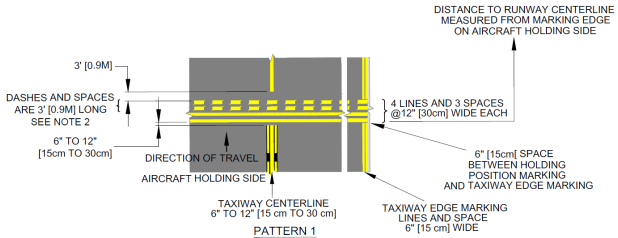
PATTERN 1
Example of two straight enhanced taxiway centerline markings intersecting the runway holding position marking.

PATTERN 2
Example of converging enhanced taxiway centerline markings intersecting at an angle of less than 90° with runway holding position marking.

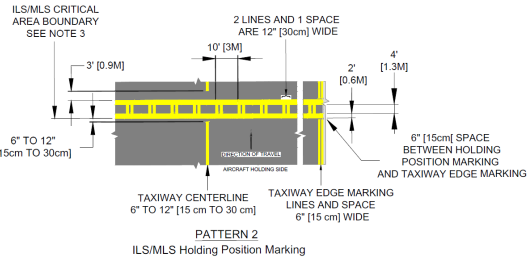
PATTERN 3
Example of straight enhanced taxiway centerline markings intersecting with runway holding position marking.

PATTERN 4
Example of curved enhanced taxiway centerline markings intersecting with runway holding position marking.

DETAIL B: CONVERGING, STRAIGHT, AND CURVED ENHANCED TAXIWAY CENTERLINE INTERSECTING WITH HOLDING POSITIONS MARKING
N.T.S.

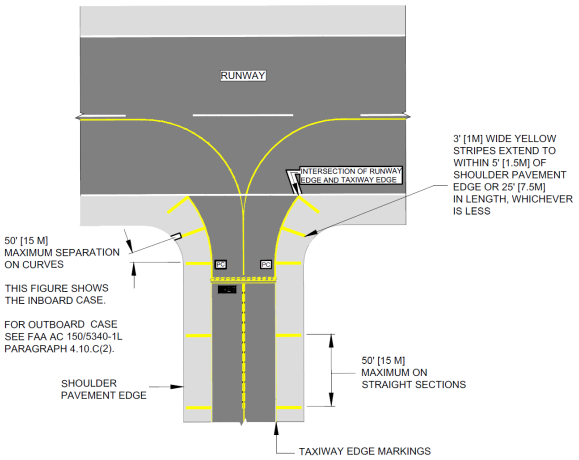


PATTERN 1
Runway Holding Position Marking



PATTERN 2
ILS/MLS Holding Position Marking

DETAIL D: HOLDING POSITION MARKING DETAIL
N.T.S.



DETAIL E: TAXIWAY SHOULDER MARKINGS
N.T.S.

FOR RUNWAY/TAXIWAYPAVEMENT MARKING OR STRIPING AND DESIGNATION DETAIL, SEE FAA AC No. 150/5340-1L

Source: The Port Authority of NY & NJ John F. Kennedy International Airport Rehabilitation of Runway 13L-31R and Associated Taxiways, on-file VHB, May 2018.

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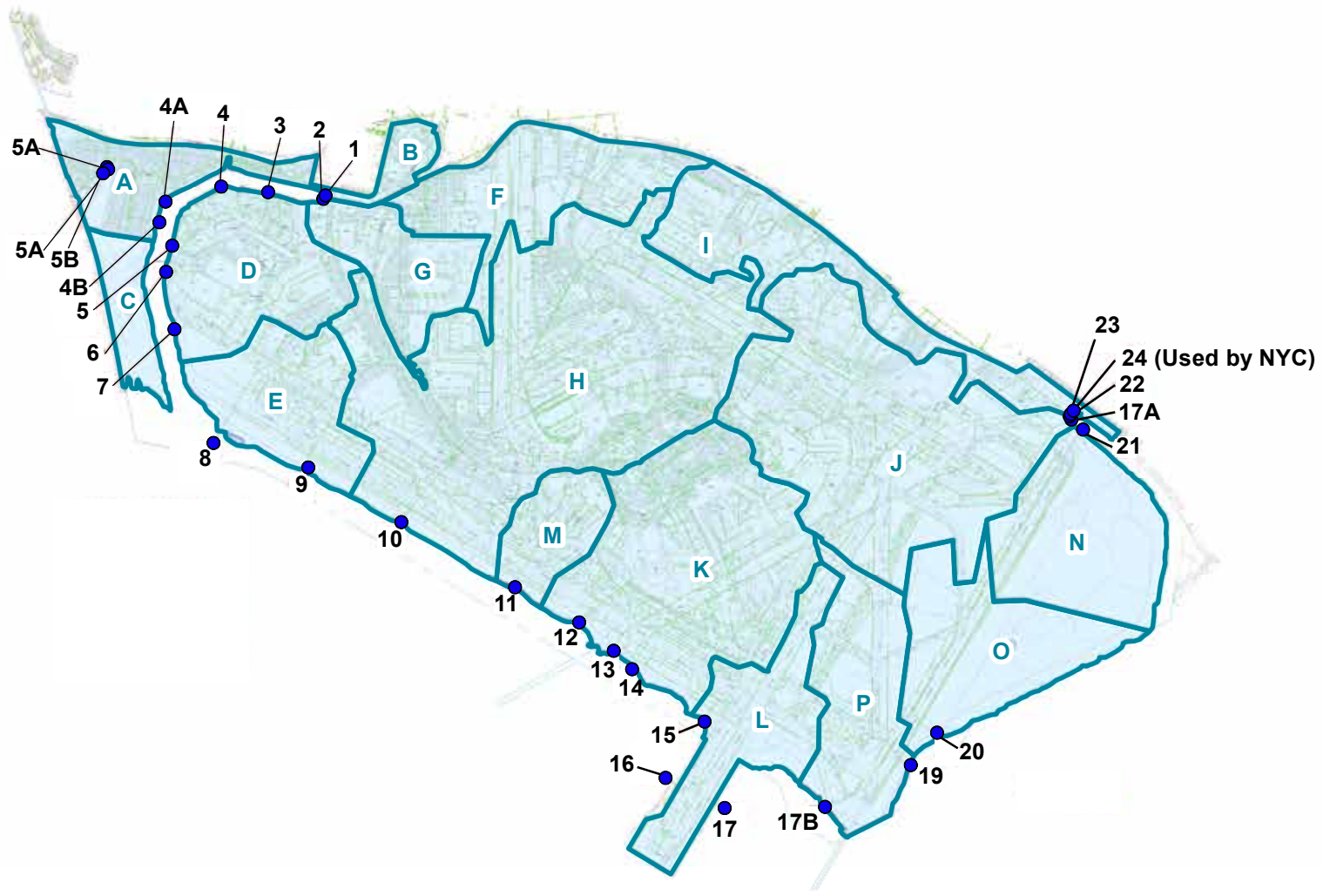
Figure 1-6
Runway 13L-31R Markings



0 200 500ft

Outfall Designations (Numbers 1-24)

Drainage Areas (Letters A-P)

Source: The Port Authority of NY & NJ John F. Kennedy International Airport Rehabilitation of Runway 13L-31R and Associated Taxiways Contract No. JFK-164.020, 50% Submission, September 29, 2017, on-file VHB, 10/27/17.

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Figure 1-7
Stormwater Zones and Outfalls

(1) Reconstruct the Runway, Rehabilitate Associated Taxiway Pavement, and Improve/Widen Taxiway Fillets

Reconstruction of Runway 13L-31R and rehabilitation of associated taxiways are needed because the pavement is deteriorating. The Port Authority considers the Proposed Project to be a high priority based on the condition of the Runway and need for operational improvement (specifically, to improve the safety and operational efficiency of the Airport by providing air traffic controllers with the flexibility to accommodate all ADG-VI aircraft operations on Runway 13L-31R). The Port Authority generally rehabilitates asphalt runways every ten years to maintain a state of good repair. However, the last time asphalt Runway 13L-31R was rehabilitated was fourteen years ago (2004).

The Port Authority evaluated the condition of the Runway 13L-31R pavement in 2017 using the Pavement Condition Index (PCI) from the American Society for Testing and Materials (ASTM). [10] The PCI ranges from 0 to 100, with 0 being the worst condition. According to the ASTM, pavement with a score of 0 to 54 is in poor condition, 55 to 69 is in fair condition, and 70 to 100 is in good condition. Based on the 2017 assessment, the area weighted average PCI of Runway 13L-31R is projected at 67 with a PCI range of 44 to 82. Taxiways U and A have PCIs of 45 and 51, respectively. These PCI scores are artificially high because the Port Authority has responded to 8 emergency repairs to the pavement since 2014 (each of which required runway closures and assignment of aircraft to other runways at JFK). The 2017 PCI scores are not indicative of the future life span of the pavement because the rate of pavement deterioration increases rapidly with pavement age. Based on the 2017 PCI scores, the Port Authority projects that absent the Proposed Project or emergency repairs, nearly all of Runway 13L-31R and its taxiways will have "poor" PCI scores by 2021 due to continued pavement deterioration.

As recently as February 27, 2018, the Runway was closed for nearly 5 hours during a period of high traffic volume (early morning to noon) due to emergency pavement repairs to Taxiway V. Emergency repairs that require closure of the Runway are disruptive to Airport operations because aircraft must be rerouted to other runways at the Airport.

Based on the condition of Runway 13L-31R and the recent history of emergency repairs, the Port Authority reasonably anticipates that future repairs and associated runway closures will be needed unless the Proposed Project is implemented. The Port Authority further anticipates that the frequency of emergency repairs on Runway 13L-31R and its taxiways would increase, as would the frequency of Runway closures and the need to reassign aircraft operations to other runways. Eventually, continual deterioration would make Runway 13L-31R unusable.

10 American Society for Testing and Materials (ASTM) D5340–11: Standard Test Method for Airport Pavement Condition Index Surveys.

In addition to Runway reconstruction, the Runway and associated taxiway fillets would be improved and widened. Taxiway fillets would be widened to meet current FAA design standards. This Proposed Action is the first reconstruction of Runway 13L-31R since the FAA issued the taxiway fillets' current design standards. In addition, Taxiway YA would receive new taxiway, shoulder, and erosion pavement to accommodate a potential future taxiway project, which is independent of this Proposed Action (see **Figure 1-3**). At present, it is not known whether the potential future taxiway project would be implemented. If the potential future taxiway project is implemented, the Taxiway YA improvement would avoid the need to close Runway 13L-31R (and all impacts associated with runway closure) during construction of the potential future taxiway project.

(2) Realignment of Taxiways U and V

Currently, Runway 31R is the only runway at JFK that cannot accommodate ADG-VI standard Airbus A380 aircraft arrivals. This is due to the following operational restrictions:

- The Airbus A380 aircraft (not all ADG-VI) is currently restricted (prohibited) from landing on Runway 31R.
- The Airbus A380 aircraft (not all ADG-VI) is currently restricted (prohibited) from operating on Taxiways U and V due to insufficient clearance to/from the Runway 13L ILS Glideslope.

The realignment of Taxiways U and V is needed because the current alignment prohibits the Airbus A380 aircraft from landing on Runway 31R. There is currently no taxiway that can accommodate an Airbus A380 aircraft from Runway 31R. The realignment of Taxiways U and V would increase the distance from the glideslope to the centerlines of taxiways U and V. While the Proposed Action would increase the distance between the Runway 13L ILS-Glideslope to Taxiways U, V and the intersection of Taxiways U/V/A/B, the taxiways would not meet the full Group VI design standards. Therefore, FAA approval of a MOS to the FAA's ADG VI standard of 193' separation from the taxiway centerline would be required. With realignment of the taxiways and FAA approval of the aforementioned MOS, Runway 31R would be able to accommodate Airbus A380 aircraft arrivals. Following the completion of the Proposed Action and approval of the MOS, the FAA Air Traffic Control (ATC) personnel would have the flexibility to accommodate all ADG-VI aircraft operations on Runway 13L-31R, providing the FAA ATC with additional flexibility improves the safety and operational efficiency of the Airport.

(3) New HSE Taxiway

In contrast to traditional taxiways, which are perpendicular or 90 degrees to a runway, HSE taxiways have a gentler angle, at about 30 degrees, to allow aircraft to leave a runway faster. The new HSE taxiway is needed to accommodate existing use and improve overall operating efficiency at JFK

Airport and quality-of-service for the traveling public. It would allow aircraft arrivals to exit Runway 31R sooner, thereby reducing aircraft taxi distance and time from runway touchdown to the CTA.

According to the Port Authority's *JFK International Airport – Runway 13L-31R Taxiway Improvements - Benefit Cost Analysis*, the enhancements to the intersection of Taxiways U/V/A/B and the implementation of a HSE taxiway between Taxiways V and W would reduce average arrival aircraft gate delays from 13.7 minutes to 12.9 minutes because Runway 31R arrival aircraft would be able to exit the Runway sooner at a gentler turning angle than the traditional taxiway. [11] The projected annual cumulative time savings of the new HSE is approximately 1,000 less hours of taxiing time among approximately 90,000 annual Runway 13L-31R aircraft landings.[12] This would also result in reduced fuel consumption (and associated air emissions) and travel time savings for passengers.[13]

In addition, improved on-time performance with reduced delays benefits both passengers and airlines. Airlines can reduce the need for additional staff for delayed flights and a high quality of service can be maintained for continued customer growth and demand at JFK. Because delays at JFK can spread throughout the national airspace system, a reduction in delay at JFK could potentially reduce delays at other airports.[14]

1.6 Required Federal Approval

The Federal Action for this Proposed Action is the approval by the FAA of a change to the ALP and approval of funding from the FAA for Airport Improvement Program (AIP) funds. The Port Authority would also seek the FAA approval of a MOS to the FAA's ADG VI standard of 193' separation from the taxiway centerline. In addition, the FAA would implement a new temporary flight procedure to accommodate the flow of aircraft with one less runway. Therefore, this Proposed Project is submitted for review under NEPA. As a requirement of NEPA, Federal agencies must analyze and disclose the potential environmental impacts associated with a project, including any mitigation measures, which will be reviewed and considered by the appropriate regulatory agencies and interested parties.

11 Port Authority of New York & New Jersey. 2017 JFK International Airport – Runway 13L-31R Taxiway Improvement Benefit Cost Analysis, Chapters 9 and 10, Draft 1, October 23, 2017, ARUP North America Ltd.

12 50,457 annual aircraft landings of the total 90,000 annual Runway 13L-31R aircraft landings are from Runway 31R aircraft landings as noted in the Final 2017 JFK Noise Exposure Map Report by Environmental Science Associates.

13 Port Authority of New York & New Jersey. Press Release Number: 177-2017, September 28, 2017.

14 Port Authority of New York & New Jersey. 2017 JFK International Airport – Runway 13L-31R Taxiway Improvements Benefit Cost Analysis.

2. Alternatives Analysis

This chapter describes the alternatives identified by the Port Authority in response to the existing operational and standard deficiencies at Runway 13L-31R. It also outlines the criteria for evaluating the alternatives, the rationale for selecting the alternatives, and whether the resulting alternative would be able to fulfill the Project Purpose and Need as the Proposed Action.

2.1 Proposed Action

The Port Authority is committed to improving operational efficiency at JFK by investing in infrastructure improvements at Runway 13L-31R that focus on a Proposed Action with three components:

- Reconstruct Runway 13L-31R, rehabilitate associated taxiway pavement, and improve/widen taxiway fillets.
- Realign Taxiways U, V and the corresponding intersection of Taxiways U/V/A/B.
- Construct a new High-Speed-Exit (HSE) taxiway.

2.2 Alternatives Considered in this Environmental Assessment

This EA considers a No Action Alternative and Alternatives for each of the three Proposed Action components. Among the three components of the Proposed Action, multiple Alternatives were considered for the (1) Runway Reconstruction and Associated Taxiway Improvements; and (2) Realignment of Taxiways U and V. The third component (New HSE Taxiway) only has a No Action Alternative and one Alternative for consideration.

The following text in **Tables 2-1 to 2-3** identifies each component of the Proposed Action and their corresponding No Action Alternative and Alternative/s considered for the Proposed Project.

Table 2-1: Runway Reconstruction and Associated Taxiway Improvement Alternatives Considered in this EA

Project Component	Alternatives Considered	Description
Runway Reconstruction and Associated Taxiway Improvements	No Action Alternative	• No rehabilitation or reconstruction of runway and associated taxiways, or taxiway fillet improvements/widening. • Predicted "poor" PCI scores by 2021 due to continued pavement deterioration. • Over time, emergency runway closures to repair deteriorating pavement would become more frequent.
	Runway Alternative A (Asphalt Rehabilitation)	<u>Implementation:</u> ▪ Mill and/or overlay 8,850-feet of Runway 13L-31R and associated taxiways with asphalt. ▪ Improve/widen taxiway fillets (including new taxiway pavement at Taxiway YA). ▪ Replace electrical and drainage infrastructure, signage and foundations, and pavement markings. ▪ Runway width remains at existing 150 feet and does not meet ADG VI standards. <u>Construction:</u> ▪ Five (5) runway closure phases. ▪ 330 days of runway closure plus 94 days of runway operational restrictions.
	Runway Alternative B (Concrete Reconstruction) ***(Figure 1-2)***	<u>Implementation:</u> ▪ Replace 8,850-feet of Runway 13L-31R asphalt with concrete at 18 inches thick on a 2-inch asphalt leveling course and rehabilitate associated Runway taxiways with asphalt. ▪ Widen runway from 150 to 200 feet to meet ADG VI standards. ▪ Improve/widen taxiway fillets (including new taxiway pavement at Taxiway YA). ▪ Replace electrical and drainage infrastructure, signage and foundations, and pavement markings.

Project Component	Alternatives Considered	Description
		Construction: ▪ One (1) runway closure phase and 229 days of runway closure.

Table 2-2: Realignment of Taxiways U and V Alternatives Considered in this EA

Project Component	Alternatives Considered	Description
Realignment of Taxiways U and V	No Action Alternative	▪ Continue ADG VI restrictions on Taxiways U and V.
	Taxiways Alternative A ***(Figure 2-1)***	▪ Close portion of Taxiway V between Runway 13L-31R and Taxiway B. ▪ Realign portion of Taxiways U and B. ▪ Relocate Restricted Service Road (RSR) and ramp. ▪ Provide standard (193-feet) clearance from existing Taxiways U and V to Runway 13L ILS-Glideslope. ▪ Relocate blast fence.
	Taxiways Alternative B ***(Figure 2-2)***	▪ Realign portion of JFK Expressway. ▪ Realign portion of Taxiways U and V. ▪ Relocate Restricted Service Road (RSR), ramp and bridge south of Runway 13L-31R. ▪ Relocate and realign western portion of Taxiway C north of Runway 13L. ▪ Decommission Taxiway CD north of Runway 13L. ▪ Relocate portion of RSR adjacent to Taxiway C. ▪ Relocate North Hangar Road. ▪ Relocate blast fence. ▪ Relocate Runway 13L ILS-GS to north side of Runway.

Project Component	Alternatives Considered	Description
	Taxiways Alternative C *(Figure 2-3)*	▪ Relocate Runway 13L ILS-Glideslope slightly to provide standard (193-feet) clearance from existing Taxiways U and V.
	Taxiways Alternative D *(Figure 2-4)*	▪ Realign portions of Taxiways U and V to increase the current separations between the Runway 13L ILS-Glideslope and the (realigned) Taxiways U and V by 167-feet and 170-feet. ▪ Obtain Modification of (Airport Design) Standards to approve the substandard separations and allow Airbus A380 aircraft restrictions to be lifted.

Table 2-3: New HSE Taxiway Alternatives Considered in this EA

Project Component	Alternatives Considered	Description
New HSE Taxiway	No Action Alternative	▪ No HSE taxiway.
	HSE Alternative A *(Figure 2-5)*	▪ Implement a HSE taxiway between Taxiways V and W, approximately 5,400 feet from the Runway 31R Landing (Displaced) Threshold.

The following provides additional detail for each Alternative briefly discussed in **Tables 2-1 to 2-3:**

2.2.1 Runway Reconstruction and Associated Taxiway Improvements

2.2.1.1 No Action Alternative

The No Action Alternative would result in no rehabilitation or reconstruction of Runway 13L-31R and associated taxiways to a state-of-good-repair. As a result, continued emergency pavement repairs on Runway 13L-31R and associated taxiways, and the related runway closures, would be required to keep the Runway operational. For every closure of Runway 13L-31R, aircraft would have to be assigned to other runways at JFK. The frequency, magnitude and duration of pavement repairs and associated Runway closures would increase over time as the pavement deteriorates. Eventually, continual deterioration would make Runway 13L-31R unusable. This would severely affect Airport operations because Runway 13L-31R accommodates approximately 50% of JFK's aircraft arrivals. Those arrivals would have to be assigned to alternate runways at JFK, and as discussed in **Chapter 4**, a shift in runway usage could result in increased noise exposure in areas on either end of the alternate runways. In addition, taxiway fillet upgrades to meet FAA design standards would not be met. Accordingly, the No Action Alternative would have an adverse impact to JFK operations.

2.2.1.2 Runway Alternative A – Asphalt Rehabilitation

Under Runway Alternative A, exisiting pavement would be milled and asphalt pavement applied to Runway 13L-31R to improve pavement condition and avoid/minimize repeated closure of Runway 13L-31R for future emergency pavement repairs. Associated taxiway fillets would be improved/widened to meet FAA design standards of cockpit-over-centerline design and the revised Taxiway Design Group (TDG) categories for fillet design. This would be accompanied by replacement of electrical and drainage infrastructure, signage and foundations, and pavement markings. In addition, Taxiway YA would be modified with new taxiway, shoulder, and erosion pavement to accommodate a potential future taxiway project after Runway 31R reopens (see Figure 1-3).

Construction of Runway Alternative A would take place in five construction phases from Fall 2018 to Spring 2020 with 330 days of runway closure plus 94 days of runway operational restrictions. During preliminary design of the asphalt rehabilitation option, it was assumed that construction could be

completed in 15 months, with four construction phases and 238 days of runway closure. However, based on additional information developed during design, the Port Authority determined that rehabilitating the runway with asphalt would require a greater thickness of asphalt than originally contemplated. Applying the necessary thickness of asphalt would take longer, requiring five construction phases and 330 days of runway closure to complete the project.

Pursuant to FAA AC 150/5300-13A, the elevation of a runway within 25% of its length from each end shall remain unchanged. Currently, Runway 13L-31R does not meet this requirement. To comply with this standard, the elevation of the Runway would have to be raised. The rehabilitation of Runway 13L-31R with asphalt would require adding an asphalt overlay that varies between 12 to 17 inches in thickness. The thickness of the overlay would vary because the asphalt elevation currently varies along the full length of the Runway. Each pass of asphalt placement is up to 3 inches thick, which means that multiple lifts of asphalt (4 – 6 passes) would have to be installed. Each layer of asphalt would also require time to allow for cooling in between passes. Intersecting taxiways would be graded to meet the final elevation of Runway 13L-31R.

2.2.1.3 Runway Alternative B - Concrete Reconstruction

Under Runway Alternative B, Runway 13L-31R would be reconstructed with concrete. Construction of Runway Alternative B would take place in one phase from Spring 2019 to Fall 2019 with 229 days of runway closure. The concrete pavement would be 18 inches thick on a 2-inch asphalt leveling course to meet the pavement elevation of the 1,150 feet of reconstructed concrete at the intersection of Runway 13L-31R and Runway 4L-22R. The subbase of Runway 13L-31R would be leveled prior to the application of concrete because, unlike asphalt, concrete must be applied using a uniform thickness. Intersecting taxiways would be graded to meet the final elevation of Runway 13L-31R.

Runway 13L-31R would also be accompanied by 40-foot shoulders and 40-foot erosion pavement. The Runway would also be widened from 150 to 200 feet to comply with ADG VI standards and the taxiway fillets would be improved/widened to meet FAA design standards. The reconstruction would be accompanied by replacement of electrical and drainage infrastructure, signage and foundations, and pavement markings (see **Figure 1-2**). In addition, Taxiway YA would be modified with new taxiway, shoulder, and

erosion pavement to accommodate a potential future taxiway project after Runway 31R reopens (see **Figure 1-3**).

2.2.2 Realignment of Taxiways U and V

2.2.2.1 No Action Alternative

The No Action Alternative would maintain Airbus A380 aircraft operational restrictions along Taxiways U and V, and at the intersection of Taxiways U/V/A/B. Airbus A380 aircraft would not be able to land on Runway 31R. FAA Air Traffic Control (ATC) personnel would not have the flexibility to accommodate Airbus A380 aircraft arrivals on both Runways 31L and 31R, limiting air traffic control optimization. Accordingly, the No Action Alternative would not improve the efficiency of JFK operations.

2.2.2.2 Taxiways U and V Realignment Alternatives

FAA's ADG VI standard for Airbus A380 aircraft requires a 193' separation from the taxiway centerline of Taxiways U and V and the corresponding intersection of Taxiways U/V/A/B from the Runway 13L ILS-Glideslope. Under Taxiways U and V Realignment Alternatives, Airbus A380 aircraft operations would be allowed along Taxiways U, V, and the corresponding intersection of Taxiways U/V/A/B by complying with the FAA's ADG VI standards or approval of a MOS to the ADG VI standard. This would ensure FAA ATC personnel would have flexibility in accommodating the Airbus A380 aircraft arrivals on both Runways 31L and 31R. Currently, Runway 31R is the only runway at JFK that cannot accommodate the landing of the Airbus A380 aircraft because of operational restrictions on Taxiways C, U, and V.

The following Alternatives were identified to accommodate realignment of Taxiways U, V and the intersection of Taxiways U/V/A/B to allow for Airbus A380 aircraft to exit south from Runway 31R. Each Alternative is described below and screened in Section 2.3 of this Chapter.

- **Taxiways U and V Realignment Alternative A**

  Taxiways Alternative A would remove operational restrictions for Airbus A380 aircraft by increasing the separation between the Runway 13L ILS-Glideslope and the Taxiway U centerline to 193 feet to accommodate the wing-span of the Airbus A380 aircraft. A 193-foot object separation to the centerline of a taxiway is the ADG-VI standard. In addition, Taxiway U would be realigned, and a portion of Taxiway V would be closed to Runway 13L-31R and the separation

between the Runway 13L ILS-Glideslope and the Taxiway V centerline would be 193 feet proximate to the intersection of Taxiways U/V/A/B.

To accomplish Taxiways Alternative A, the Restricted Service Road (RSR) and ramp located south of Taxiways U and V would have to be reconfigured to provide adequate clearance between Taxiways U and V and the Runway 13L ILS-Glideslope according to ADG-VI standards. The resulting helical service road ramp reconfiguration would feature a compound curve with consecutive radii of 172 feet, 33 feet, and 111 feet, as measured from the inner edge of the traveled way. The existing blast fence would also be relocated. (see **Figure 2-1, Taxiways U and V Realignment Alternative A**)

- **Taxiways U and V Realignment Alternative B**

Taxiways Alternative B would remove the operational restrictions for the Airbus A380 aircraft by increasing the separation between the Runway 13L ILS-Glideslope and the Taxiway U centerline to 193 feet to accommodate Airbus A380 aircraft. A 193 feet object separation to the centerline of a taxiway is the ADG VI design standard.

Taxiways Alternative B would include realignment of a portion of the JFK Expressway laterally by approximately 94 feet southwest, realignment of Taxiways U and V, and realignment and relocation of the western portion of Taxiway C to accommodate the relocation of the Runway 13L-ILS Glideslope. The existing Runway 13L ILS-Glideslope would be relocated to the north side of Runway 13L, away from Taxiways U and V and the intersection of Taxiways U/V/A/B. The Runway 13L ILS-Glideslope would be removed from the Taxiway Object Free Area. The relocation would be staged in such a way that the site preparation for the relocated facility would be accomplished prior to the current Runway 13L ILS-Glideslope outage. Additionally, any downtime or outage would be timed to occur during an extended closure of the Runway.

Taxiways Alternative B would also relocate the following features to meet the ADG VI standard distance between the intersection of Taxiways U/V/A/B and the Runway 13L ILS-Glideslope of 193 feet:

- Restricted Service Road (RSR) and accompanying ramp and bridge adjacent to Taxiway B
- RSR adjacent to Taxiway C
- Blast fence located south of Taxiway U
- North Hangar Road located north of Taxiway C

This Taxiways Alternative would rebuild the interchange ramps between the upper RSR that crosses over the JFK Expressway parallel to Taxiway B, and the lower RSR that passes under Taxiway B and runs parallel to the JFK Expressway. The rebuilt RSR ramps would have the same geometric configuration, horizontal curves, and vertical curves as the existing conditions. This geometric configuration would meet American Association of State Highway and Transportation Officials (AASHTO) guidelines[15] for vertical and horizontal curves, allowing the RSR interchange ramps to occupy the same amount of area as the existing interchange ramps, yet shifted further south from Taxiway U and the Taxiway U/V/A/B intersection (see **Figure 2-2, Taxiways U and V Realignment Alternative B**).

- **Taxiways U and V Realignment Alternative C**

  In order to remove the operational restriction for Airbus A380 aircraft on Taxiways U and V under Alternative C, the Runway 13L ILS-Glideslope would be slightly relocated away from the Taxiway Object Free Area and Taxiways U and V to provide the standard (193') clearance from existing Taxiways U and V. The relocation would be staged in such a way that the site preparation for the relocated facility would be accomplished prior to any Runway 13L-ILS Glideslope outage. Additionally, any downtime or outage would be timed to occur during an extended closure of the Runway (see **Figure 2-3: Taxiways U and V Realignment Alternative C**).

- **Taxiways U and V Realignment Alternative D**

  Taxiways Alternative D would remove the operational restriction for ADG-VI standard Airbus A380 aircraft on Taxiways U and V by shifting the centerline of Taxiway U, V and the intersection of Taxiway U/V/A/B slightly south. To remove the restriction, Taxiways Alternative D would require approval of a MOS from the FAA,

15 American Association of State Highway and Transportation Officials (AASHTO). A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011

allowing the provision of taxilane centerline to object separation (167 feet) instead of taxiway centerline to object separation (193 feet). The Port Authority would propose this modification as an applicable design change due to a 20 mph restriction for ADG-VI aircraft at JFK, in proximity to Taxiways U, V and the intersection of Taxiways U/V/A/B. The realigned taxiway centerlines are shown on **Figure 2-4, Taxiways U and V Realignment Alternative D**.

2.2.3 Implement HSE Taxiway

2.2.3.1 No Action Alternative

The No Action Alternative would maintain the current number of taxiways along Runway 13L-31R. No new HSE would be implemented. Gate arrival delays would not be reduced. This No Action Alternative would maintain the status-quo of current customer experience and airline performance with no reduction in runway and taxiing delays for passengers.

2.2.3.2 HSE Alternative A

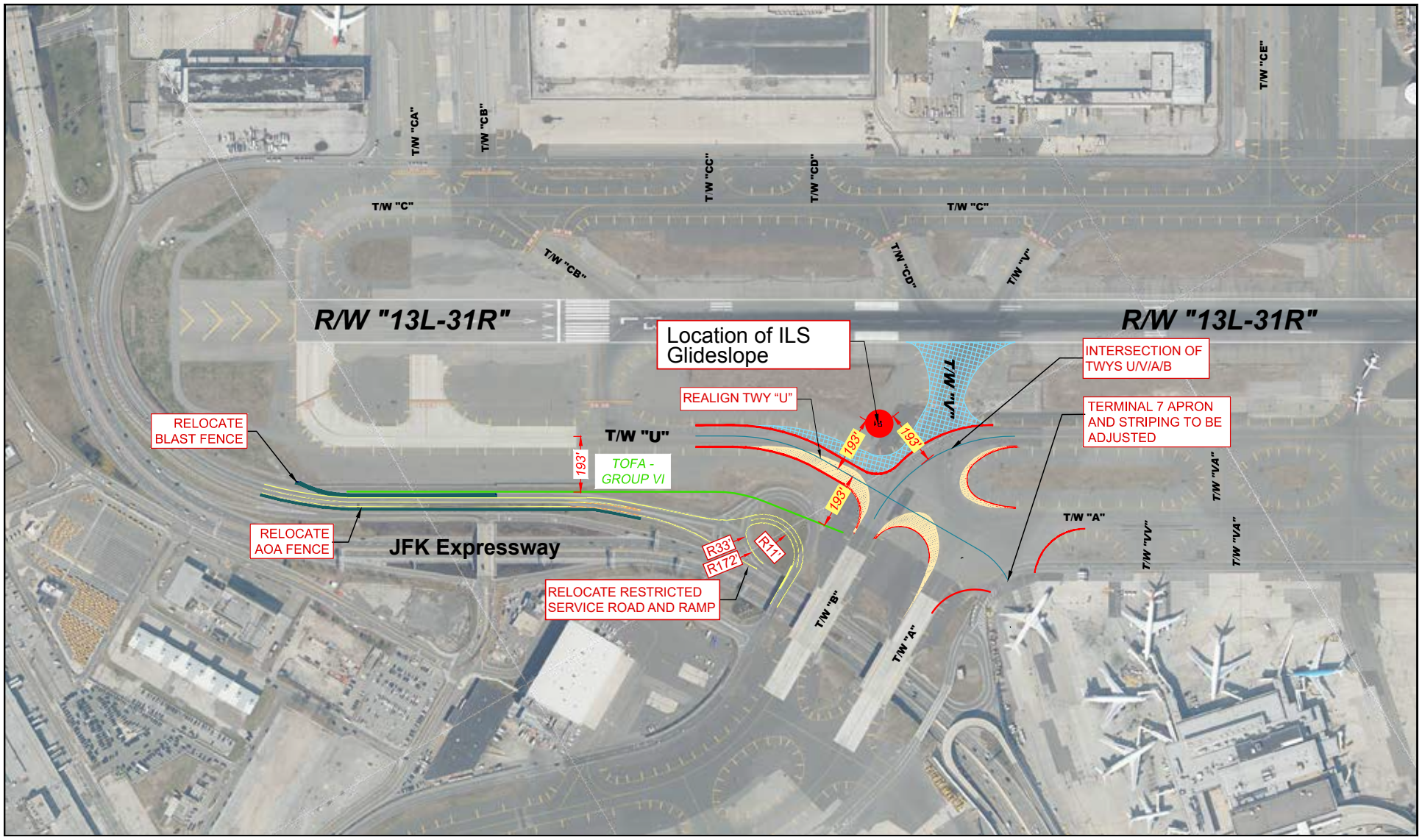
Under the HSE Preferred Alternative, a HSE would be constructed approximately 5,400 feet from the Runway 31R Landing (Displaced) Threshold, between Taxiways V and W. According to the Port Authority's Runway Exit Design Interactive Model (REDIM)[16], this would be the optimal location for a HSE. The proposed HSE would allow aircraft to depart the runway faster, resulting in reduced Runway-Occupancy-Time (ROT) and gate arrival delays. The cumulative time savings of this annual delay reduction would equate to reduced fuel consumption (and reduced air emissions), decreased operating costs, and travel time savings for passengers.[17] Based on the REDIM analysis, it is assumed ROT would reduce by approximately 6 seconds per aircraft after HSE implementation. In combination with the realignment of Taxiways U and V, the ROT is expected to have a slight additional reduction. [18] **Figure 2-5, HSE Alternative A** provides the location of the HSE in combination with the preferred Taxiways U and V Realignment Alternative D.

16 Runway Exit Design Interactive Model (REDIM) is a computer model to locate and design HSE runway exits at an airport. The REDIM estimates runway exit utilization per forecasted aircraft fleet mix.

17 Port Authority Press Release Number: 177-2017, September 28, 2017.

18 Runway Exit Design Interactive Model (REDIM) Analysis, JFK Runway 13L-31R Rehabilitation Runway and Associated Taxiways Improvement Stakeholder Workshop, September 2017.

Not to Scale



- Location of Proposed Runway 13 ILS Glideslope
- New Pavement
- Proposed Realignment of Taxiway Centerline
- Proposed Realignment of Taxiway Edge Marking
- Proposed Restricted Service Road and Ramp
- Relocate Blast Fence and Air Operations Area (AOA) Fence
- Proposed Portion of Taxiway to be Closed
- Taxiway Object Free Area (TOFA) - ADG VI

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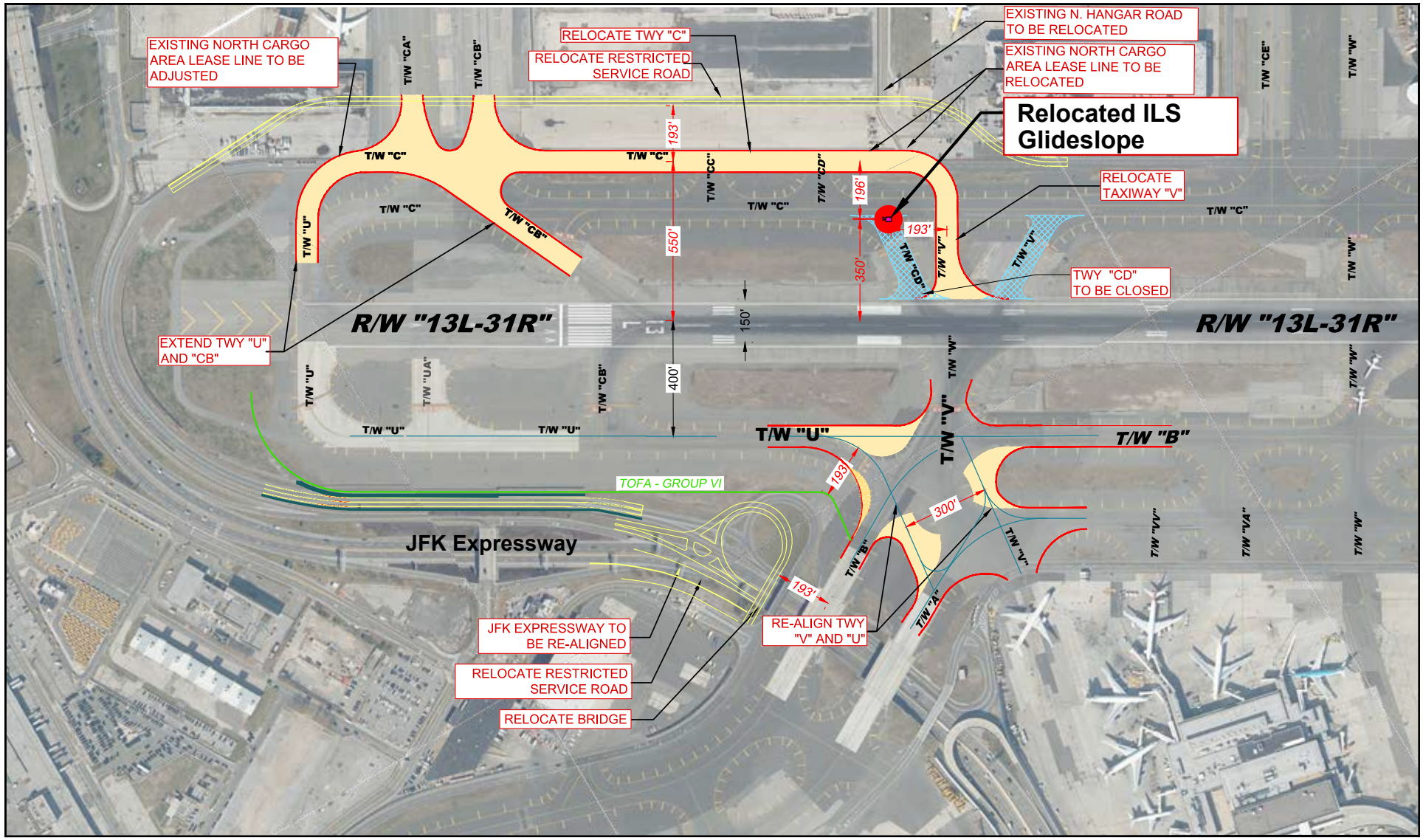
Reconstruction of Runway 13L-31R and Associated Taxiways DRAFT Environmental Assessment

Figure 2-1
Taxiway U and V Realignment Alternative A

Not to Scale



- Location of Proposed Runway 13 ILS Glideslope
- New Pavement
- Proposed Realignment of Taxiway Centerline
- Proposed Realignment of Taxiway Edge Marking
- Proposed Restricted Service Road and Ramp & JFK Expressway
- Relocate Blast Fence and Air Operations Area (AOA) Fence
- Proposed Portion of Taxiway to be Closed
- Taxiway Object Free Area (TOFA) - ADG VI

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Reconstruction of Runway 13L-31R and Associated Taxiways DRAFT Environmental Assessment

Figure 2-2
Taxiway U Realignment Alternative B

Not to Scale

Location of Proposed Runway 13L ILS Glideslope

Source: Runway 13L-31R Rehabilitation Runway and Associated Taxiways Improvement Stakeholder Workshop with Federal Aviation Administration. September 21, 2017.

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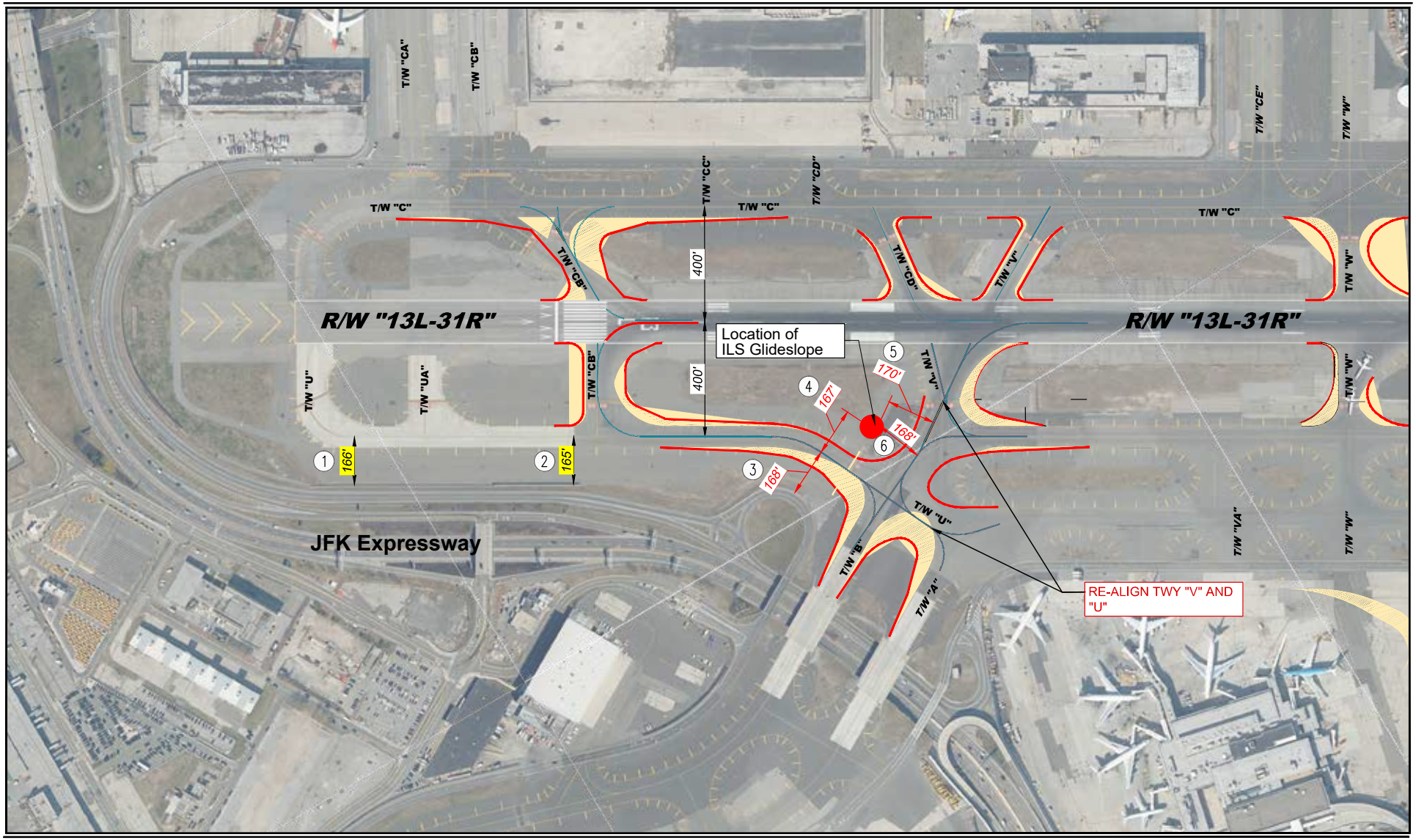
John F. Kennedy International Airport
Reconstruction of Runway 13L-31R and Associated Taxiways DRAFT Environmental Assessment

Figure 2-3
Taxiway U and V Realignment Alternative C

Not to Scale



Location of Proposed Runway 13 ILS Glidescope

New Pavement

Proposed Realignment of Taxiway Centerline

Proposed Realignment of Taxiway Edge Marking

Source: Runway 13L-31R Rehabilitation Runway and Associated Taxiways Improvement Stakeholder Workshop with Federal Aviation Administration. September 21, 2017.

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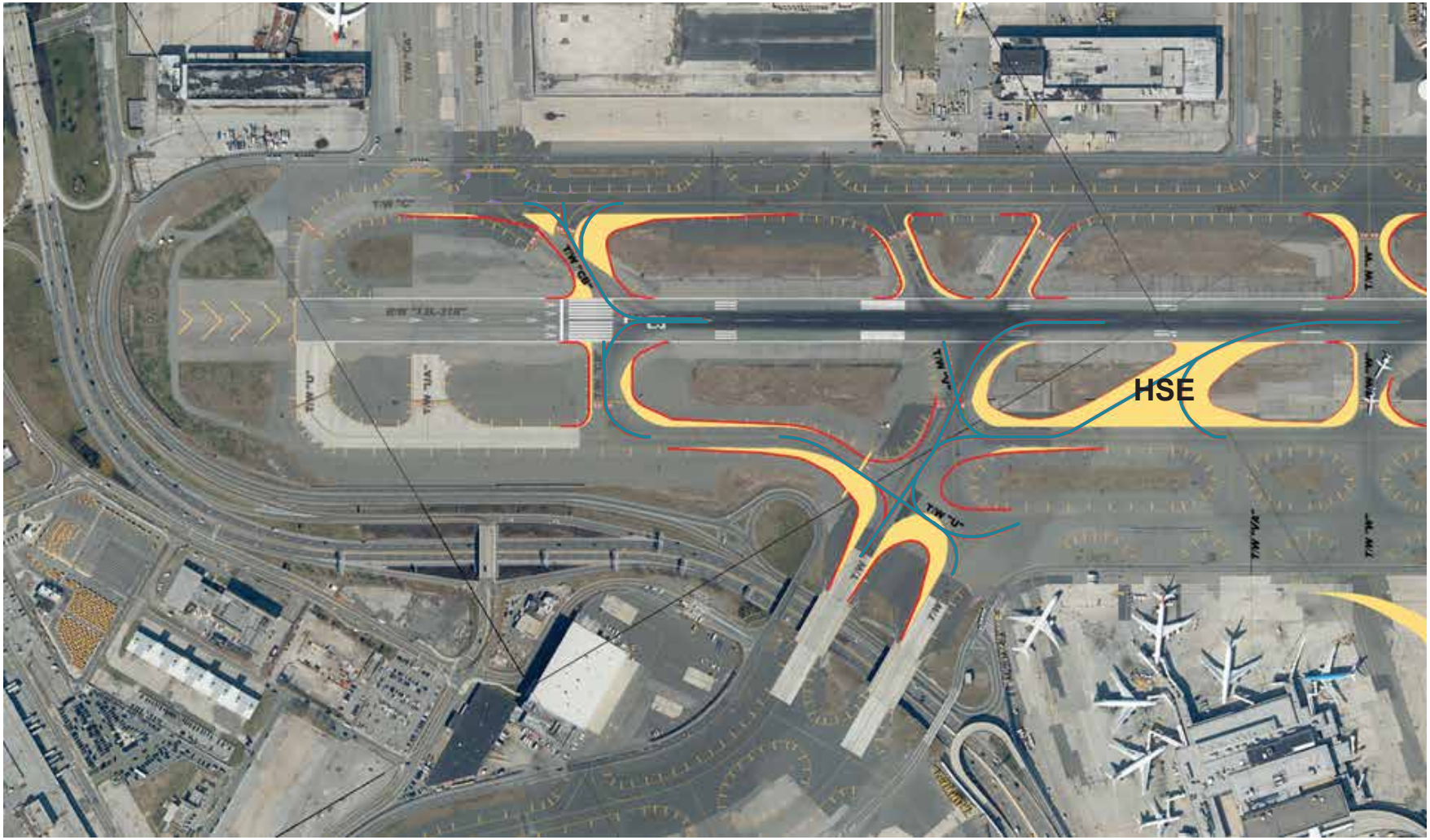
John F. Kennedy International Airport
Reconstruction of Runway 13L-31R and Associated Taxiways DRAFT Environmental Assessment

Figure 2-4
Taxiway U and V Realignment Alternative D

Not to Scale



New Pavement

Proposed Realignment of Taxiway Centerline

Proposed Realignment of Taxiway Edge Marking

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John F. Kennedy International Airport Reconstruction of Runway 13L-31R and Associated Taxiways DRAFT Environmental Assessment

Figure 2-5
HSE Alternative A

Source: Runway 13L-31R Rehabilitation Runway and Associated Taxiways Improvement Stakeholder Workshop with Federal Aviation Administration. September 21, 2017.

2.3 Alternatives Screening Process and Results

A two-tier screening process was established to assess the extent to which the Proposed Project alternatives meet the Project Purpose and Need as outlined in Chapter 1, Section 1.5. The screening process was based on three components of the Proposed Action and associated alternatives outlined below. These alternatives are described in Section 2.2 above.

- **Runway Reconstruction and Widening, and Associated Taxiway Improvements**
  - No Action Alternative
  - Runway Alternative A – Asphalt Rehabilitation
  - Runway Alternative B – Concrete Reconstruction **(Figure 1-2)**

- **Realignment of Taxiways U and V**
  - No Action Alternative
  - Taxiways U and V Realignment Alternative A **(Figure 2-1)**
  - Taxiways U and V Realignment Alternative B **(Figure 2-2)**
  - Taxiways U and V Realignment Alternative C **(Figure 2-3)**
  - Taxiways U and V Realignment Alternative D **(Figure 2-4)**

- **High-Speed-Exit (HSE) Taxiway**
  - No Action Alternative
  - HSE Alternative A (**Figure 2-5**)

The No Action Alternatives for all three Proposed Action components were eliminated from further consideration because they do not meet the Project's Purpose and Need. However, the No Action Alternative is carried forward in the Chapter 4: Environmental Consequences analysis of this EA. The Port Authority anticipates the No Action Alternative would leave Runway 13L-31R in its current condition, and as it continues to deteriorate, the frequency, magnitude and duration of emergency repairs, and closures of the Runway and associated taxiways would increase. Because closure of Runway 13L-31R would require assignment of aircraft to alternate runways at the Airport, longer and more frequent closures of the Runway would likely result in increased noise exposure in areas on either end of the alternate runways. In addition, the operational efficiency of Runway 13L-31R would not be improved because the proposed HSE taxiway and realignment of Taxiways U and V would not be implemented with the No Action Alternatives.

2.3.1 Level 1 Screening and Results

The first level of screening evaluates the ability of the remaining Alternatives to meet AASHTO roadway design standards. All four remaining Alternatives meet AASHTO roadway design standards with the exception of Taxiways U and V Realignment Alternative A. The Taxiways U and V Realignment Alternative A was eliminated from further screening because the proposed design does not meet AASHTO design standards[19] as described below.

- **Taxiways U and V Realignment Alternative A**

  The proposed helical ramp reconfiguration of the RSR ramp at Taxiways B and U features a compound curve with consecutive radii of 172 feet, 33 feet, and 111 feet as measured from the inner edge of the traveled way. This compound curve does not meet roadway guidelines set forth in **AASHTO *A Policy on Geometric Design of Highways and Streets*** (AASHTO, 2011). The AASHTO policy guidance states that when employing compound curves, the ratio of the flatter radius to the sharper radius should not exceed 2:1. The compound curves shown in this alternative have ratios of greater than 5:1 (172 feet to 33 feet) and greater than 3:1 (111 feet to 33 feet). Therefore, the proposed design does not meet AASHTO policy guidance.

2.3.2 Level 2 Screening and Results

The second level of screening assesses the ability of the remaining Alternatives to meet the Proposed Project Purpose and Need while maintaining the current utilization of navigational aid performance. As discussed below, moving the Runway 13L-ILS Glideslope would have a potential negative impact to utilization. Therefore, both Taxiways U and V Realignment Alternatives B and C were eliminated from further consideration during the second level of screening, as noted below.

- **Taxiways U and V Realignment Alternative B**

  Taxiways Alternative B does not meet the Project Purpose and Need while maintaining current utilization of navigational aid performance because it would entail relocating the Runway 13L ILS-Glideslope to the north side of Runway 13L-31R. This relocation would require a new ILS-Glideslope to be installed and operating before the existing Runway 13L ILS-Glideslope could be taken out of service and removed. In addition, the relocation could impact the current ILS-Glideslope Threshold Crossing Height (TCH) of 58', which is the theoretical height

19 "3.3.7 Turning Roadways." Page 3-57 Policy on Geometric Design of Highways and Streets (6th Edition), American Association of State Highway and Transportation Officials (AASHTO), 2011 (hereinafter "AASHTO 2011")

above the runway threshold at which the aircraft glideslope antenna would be if the aircraft maintains its landing trajectory. The TCH is an important reference for pilots to identify the runway landing environment as the pilot descends to the runway for landing.

Due to the relocation of the Runway 13L ILS-Glideslope, Alternative B was eliminated from further consideration because it fails to meet the Project's Purpose and Need while maintaining the current utilization of navigational aid performance.

- **Taxiways U and V Realignment Alternative C**

  Under Taxiways Alternative C, it would be necessary to relocate the Runway 13L ILS-Glideslope slightly within the south side of Runway 13L-31R. This relocation would require a new ILS-Glideslope to be installed and operating before the existing Runway 13L ILS-Glideslope could be taken out of service and removed. Shifting the Runway 13L ILS-Glideslope further away from Taxiway V would also result in a reduction of the Runway 13L ILS-Glideslope TCH (Existing TCH 58'), which may not be acceptable for a precision instrument approach and landing Category II operation by a pilot arriving on Runway 13L-31R.[20] A Category II approach allows for decision heights[21] as low as 100 feet and visibility conditions at 1,200 feet Runway Visual Range (RVR)[22].

  Due to the potential impact to the TCH from the relocation of the Runway 13L ILS-Glideslope, Alternative Taxiways U and V Realignment Alternative C was eliminated from further consideration. This Alternative would not maintain the current utilization of navigational aid performance.

- **Taxiways U and V Realignment Alternative D**

  Taxiways Alternative D is dependent upon a MOS because the design deviates from ADG-VI standards. The Port Authority is seeking a MOS to accommodate a specific need within a constrained area without compromising safety. The MOS would allow Airbus A380 aircraft to exit Runway 31R and use Taxiways U and V, and corresponding intersection of Taxiways U/V/A/B, by modifying the standard distance needed between the taxiway and the Runway 13L-ILS Glideslope. The MOS

20 A Category II operation is a precision instrument approach and landing with a decision height between 200' and 100'.

21 Decision Height: height at which a decision must be made during an instrument landing system (ILS) instrument approach to either continue the approach or to execute a missed approach.

22 Runway Visual Range (RVR): Equipment that measures visibility, background luminance, and runway light intensity to determine the distance a pilot should be able to see down the runway.23 An area of runway, taxiway, or taxilane centerline which is free of objects, except for objects that need to be located in the OFA for air navigation or aircraft maneuvering purposes. The purpose of the OFA is to enhance safety for aircraft operations.

would also reflect the existing 20 mph restriction for Airbus A380 aircraft at the Airport. If the MOS is approved, JFK would be able to accommodate Airbus A380 aircraft from Runway 31R without the relocation of the Runway 13L ILS-Glideslope, JFK Expressway, or RSR ramp immediately northwest of the Taxiway B bridge structure.

The Port Authority would request a MOS to the Advisory Circular (AC) 150/5300-13A – Change 1, Airport Design Table 4.1 (design standards based on ADG-VI). According to this design standard for ADG-VI, the Taxiway Object Free Area (TOFA)[23] should be 386 feet and 193 feet from the centerline. The Port Authority would request a MOS of this design standard to reduce the separation from the centerline of Taxiways U and V to 167 feet and 170 feet, respectively, from the neighboring Runway 13L ILS-Glideslope. A similar separation of 168 feet from the Taxiways U/V/A/B intersection centerline to the Runway 13L ILS-Glideslope would be implemented as well. These changes would result in a decreased TOFA for Taxiways U and V within a 20 mph restriction for Airbus A380 aircraft at JFK.

Alternative D is the Preferred Alternative for the Taxiways U and V Realignment. The Alternative meets the Project Purpose and Need of allowing for Airbus A380 aircraft operations along Taxiway U while maintaining the current utilization of navigational aid performance.

2.3.3 Runway Alternatives – Asphalt Rehabilitation versus Concrete Reconstruction

Both alternatives for repairing the runway passed the two-tier screening level process. Rehabilitating the runway with asphalt or reconstructing it with concrete meet the Purpose and Need as well as the criteria in the two screening levels. However, reconstruction of the Runway with concrete has several advantages over rehabilitating the Runway's asphalt pavement as described below.

- Reconstructing with concrete would increase the useful life of the pavement from 10 to 40 years. Extending the runway pavement's useful life by 30 years would reduce the need for future recurring runway closures to conduct routine maintenance and emergency repairs, along with the need to assign flights to other runways during such closures. By contrast, asphalt runway rehabilitation at JFK typically lasts only approximately 10 years before pavement rehabilitation is required. Reducing the need for future recurring runway closures for pavement rehabilitation work every 10

23 An area of runway, taxiway, or taxilane centerline which is free of objects, except for objects that need to be located in the OFA for air navigation or aircraft maneuvering purposes. The purpose of the OFA is to enhance safety for aircraft operations.

years, and routine pavement maintenance and emergency repairs, would in turn lessen noise impacts associated with assignment of aircraft to other runways during construction.

- Concrete reconstruction of the Runway would require a shorter runway closure duration, 330 days for asphalt versus 229 days for concrete. The shorter runway closure period minimizes both the disruption to JFK aircraft operations and the community impacts (noise) associated with having to assign aircraft to other runways at JFK.

- The durability and long-life expectancy of concrete reduces the operating and capital costs to maintain the runway pavement over time compared to asphalt.

For the technical and operational reasons stated above, Runway Alternative B is the Preferred Alternative.

The environmental assessment contained herein further supports Runway Alternative B as the Preferred Alternative. Specifically, Runway Alternative B would result in less air pollutant emissions and noise exposure to the surrounding communities during construction than Runway Alternative A based on the air quality and noise analyses conducted as part of this EA (see Chapter 4).

2.3.4 Preferred Alternative

- **Runway Alternative B – Concrete Runway Reconstruction**

  The Preferred Alternative would replace 8,850 feet of Runway 13L-31R asphalt with concrete pavement at 18 inches thick on a 2-inch asphalt leveling and rehabilitate associated taxiway asphalt pavement. This would be accompanied by 40-foot shoulders and 40-foot erosion pavement. The Runway would also be widened from 150 to 200 feet to meet ADG VI standards, and the taxiway fillets would be improved/widened with new taxiway, shoulder, and erosion pavement to meet FAA design standards. The reconstruction would be accompanied by replacement of electrical and drainage infrastructure, signage and foundations, and pavement markings. In addition, Taxiway YA would be modified with new taxiway, shoulder, and erosion pavement to accommodate a potential future taxiway project after Runway 31R reopens.

- **Taxiways U and V Realignment Alternative D**

  Taxiways U and V would be realigned to allow for a 167 feet and 170 feet separation from the centerline of Taxiways U and V sto the Runway 13L ILS-Glideslope,

respectively. This Alternative is dependent upon a FAA approval of a MOS for an object separation.

- **HSE Taxiway Alternative A**

  Implement a new HSE taxiway between Taxiways V and W to reduce ROT by approximately 6 seconds.[24] The HSE taxiway would be approximately 5,400 feet from the Runway 31R Landing (Displaced) Threshold.

The Preferred Alternative would maintain Runway 13L-31R in a state-of-good repair, while enhancing JFK airfield operations. The No Action Alternatives are not viable options because they do not maintain operations of Runway 13L-31R, do not reduce ROT, nor improve operational efficiency at JFK. **Table 2-4** provides an overview of the screening results and which Alternatives progressed as the Preferred Alternative based on the two level screening process.

24 Runway Exit Design Interactive Model (REDIM) Analysis, JFK Runway 13L-31R Rehabilitation Runway and Associated Taxiways Improvement Stakeholder Workshop, September 2017.

Table 2-4: Alternatives Screening Results (Selected Alternatives)

Alternatives	Does Alternative Conform to Screening Criteria?	Carried Forward for Detailed Environmental Review?
No Action Alternatives	• Does not meet Purpose and Need	Yes (as required by CEQ regulations)
Rehabilitate Runway and Improve/Widen Taxiway Filets		
Runway Alternative A (Asphalt Rehabilitation)	• Rehabilitate Runway 13L-31R and associated taxiway pavement • Improve/widen taxiway fillets • 330 days of runway closure plus 94 days of runway operational restrictions during construction • Does not minimize construction related air emissions • Life cycle maintenance costs and runway closures (about every 8-12 years)	Yes
Runway Alternative B (Concrete Reconstruction)	• Replace and widen Runway 13L-31R asphalt pavement with concrete and rehabilitate associated taxiway pavement • Improve/widen taxiway fillets • 229 days of runway closure during construction • Lower construction related air emissions compared to asphalt rehabilitation • Life cycle maintenance costs and runway closures (about every 40 years)	Yes
Realignment of Taxiways U and V		
Alternative A	• Does not meet AASHTO roadway design standards • Removes Airbus A380 aircraft operational restrictions from Runway 31R	No
Alternative B	• Does not maintain current utilization of navigational aid performance • Removes Airbus A380 aircraft operational restrictions from Runway 31R	No

Alternatives	Does Alternative Conform to Screening Criteria?	Carried Forward for Detailed Environmental Review?
Alternative C	• Does not maintain current utilization of navigational aid performance • Removes Airbus A380 aircraft operational restrictions from Runway 31R	No
Alternative D	• Maintains current utilization of navigational aid performance • Removes Airbus A380 aircraft operation restrictions from Runway 31R	Yes
New HSE Taxiway		
Implement HSE Taxiway	• Increases operational efficiency from Runway 13L-31R and JFK Airport overall.	Yes

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3. Affected Environment

This chapter of the Environment Assessment (EA) identifies the natural and human environment within the Proposed Project's Study Area (see Section 3.1 below). Federal Aviation Administration (FAA) Order 1050.1F (the Order) states that for analysis under the National Environmental Policy Act (NEPA), an affected environment "succinctly describes the environmental conditions of the potentially affected geographic area or areas."[25] The Order presents details on the resource categories that should be analyzed, if applicable.

In this chapter, the existing (baseline) conditions for those resource categories within the Proposed Project's Study Area are summarized. Due to the Proposed Project's characteristics and the location of JFK, 5 of the 13 resource categories are not applicable to this analysis. These are Hazardous Materials, Solid Waste, and Pollution Prevention; Natural Resource and Energy Supply; Prime and Unique Farmlands; Visual Effects (Light Emissions, Visual Resources/Visual Character); and Water Resources. The reasons these categories are dismissed from further consideration are presented in Section 3.2 Resource Categories Not Applicable. The remaining resource categories are discussed in Section 3.3 Resources Present.

25 Federal Aviation Administration. Order 1050.1F. Environmental Impacts: Policies and Procedures, pg. 6-2. July 16, 2015.

3.1 Study Area

A study area for a NEPA environmental review is defined three ways: direct impact area, indirect effects area, and context[26] area.

Direct Impact Area: A direct impact area is one that would be physically affected by a proposed action within a study area (for example, by construction). The direct impact area for the Proposed Action is defined as Runway 13L-31R, the taxiways associated with the Runway, and the construction of a new HSE taxiway (see **Figure 1-1, Project Location**).

Indirect Effects Areas: An indirect effects area is located outside of the direct impact area and is defined for each resource category that considers indirect effects. Indirect effects must be evaluated for the following resource categories: Department of Transportation, Section 4(f); Historical, Architectural, Archaeological, and Cultural Resources; Compatible Land Use; Noise and Noise-Compatible Land Use; and Visual Effects (Light Emissions, Visual Resources/Visual Character).

Context Area: The extent of a study area must be broad enough to estimate the potential impacts of the alternatives considered. According to the Council on Environmental Quality (CEQ), context is "the geographic, biophysical, and social context in which the effects will occur" with a focus on the project's effects on the local area, as directed by 40 CFR 1508.[27] For the purposes of this Project, a one-mile radius around Runway 13L-31R was used to define the local, or context, area and applied to the following resource categories: Visual Effects, Department of Transportation Act Section 4(f), and Historical, Architectural, Archaeological and Cultural Resources.

3.2 Resource Categories Not Applicable

Federal Aviation Administration (FAA) Order 1050.1F (the Order) identifies 13 resource categories that must be evaluated, if applicable, in an EA analysis. As discussed in Sections 3.2.1 through 3.2.6 below, the following five resource categories are not applicable to the Proposed Project:

- Hazardous Materials, Solid Waste, and Pollution Prevention
- Natural Resource and Energy Supply
- Prime and Unique Farmlands
- Visual Effects (Light Emissions, Visual Resources/Visual Character)
- Water Resources

[26] Council on Environmental Quality Executive Office of the President and Advisory Council on Historic Preservation. *A Handbook for Integrating NEPA and Section 106*. March 2013, Page 40.

[27] Council on Environmental Quality Executive Office of the President and Advisory Council on Historic Preservation. *A Handbook for Integrating NEPA and Section 106*. March 2013, Page 40.

3.2.1 Hazardous Materials, Solid Waste, and Pollution Prevention

Requirements related to hazardous materials, solid waste and pollution prevention fall under various federal environmental statutes and their regulations, including Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (regulated under 40 CFR parts 300, 311, 355, 370 and 373), Resource Conservation and Recovery Act (RCRA) (regulated under 40 CFR parts 240-299), Toxic Substances Control Act (TSCA) (regulated under 40 CFR parts 745, 761 and 763), as well as New York State Department of Environmental Conservation (NYSDEC) regulations (including 6 New York Code of Rules and Regulations (NYCRR)) and local regulations.

FAA NEPA Order 1050.1F requires evaluation of waste streams generated, potential hazardous materials that could be utilized during construction, the potential to encounter hazardous materials at contaminated sites during construction, and the potential to interfere with ongoing remediation of existing contaminated sites during construction.

Based on a visual site inspection of the Proposed Project Site on October 27, 2017, no structures are present, the paved runway areas are in various states of disrepair, and there are landscaped areas and a subgrade drainage system. Water in drainage structures on the eastern half of the runway drains to Outfall No. 22 and water on the western half of the runway drains to Outfall No. 10. No tanks or storage of hazardous materials were observed during the visual inspection.

Environmental Database Review and Summary

Environmental Data Resources, Inc. (EDR)[28] was retained to provide a computerized database search within an American Society of Testing and Materials (ASTM) Practice E1527-05-standard radius for the Proposed Project Site (**Appendix B, EDR Report**).[29] The database output was reviewed to determine if areas within the Proposed Project Site are on any of the regulatory agency lists. According to the EDR database report, one closed NYSDEC Spill is associated with the Proposed Project Site, Spill No. 1306219. This release was reported on September 12, 2013 following the release of approximately five gallons of jet fuel. A majority of the release was contained to the concrete with minimal volume entering a catch basin. The release was remediated, and an absorbant boom was placed in Outfall No. 22, downstream. The absorbant boom was monitored daily for one week. No evidence of release at Outfall No. 22 was observed at the absorbant boom and the NYSDEC issued a letter of no further action for this incident on November 25, 2013. There is no indication that soil and/or groundwater beneath the Proposed Project Site have been impacted as a result of this release.

28 The EDR report searches various state and federal databases including, but not limited to, NYSDEC spills and hazardous waste disposal site databases, and United States Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), Resource Conservation and Recovery Act (RCRA), and National Priority List (NPL) databases.

29 EDR Radius Map Report with GeoCheck, JFK Runway 13L-31R, Inquiry Number 5111424.2s, November 17, 2017.

Solid Waste

The Solid Waste Disposal Act (SWDA) of 1965 (42 USC Sections 6901 et Seq.) provides regulations regarding the disposal of solid waste to reduce danger to human health and the environment. Under the SWDA, solid waste includes (among other things) garbage, refuse, and sludge from waste water treatment plants, water supply treatment plants, and air pollution control facilities. Solid waste also includes other discarded material, including solid, liquid, semisolid, or contained gaseous material generated from industrial, commercial, mining, agricultural and/or community activities. In addition, solid waste is construction debris, including asphalt concrete, Portland cement concrete, steel, and excess unrestricted soil.

The contractor would be responsible for retaining a waste hauler to remove garbage and refuse generated during construction of the Proposed Project. Construction debris generated during the removal of the existing runway surface to the subgrade in preparation for conversion to concrete would be managed in accordance with all applicable regulations. Under Port Authority policy, no less than 75% by weight of the construction debris (including asphalt, concrete, Portland cement, steel, and excess unrestricted soil) would be transported by the contractor to a recycling facility.[30]

There are no septic, potable water, or water treatment facilities located within the Proposed Project Site or immediately adjacent to it.

Hazardous Waste

Hazardous waste is solid waste that exhibits the characteristics of ignitibility, corrosivity, reactivity and/or toxicity as defined in 40 CFR Part 261 Subpart C, or is listed in 40 CFR Part 261 Subpart D. A hazardous substance is a broad term defined in Section 101(14) of Compensation and Liability Act (CERCLA) and includes specific elements, compounds, mixtures, solutions and wastes outlined in specific sections of the Comprehensive Environmental Response, CERCLA, Clean Water Act (CWA), RCRA, the Clean Air Act (CAA) and the TSCA. A hazardous material is a substance or material which poses an unreasonable risk to health, safety and property when transported in commerce.

There is no indication that hazardous waste, hazardous substances or hazardous materials are present, or will be introduced during construction, within the Proposed Project Site.

Pollution Prevention

The contractor will ensure that all equipment utilized for the Proposed Project is properly maintained to prevent the release of gasoline, diesel, hydraulic fluid and other materials. The contractor will maintain containment equipment, emergency spill kits and oil booms in the immediate vicinity of the

30 Email communication from Yatsun Lau (Port Authority) to Kathryn Lamond (Port Authority (Dec. 6, 2017).

Proposed Project Site to immediately address any inadvertent release of fluids from on-site equipment.

Based upon the information provided above, there is no evidence of environmental consequences related to hazardous materials, solid waste or pollution prevention as a result of the Proposed Action.

3.2.2 Natural Resources and Energy Supply

Under 40 CFR 1502.16 (e) and (f), consideration must be given to the energy requirements of the proposed activities and the use of natural or consumable resources. Runway 13L-31R and associated taxiways uses electricity for lighting and signage systems. The Proposed Project includes electrical improvements such as the in-kind replacement of the existing lighting and signage systems along with the installation of some additional signage and lighting fixtures for the new HSE taxiway. All of Runway 13L-31R and associated taxiway lighting, except for the Runway's edge lights, will use LED fixtures to improve energy efficiency. Some additional electrical power would be required to service the additional signage and lighting fixtures to be installed as part of the Proposed Project. However, this would be offset by the reduction in energy consumption attributable to new energy efficient LED lighting. For this reason, it is anticipated that overall energy consumption would decrease compared with existing conditions.

During construction of the Proposed Project, energy usage would increase temporarily. However, this increase would be offset slightly as the Runway lighting system would not require electric power during construction. Energy use during construction would only be temporary, and therefore, would not cause a burden to other activities or the supply of electricity to the surrounding community. Use of consumable materials, primarily paving materials, would also increase temporarily during construction.

Construction-related energy and resource usage would be temporary and primarily include the fuel to operate construction vehicles and equipment, equipment for the disposal of existing soil and asphalt concrete pavement,[31] and equipment associated with the removal of old electrical material. As required by the Port Authority's Sustainable Infrastructure Guidelines, materials would be reused or recycled to the extent feasible[32] and materials that cannot be reused or recycled would be disposed of at approved disposal sites. While the Sustainabile Infrastructure Guidelines do not provide a quantitative metric for reusing materials, the stated goal is to "reuse the maximum amount of

31 Personal communication. Yatsun Lau to Kathryn Lamond re: soil and asphalt concrete disposal procedures referencing 50% Environmental Drawing N102 and example of "Recycling of Construction Debris Materials." December 6, 2017.

32 The Port Authority of NYNJ. Sustainable Infrastructure Guidelines, March 23, 2011, page 90.

materials and products without compromising quality or function."[33] The required percentage of recycled content varies by material. Consistent with the Sustainable Infrastructure Guidelines, several energy conservation elements for the Proposed Project would be implemented (i.e., LED lighting for the runway touchdown zone lights, taxiway centerline lights, taxiway edge lights, runway guard lights and guidance signs).[34]

In summary, as described above, the increase in energy usage and consumable resources during construction would be temporary and not result in a significant impact. In the long term, the energy conservation elements that would be implemented may result in a decrease in energy demand compared to current energy usage.

3.2.3 Prime and Unique Farmlands

The Farmland Protection Policy Act (FPPA) of 1994[35] regulates federal actions with the potential to convert farmland to non-agricultural uses. The FPPA assures that to the extent possible, federal programs are administered to be compatible with state and local government, and private programs and policies to protect farmland.

The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) identifies the Proposed Project and adjacent soil map units as Laguardia-Urban land complex, 3 to 8 percent slopes (LUB); Secaucus artifactual fine sandy loam, 0 to 3 percent slopes (SeA); Urban land – Laguardia complex, 0 to 3 percent slopes; and Urban land, tidal marsh substratum, 0 to 3 percent slopes (UmA). These soil units are classified by USDA NRCS as "Not prime farmland."[36] (USDA 2017:13-19).

The soils beneath the proposed Proposed Project Site and adjacent areas consist of made-lands (fill material) overlying tidal marsh. These areas have never been used for agricultural purposes. Therefore, FPPA regulations do not apply.

33 The Port Authority of New York & New Jersey. Sustainable Infrastructure Guidelines. Updated March 23, 2011.

34 The Port Authority of New York & New Jersey. JFK International Airport, Rehabilitation of Runway 13L-31R and Associated Taxiways 50% Engineering Drawings, 09/29/17, Drawing E101, Electrical Legend.

35 Agricultural and Food Act of 1981 (Public Law (97-98) containing the Farmland Protection Policy Act (FPPA) subtitle I of Title XV, Section 1539-1549, final rules and regulations, June 17, 1994.

36 USDA NCRS. 2017. Custom Soil Report for Queens County, New York VHB 26209.01. Report downloaded 11/5/17, USDA_20171105_13415401085_297_Soil_Report.pdf.

3.2.4 Visual Effects (Light Emissions, Visual Resources/Visual Character)

According to FAA Order 1050.1F, issued July 16, 2015, the FAA must consider the "degree to which the action would have the potential to create annoyance or interfere with normal activities from light emissions; and affect the visual character of the area due to light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources," as well as the "extent the action would have on the potential to affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources; contact with the visual resources and/or visual character in the study area; and block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations." [37]

Light Emissions

Existing light emissions at and adjacent to the Proposed Project Site that are associated with the operations of Runway 13L-31R and associated taxiways include airfield and apron/ramp flood lighting, navigational aids, and light generated from aircraft launches. In addition, there are also light emissions associated with hangar lighting, parking facility lighting, and roadway lighting located adjacent to Runway 13L-31R. The existing lighting associated with the operations of Runway 13L-31R is designed to provide a safe environment for aircraft, vehicles and maintenance personnel at JFK. In addition, there are light emissions associated with the JFK Expressway and Nassau Expressway/ Rockaway Boulevard located west and north of the Runway. These transportation corridors, as well as commercial and/or industrial land uses, separate all residential uses north of JFK from the Proposed Project Site. These residences are currently subject to light emissions from roadways and adjacent commercial and/or industrial uses.

There are Section 4(f) resources (parks, wildlife refuges, recreational areas, and historic properties) within a one-mile radius of the Proposed Project, but none are in or adjacent to the Proposed Project direct impact area. Therefore, no such properties are affected by light emissions associated with operations of Runway 13L-31R. In addition, there are no Section 106 resources[38] within or adjacent to the Proposed Project that are affected by existing light emissions and/or would be affected by changes to light emissions as a result of the Proposed Project. No Section 6(f) properties (parks that have received funding from the U.S. Department of the Interior) within a one-mile radius of the Proposed Project area, and, therefore, no such resources would be affected by light emissions from the Proposed Project (see further discussion in Section 3.3.5).

37 FAA Order 1050.1F, Paragraph 4-1.

38 A Section 106 resource is a building, structure, archaeological site, object, historic district, cultural landscape, or place of religious and cultural significance that is evaluated under the National Historic Preservation Act of 1966, as amended, for possible inclusion into the National Register of Historic Places.

Likewise, the following parks currently are subject to light emissions from major transportation corridors (Nassau Expressway/Rockaway Boulevard) which separate the parks from the Proposed Project:

- Idlewild Park is approximately 2,550 feet north of the Proposed Project.
- Baisley Pond Park is approximately 3,150 feet northwest of the Proposed Project.
- Springfield Park is 3,800± feet north of the Proposed Project.
- Hook Creek Park is approximately 4,050 feet northeast of the Proposed Project.
- Belt Parkway is 4,600± feet north of the Proposed Project.
- Brookville Park is approximately 5,800 feet north of the Proposed Project.

The Proposed Project would not result in any significant change to the existing light emissions or glare among the indirect effects area. Therefore, further consideration of impacts of light emissions and/or glare resulting from the Proposed Project's implementation is not warranted.

Visual Resources and Visual Character

As discussed in detail in Sections 3.3.5 and 3.3.6, there are no Section 4(f) or Section 106 properties in the Direct Impact Area and immediately adjacent areas that would be affected by the Proposed Action. As discussed in Section 3.3.6, there are historic properties within the study area, but such resources are not within the Direct Impact Area. Finally, there are no Section 6(f) properties near the Proposed Project.

The Proposed Action is consistent with the land uses within the existing viewshed (i.e., airport, commercial, and industrial uses), and therefore, would not affect existing visual character. There are no unique visual resources, either protected or unprotected, within one-mile of the Proposed Project Site that could be affected by changes to visual character. Due to the relatively flat topography and the presence of structures and transportation corridors that separate the neighboring communities from JFK, the on-ground operations at JFK are not visible from the residences, and are not part of the visual character within these neighborhoods. Therefore, further consideration of visual impacts from the Proposed Project's implementation that could affect visual resources and proximate land uses is not warranted.

3.2.5 Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

As defined by the FAA Order 1050.1F and its associated desk reference, water resources include wetlands, surface waters, floodplains, groundwater, and wild and scenic rivers.[39] These resources function together as integrated components of a watershed. Accordingly, the water resources

39 Federal Aviation Administration Office of Environment and Energy. 1050.1F Desk Reference. 2015.

assessment provided herein includes analyses of the five individual water resource categories (wetlands and surface waters, floodplains, groundwater, and wild and scenic rivers), as well as their integrated function as components of the overall watershed. No surface waters that are listed under the federal Wild and Scenic Rivers Act (WSRA) and its implementing regulations (36 CFR part 297, subpart A) or in the New York State Wild, Scenic and Recreational Rivers Act are located at or in the vicinity of the Proposed Project Site and they are not considered in the watershed assessment.

Wetlands and Surface Waters

The United States Army Corps of Engineers (USACE) and the United States Environmental Protection Agency (EPA) jointly define wetlands as: *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas such as wet meadows, mud flats, rivers, streams, as well as estuarine areas."*[40] At the federal level, such features are protected by Executive Order 11990 (*Protection of Wetlands*), the Fish and Wildlife Coordination Act, DOT Order 5660.1A (*Preservation of the Nation's Wetlands*), Rivers and Harbors Act, Safe Drinking Water Act and Sections 401 and 404 of the Clean Water Act (CWA). Among other protective measures, these laws direct federal agencies to avoid the destruction and modification of, or construction within, existing wetlands where there is a practicable alternative.

According to the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, there are no wetlands or surface waters that may be regulated by the federal government located at or proximate to the Proposed Project Site (**Figure 3-1, Wetlands within One-mile Study Area**).

According to the NYSDEC Tidal Wetlands Maps and the NYSDEC Environmental Resource Mapper (ERM) website, there are no NYSDEC-regulated wetlands (either tidal or freshwater) or surface waters located at or proximate to the Proposed Project Site (see **Figure 3-1**). No wetlands or surface waters were observed at or adjacent to the Proposed Project Site during the field assessment.

Surface water habitats, however, are present on three sides of JFK, including Bergen Basin (west and northwest), Thurston Basin (northeast), Head of the Bay (east) and the Jamaica Bay estuarine complex (south). The closest surface water habitat occurs approximately 1,100 feet to the north-northeast of the Proposed Project Site and is associated with Thurston Basin.

The Jamaica Bay estuarine complex (approximately 8,800 feet south of the Proposed Project Site) consists of extensive marine open water habitats, with numerous islands, tidal creeks, marshes,

40 United States Army Corps of Engineers. Wetlands Delineation Manual, Wetlands Research Program Technical Report Y-87-01. 1987.

Sources: USFWS National Wetlands Inventory (2016); NYSDEC Tidal Wetlands (2016); NYS Orthos-imagery (2016).

Legend

- Project Area
- Existing Pavement
- New Full Depth Pavement - Taxiway
- New Full Depth Pavement - Fillet
- One-Mile Radius
- Airport Boundary

NWI Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

NYSDEC Tidal Wetlands

- High Marsh
- Intertidal Marsh
- Littoral Zone
- Coastal Shoals, Bars and Mudflats

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Figure 3-1
Wetlands within One-Mile Study Area

brackish ponds and upland field and wooded habitats. These largely undeveloped features represent habitat for birds, mammals, amphibians, reptiles, finfish, insects and other wildlife, and are an important recreational resource. The majority of the aquatic and wetland habitats within Jamaica Bay have been designated as a New York City Special Natural Waterfront Area (SNWA) and NYSDEC Significant Coastal Fish and Wildlife Habitat (SCFWH).

Floodplains

Floodplains are defined in Executive Order (EO) 11988, Floodplain Management, issued May 24, 1977, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including, at a minimum, that area subject to a one percent or greater chance of flooding in any given year."[41] The EO 11988 directs federal agencies to reduce the risk of flood loss, minimize the impacts of floods on human safety, health, and welfare and restore and preserve the natural and beneficial values served by floodplains. FAA Order 1050.1F also established the criteria for FAA floodplain impacts evaluation and how to determine if a "significant floodplain encroachment" would occur.

Pursuant to the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding. The resultant maps are referred to as FEMA Flood Insurance Rate Maps.[42] FEMA defines the 100-year flood event (also known as the base flood of one-percent annual flood) as the flood that has a 1% chance of being equaled or exceeded in any given year. Most federal and state agencies use the 100-year flood event as the standard for regulations related to floodplain management. FEMA defines the 500-year flood event as the flood that has a 0.2% chance of being equaled or exceeded in any given year.

According to FEMA Flood Insurance Rate Maps, no part of the Proposed Project Site is located within the 100-year floodplain (**Figure 3-2, Flood Zones within One-mile Study Area**).

Groundwater

At the Federal level, groundwater resources are protected by the Safe Drinking Water Act, which prohibits federal agencies from funding actions that would contaminate an EPA-designated sole source aquifer[43] or its recharge area. At the state level, the NYSDEC has established various water quality standards and regulations to protect groundwater (see 6 NYCRR Parts 700-706).

41 Executive Order 11988, https://www.archives.gov/federal-register/codification/executive-order/11988.html

42 FEMA Flood Insurance Rate Map (FIRM) = A FIRM is a flood map created by the Federal Emergency Management Agency (FEMA) used by the National Flood Insurance Program (NFIP) for floodplain management, mitigation, and insurance purposes. https://www.fema.gov/faq-details/Flood-Insurance-Rate-Map, accessed 1/15/18.

43 Sole source aquifer = EPA defines as an aquifer 1) as one that supplies at least 50 percent of the drinking water for its service area and 2) as one that has no reasonably available alternative drinking water sources should the aquifer become contaminated. https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#What_Is_SSA, accessed 1/15/18.

Sources: FEMA Preliminary Flood Insurance Rate (FIRM) Map (2017); NYS Orthos-imagery (2016).

Legend

- Project Area
- Existing Pavement
- New Full Depth Pavement - Taxiway
- New Full Depth Pavement - Fillet
- One-Mile Radius
- Airport Boundary

Flood Zones

- 1% Annual Chance Flood Hazard (100-Year Flood)
- 0.2% Annual Chance Flood Hazard (500-Year Flood)

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Figure 3-2
Flood Zones within One-Mile Study Area

Based on a review of the U.S. Geological Survey (USGS) Long Island Depth to Water Viewer (2013), depth to groundwater beneath the Proposed Project Site is approximately five-to-ten feet below ground surface (bgs). The proximity of Thurston Basin to the Proposed Project (approximately 1,100 feet to the northeast of the Proposed Project Site at its nearest point) may cause the groundwater table elevation beneath the Proposed Project Site to rise and fall with the tides.

As detailed on the the Port Authority stormwater zone map for JFK (**Figure 1-7**), stormwater at the Proposed Project Site is collected by a system of drainage structures and is conveyed beneath the surface to outfalls discharging to Thurston Bay and Jamaica Bay. However, some sheet flow at the Proposed Project Site infiltrates directly into grassy areas adjacent to the runway and taxiways without being captured by the conveyance system.[44] Thus, while the majority of stormwater is directed to adjacent surface waters (i.e., Thurston Bay and Jamaica Bay), groundwater beneath the Proposed Project Site is subject to stormwater influence through surface infiltration in select areas. The Port Authority Environmental Engineering Department will prepare a Stormwater Pollution Prevention Plan prior to the start of construction that will specify the pollution prevention measures that will be implemented during site preparation, construction and post-construction.[45] Activities in the post-construction period specific to the Proposed Project would include the removal of sediment barriers once seeded areas have been stabilized or restored.[46]

Wild and Scenic Rivers

No surface waters that are listed under the federal Wild and Scenic Rivers Act (WSRA) and its implementing regulations (36 CFR Part 297, Subpart A) are located at or within one-mile of the Proposed Project. As a result, no WSRA analysis will be presented as part of the discussion of Water Resources.

Similar to the federal WSRA, the New York State Wild, Scenic and Recreational River Systems Act (WSRRS; Title 27, Article 15 of the Environmental Conservation Law, 1972) and its implementing regulations (6 New York Code of Rules and Regulations [NYCRR] Part 666) protect those rivers within New York State determined by the State to possess outstanding scenic, ecological, recreational, historic, and/or scientific values. Based on the review of the WSRRS list of protected rivers, there are no protected rivers at or within one-mile of JFK.

44 Personal communication. 2017 (November 16). Kathryn Lamond to Carol S. Weed, email, re: sheet flow dispersal to outfall and grassy areas.

45 Personal communication. 2017 (November 2). Yatsun Lau to Kathryn Lamond, email, re: stormwater and pollution prevention plan.

46 Port Authority of New York & New Jersey. 2017 (September 29). 50% Plan, Rehabilitation of Runway 13L-31R and Associated Taxiways, Soil Erosion and Sediment Control Details, NY Project with SWPPP – Soil Erosion and Sediment Control Notes, Item 10. Sheet N16067000-N101.

3.3 Resources Present

The following resources are determined to be pertinent in the analysis of the Proposed Action.

3.3.1 Noise and Compatible Land Use

JFK is located in a heavily urbanized area with various noise sources that contribute to the ambient, or background noise levels. Noise levels at and around JFK are affected by land uses surrounding the Airport, ground-based activities at the Airport, and the aircraft operations taking place on the airfield. Vehicle traffic on and off the airport is a steady source of ambient noise while aircraft operations are more intermittent and different in terms of intensity and duration.

Land uses affected by noise around JFK include residential, commercial, industrial, open space, recreational and wildlife sanctuary. JFK is bounded by Jamaica Bay and major roads and highways (as noted previously in this section), including Belt Parkway (State Road 878), Nassau Expressway, South Conduit Avenue, and Rockaway Boulevard. Communities in the immediate vicinity of JFK include Howard Beach and South Ozone Park to the northwest; South Jamaica, Rochdale, Laurelton, Springfield Gardens, and Rosedale to the northeast; Valley Stream, Woodmere, Cedarhurst, Inwood, and Lawrence to the southeast; and Bayswater, Edgemere, Rockaway Beach, and Arverne to the south. Apart from sections of the shoreline and islands in Jamaica Bay dedicated to open space, wildlife sanctuary, and recreation, the predominant land use near JFK is residential. Commercial development is found along major road corridors. Areas northwest of JFK have concentrations of industrial land use (e.g., East New York). Land uses surrounding JFK are depicted with the No Action Scenario noise exposure in **Figure 3-3, No Action Noise Exposure Scenario.**

General noise-related guidelines and procedures at JFK include the following:

- Aircraft must conform to "Stage III" noise limits for airplanes with certified weights greater than 75,000 pounds in accordance with the Airport Noise and Capacity Act of 1990 (ANCA). In addition, aircraft certified after January 1, 2006 must meet "Stage IV" noise limits. Both Stage III and IV are defined in Federal Aviation Regulation (FAR) Part 36 noise level classifications. In addition, the FAA promulgated the rule for Stage V for new type certificates after December 31, 2017 and December 31, 2020, depending on the weight of the aircraft. The Notice of Proposed Rule Making (NPRM) for Stage V was published on January 14, 2016.

- Noise produced by a departing aircraft shall not exceed 112 PNdB (percieved noise level in decibels) as measured by noise monitors located among communities closest to departure runways under the flight path of departing aircraft. The Port Authority enforces this rule on a

Path: U:\PROJECTS\SAC\17xxx\D171006.00 - JFK Runway 13L- 31R Improvements EA\05 Graphics-GIS-Modeling\GIS\MXD\Fig# 2016 No Action DNL Contours.mxd, sdb 11/14/2017

SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015;
Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015;
AEDT 2d; ESRI Mapping Services

John F. Kennedy International Airport Runway 13L-31R Reconstruction EA . 171006

Figure 3-3
No Action Noise Exposure Scenario Map
John F. Kennedy International Airport

ESA

continuous basis. An aircraft operator is assessed a monetary charge for each aircraft departure that violates this rule.[47]

The Port Authority Aviation Department's Noise Office manages noise issues arising from aircraft operations at JFK and Port Authority's other four airports. The Noise Office employs sophisticated databases and flight tracking computer programs to analyze noise associated with the airports. The Port Authority Noise Office also operates and maintains a network of 40 noise monitors to track airport-related noise in communities surrounding the airports.

The Noise Office maintains a noise information website (http://www.panynj.gov/airports/aircraft-noise-information.html). This website provides links to information about noise at the airports and useful tools that the public can use to assist with understanding aircraft-related noise in their communities. The Port Authority's noise information website also provides a link to an online noise complaint form that the public can use to submit noise complaints to the Port Authority. In addition to the online noise complaint form, questions and complaints about airport noise can be submitted to the Port Authority by leaving a voicemail message on a Port Authority phone line that is dedicated to noise issues.

In 2015, the Port Authority initiated voluntary noise compatibility planning studies at four of its New York-area airports (including JFK) in accordance with Part 150 of the FAA's regulations (14 C.F.R. Part 150) with a completion date of 2020. With input from stakeholders, the Part 150 Study at JFK evaluates aircraft noise associated with JFK, identifies land uses surrounding JFK that are not compatible with airport operations, and once completed, will recommend potential measures to abate and mitigate aircraft noise in the surrounding communities.

For this EA, existing aircraft-related noise conditions at and surrounding JFK were evaluated using the FAA's Aviation Environmental Design Tool version 2d (AEDT 2d).[48] The AEDT 2d calculates aircraft noise exposure using a defined network of grid points at ground level around an airport. It computes the noise exposure generated by each aircraft operation, by aircraft type and engine thrust level along each flight track.[49] AEDT 2d also models how aircraft noise exposure is influenced by atmospheric acoustical attenuation,[50] acoustical shielding of the aircraft engines by the aircraft itself, and aircraft speed variations. The noise exposure levels resulting from each aircraft operation are then summed at each grid point. The cumulative noise exposure levels at all grid points are then used to develop noise exposure contours for selected values. The AEDT 2d was used to produce Day-Night

47 The Port Authority of New York and New Jersey Airport Rules and Regulations, Issue date: August 4, 2009.

48 FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

49 The analysis used AEDT version 2d default data sets with no aircraft substitutions or user-defined flight profiles.

50 The AEDT's default atmospheric absorption model was used in the analysis.

Average Sound Level (DNL)[51] 65, 70, and 75 noise contours (representing noise exposure on an average annual day) for current conditions at the Airport (see **Figure 3-3)**. A detailed description of the noise analysis methodology and the modeling results is provided in **Appendix C, Noise Technical Report**.

3.3.2 Air Quality and Climate

This section describes (i.) the regulatory agencies involved in the management of air quality conditions, (ii.) current air quality regulatory requirements, standards and criteria, (iii.) local meteorological conditions and (iv.) historic/current air pollutant monitoring data within the area.

Regulatory Agencies

At the federal level, under the Clean Air Act (CAA), the U.S. Environmental Protection Agency (USEPA) establishes requirements to ensure acceptable air quality. The USEPA has established National Ambient Air Quality Standards (NAAQS), which define outdoor levels of air pollutants that are considered safe for public health, welfare and the environment. The USEPA is also responsible for approval of state plans to attain and maintain the NAAQS (State Implementation Plans, or SIPs) as well as the establishment of emission standards for mobile and stationary sources.

Also at the federal level, the FAA is the primary agency involved in, and responsible for, ensuring that air quality impacts associated with proposed airport projects adhere to the reporting and disclosure requirements of the NEPA as well as the General Conformity Rule of the CAA (40 C.F.R. Parts 6, 51 and 93). The General Conformity Rule is applicable to projects that are federally funded, licensed, permitted, or approved, and ensures that air pollutant emissions resulting from federal actions conform to a state's SIP.[52] The General Conformity Rule of the CAA prohibits federal agencies (including the FAA) from permitting, authorizing or funding projects that do not conform to a SIP. The General Conformity Rule applies only to areas that are designated "nonattainment" or "maintenance" for any of the NAAQS

New York is part of the Ozone Transport Commission (OTC). This organization is comprised of 13-states in the Northeast and Mid-Atlantic regions of the United States as well as the District of Columbia. These government entities work together to advise the USEPA on air pollutant transport issues and develop and implement regional strategies to reduce levels of ground-level ozone.

At the state level, the New York State Department of Environmental Conservation (NYSDEC) is responsible for enforcing the CAA, including compliance with the NAAQS, issuance of air emission

51 The DNL metric is used by the FAA and EPA to assess cumulative, aviation-related noise impacts on humans to meet Aviation Safety and Noise Abatement Act (ASNA) of 1979 requirements.

52 A Federal action must not cause or contribute to new violations of NAAQS, worsen existing NAAQS violations, or delay attainment of a NAAQS.

source permits, monitoring of air quality conditions, and assisting in the preparation of New York's SIP. Also at the state level, the New York State Department of Transportation (NYSDOT) is responsible for ensuring that highway-related transportation projects conform to New York's SIP.

At the local level, the New York City Department of Environmental Protection (NYCDEP) is responsible for updating and enforcing the Air Pollution Control Code (Title 24, Chapter 1 of the New York City Administrative Code and Title 15 of the Rules of the City of New York) which has the goal to preserve, protect, and improve the air resources of the city.

National Ambient Air Quality Standards (NAAQS)

The USEPA has established NAAQS for six "criteria" air pollutants--carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), and particulate matter (PM). There are NAAQS for two sizes of PM. $PM_{2.5}$ are particles with a diameter of 2.5 microns or less and PM_{10} are particles with a diameter of 10 microns or less. The NAAQS are listed in **Table 3-1**.

Table 3-1: National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Period	Standards	Form
CO	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Pb	Primary and Secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
NO_2	Primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	Annual	53 ppb(1)	Annual mean
O_3	Primary and Secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
PM **$PM_{2.5}$**	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years

Table 3-1: National Ambient Air Quality Standards					
Pollutant		Primary/ Secondary	Averaging Period	Standards	Form
		Primary and Secondary	24-hour	35 μg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24-hour	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
SO_2		Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes: ppb = parts per billion, ppm = parts per million, and μg/m^3 = micrograms per cubic meter of air.
(1) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of comparison to the 1-hour standard level.
Source: USEPA, National Ambient Air Quality Standards (NAAQS) at https://www.epa.gov/criteria-air-pollutants/naaqs-table, November 2017.

Attainment/Nonattainment Status

The USEPA designates areas as having air pollutant levels that are either meeting/lower than the NAAQS or higher than the NAAQS. An area with pollutant concentrations which are meeting/lower than the NAAQS is designated as an attainment area and an area with pollutant concentrations that exceed the NAAQS is designated as a nonattainment area. After air pollutant concentrations in a nonattainment area are reduced to levels that meet or are below the NAAQS, the USEPA designates the area as a maintenance area. An area is designated as unclassifiable when there is a lack of sufficient data to form the basis of an attainment status determination.

Table 3-2 summarizes and provides additional information regarding the USEPA-designated status for Queens County, NY. As shown, Queens County is currently designated by the USEPA to be moderate nonattainment for the 2015 8-hour ozone standard and a maintenance area for the 2006 $PM_{2.5}$ standard.

Table 3-2: USEPA-designated Nonattainment Status				
County, State	Pollutant	Area Name/State	Classification	County NA Part/Whole? (1)
Queens County, New York	8-Hour Ozone (2015)	New York-N. New Jersey-Long Island, NY-NJ-CT	Nonattainment	Whole
	$PM_{2.5}$ (2006)		Maintenance	
Notes: (1) The column "County NA Part/Whole" indicates whether only a part of the county or the whole county is designated nonattainment. **Source:** USEPA, Green Book at https://www.epa.gov/green-book, November 2017.				

General Conformity Requirements

As previously stated, as a means of demonstrating conformity with a SIP, project-related emissions of the pollutant and/or pollutant precursors for which an area is designated nonattainment or maintenance are compared to *de minimis* level thresholds established by the USEPA (referred to as an Applicability Test). If project-related emissions are below the de minimis threshold, a project is assumed to conform to a SIP. If the emissions exceed a threshold, then a formal Conformity Determination is required to evaluate whether the action conforms to the purpose of the SIP (i.e., bringing an area into compliance with, or maintaining, the NAAQS).

The applicable *de minimis* levels for O_3 and $PM_{2.5}$ are listed in **Table 3-3**.[53] As shown, these thresholds apply to nitrogen oxides (NO_x) and volatile organic compounds (VOCs) – the two primary precursors to ozone formation, and $PM_{2.5}$.

Table 3-3: General Conformity *de Minimis* Levels	
Pollutant	Tons/Year
Ozone	100 for NO_x & 50 for VOCs
$PM_{2.5}$	100
Source : USEPA, *De Minimis* Levels, https://www.epa.gov/general-conformity/de-minimis-emission-levels, November 2017.	

Ambient Air Quality Monitoring Data

As stated above, the NYSDEC monitors air quality conditions in Queens County. Data at the station closest to JFK are provided in **Table 3-4**.[54]

53 USEPA, De Minimis Levels, https://www.epa.gov/general-conformity/de-minimis-emission-levels, November 2017.

54 Data for the three most recent years available (January 2015-October 2017) are provided.

Table 3-4: Air Monitoring Data in JFK Area (2015-2017)

Site Name & ID	Pollutant	Averaging Period	NAAQS	Year		
				2015	2016	2017
Queens College Kissena Blvd Parking Lot #6 Site ID: 36-081-0124 (Approximately 6.05 miles NNW of Airport)	CO	8-hour	9 ppm	1.4	1.2	0.9
		1-hour	35 ppm	2.1	1.6	1.8
	NO_2	Annual	0.053 ppm	0.017	0.016	0.015
		1-hour[1]	0.10 ppm	0.06	0.06	0.06
	O_3	8-hour[2]	0.075 ppm	0.069	0.069	0.074
	$PM_{2.5}$	Annual[3]	12 µg/m³	8.0	7.7	7.6
		24-hour[4]	35 µg/m³	22	20	19
	PM_{10}	24-hour	150 µg/m³	29	44	40
	SO_2	3-hour[5]	0.5 ppm	0.01	0.01	0.004
		1-hour[6]	0.075 ppm	0.011	0.009	0.007

Notes: ppm = parts per million, µg/m³ = micrograms per cubic meter, and NNW = north-northwest.
(1) Standard based on the 98th percentile of 1-hour daily maximum concentrations, averaged over three years.
(2) Standard based on the annual fourth-highest daily maximum 8-hour concentration, averaged over three years.
(3) Standard based on annual mean, averaged over three years.
(4) Standard based on the daily 98th percentile, averaged over three years.
(5) The SO_2 3-hour standard is a "secondary" standard.
(6) Standard based on the 99th percentile of 1-hour daily maximum concentrations, averaged over three years.
Source: USEPA AirData – Monitor Value Reports, https://www.epa.gov/outdoor-air-quality-data, November 2017.

For ease of reference, the NAAQS for each monitored pollutant is also provided. As shown, all the pollutants are below the NAAQS. The closest air monitoring station at which levels of lead are monitored is located approximately 80 miles north of JFK.

Climate Change

Research has shown that the increase in atmospheric greenhouse gas (GHG) emissions is affecting the Earth's climate. These conclusions are based upon a scientific record that includes substantial contributions from the United States Global Change Research Program (USGCRP)—a program mandated by Congress in the Global Change Research Act to "assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.[55]

55 Global Change Research Act of 1990, Pub. L. 101–606, Sec. 103 (November 16, 1990), http://www.globalchange.gov.

In 2009, based primarily on the scientific assessments of the USGCRP, as well as the National Research Council (NRC) and the Intergovernmental Panel on Climate Change (IPCC), the USEPA issued a finding that it was reasonable to assume that changes in our climate caused by elevated concentrations of GHG in the atmosphere endanger the public health and public welfare of current and future generations.[56] In 2015, USEPA acknowledged more recent scientific assessments that "highlight the urgency of addressing the rising concentration of carbon dioxide (CO_2) in the atmosphere".[57]

The USEPA and the FAA traditionally work within the standard-setting process of the International Civil Aviation Organization's (ICAO) Committee on Aviation Environmental Protection (CAEP) to establish international emission standards and related requirements, which individual nations later adopt into domestic law. At its meeting in February of 2016, ICAO/CAEP agreed on the first-ever international standards to regulate CO_2 emissions from aircraft.[58] In August of 2016, the USEPA formally announced that GHG emissions from certain classes of aircraft engines cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. 81 F.R. 54422 (08/15/16).

Notably, there are currently no standards for ambient concentrations of GHGs. The IPCC estimates that aviation accounted for 4.1 percent of world-wide transportation GHG emissions during the year 2013. The USEPA data indicates that commercial aviation contributed to 6.4 percent of total CO_2 emissions in 2014, compared with other sources, including electric generation (30 percent), the remainder of the transportation sector (19.6 percent), industry (21 percent), commercial (7 percent), residential (6 percent), agricultural (9 percent) and U.S. territories[59] (<1 percent).[60]

3.3.3 Biological Resources (including Fish, Wildlife, and Plants)

As indicated in the FAA 1050.1F Desk Reference, biological resources include fish, wildlife and plants, and their habitats. These resources function as integrated resources within ecosystems, which are generally defined as biological communities of interacting organisms and the physical environment in which they occur. Accordingly, the biological resources and habitat assessment provided herein

56 Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496 (December 15, 2009).

57 EPA, Final Rule for Carbon Pollution Emission Guidelines for Existing Stationary Sources Electric Utility Generating Units, 80 Fed. Reg. 64661, 64677 (October 23, 2015).

58 The ICAO intends to approve the standard in October of 2016 and to formally adopt the standards in March of 2017.

59 Fuel consumption by U.S. Territories (i.e., American Samoa, Guam, Puerto Rico, U.S. Virgin Islands, Wake Island, and other U.S. Pacific Islands) is included in this report.

60 EPA, GHG allocation by economic sector, Environmental Protection Agency (2016). Inventory of U.S. Greenhouse Gas Emission and Sinks: https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. (January 2017).

includes analyses of the three aforementioned biological resource categories and the degree to which they function as integrated components of the overall ecosystem.

Ecological Communities and Vegetation

The majority of the Proposed Project Site includes concrete- and asphalt-paved aircraft runways and associated taxiways, as well as service roads for supporting vehicle access. There are no buildings within the Proposed Project Site; however, concrete barriers and fences separate the Proposed Project Site from surrounding vehicular roadways and structures. Grass-covered areas subject to regular mowing are also present between paved areas.

The New York Natural Heritage Program (NYNHP) publication "Ecological Communities of New York State" (ECNYS) provides detailed descriptions of global and state rarity rankings for many habitats found within the State of New York, including descriptions that are representative of the disturbed communities described below that are within the Proposed Project. Based on the descriptions in the ECNYS and observations during the October 27, 2017 field assessment performed by VHB, the Proposed Project is comprised of the following two ECNYS ecological communities:

- Mowed Lawn: residential, recreational, or commercial land, or unpaved airport runways in which the groundcover is dominated by clipped grasses and there is less then 30% cover by trees. The groundcover is maintained by mowing and broadleaf herbicide application.

- Paved Road/Path: a road or pathway that is paved with asphalt, concrete, brick, stone, etc. There may be sparse vegetation rooted in cracks in the paved surface.

According to ECNYS, the Mowed Lawn and Paved Road/Path communities are unranked cultural communities (i.e., communities that are created or altered by humans).

As described above, regularly mowed grass-covered areas comprised of turf grasses (i.e., ryegrasses (*Lolium spp.*), fescues [*Festuca spp.*], crabgrasses [*Digitaria spp.*], etc.) are scattered throughout the Proposed Project Site. The grass-covered areas also include various "weedy" herbaceous plants common to disturbed/developed sites (e.g., mugwort [*Artemesia vulgaris*], plantains [*Plantago spp.*] dandelions [*Taraxacum spp.*], foxtails [*Setaria spp.*], etc.). Remaining portions of the Proposed Project Site consist of paved areas that are largely unvegetated. Based upon the foregoing, the Proposed Project Site is comprised of regularly maintained (e.g., mowed) lawn areas and largely unvegetated cultural communities, in this case paved surfaces.

Wildlife

The Proposed Project Site does not represent a significant habitat area for wildlife, given the disturbed, developed, and largely unvegetated conditions at the Proposed Project Site, as well as the

noise and activity associated with airport operations. Moreover, wildlife populations and their habitats are actively managed by JFK operations and maintenance staff, as described below.

Avian species are the commonly observed or expected fauna at the Proposed Project Site, specifically those species that are adapted to cultural habitats and a high degree of human activity, such as pigeon (*Columba livia*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*) and herring gull (*Larus argentatus*). Limited foraging habitat for these species may exist at the Proposed Project Site; however, significant nesting areas do not occur.

The Proposed Project Site represents potential habitat for a few mammals, primarily small burrowing rodents that occur within the grass-covered areas.

As there are no wetland or surface waters located at or directly adjacent to the Proposed Project Site, it does not represent significant habitat for reptiles and amphibians, most of which require vegetated and/or aquatic habitat for at least some portion of their life cycle. Although the grass-covered area of the Proposed Project Site represents potential habitat for a few reptile and amphibian species that are adapted to dry terrestrial habitats, these species are not expected to occur at the Proposed Project Site due to the disturbed/developed conditions and lack of necessary vegetated habitats. Due to the absence of wetlands or surface waters, the Proposed Project Site is terrestrial in nature and therefore does not include habitat to support fish or populations of other aquatic organisms. The closest surface water habitat occurs approximately 1,100 feet to the north-northeast of the Proposed Project Site and is associated with Thurston Basin. In addition, two potential federally-regulated wetlands habitats are located approximately 580 feet to the southeast of the Proposed Project Site.

The Jamaica Bay estuarine complex is located approximately 8,800 feet to the south of the Proposed Project Site. This complex consists of extensive marine open water habitats, with numerous islands, tidal creeks, marshes, brackish ponds and upland field and wooded habitats. These largely undeveloped features represent habitat for extensive inventories of birds, mammals, amphibians, reptiles, finfish, insects and other wildlife, and are an important recreational resource. More than half of the estuarine complex (9,155 acres) is managed by the National Park Service (NPS) as the Jamaica Bay Wildlife Refuge, which is included within the larger Gateway National Recreation Area (GATE). The refuge is an important habitat for resident and migratory birds, with over 325 species reported, including waterfowl, wading birds, shorebirds, raptors and passerine birds. Jamaica Bay also hosts large populations of finfish, crustaceans and other marine organisms, including significant spawning populations of horseshoe crab (*Limulus polyphemus*) and the diamondback terrapin turtle (*Malaclemys terrapin*).[61] The majority of the aquatic and wetland habitats within Jamaica Bay have been designated

61 Laura Francoeur 2017. (December 12). Email: Laura Francoeur, Chief Wildlife Biologist PANYNJ, to Carol Weed, VHB re: distribution of terrapins on JFK. According to Ms. Francoeur, "The terrapins are active in the southern portion of the AOA - 4L-22R (4L to 13R-31L) and some of the taxiways and vehicle

as a New York City Special Natural Waterfront Area (SNWA) or NYSDEC Significant Coastal Fish and Wildlife Habitat (SCFWH).

Pursuant to 14 CFR Part 139, wildlife populations at JFK are monitored and managed by JFK operations and maintenance staff, to prevent or reduce aircraft wildlife strikes. The airport's strategy to minimize hazards associated with wildlife is set forth in the *John F. Kennedy International Airport Wildlife Hazard Management Plan (WHMP)*[62] (see **Appendix D, for full plan**). Prioritized hazard mitigation actions included in the WHMP are summarized in **Table 3-5**.

Table 3-5: JFK Airport Wildlife Hazard Management Plan Prioritized Actions

Action	Description
Gull Hazard Reduction Program	Since 1991, the airport has conducted an annual reduction program to shoot gulls attempting to fly over JFK. Geese, other waterfowl, starlings, doves, pigeons and mammals are also depredated. This program is conducted during the summer breeding season and continues into the fall migration period. The number of birds depredated, locations and efforts are recorded to monitor the population.
Regional Canada Goose Population Management	The City of New York and Port Authority have agreed to conduct nest management and/or remove Canada geese from certain public areas within the five-mile radius of JFK. The JFK Wildlife Biologist reviews data collected from goose removals, nest and egg treatments and surveys to determine the effectiveness of the program.
Mute Swan Management	The National Parks Service implemented an egg-oiling program and has authorized the Port Authority and United States Department of Agriculture (USDA) to conduct lethal control of mute swans in 2013.
Wildlife Monitoring	Routine wildlife surveys are conducted at locations on and off JFK. Results are summarized in monthly and annual reports.
Seasonal Wildlife Control Program	JFK uses additional wildlife contractors to supplement airport operations staff in dispersing wildlife from the airport, especially the Aircraft Operations Area (AOA).

service road near 13R-31L. Our main terrapin release site is south of 4R-22L just east of the 4R light pier and south of the FAA shacks. We have also seen a handful of terrapins in Thurston Basin. Rare sightings on [JFK] side of the basin, however, NYC Parks has documented heavy nesting activity on their (north) side of Thurston Basin a bit east of 22L-4R."

62 John F. Kennedy International Airport Wildlife Hazard Management Plan. 2017.

Action	Description
Turf, Woody Vegetation and Landscaping	All newly planted JFK vegetation will be in accordance with the Port Authority Engineering Department's "Aviation Landscape and Sustainable Design Criteria". Turf will be managed at a height of six-to-ten inches where conditions allow. Grass will be seeded in bare areas to eliminate or reduce ground-nesting birds. Fruiting vegetation will be removed to the extent possible.
Central Taxi Hold	An electronic messaging board and metal signs in three languages advising drivers not to feed birds are installed in prominent locations around the Central Taxi Hold. Additionally, anti-perching devices are installed on buildings and lighting to reduce perching.
Temporary Standing Water	Large puddles after rain events will be removed where feasible. Repeat ponding in areas will be examined to determine the cause.
Airport Buildings are Perching Structures	Puddles on buildings, roofs and structures will be drained using the most appropriate method available. Holes or gaps in walls and doors will be filled and hangar and garage doors closed when not in use.
Airport Construction	Construction projects will be kept as neat as possible to avoid attracting wildlife. Contractors are educated by the Resident Engineers office at pre-construction meetings about wildlife hazards at JFK and how to avoid them, including not feeding the birds.
Trash, Debris and Feeding	All trash containers in landside and airside areas will be closed containers to prevent access to food waste by wildlife. Construction and other debris will be removed to eliminate cover for small mammals, which are prey source for raptors.

Source: *John F. Kennedy International Airport Wildlife Hazard Management Plan 2017.*

In addition to the above, tidal wetlands are located within the vicinity of JFK. JFK's hazard mitigation activities in these areas are focused on deterring feeding by waterfowl, wading birds, shorebirds, raptors, passerine birds, horseshoe crab and the diamondback terrapin turtle particularly at low tide. Vegetation within this area is also maintained for greater visibility and to reduce wildlife cover.

Rare/Protected Species

The United States Fish and Wildlife Service (USFWS) IPaC Resources List[63] for the Proposed Project Site includes three marine shorebirds; piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*) and roseate tern (*Sterna dougallii dougallii*), as well as the vascular plant seabeach amaranth (*Amaranthus pumilus*), which is a plant of marine shorelines (see **Appendix E, Biological Resources Filings and Correspondence**). Potentially suitable habitat for these species exists 1.25+ miles south of the Proposed Project Site within the Jamaica Bay estuarine complex. However, suitable habitat to support these four species does not exist at or adjacent to the Proposed Project Site, and, as detailed below, no NYNHP records exist for these species as occurring at or in the vicinity of the Proposed Project. Accordingly, the four species included on the USFWS Trust Resources Report are not expected to occur at the Proposed Project Site, and they were not observed during the field assessment.

In addition, NYSDEC's Nature Explorer[64] database was consulted to determine if NYSDEC has identified any rare and protected plant species at the Proposed Project Site and vicinity. The NYSDEC Nature Explorer (accessed October 27, 2017) identified four plant species (fringed boneset (*Eupatorium torreyanum*), green parrot's feather (*Myriophyllum pinnatum*), stiff cowbane (*Oxypolis rigidior*), and velvet panic grass (*Dichanthelium scoparium*). Two of these, green parrot's feather and stiff cowbane, are obligate wetlands plants (i.e., plants that only occur within or adjacent to wetland habitats). According to Nature Explorer, velvet panic grass, also a plant typically associated with wetland habitats, including moist, sandy and disturbed areas and damp thickets, swales and shores, has been identified in the area of the Proposed Project Site and vicinity. However, based on the October 27, 2017 site inspection, none of the three wetland species, nor their habitats, were observed at the Proposed Project Site.

The fourth plant species, fringed boneset, is a plant found in grasslands, dunes, and openings within shrub thickets or dry oak woods. Fringed boneset is also known to occur in areas associated with human disturbance such as trails, reservoirs or airports. Potentially suitable habitat for fringed boneset occurs within the grass-covered areas of the Proposed Project Site. However, regular maintenance of these areas precludes or severely reduces the potential for this plant species to occur. Furthermore, fringed boneset was not observed during the field assessment, which was conducted during the fruiting period for this species, when it would be most readily identifiable.

NYNHP was consulted to determine whether records exist for known occurrences of rare or New York State-listed wildlife, plants or significant natural communities at or in the immediate vicinity (generally within one-half mile) of the subject property. In correspondence dated December 1, 2017 (**Appendix E**), the NYNHP reported that one New York State threatened species, upland sandpiper

63 U.S. Fish and Wildlife Service. JFK BFF IPaC Resources Report, generated July 13, 2016 05:22 PM MDT, IPaC v3.08. Accessed July 13, 2016.
64 NYSDEC, New York Nature Explorer, http://www.dec.ny.gov/natureexplorer/app/, Accessed November 13, 2017

(*Bartramia longicauda*), was documented at the Proposed Project Site. In addition, the New York State endangered species, short-eared owl (*Asio flammeus*) and the New York State threatened species, northern harrier (*Circus cyaneus*) have been documented at the southeastern edge of the Proposed Project Site.

Pursuant to 6 NYCRR §182.2, New York State Endangered wildlife species are defined as "*any native species in imminent danger of extirpation or extinction in New York or any species listed as endangered by the United States Department of the Interior in the Code of the Federal Regulations (50 CFR part 17)*." New York State Threatened species are defined in 6 NYCRR §182.2 as "*any native species likely to become an endangered species within the foreseeable future in New York or any species listed as threatened by the U.S. Department of the Interior in the Code of the Federal Regulations (50 CFR part 17)*." Habitat requirements for each of the three species and their applicability to the Proposed Project Site are summarized below:

Upland Sandpiper

The NYNHP Animal Guide for Upland Sandpiper,[65] indicate that this species is an obligate grassland bird that favors level topography. Airfields provide the majority of suitable habitat in the Northeast. According to the *The Second Atlas of Breeding Birds in New York State*[66], upland sandpiper requires three different habitats in close proximity: perches and low vegetation for visibility during courting; higher vegetation to hide nests and lower vegetation during supervision of young. As previously indicated, the Proposed Project Site consists of concrete runways and paved vegetated areas that are devoid of trees or significant shrub cover and subject to regular mowing. Based on the existing conditions described above, courting and nesting habitat for Upland Sand Piper do not occur at the Proposed Project Site. The grassed areas of the Proposed Project Site represent potential foraging habitat for this species.

Short-eared Owls

According to the NYSDEC Short Eared Owl Fact Sheets,[67] Short-eared Owls are birds of open country including grasslands and mashlands. Short-eared Owls often inhabit areas where small mammals are abundant as a food source. The nests of the Short-eared Owl are placed on the ground where the female creates a cup and lines it with grasses and down. As previously indicated, the vegetated areas at the Proposed Project Site are subject to regular mowing thereby precluding or severely limiting potential presence of nesting habitat for Short-eared Owl. Potential hunting habitat for this species occurs within the grassed areas of the Proposed Project Site.

65 NYNHP Animal Guides, http://www.acris.nynhp.org/animals.php, accessed December 4, 2017.

66 K.J. McGowan. 2008. The Second Atlas of Breeding Birds in New York State. Ithaca: Comstock Publishing Associates.

67 NYSDEC Short-eared Owl Fact Sheet, http://www.dec.ny.gov/animals/7080.html, accessed December 4, 2017.

Northern Harrier

The NYSDEC Northern Harrier Fact Sheet[68] indicates that this species hunts small rodent and bird species, primarily on the wing. The nest of the Northern Harrier consists of a flimsy structure built of sticks and grass on the ground. Similar to the Short-eared Owl, the vegetated areas at the Proposed Project Site are subject to regular mowing, thereby precluding or severely limiting the potential presence of nesting habitat for Northern Harrier. Potential hunting habitat for this species occurs within the vegetated areas of the Proposed Project Site.

Summary

With respect to the latter two species described above, Short-eared Owl and Northern Harrier are actively managed under the aforementioned WHMP. According to the WHMP, a Federal Depredation Permit authorizes the airport to live-trap and relocate five northern harrier individuals and five short-eared owl individuals within a one-year period. In addition, if non-lethal methods are not practical or effective, the airport is authorized to utilize lethal means to remove these birds. The upland sandpiper is not identified in the Federal Depredation Permit; however, according to the WHMP, birds, nests and eggs not specifically listed on the airport's federal depreadation permit may be taken when posing a direct threat to human safety, in accordance with the emergency take clause of the permit.

Given the habitat and life history requirements described above, it is unlikely that nesting sites for the three NYNHP-listed birds occur within the Proposed Project Site. The grassed portions of the Proposed Project Site represent potential foraging/hunting habitat for these species. However, due to the existence of site-specifice NYNHP records, consultations with the NYSDEC under 6 NYCRR Part 182 and the USFWS under Section 7 of the Endangered Species Act would be required for any proposed impact to Upland Sandpiper, Short-eared Owl and Northern Harrier, or their habitat.

3.3.4 Coastal Resources

Coastal resources include coastal barriers and coastal zones. Applicable regulations that address these coastal resources are detailed in FAA Order 5050.4B, FAA Order 1050.1F, and guidance is provided in the 1050.1F Desk Reference.[69] According to Order 1050.1F, coastal resources must be evaluated for a Proposed Project if it is 1) on a barrier island,[70] 2) within a coral reef ecosystem, 3) within a coastal zone, 4) can cause an unacceptable risk to human safety or property in a coastal zone, or 5) can cause adverse impacts to a coastal environment.

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68 NYSDEC Northern Harrier Fact Sheet, http://www.dec.ny.gov/animals/7090.html, accessed December 4, 2017.

69 Federal Aviation Administration. 1050.1F Desk Reference, Chapter 4. 2015.

70 Barrier islands are geologically unstable formations that protect the mainland by buffering storm or hurricane-driven winds or waves. As a result, these islands protect fish, wildlife, human life, and property along coasts and shorelines. The Department of the Interior (DOI), through the United States Fish and Wildlife Service (USFWS) and the NPS, develops and maintains the Coastal Barrier Resource System (CBRS) maps.

Although the Jamaica Bay (approximately 8,800 feet south of the Proposed Project) is subject to the Coastal Barrier Resources Act (CBRA) of 1982, as amended by the Coastal Barrier Improvement Act of 1990[71], the Proposed Project does not lie within the area subject to CBRA (**Figure 3-4, Coastal Zone Boundary)**. Jamaica Bay is classified as an "Otherwise Protected Area" by the Federal Emergency Management Agency (FEMA).[72]

Coastal Zone Management

Coastal zones are those waters and their bordering areas located in states along the coastlines of the Atlantic and Pacific Oceans, the Gulf of Mexico, and the shorelines of the Great Lakes. These zones include islands, beaches, transitional and intertidal areas, and salt marshes. The Coastal Zone Management Act of 1972 (CZMA) established the Federal Coastal Zone Management (CZM) Program to encourage and assist states in preparing and implementing management programs to "preserve, protect, develop, and, where possible, to restore or enhance the resources of the Nation's coastal zone."

Pursuant to the CZMA, New York State adopted the Waterfront Revitalization and Coastal Resources Act in 1981, which created the New York Coastal Management Program, a program administered by the New York State Department of the State (NYSDOS), Division of Coastal Resources. The Coastal Management Program encourages coordination among all levels of government and communities to develop Local Waterfront Revitalization Programs (LWRPs) that promote sound waterfront planning that is consistent with federal, state, and local coastal policies and objectives. Once a LWRP is adopted by the community and approved by the New York Secretary of State and National Oceanic and Atmospheric Administration, all permitting, funding, and direct actions must be consistent with the approved LWRP.

Based upon review of the New York State Coastal Boundary Map,[73] the Proposed Project is located within a Coastal Zone and, therefore, must be consistent with the NYSDOS Coastal Management Program (CMP) and the policies of the New York City Waterfront Revitalization Program (NYCWRP). The coastal zone applications and supporting materials were filed with the New York

71 U.S. Federal Emergency Management Agency. 2012. Figure F – New York State Coastal Boundary Map. The CBRA encourages conservation of hurricane prone, biologically rich coast barriers by restricting federal expenditures that encourage development.

72 U.S. Federal Emergency Management Agency. Coastal Barrier Resource System: New York. https://www.fema.gov/national-flood-insurance-program/coastal-barrier-resource-system-new-york. Accessed July 2016.

73 New York State Department of State, Office of Communities and Waterfronts. New York State Coastal Zone Boundary Map. Available online at: http://appext20.dos.ny.gov/coastal_map_public/map.aspx. Accessed June 2016.

Sources: NYS Department of State (2013); NYS Orthos-imagery (2016.

Legend

- Project Area
- Existing Pavement
- New Full Depth Pavement - Taxiway
- New Full Depth Pavement - Fillet
- One-Mile Radius
- Airport Boundary
- Coastal Boundary

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Figure 3-4
Coastal Zone Boundary

State Department of State (NYDOS)[74] and the New York City Department of City Planning (NYC DCP)[75] by the Port Authority on November 28, 2017 (see **Appendix F, Coastal Resources Filing and Correspondence**). The NYDOS returned a no adverse effect statement on January 22, 2018. The NYDOS had no objection to the Proposed Project and met the NYDOS' general consistency concurrence criteria.

On January 18, 2018, the NYC DCP requested that Port Authority evaluate (pursuant to its Climate Change Adaptation Guidance (March 2017)) whether the Proposed Project would eventually be affected by sea level rise between A.D. 2020 and 2100. NYC DCP particularly focused its request on the consequences of sea level rise on the proposed new High-Speed-Exit (HSE) taxiway. The evaluation is included in **Appendix F**. The evaluation concluded the Proposed Project Site would be above the 1% annual chance flood zone in forecast years 2020, 2050, 2080, and 2100, and not located in the Coastal A or V zones. In addition, the Proposed Project Site is protected from flooding to the west, east, and south of the Airport by the proposed JFK system of tide gates and perimeter berms.

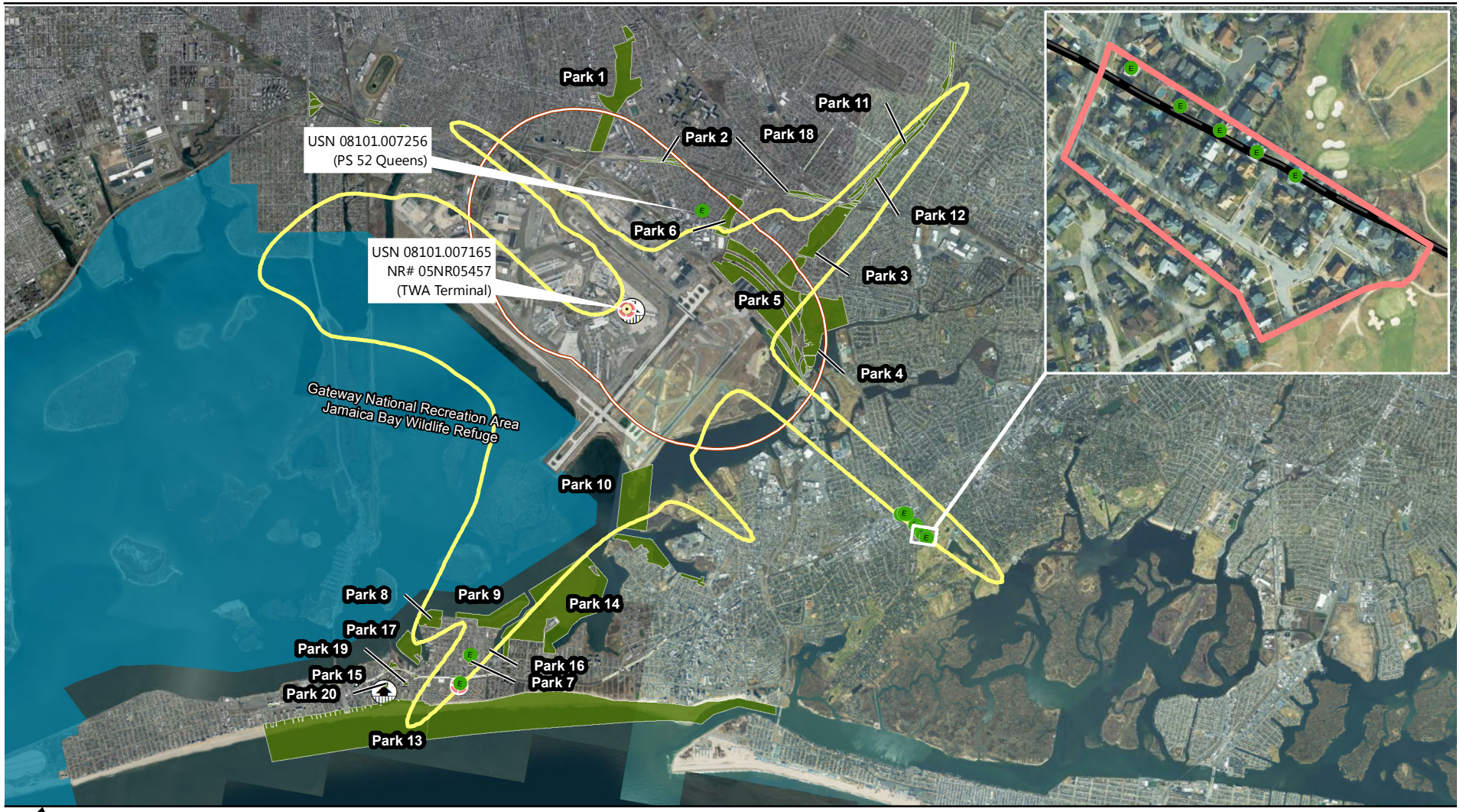
3.3.5 Department of Transportation Act Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (49 USC Section 303 (c)) requires the evaluation of possible direct and indirect consequences of proposed actions on publicly-owned land, such as a park, recreational area, wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state or local significance. Under FAA guidance, the Section 4(f) discussion in an environmental assessment also considers whether U.S. Department of the Interior Land and Water Conservation Fund Act (LWCFA) properties would be impacted by the proposed action. Section 6(f) of the LWCFA provides public funds to buy or develop public use recreational lands. For the Proposed Project, no public use recreational lands supported by Section 6(f) funds are within the analysis areas.

There are no parks, recreational areas, wildlife/waterfowl refuges, or historic properties within the Proposed Project Site or immediately adjacent to the Proposed Project's Site. However, there are parks, recreational areas, wildlife/waterfowl refuges, and historic properties within the indirect effects area as defined by the DNL 65 dB contour of the No Action Alternative (see **Figure 3-5, Section 4(f) Resources within Affected Environment**). The northern boundary of the Gateway National Recreation Area (GATE) and its associated Jamaica Bay Wildlife Refuge are approximately 8,800 feet

74 Marc Helman. 2017 (November 28). Application to Jeffrey Zappieri, Supervisor, Consistency Review Unit, New York State Department of State, Division of Coastal Resources, re: John F. Kennedy International Airport, Runway 13L/31R Rehabilitation: Coastal Zone Management Program Certification Concurrence, by Marc Helman, Supervisor, Permits and Governmental Approvals, Environmental Engineering Unit, The Port Authority of NY & NJ.

75 Marc Helman. 2017 (November 28). New York City Waterfront Revitalization Program Consistency Assessment Form for John F. Kennedy International Airport, Rehabilitation of Runway 13L/31R New York City Department of City Planning New York City Waterfront Revitalization Program (WRP) Policy Evaluation.



0 7,500 15,000 Feet

Sources: New York City Department of Parks and Recreation (2016); NYS Orthos-imagery (2016); GATE data from the National Parks Service (2008).

- No-Action DNL 65 Noise Contour
- Context Study Area
- Flower Streets Historic District
- NYC Landmarks
- Parks
- Gateway National Recreation Area (GATE)
- National Register of Historic Places

NYS Building Unique Site Number Points

- Eligible
- Listed

*USN is the NYS Building Unique Site Number Points

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Figure 3-5
Section 4(f) Resources within Affected Environment

south of the southernmost point of the Proposed Project's Direct Impact Area and currently included within the DNL 65 dB contour.

Six parks, one National Register of Historic Places (NRHP)-listed historic property, and one NRHP-eligible historic property are present within one-mile of the Proposed Project Site (see **Figure 3-5**). The six parks within one-mile of the Proposed Project Site are Baisley Pond Park (Park 1), Belt Parkway Park (Park 2), Brookville Park (Park 3), Hook Creek Park (Park 4), Idlewild Park (Park 5), and Springfield Park (Park 6) (**Figure 3-5)**. Except for the Belt Parkway Park, all of the parks are owned and maintained by New York City, and all of them contain recreational facilities. Five of the six parks are within the right-of-way of the Belt Parkway limited-access arterial route, which is classified as a parkway by New York City Parks. Belt Parkway lies north of the JFK boundary and the associated parks are on the north side of the Belt Parkway.

As of November, 2017, there are 26 previously inventoried archaeological sites, buildings, or structures within one-mile of the Proposed Project Site, including JFK's TWA Terminal (listed on the National Register of Historic Places) and Public School (PS) 52 Queens (eligible to be listed). The TWA Terminal is south of the Proposed Project Site and listed on the State and National Register (S/NR) and is a New York City Landmarks Preservation Commission (LPC) Landmark. PS 52 Queens is northwest of the Proposed Project Site on the north side of Rockaway Boulevard and is determined eligible to the NRHP. The TWA Terminal is currently within the DNL 65 dB noise contour (or Indirect Effects Area).

According to FAA Order 1050.1F, consideration needs to be given to evaluate the possible direct and indirect consequences of a proposed action's noise impacts on Section 4(f) properties. A quiet setting is a generally recognized purpose and attribute to consider for noise impacts. The NHRP listing and NRHP eligibility of the above mentioned structures is not based on their settings nor on events that might have occurred in their respective locations. A quiet setting is not a recognized purpose and attribute of these structures. As a result, the Chapter 4 - Environmental Consequences of this EA will not consider an increase in noise exposure as a significant impact to the resources' listed or eligibility for listing. The Proposed Project would not consitute a significant impact to either resource.

Parks, recreation areas, wildlife refuges, and historic properties, including one eligible historic district, are within the Proposed Project Site's indirect effects area (or DNL 65 dB contour). The historic properties are provided below in **Table 3-6**. The 17 parks, recreation areas and wildlife refuges include all parks within one-mile of the Proposed Project Site plus the indirect effects area (or DNL 65 dB contour).

Table 3-6: Section 4(f) Parks, Recreational Areas and Wildlife/Waterfowl Refuges in the No Action Alternative Indirect Effects Area

Map Label	Resource	Type	Location
1	Baisley Pond Park	Community Park	N. Conduit Ave., 116 Ave. bet. 150 St., Suptin Blvd., and Baisley Blvd. S.
2	Belt Parkway	Parkway	Belt Pkwy. bet. Cross Bay Blvd. and Laurelton Pkwy.
3	Brookville Park	Community Park	S. Conduit Ave., 149 Ave. bet. 232 St. and 235 St.
4	Hook Creek Park	Nature Area	Brookville Blvd., Huxleyy St. bet. 149 Ave. and Hook Creek Basin
5	Idlewild Park	Nature Area	149 Ave., Rockaway Blvd., Jamaica Bay bet. James Brown Pl. and Brookville Blvd.
6	Springfield Park	Community Park	Springfield Blvd., 183 St. bet. 145 Rd. and 149 Ave.
7	Almeda Playground	Jointly Operated Playground	Beach 65 St. to Beach 66 St., Beach Channel Dr.
8	Brant Point Wildlife Sanctuary	Nature Area	Beach 72 St. bet. Bayfields Ave. and Hillmeyer Ave.
9	Dubos Point Wildlife Sanctuary	Nature Area	De Costa Ave. bet. Sommerwille Basin and B. 65 St.,Bayfield Ave. bet. B. 65 St. and B. 69 St.
10	Jamaica Bay Park	Nature Area	Mott Basin to the City Line
11	Laurelton Parkway	Parkway	121 Ave., N. Conduit Ave. bet. Laurelton Pkwy. Sr. Rd. S and Brookville Blvd.
12	Laurelton Playground	Neighborhood Park	Brookville Blvd. bet. 136 Ave. 137 Ave.
13	Rockaway Beach and Boardwalk	Waterfront Facility	Shore Front Pkwy. bet. Beach 109 St. and B. 73 St.

Map Label	Resource	Type	Location
14	Rockaway Community Park	Community Park	Almeda Ave., Norton Ave. bet. Beach 58 St., Sommerville Basin and Beach 49 St., Conch Basin
15	Rockaway Freeway	Parkway	Rockaway Frwy. bet. Beach 108 St. and Regina Ave., Beach Channel Dr.
16	Thursby Basin Park	Undeveloped	Beach 63 St. bet. Elizabeth Rd. and Thursby Ave.
17	Vernam Barbadoes Peninsula	Nature Area	Amstel Blvd., Jamaica Bay

Source: VHB, from New York City Department of Parks and Recreation (2016) and National Parks Service (2008)

3.3.6 Historical, Architectural, Archaeological, and Cultural Resources

Historic and cultural resources include archaeological sites, buildings, cultural landscapes, historic districts, objects, structures, and places of religious and cultural significance. Potential direct or indirect impacts to cultural resources are evaluated in accordance with National Historic Preservation Act (NHPA) regulations (36 CFR 800). The NHPA regulations (36 CFR 800.16(d)) defines an Area of Potential Effect (APE) as the "geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist." Under NHPA, the APE for the Proposed Project addresses both direct and indirect impact settings (see Section 3.1). For this Proposed Project, the significance of a historic property is based on the resource types within one-mile of the Proposed Project Site. New York State Section 14.09 regulations and the New York City Landmarks Preservation Commission (NYC LPC) guidelines were also considered for the cultural resource assessment.

Based on site data on-file at the New York Office of Parks, Recreation, and Historic Preservation (NY SHPO) and the NYC LPC accessed in November 2017 and January 2018, no systematic cultural resources survey of the Proposed Project Site has been conducted by others in connection with previous projects. No previously inventoried cultural resources recorded by others are present in the Proposed Project's direct effect APE with the exception of JFK itself.

The 26 cultural resources within one-mile of the Proposed Project Site, which can also be referred to as the indirect effects APE, includes one NRHP and LPC listed site (TWA Terminal[76]). The remaining cultural resources of PS 52 Queens[77] and 24 buildings, structures, and terrestrial archaeological sites are not eligible for listing on the NRHP or have undetermined NRHP status.[78] The NYC LPC site file does not list any landmarks or landmark districts within the Proposed Project Site.

JFK's TWA Terminal will be re-adapted for hotel use and was constructed in 1962. There are no National or State Register districts, cultural landscapes, or objects within one-mile of the Proposed Project Site. It is unknown if there are any places of religious or cultural significance as no consultation has been conducted with the Native American Tribes that hold heritage interest in the APE. Table G-1 in **Appendix G, Cultural Resources Filings, Correspondence and Table G-1** lists the historic properties that are listed in the NYOPRHP State Inventory of Historic Places within one-mile of the Proposed Project Site.

For the purposes of noise exposure, all historic properties within the No Action Alternative DNL 65 dB and higher contour are included within the Proposed Project Site indirect effects APE. Five of the 48 historic structures within the Flower Streets Historic District are within the DNL 65 dB and higher contour for the No Action Alternative. These five historic structures are included within the Proposed Project's APE. A list of the APE historic properties are in **Table 3-7**.

76 TWA Terminal designations are NYOPRHP Unique Site Number (USN) 08101.007165, National Register of Historic Places (NRHP) designation 05NR05457, and LPC designation LP-1915.

77 PS 52 Queens designation is USN 08101.007165.

78 An undetermined NRHP eligibility status occurs when the cultural resource was not evaluated for eligibility using the NRHP criteria standards. Many of these sites were inventoried during local area surveys.

Table 3-7: Historic Properties in the No Action Alternative APE that are Listed on the National Register of Historic Places or are Eligible for Listing

USN Number	Resource	Address
5909.000019	St. Joachim Roman Catholic Church	614 Central Avenue, Cedarhurst
5909.000028	Temple Beth-El	40 Locust Avenue, Cedarhurst
5909.000073	St. Joachim School	620 Central Avenue, Cedarhurst
5909.000071	St. Joachim Rectory	614 Central Avenue, Cedarhurst
5909.000072	Possibly Related to St. Joachim School	124 McGlynn Place, Cedarhurst
8101.007210	Congregation Derech Emunoh Synagogue	199 Beach 67th Street, Queens
8101.009536	PS 42 Q	488 Beach 66th Street, Arverne
5901.002555	Private Residence – Flower Streets Historic District[1]	611 Broadway, Cedarhurst
5901.002557	Private Residence – Flower Streets Historic District	6 Rose Street, Lawrence
5901.002567	Private Residence – Flower Streets Historic District	6 Iris Street, Lawrence
5901.002568	Private Residence – Flower Streets Historic District	5 Iris Street, Lawrence
5901.002214	Private Residence – Flower Streets Historic District	5 Rose Street, Lawrence
8101.007165	Trans World Airlines – International Terminal	Van Wyck Expressway, Queens
8202.007256	PS 52 Queens	178-37 146th Terrace, Jamaica

Source: VHB, from data provided by NYS Parks, Recreation & Historic Preservation Office
[1] The listed resources in the Flower Streets Historic District are only those in the district that are within the 65 DNL contour.

Section 106 evaluations consider noise as a potential affect factor only if the historic property's significance is linked to quiet or solitude. None of the listed and eligible historic properties within the No Action Alternative APE have quiet or solitude as a condition of their significance. The NY SHPO was notified on November 27, 2017, by electronic submission of the Proposed Project and the direct impact APE (**Appendix G**). The NY SHPO assigned the Proposed Project NYOPRHP Project Review number 17PR08001. By letter dated December 7, 2017, the NY SHPO commented "that no historic properties will be affected by this undertaking."[79]

79 Michael F. Lynch. 2017 (December 7). Letter: Michael Lynch to Carol S. Weed, re: FAA JFK Airport Rehabilitation of Runway 13L-31R and Associated Taxiway Project, Borough of Queens, Queens County, NY, 17PR08001. ReportEffectFindingNoEffect_13157129200051949.

3.3.7 Socioeconomic Conditions, Environmental Justice Communities, and Children's Environmental Health and Safety Risk

According to FAA Order 5050.4B and FAA Order 1050.1F, Desk Reference Chapter 12, the FAA must evaluate proposed airport development actions to determine if they would cause social impacts, including effects on health and safety risks to children, socioeconomic impacts, and assessment of the potential to cause disproportionate and adverse effects on low-income or minority populations. FAA has not established significance thresholds for socioeconomic impacts, environmental justice impacts or impacts associated with children's environmental health and safety risks. See FAA Order 1050.1F, Exhibit 4-1. This section provides an overview of the existing socioeconomic conditions in the Study Area, and identifies low-income and minority populations.

For the purposes of this EA, the indirect effects area for socioeconomics, environmental justice communities, and children's environmental health and safety risks is defined as the Census Tracts within or partially within JFK's noise contours for DNL 65 dB and higher, as this is the area that has the potential for the Proposed Project to have indirect impacts on residential populations and publicly-accessible locations (see **Figure 3-3**). The indirect effects area includes 29 Census Tracts in Queens and 10 Census Tracts in Nassau County. It is noted that several of the Census Tracts are only partially within the indirect effects area. Therefore, the population within the noise contours of DNL 65 dB and higher, is less than what is included in this section.

Socioeconomic Conditions

JFK currently employs about 37,000 people. Recent economic studies have shown JFK contributes more than $43.6 billion in annual economic activity to the New York/New Jersey region and generates about 256,000 total jobs and over $13 billion in annual wages and salaries.[80] Additional income and employment opportunities are generated in the region on a temporary basis whenever JFK undertakes a significant capital project (such as the Proposed Action).

Environmental Justice Communities

According to the FAA 1050.1F Desk Reference, the potential for a project to have disproportionately high and adverse effects on minority or low-income populations must be assessed according to DOT Order 5610.2(a). To provide regional context, the New York Metropolitan Transportation Council's (NYMTC)[81] thresholds for defining environmental justice populations were used. NYMTC's established regional thresholds for defining environmental justice populations in Plan 2040:

80 Port Authority of New York and New Jersey. John F. Kennedy International Airport Facts and Information. https://www.panynj.gov/airports/jfk-facts-info.html. Accessed November 14, 2017.

81 The New York Metropolitan Transportation Council (NYMTC) is the designated Metropolitan Planning Organization for the New York metropolitan region.

Appendix 4, Environmental Justice and Title VI (September 2013; "NYMTC Plan 2040") are noted below:

- **Minority Community:** The minority population of a Census Tract in 2010 was 56% or more of the population (the regional average). Minority is defined as persons who are American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander (USDOT Order 5610.2 (Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) defines minorities as people who are Black, Hispanic, Asian-American, American Indian or Alaskan Native, or Native Hawaiian or Pacific Islander.)

- **Low-Income Community:** The regional average in 2010 was 15% or more of a Census Tract population earning an income at or below the poverty level.

- **Environmental Justice Community:** A Census Tract where either the minority population or low-income population criteria are met.

NYMTC's regional thresholds are sensitive to specific regional conditions. According to NYMTC Plan 2040[82], some of the Census Tracts within the indirect effects area of the Proposed Action are characterized as minority or low-income. Since the issuance of NYMTC Plan 2040 in 2013, new census information has been released by the United States Census Bureau. Each of the Census Tracts within the Study Area was re-evaluated for the presence of environmental justice communities based upon US Census Bureau 2015 American Community Survey, 5-year Estimates data. As NYMTC has not updated its methodology for identifying minority communities, or low income communities, the same standards were utilized (56 percent minority; 15 percent low-income). The entire Census Tract was included in this evaluation, not just the portion within the Study Area boundaries. **Table 3-8** presents information on environmental justice communities within the Study Area. Based on this analysis, there are 28 census tracts that would be considered an Environmental Justice community within the indirect effects area of the No Action Alternative.

82 NYMTC Plan 2040 is the most recent data available regarding Environmental Justice.

Table 3-8: Environmental Justice Populations in the No Action Alternative Indirect Effects Area

Census Tract	County	Population	Total Households	Median Household Income	Minority % of Population	% Below Poverty Line	Environmental Justice Community?[1]
4099	Nassau	8,669	2,452	$ 104,018	**78.7%**	4.9%	Yes
4103	Nassau	6,805	1,850	$ 86,597	**77.8%**	6.4%	Yes
4110	Nassau	5,084	1,567	$ 48,773	**65.1%**	13.2%	Yes
4111	Nassau	4,968	1,419	$ 47,974	**88.6%**	**21.2%**	**Yes**
4112	Nassau	6,655	1,986	$ 88,913	21.7%	6.3%	No
4113.01	Nassau	3,977	1,285	$ 114,567	23.6%	2.7%	No
4113.02	Nassau	6,824	1,919	$ 135,156	5.8%	1.8%	No
4114	Nassau	6,416	1,876	$ 111,528	20.7%	8.3%	No
4115	Nassau	2,675	917	$ 198,750	6.9%	2.3%	No
4116	Nassau	6,529	2,189	$ 140,391	2.5%	1.6%	No
320	Queens	5,330	1,058	$ 71,806	**95.2%**	**21.3%**	**Yes**
614.00	Queens	1,321	341	$ 101,473	**96.0%**	2.0%	Yes
616.01	Queens	2,384	694	$ 97,679	**99.5%**	3.7%	Yes
616.02	Queens	1,275	367	$ 89,063	**97.8%**	6.2%	Yes
618	Queens	1,876	678	$ 60,938	**96.0%**	3.6%	Yes
632	Queens	2,459	684	$ 84,167	**98.9%**	6.4%	Yes
638	Queens	4,113	1,033	$ 104,112	**95.1%**	12.6%	Yes
646	Queens	3,121	943	$ 84,393	**99.4%**	8.8%	Yes
650	Queens	3,070	849	$ 79,632	**98.7%**	3.7%	Yes
654	Queens	3,128	878	$ 83,864	**96.4%**	5.7%	Yes
656	Queens	5,230	1,515	$ 63,156	**98.4%**	10.7%	Yes
664	Queens	10,018	2,892	$ 88,162	**95.2%**	8.5%	Yes
680	Queens	5,064	1,476	$ 93,333	**98.8%**	2.4%	Yes
690	Queens	3,460	1,000	$ 81,105	**99.2%**	9.8%	Yes
694	Queens	3,687	1,104	$ 80,598	**96.4%**	**16.4%**	**Yes**
716	Queens	0	-	-	-	-	No
818	Queens	4,381	1,052	$ 54,265	**96.1%**	**25.6%**	**Yes**
838	Queens	6,247	1,715	$ 66,067	**87.0%**	11.3%	Yes
846.01	Queens	2,671	792	$ 63,971	**80.2%**	8.7%	Yes
846.02	Queens	1,256	274	$ 56,167	**89.0%**	**22.7%**	**Yes**
884	Queens	7,279	2,607	$ 76,420	19.2%	8.2%	No
892	Queens	8,047	2,617	$ 85,365	13.4%	2.9%	No
942.02	Queens	4,686	1,644	$ 44,474	**80.1%**	**30.1%**	**Yes**

Census Tract	County	Population	Total Households	Median Household Income	Minority % of Population	% Below Poverty Line	Environmental Justice Community?[1]
942.03	Queens	5,586	2,685	$ 44,689	45.6%	5.7%	No
954	Queens	5,221	1,455	$ 61,458	**87.5%**	**18.7%**	**Yes**
964	Queens	4,153	1,286	$ 58,320	**90.7%**	**15.6%**	**Yes**
972.03	Queens	6,557	2,234	$ 20,712	**96.6%**	**45.5%**	**Yes**
1008.01	Queens	2,277	608	$ 75,800	54.3%	**21.5%**	Yes
1072.02	Queens	0	-	-	-	-	No

[1] Defined as Census Tracts that meet the thresholds for either minority or low-income community based on the NYMTC regional thresholds for defining environmental justice populations in Plan 2040: Appendix 4, Environmental Justice and Title VI, September 2013.

Children's Environmental Health and Safety Risks

According to EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, federal agencies are directed to identify environmental health and safety risks that could disproportionally affect children. These risks are defined as risks to health or safety attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

As noted above, the indirect effect area for children's environmental health and safety risks is defined as the Census Tracts that are exposed to DNL 65 dB and higher. The indirect effect area contains a population of 172,499, of which 42,977, or 25 percent, are children under age 18.

4. Environmental Consequences

Federal Aviation Administration (FAA) Order 1050.1F states that the environmental consequences analysis should include consideration of the "direct effects and their significance, the indirect effects and their significance, and cumulative effects and their significance." This chapter describes the potential impacts on the natural and human environment from the construction of the Preferred Alternative (Runway Alternative B – Concrete Reconstruction) as compared to the No Action Alternative and Runway Alternative A.

4.1 Construction Overview and Airport Operation Impacts

This section provides an overview of the construction schedules and the operational impacts to the Airport while Runway 13L-31R is closed for construction under both Runway Alternatives A and B, inclusive of the taxiway improvements and HSE taxiway construction. The environmental impacts to resource categories associated with the construction activites are further detailed in subsequent sections in Chapter 4.

4.1.1 Construction Duration and Phasing

The duration and phasing of construction would differ for Runway Alternatives A and the Preferred Alternative due to the differences between the methology utilized when reconstructing a runway with concrete versus rehabilitating with asphalt. Construction of Runway Alternative A would require Runway 13L-31R to be closed for 330 days. In addition, Runway 13L-31R would be open during the Summer for 94 days but with operational restrictions to accomodate construction on adjacent taxiways. Therefore, it would require multiple phases to complete the work over 3 years. The five Phases and associated durations necessary to complete the construction of Runway Alternative A are as follows.

Runway Alternative A:

- Phase 1: 74 days in Fall of 2018 (Runway closed)
- Phase 2: 92 days in Spring of 2019 (Runway closed)
- Phase 3: 94 days in Summer of 2019 (Runway open with operational restrictions)
- Phase 4: 72 days in Fall of 2019 (Runway closed)
- Phase 5: 92 days in Spring of 2020 (Runway closed)

Construction of the Preferred Alternative would be performed in one continuous construction phase starting in the spring and continuing through Fall 2019. The Preferred Alternative would require 229 days of runway closure from April 1, 2019 to November 15, 2019. The proposed construction durations are summarized in **Figure 4-1** Runway Closure Alternatives. The construction schedules for the two alternatives were developed based on the assumptions summarized in **Table 4-1**.

Figure 4-1: Runway Closure Alternatives

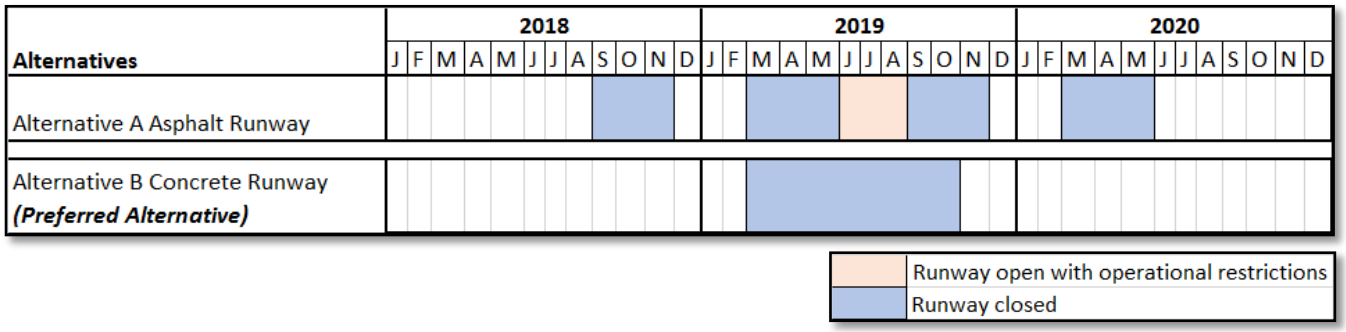


Table 4-1: Construction Schedule and Activities		
Year	**Runway Alternative A (Asphalt Rehabilitation)**	**Preferred Alternative (Concrete Reconstruction)**
2018	▪ Reconstruct a portion of the 8,850-feet of Runway 13L-31R with asphalt ▪ Improve/ widen fillets associated with Taxiway D ▪ Replace electrical and drainage infrastructure, signage and foundations, and pavement markings	▪ No construction
2019	▪ Rehabilitate the remainder of the 8,850-feet of Runway 13L-31R with asphalt ▪ Construct a HSE taxiway between Taxiways V and W, approximately 5,400-feet from the Runway 31R Landing (Displaced) Threshold ▪ Install new pavement for Taxiway YA ▪ Improve/widen Taxiways V and W (south), and CB ▪ Realign and improve/widen fillets for Taxiways B, U and Taxiway U/V/A/B intersection ▪ Replace remainder of electrical and drainage infrastructure, signage and foundations, and pavement markings	▪ Replace 8,850-feet of Runway 13L-31R asphalt with concrete at 18-inches thick on a 2-inch asphalt leveling course ▪ Widen Runway 13L-31R from 150- to 200-feet ▪ Improve/widen taxiway fillet upgrades (including new pavement at Taxiway YA) ▪ Replace electrical and drainage infrastructure, signage and foundations, and pavement markings ▪ Realign portions of Taxiways U and V to increase the current separations between the Runway 13L ILS-Glideslope and the (realigned) Taxiways U and V by 167-feet and 170-feet ▪ Construct a HSE taxiway between Taxiways V and W, approximately 5,400-feet from the Runway 31R Landing (Displaced) Threshold ▪ Install new runway lighting system
2020	▪ Improve/widen fillets associated with Taxiways V and W (north) and Taxiway Y (north and south) ▪ Improve/widen fillets associated with Taxiway DB (north and south) and Taxiway YA ▪ Install new runway lighting system	▪ No construction
Source: Port Authority of New York and New Jersey, 2018.		

4.1.2 New Temporary Flight Procedure During Construction

The FAA's Air Traffic Organization (ATO) is expected to provide a new temporary flight procedure for Runway 13R arrivals during the Project's construction. The purpose of the temporary flight procedure is to mitigate reductions in JFK's operational capacity in the event that certain marginal weather conditions (such as low cloud ceilings and/or low visibility) occur during the construction period. The temporary flight procedure would be used when there are sustained winds above 22 knots from the southeast and the ceiling is below 1,200 feet or visibility is less than 3 miles. FAA has indicated that the temporary flight procedure would only be used during the construction period and would be terminated after completion of the Proposed Project. A Runway 13R AEDT arrival flight track was developed using a Terminal Area Route Generation and Traffic Simulation (TARGETS) software data file provided by the FAA's ATO. This temporary flight track is presented in **Appendix C, Figure C-1, Proposed 13R Temporary Approach Track**.

4.1.3 Aircraft Operations and Runway Usage During Construction

During closure of Runway 13L-31R, the FAA would assign Runway 13L-31R aircraft arrivals and departures to the remaining three runways at JFK. The operations during construction would primarily be assigned to Runways 4R-22L and 4L-22R. However, if weather conditions make it difficult to land on Runways 4R-22L and 4L-22R, the FAA would direct aircraft to use Runway 13L-31R.

Detailed assumptions about runway usage at JFK while Runway 13L-31R is under construction were developed in coordination with the FAA for both Runway Alternative A and the Preferred Alternative. Development of the runway usage assumptions was necessary to evaluate impacts associated with the use of the new temporary flight procedure and the temporary closure of Runway 13L-31R under both Runway Alternative A and the Preferred Alternative, as discussed in further detail in subsequent sections in Chapter 4.

As set forth in Section 4.1.1, construction of Runway Alternative A would require closure of the Runway during the Fall of 2018, Spring of 2019, Fall of 2019, and Spring of 2020. The impacts analyses in subsequent sections of Chapter 4 are based on construction during 2019 because it is the year with the greatest level of construction activity, and therefore, the greatest potential for impacts. The following operational assumptions were incorporated into the development of the 2019 runway usage assumptions under Runway Alternative A:

- Winter 2019: JFK operations are anticipated to be the same as in the No Action scenario.
- Spring 2019: Runway 13L-31R is expected to be closed.

- Summer 2019: Runway 13L-31R is expected to be open, but with limited operations while construction activities are performed on Taxiways U, the intersection of U/V/A/B, and the new HSE taxiway.
- Fall 2019: Runway 13L-31R is expected to be closed
- Winter 2019: Runway 13L-31R will be open and the Airbus A380 can arrive on Runway 31R

Runway usage assumptions were developed for each of the periods outlined above. The assumptions estimate how arrivals and departures would be transferred from Runway 13L-31R onto the other three runways at JFK during construction. The assumptions also estimate how frequently the new temporary flight procedure will be used to land aircraft on Runway 13R. The runway usage assumptions are provided in **Table 4-2: Runway Alternative A – Asphalt Rehabilitation Construction Period Scenario Operational Assumptions.**

Table 4-2: Runway Alternative A – Asphalt Rehabilitation Construction Period Scenario Operational Assumptions

Time Period (Midnight to Midnight)	Operation Type	Runway End	Operation
Winter 2019	Arrivals and Departures	All runway ends	Calendar year 2016 operational data from the JFK 14 CFR Part 150 Study will be used, with all aircraft converted to the appropriate AEDT 2d types.
Spring 2019	Arrivals	13L	432 arrivals would be "assigned" (i.e., moved for modeling purposes) to the FAA-proposed Runway 13R approach from Runway 13L, with 90% of the approaches occurring during daytime (7:00 A.M. to 9:59:59 P.M.) and 10% of the approaches occurring at night (10:00 P.M. to 6:59:59 A.M.). These arrivals represent the assumed usage of the new temporary flight procedure. The assignment of traffic to 13R from 13L would be made irrespective of whether the 13L operation appears to be flying the ILS or appears to be flying the VOR approach (as seen in radar data). The remainder of Runway 13L arrivals during construction would be re-assigned to Runway 4L (25%), Runway 4R (25%), Runway 22L (25%), and Runway 22R (25%). Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		13R, 22L, 22R	Will not be moved to other runways.
		31L	Assume only 10% of arrivals will remain on Runway 31L. All other arrivals would be re-assigned to Runway 4L (25%), Runway 4R (25%), Runway 22L (25%), and Runway 22R (25%). Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		31R	All arrivals would be re-assigned to Runway 31L (8%), Runway 4L (23%), Runway 4R (23%), Runway 22L (23%), and Runway 22R (23%). Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		4L, 4R	Will not be moved to other runways.
	Departures	13L, 13R	All departures would be assigned 50% to Runway 4L and 50% to Runway 22R. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		22L, 22R	Will not be moved to other runways.

Table 4-2: Runway Alternative A – Asphalt Rehabilitation Construction Period Scenario Operational Assumptions

Time Period (Midnight to Midnight)	Operation Type	Runway End	Operation
		31L	7:00 A.M. to 10:00 A.M.: No change. 4:00 P.M. to 10:00 P.M.: No change. All other hours: * All departures would be assigned 50% to Runway 4L and 50% to Runway 22R. * Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		31R	All departures would be assigned 50% to Runway 4L and 50% to Runway 22R. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		4L, 4R	Will not be moved to other runways.
Summer 2019	Arrivals	13L, 13R, 22L, 22R, 31L	Will not be moved to other runways.
		31R	Assume only 2% of arrivals will occur on 31R (these arrivals would have to exit north of the runway) All other arrivals would be re-assigned to Runway 31L (8%), Runway 4L (23%), Runway 4R (23%), Runway 22L (23%), and Runway 22R (23%). Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		4L, 4R	Will not be moved to other runways.
	Departures	13L	All departures would be assigned 50% to Runway 4L and 50% to Runway 22R. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		13R, 22L, 22R, 31L	Will not be moved to other runways.
		31R	All departures would be assigned 50% to Runway 4L and 50% to Runway 22R. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		4L, 4R	Will not be moved to other runways.
Fall 2019	Arrivals and Departures	All runway ends	See Mar 1 - May 31
Winter 2019	Arrivals	13L, 13R, 22L, 22R, 31L, 31R, 4L, 4R	Will not be moved to other runways.
	Departures	13L, 13R, 22L, 22R	Will not be moved to other runways.

Table 4-2: Runway Alternative A – Asphalt Rehabilitation Construction Period Scenario Operational Assumptions

Time Period (Midnight to Midnight)	Operation Type	Runway End	Operation
		31L	7:00 A.M. – 10:00 A.M.: all A380 arrivals moved to Runway 31R 10:00 A.M. – 5:00 P.M: assume 50-50 split A380 arrivals Runway 31L and 31R 5:00 P.M. – 10:00 P.M.: all A380 arrivals moved to Runway 31R 10:00 P.M. to 7:00 A.M.: assume 50-50 split A380 arrivals Runway 31L and 31R No operations of any other aircraft type will be moved.
		31R, 4L, 4R	Will not be moved to other runways.

SOURCE: Port Authority, 2018.

During construction of the Preferred Alternative, the Runway would be closed for construction during the Spring, Summer, and Fall of 2019. The following operational assumptions were incorporated into the development of the runway usage assumptions:

- Early Spring 2019: JFK operations are anticipated to be the same as in the No Action scenario.
- Spring 2019 – Fall 2019: Runway 13L-31R is closed.
- Fall 2019: Runway 13L-31R will be open and the Airbus A380 can arrive on Runway 31R.

Runway usage assumptions were developed for each of the periods outlined above. The assumptions estimate how arrivals and departures would be transferred from Runway 13L-31R onto the other three runways at JFK during construction of the Preferred Alternative. The assumptions also estimate how frequently the new temporary flight procedure will be use to land aircraft on Runway 13R. The runway usage assumptions are provided in **Table 4-3 Preferred Alternative Construction Period Scenario Operational Assumptions.**

Table 4-3 Preferred Alternative Construction Period Scenario Operational Assumptions

Time Period (Midnight to Midnight)	Operation Type	Runway End	Operation
Winter 2019 to Early Spring 2019	Arrivals and Departures	All runway ends	Calendar year 2016 operational data from the JFK 14 CFR Part 150 Study will be used, with all aircraft converted to the appropriate AEDT 2d types.
Spring 2019 to Fall 2019	Arrivals	13L	864 arrivals would be "assigned" (i.e., moved for modeling purposes) from Runway 13L to the FAA-proposed Runway 13R approach, with 90% of the approaches occurring during daytime (7:00 A.M. to 9:59:59 P.M.) and 10% of the approaches occurring at night (10:00 P.M. to 6:59:59 A.M.). These arrivals represent the assumed usage of the new temporary flight procedure. The assignment of traffic to 13R from 13L would be made irrespective of whether the 13L operation appears to be flying the ILS or appears to be flying the VOR approach (as seen in radar data). The remainder of Runway 13L arrivals during construction would be re-assigned to Runway 4L (15%), Runway 4R (35%), Runway 22L (35%), and Runway 22R (15%). Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		13R, 22L, 22R	Will not be moved to other runways.
		31L	Arrivals would be assigned to Runway 4L (10%), Runway 4R (35%), Runway 22L (35%), and Runway 22R (10%), with 10% of arrivals remaining on Runway 31L. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the assignment.
		31R	All arrivals would be re-assigned to Runway 31L (8%), Runway 4L (13%), Runway 4R (33%), Runway 22L (33%), and Runway 22R (13%). Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		4L, 4R	Will not be moved to other runways.
	Departures	13L	All departures would be assigned 30% to Runway 4L and 70% to Runway 22R. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		13R	All departures would be assigned 30% to Runway 4L, 50% to Runway 22R, and 20% to Runway 31L. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		22L, 22R	Will not be moved to other runways.

Table 4-3 Preferred Alternative Construction Period Scenario Operational Assumptions

Time Period (Midnight to Midnight)	Operation Type	Runway End	Operation
		31L	7:00 A.M. to 10:00 A.M.: No change. 4:00 P.M. to 10:00 P.M.: No change. All other hours: * All departures would be assigned 30% to Runway 4L and 70% to Runway 22R. * Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		31R	All departures would be assigned 30% to Runway 4L and 70% to Runway 22R. Data would be reviewed to determine the allocation between day and night, and this allocation would be retained during the re-assignment.
		4L, 4R	Will not be moved to other runways.
Fall 2019 to Winter 2019	Arrivals	13L, 13R, 22L, 22R, 31L, 31R, 4L, 4R	Will not be moved to other runways.
	Departures	13L, 13R, 22L, 22R	Will not be moved to other runways.
		31L	7:00 A.M. – 10:00 A.M.: all A380 arrivals moved to Runway 31R 10:00 A.M. – 5:00 P.M: assume 50-50 split A380 arrivals Runway 31L and 31R 5:00 P.M. – 10:00 P.M.: all A380 arrivals moved to Runway 31R 10:00 P.M. to 7:00 A.M.: assume 50-50 split A380 arrivals Runway 31L and 31R No operations of any other aircraft type will be moved.
		31R, 4L, 4R	Will not be moved to other runways.

SOURCE: Port Authority, 2018.

4.1.4 Minimizing Construction Impacts

Airport operational changes resulting from a closed runway and associated taxiways can be disruptive to airport operators, airlines, travelers, and the community surrounding an airport. Therefore, minimizing the duration of runway and taxiway closures is an important factor to consider when planning a runway reconstruction or rehabilitation project. The Preferred Alternative can be constructed with approximately 100 fewer days of runway and associated taxiway closure time than Runway Alternative A. With 100 fewer days of runway and associated taxiway closure, the Preferred Alternative would reduce disruptions to JFK operations and the surrounding community by approximately 3 months over Runway Alternative A.

Minimizing the frequency of runway and related taxiway closures associated with maintenance and rehabilitation is also an important factor to consider when planning a runway rehabiliation or reconstruction project. The Port Authority typically performs a complete asphalt runway rehabilitation every 10 years. A runway constructed of concrete, however, will typically only require a complete reconstruction every 40 years. Additionally, as compared to asphalt, a concrete runway typically would require less frequent maintenance during its 40 year lifespan due to the durability of concrete.

The Preferred Alternative was selected over Runway Alternative A because (a) the temporary impacts associated with the closure of Runway 13L-31R and associated taxiways during construction would be of shorter duration than Alternative A because the Preferred Alternative requires less time for construction, and (b) a concrete runway would be more durable and have a longer lifespan than asphalt and therefore, would require less maintenance and fewer construction-related runway closures in the future.

The No Action Alternative would not result in construction impacts to operations.

4.2 Noise

Airport development actions that change aircraft operations and/or movements, or aircraft flight patterns may affect noise levels in the areas surrounding an airport. A noise study using the methodology previously described in Section 3.3.1 was conducted to evaluate potential impacts associated with the implementation of the Preferred Alternative as compared to the No Action alternative. Additionally, the noise study compares the potential temporary noise impacts during the construction period of both the Preferred Alternative and Runway Alternative A. The summary report containing the noise analysis and associated results is in **Appendix C**.

4.2.1 Noise Impacts Associated With Proposed Action versus No Action Scenario

After completion of the Proposed Project with either pavement material (asphalt or concrete), Airbus A-380 aircraft would be able to land on Runway 31R. Landing the Airbus A380 aircraft on Runway 31R would slightly change the fleet mix using the Runway and, therefore, may change the noise contours of the Airport. A noise analysis was performed to model the noise impacts following the completion of the Proposed Project (Proposed Action Scenario). Since the noise analysis is not dependent on runway construction materials, the Preferred Alternative and Runway Alternative A have the same noise exposure results for the Proposed Action Scenario. The noise exposure for the Proposed Action Scenario is depicted in **Figure 4-2, No Action Scenario and Proposed Action Scenario DNL Contours.**

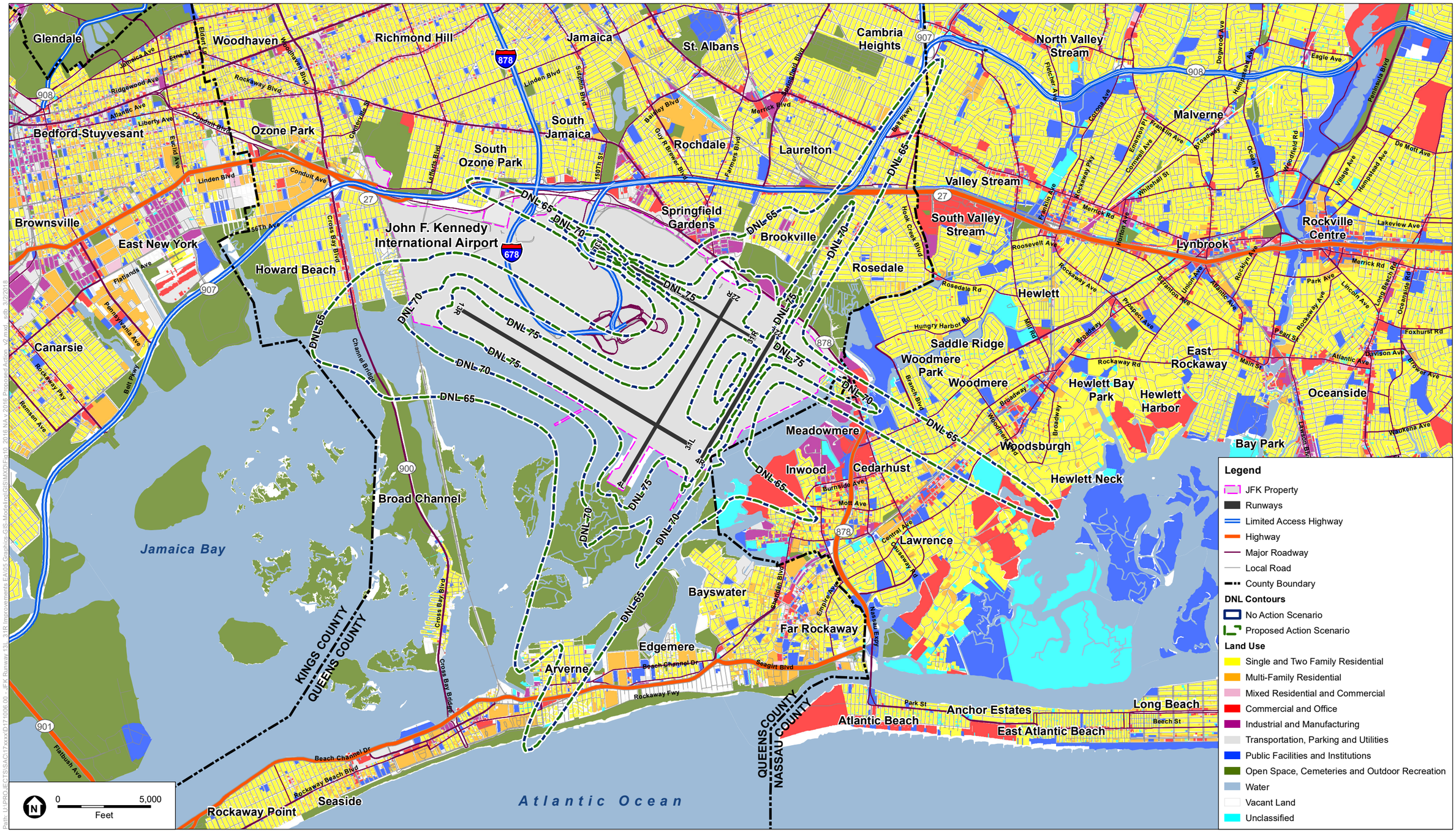
The threshold of significance for airport aircraft noise impacts in FAA Order 1050.1F is: "The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the No Action alternative for the same timeframe."

A total of 67,600 grid points was used in the AEDT 2d model to calculate the DNL 65, 70, and 75 dB values for this Proposed Project. Per FAA Order 1050.1F, the DNL values at each grid point for the Proposed Action Scenario and the No Action Alternative (No Action Scenario) were compared to determine if the Proposed Action Scenario would cause a post-construction noise increase of DNL 1.5 dB within the DNL 65 dB contour area of the No Action Scenario. Noise exposure associated with the No Action Scenario and Proposed Action Scenario (DNL 65, 70, and 75 dB) are depicted in **Figure 4-2**. The noise exposure contours at Runway-end 31R is shown on **Figure 4-3, No Action Scenario and Proposed Action Scenario DNL Contours – Southeast View**.

Model results demonstrate no increase in noise levels at any of the grid points. Therefore, construction of the Proposed Project using either the Preferred Alternative or Runway Alternative A would not result in a significant noise impact over the No Action Scenario.

4.2.2 Future No Action Scenario

As discussed in Section 3.3.1, the No Action Scenario reflects current noise conditions in and around the Airport. However, the No Action Scenario as modeled for noise is not representative of future noise conditions if the Proposed Action is not implemented because it does not incorporate noise impacts arising from increases in future runway closures for emergency pavement repairs. If Runway 13L-31R and its associated taxiways are not rehabilitated or reconstructed, emergency repairs of the pavement would be needed to maintain the safe operation of the Runway and associated taxiways,



SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015;
Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015;
AEDT 2d; ESA, 2018; ESRI Mapping Services

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Figure 4-2
No Action Scenario and Proposed Action Scenario DNL Contours
John F. Kennedy International Airport

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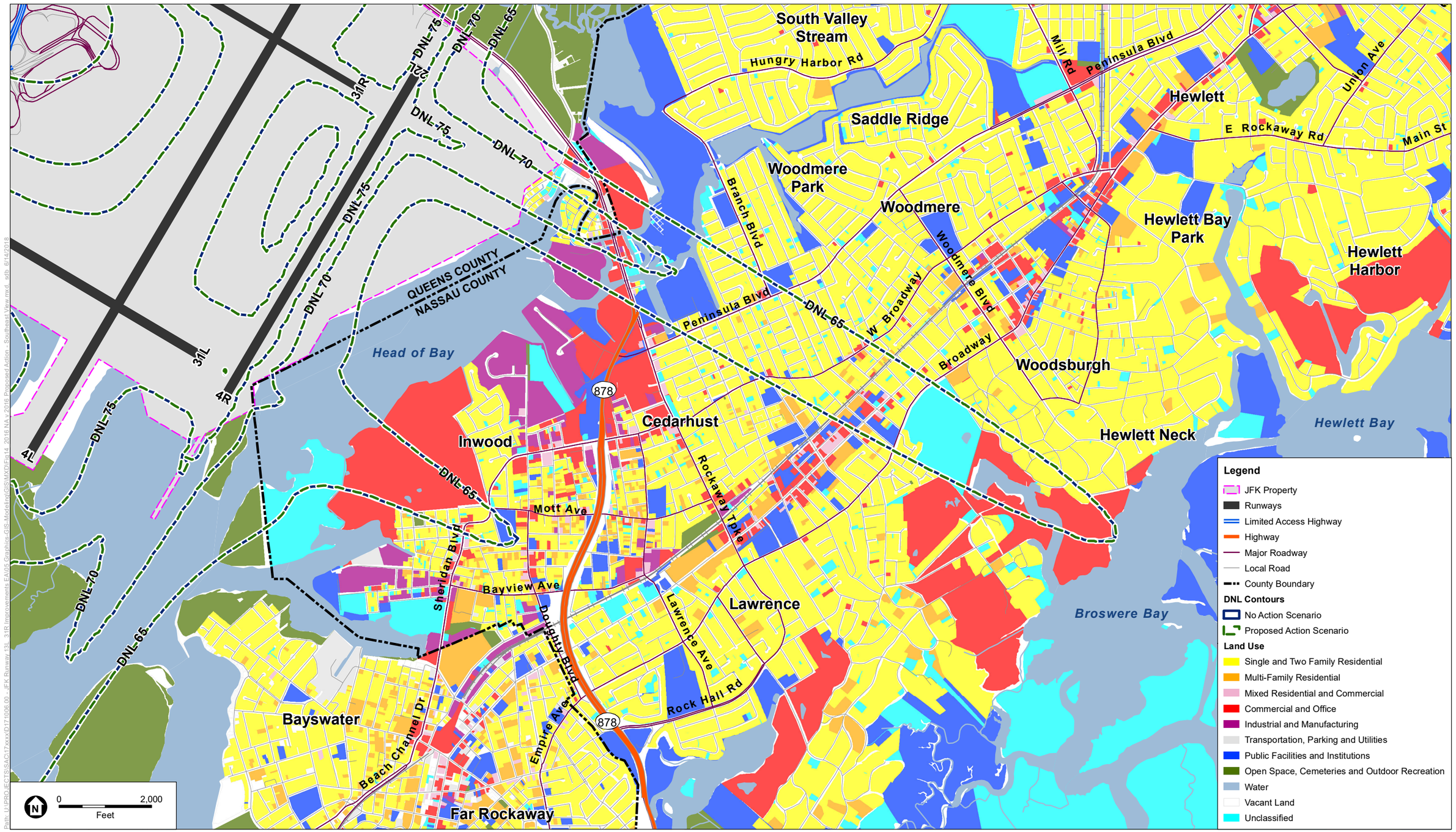

Path: U:\PROJECTS\SAC\17xxxx\017106 00 - JFK Runway 13L 31R Improvements EA\06 Graphics-GIS-Modeling\GIS\MXD\Fig14 2016 NA v 2016 Proposed Action - Southeast View.mxd, sdb 6/14/2018

SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015; Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015; AEDT 2d; ESA, 2018; ESRI Mapping Services

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Figure 4-3
No Action Scenario and Proposed Action Scenario DNL Contours - Southeast View
John F. Kennedy International Airport

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thereby resulting in recurring closure of Runway 13L-31R and the resulting need to assign aircraft to alternate runways at JFK.

Continued deterioration of pavement conditions would ultimately make Runway 13L-31R unusable. In such event, the temporary noise impacts that result from having to use other runways (see discussion of impacts in Section 4.2.3) would become permanent until such time as the Runway is made useable again. In the event of a prolonged closure of Runway 13L-31R, the No Action Scenario noise contours would reflect a 3-runway operation at JFK year-round. A 3-runway configuration year-round (365 days) would have greater noise impacts to the surrounding community associated with Runways 4L-22R and 4R-22L than the Construction Period Scenarios, which reflect a 3-runway operation for only 229 days for the Preferred Alternative. Due to the uncertainty of the noise impacts associated with the No Action Scenario, comparison of the No Action Scenario noise contours to the Construction Period Scenario noise contours does not accurately represent noise impacts associated with the construction of the Proposed Action.

4.2.3 Temporary Noise Exposure During Construction Period of the Preferred Alternative and Runway Alternative A

As discussed in Section 4.1, aircraft arrivals and departures would be reassigned to the other three runways while Runway 13L-31R is temporarily closed for construction. A noise analysis was performed to evaluate the temporary change in noise exposure to the Airport's surrounding communities during construction as compared to existing conditions. The operational changes and runway usage assumptions during the closure of Runway 13L-31R are detailed in **Section 4.1** and **Appendix C**.

The AEDT 2d model results were based on the runway usage assumptions outlined in **Tables 4-2** and **4-3** in **Section 4.1 Construction Overview and Impacts**. The results of the noise model indicate temporary changes to DNL noise exposure during construction of both the Preferred Alternative and Runway Alternative A, as shown in **Figure 4-4, No Action Scenario, Alternative A Construction Period, Preferred Alternative Construction Period DNL Contours**. **Figure 4-4** shows the temporary change in noise exposure levels within the DNL 65 dB, DNL 70 dB, and DNL 75 dB during construction while Runway 13L-31R is closed.

For both build Alternatives, a reduction in DNL noise exposure would occur in neighborhoods to the east and west of Runways 13L-31R and 13R-31L, when compared to the normal operations of the airport (No Action Alternative). The reduction in noise exposure would occur east and west of Runway 13L-31R because aircraft would not be using the Runway for 229 days in 2019. The reduction in noise exposure surrounding Runway 13R-31L is attributable to the shift in most of the aircraft operations to Runways 4R-22L and 4L-22R while Runway 13L-31R is under construction. For

Path: U:\PROJECTS\SAC\17xxxx\D171006.00 - JFK Runway 13L 31R Improvements EA\05 Graphics-GIS-Modeling\GIS\MXD\Fig6 2016 NA v 2016 Alternative A and Alternative B Construction Period Scenarios.mxd sdb 6/14/2018

SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015;
Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015;
AEDT 2d; ESA, 2018; ESRI Mapping Services

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Figure 4-4

No Action Scenario, Alternative A (Asphalt Runway) Construction Period, and Preferred Alternative (Concrete Runway) Construction Period DNL Contours
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additional information on the reduction in operation for Runways 13R and 31L, refer to **Tables 4-2** and **4-3** in this EA. Noise exposure levels to the east and west of Runway 13L-31R and 13R-31L during construction are shown on **Figure 4-5, No Action Scenario, Alternative A Construction Period, Preferred Alternative Construction Period DNL Contours – Northwest View,** and **Figure 4-6**, **No Action Scenario, Alternative A Construction Period, Preferred Alternative Construction Period DNL Contours – Southeast View** respectively.

Conversely, neighborhoods south and north of Runways 4L-22R and 4R-22L would experience a temporary increase in DNL noise exposure during construction due to reassignment of aircraft from Runways 13L-31R and 13R-31L. Noise exposure contours to the north and south of Runway 4R-22L and 4L-22R are shown on **Figure 4-7, No Action Scenario, Alternative A Construction Period, Preferred Alternative Construction Period DNL Contours – Northeast View** and **Figure 4-8, No Action Scenario, Alternative A Construction Period, Preferred Alternative Construction Period DNL Contours – Southwest View** respectively.

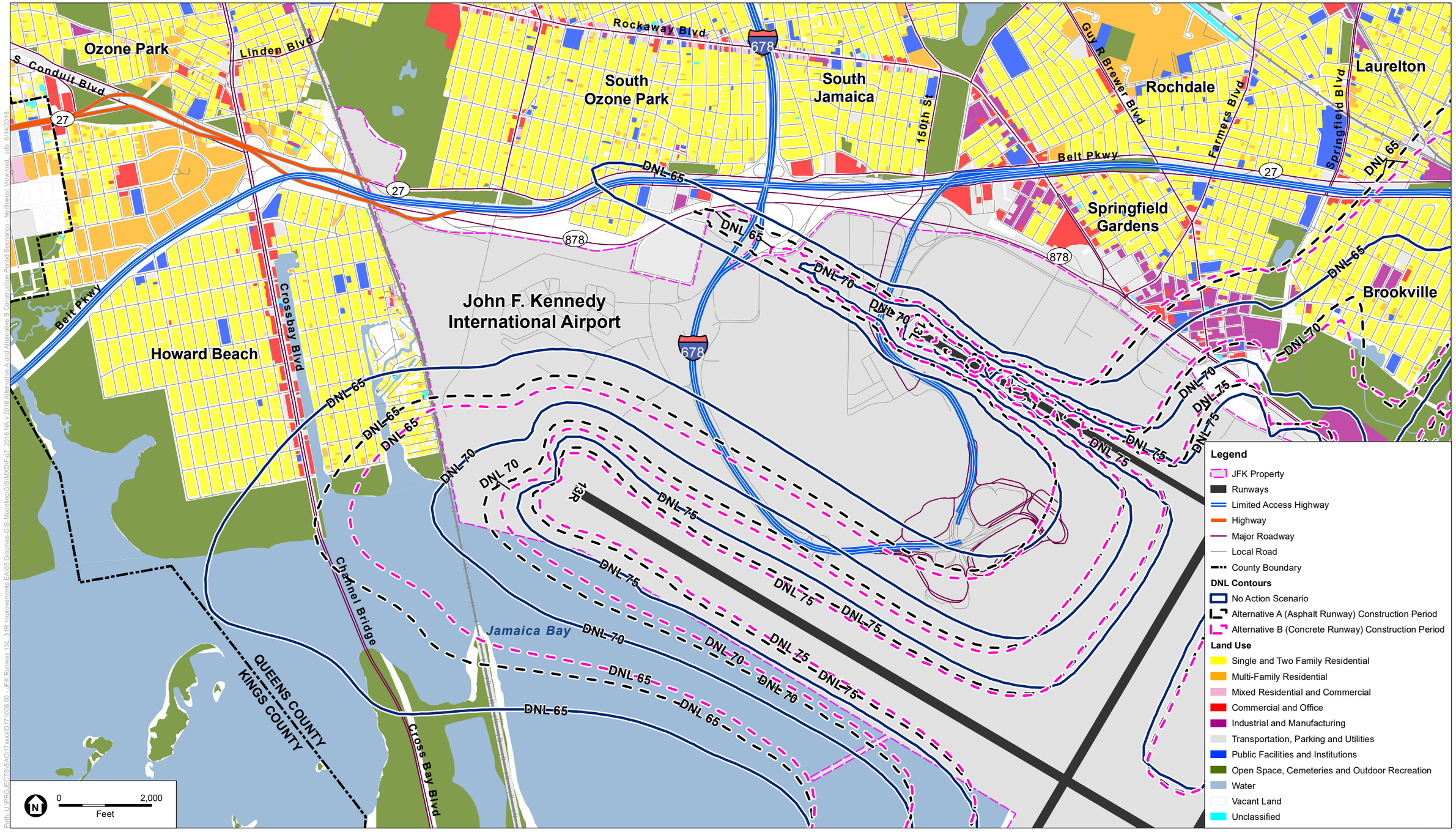
Noise sensitive sites that would be temporarily affected by the changes in noise in neighborhoods around the Airport are residences, places of worship, schools, hospitals and residential healthcare, historic resources, day cares, assisted living facilities and libraries. The change in runway usage would cause a temporary increase in noise at noise sensitive sites located in the neighborhoods south and north of Runways 4L-22R and 4R-22L. The change in runway usage during construction will also cause a reduction in noise at the noise sensitive sites located east and west of Runways 13L-31R and 13R-31L.

When comparing the modeled noise exposure during construction of the two Build alternatives, fewer households and persons would be exposed to DNL 65 dB and higher for the Preferred Alternative than for Runway Alternative A (13,406 households and 39,028 persons for the Preferred Alternative; 13,513 households and 39,246 persons exposed to DNL 65 dB and higher for Runway Alternative A). Refer to data in **Tables C-13** and **C-15** in **Appendix C**.

The temporary changes in runway usage during construction would expose some noise sensitive sites to DNL 65 dB and higher, but would also lower the noise exposure for some noise sensitive sites to below DNL 65 dB. During construction of the Preferred Alternative, temporary changes in noise exposure would impact nonresidential noise-sensitive sites as follows:

- 27 noise sensitive sites that are below the DNL 65 dB under the No Action Scenario would be exposed to DNL 65 dB or higher during construction of the Preferred Alternative.

- 16 noise sensitive sites would no longer be exposed to the DNL 65 dB level when compared to the No Action levels.



SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015;
Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015;
AEDT 2d; ESA, 2018; ESRI Mapping Services

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Figure 4-5

No Action Scenario, Alternative A (Asphalt Runway) Construction Period, and Preferred Alternative (Concrete Runway) Construction Period DNL Contours - Northwest View
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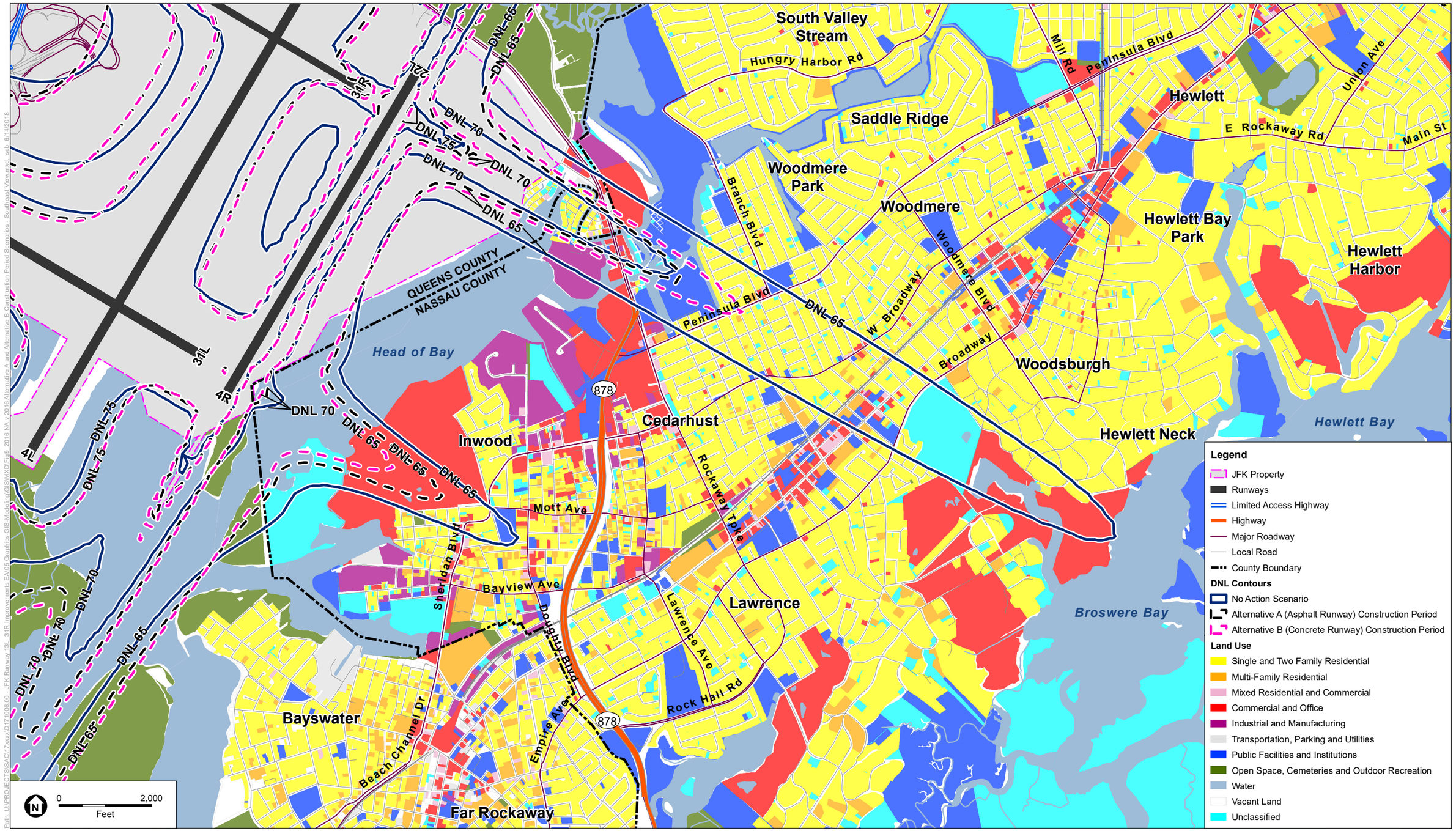
Path: U:\PROJECTS\SAC\17xxx\D171006.00 - JFK Runway 13L- 31R Improvements EA\05 Graphics-GIS-Modeling\GIS\MXD\Fig7_2016 NA v 2016 Alternative A and Alternative B Construction Period Scenarios - Northwest View.mxd, sdb, 6/14/2018



SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015; Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015; AEDT 2d; ESA, 2018; ESRI Mapping Services

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Figure 4-6

No Action Scenario, Alternative A (Asphalt Runway) Construction Period, and Preferred Alternative (Concrete Runway) Construction Period DNL Contours - Southeast View
John F. Kennedy International Airport

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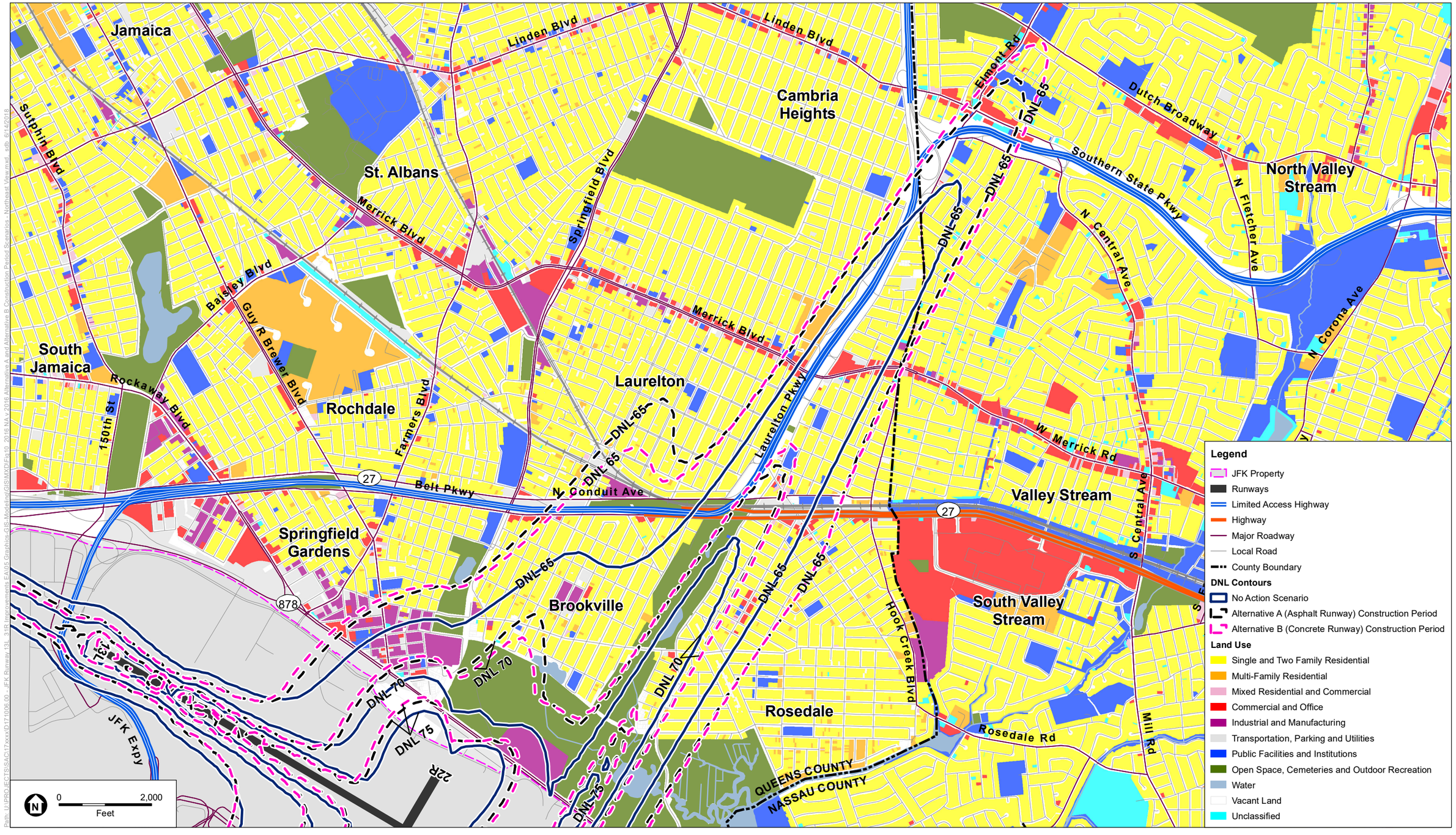

SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015; Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015; AEDT 2d; ESA, 2018; ESRI Mapping Services

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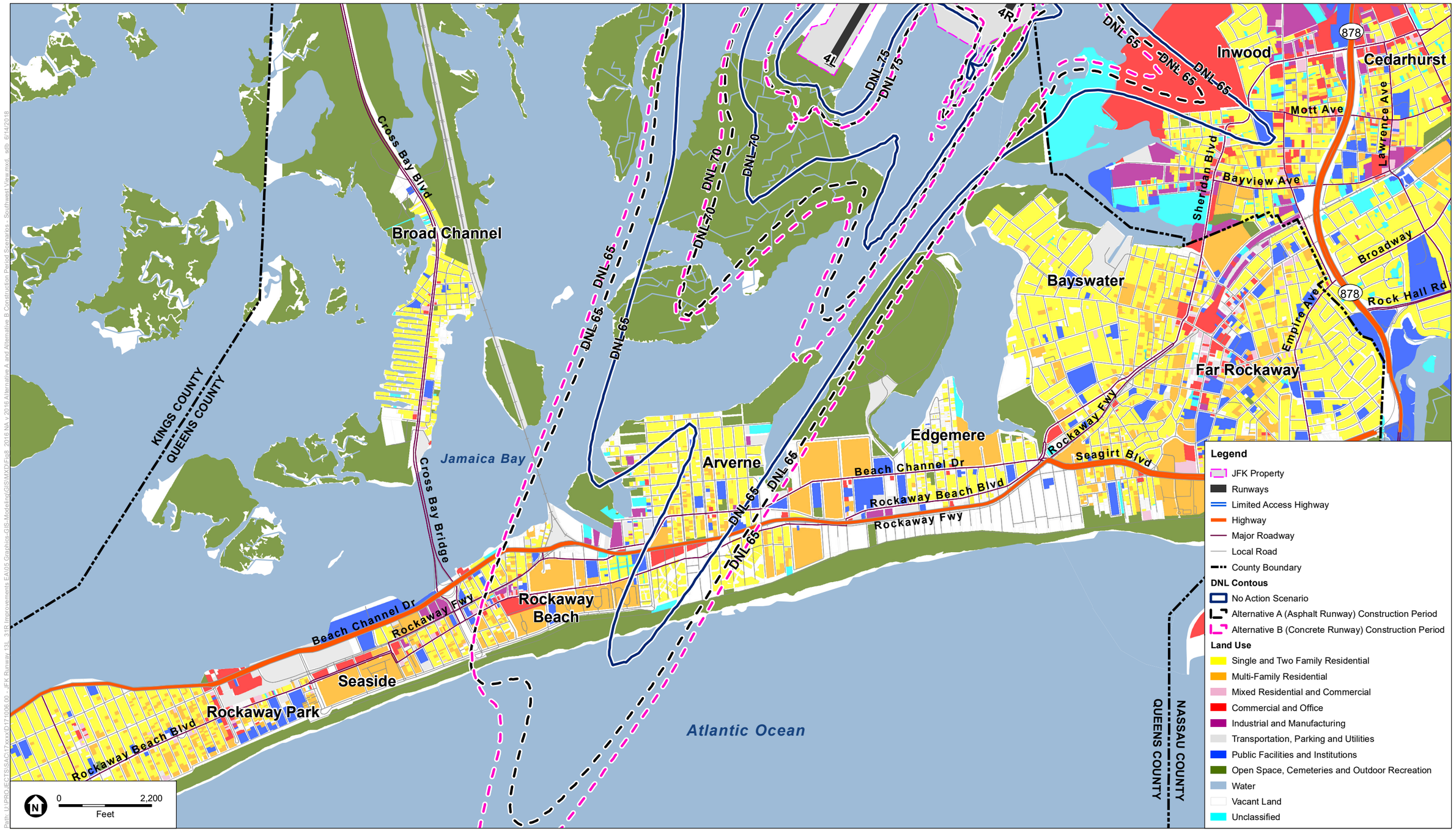
Figure 4-7

No Action Scenario, Alternative A (Asphalt Runway) Construction Period, and Preferred Alternative (Concrete Runway) Construction Period DNL Contours - Northeast View
John F. Kennedy International Airport

ESA



SOURCE: New York City Department of City planning, MapPLUTO, 15V1 - Tax lot/land use geographic information database, March 2015 - June 2015; Nassau County Department of Public Works Planning Division; Property Classification and geographic information database, September 2015; AEDT 2d; ESA, 2018; ESRI Mapping Services

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Figure 4-8

No Action Scenario, Alternative A (Asphalt Runway) Construction Period, and Preferred Alternative (Concrete Runway) Construction Period DNL Contours - Southwest View
John F. Kennedy International Airport

ESA

- 30 noise sensitive sites that are exposed to DNL 65 dB or higher under the No Action Scenario would experience an increase of DNL 1.5 dB or more.

During construction of Runway Alternative A, temporary changes in noise exposure would impact nonresidential noise-sensitive sites as follows:

- 22 noise sensitive sites would be exposed that are below the DNL 65 dB under the No Action Scenario would be exposed to DNL 65 dB or higher during construction of Runway Alternative A.

- 17 noise sensitive sites would no longer be exposed to the DNL 65 dB level when compared to the No Action levels.

- 15 noise sensitive sites that are exposed to DNL 65 dB or higher under the No Action Scenario would experience an increase of DNL 1.5 dB or more.

Refer to **Table C-19** in **Appendix C** for a list of the noise sensitive sites and the associated temporary noise increases and decreases that would result from the construction of Runway Alternative A and the Preferred Alternative.

4.2.4 Minimizing Noise Impacts

Airport operational changes resulting from a closed runway can impact noise exposure levels to surrounding communities due to the need to reassign aircraft from the closed runway to other runways at the airport. No reasonable runway operations are available that might avoid such temporary noise impacts while maintaining efficient operations at JFK during construction of the Proposed Project. However, the Port Authority has evaluated minimizing the duration and frequency of runway closures in connection with construction of the Proposed Project. As discussed in **Section 4.1 (Construction Overview and Impacts)**, the Preferred Alternative was selected over Runway Alternative A for the following reasons:

- The closure of Runway 13L-31R during construction of the Preferred Alternative would be approximately 100 days shorter than construction of Runway Alternative A.

- Reconstructing the Runway 13L-31R with concrete would give the Runway a longer life-span (30 years) than if the pavement was rehabilitated with asphalt, and concrete is more durable than asphalt. Therefore, the Preferred Alternative would avoid the need for future runway closures associated with asphalt rehabilitation (every 10 years) and maintenance.

Because the duration and frequency of construction-related runway closures would be lower for the Preferred Alternative than Runway Alternative A, construction of the Preferred Alternative instead of

Runway Alternative A would minimize the duration and frequency of noise impacts in communities that are affected by the reassignment of aircraft from Runway 31L-33R to other runways at JFK.

In addition, the Port Authority will ensure that the communities that would experience temporary noise impacts during construction of the Proposed Project are well-informed of runway usage and progress of the construction. As described in **Section 3.3.1 (Noise and Compatible Land Use)**, the Port Authority's Noise Office offers the public detailed information about airport-related noise through its website: http://www.panynj.gov/airports/aircraft-noise-information.html. In addition to the resources on the Noise Office webpage, information on expected runway usage during construction of the Proposed Project will be made available to the public on Port Authority's website so that persons residing and working in temporarily-impacted communities can anticipate Airport operations for the day. Periodic reports on construction status will also be posted on the website so that the public is informed of progress of the Proposed Project. The Port Authority will also brief the public on the progress of the Proposed Project at community meetings, such as meetings of the New York Community Aviation Roundtable.[83] Further, the Port Authority will enforce JFK's prohibition of aircraft noise above 112 PNdB for departures in the usual manner throughout the construction period (see discussion in **Section 3.3.1, Noise and Compatible Land Use**).

To the extent that noise abatement and mitigation measures such as those being evaluated in the JFK Part 150 study would abate/mitigate noise in the communities expected to be temporarily impacted by closure of Runway 31L-31R, those measures could not be implemented until after the Proposed Project has been constructed because of the time needed to plan, review and approve such measures. Delay of the Proposed Project to allow for implementation of such measures would not be prudent due to the poor condition of the Runway pavement (see discussion of the anticipated consequences of pavement deterioration in **Section 1.5, Project Purpose and Need**). And for the reasons set forth in **Section 2.2.1.1** (**No Action Alternative**), deferring Runway construction while implementing noise abatement and/or mitigation measures likely would result in more frequent noise impacts due to the need for more frequent runway closures for pavement repairs, or possible closure of Runway 13L/31R.

Permanent mitigation measures are not warranted because there would be no permanent significant noise impacts associated with the No Action Scenario compared to the Proposed Action Scenario.

[83] http://www.panynj.gov/airports/noise-community-roundtables-ny-airports.html

4.3 Air Quality

Pursuant to FAA 1050.1F 6.2.1f, this section presents and discusses air quality impacts associated with the construction activities of Runway Alternative A and the Preferred Alternative, when compared to the No Action Alternative. An operational emissions inventory was not necessary because the Proposed Project would not result in changes to aircraft operations or fleet mix at JFK Airport. However, the Proposed Project would be expected to result in operational air emissions reductions compared to the No Action Alternative because of an overall reduction in aviation fuel and electricity consumption due to operational efficiencies delivered by the Proposed Project. See, for example, discussions in Sections 1.5 (HSE expected to result in reduced taxi times) and **Section 3.2.2** (new LED runway and taxiway lighting is more energy efficient than current lighting). Additional detail about the Preferred Alternative's construction-related air emissions can be found in **Appendix A**.

4.3.1 Construction Emissions

Air pollutant emissions associated with construction activities are temporary and variable depending on project location, duration and level of activity. These emissions occur predominantly during the operation of construction equipment and vehicles (e.g., scrapers, dozers, delivery trucks, etc.) at the site, and the transportation of construction workers to and from the site. Additionally, fugitive dust emissions result from site preparation, land clearing, material handling, equipment movement on unpaved areas; and evaporative emissions from the application of asphalt paving.

Construction equipment typically utilized in airport projects consist of both on-road vehicles (i.e., on-road-licensed) and non-road equipment (i.e., off-road). The former category of vehicles are used for the transport and delivery of supplies, material and equipment to and from the site, and also include construction worker vehicles. The latter categories of equipment are operated on-site for activities such as soil/material handling, site clearing and grubbing.

The Airport Construction Emissions Inventory Tool (ACEIT)[84] was used to estimate short-term construction emissions associated with the proposed improvements at JFK. Project-specific details were used in the ACEIT to estimate construction activities and equipment/vehicle activity data (e.g., equipment mixes/operating times). Because the default emission factors used by ACEIT are outdated and do not reflect the latest USEPA's Motor Vehicle Emission Simulator (i.e., MOVES)[85] model, only activity data was extracted from the ACEIT. Emission factors were then developed using MOVES,

84 TRB, ACRP Report 102, Guidance for Estimating Airport Construction Emissions, http://www.trb.org/ACRP/Blurbs/170234.aspx.

85 USEPA's MOVES2014a is the latest version of MOVES, which includes the NONROAD model. Additional information on MOVES2014a is available at https://www.epa.gov/moves/moves2014a-latest-version-motor-vehicle-emission-simulator-moves.

which includes both on-road vehicles and off-road construction equipment. MOVES input data were obtained from the New York City Department of Environmental Conservation (NYCDEC) specific to Queens County. Fugitive dust emissions were instead calculated using emission factors within the USEPA's Compilation of Air Pollutant Emission Factors (AP-42)[86], and evaporative emissions were developed using USEPA guidance on asphalt paving[87].

Construction emissions (in tons per year) associated with Runway Alternative A and the Preferred Alternative are presented in **Table 4-4** for construction years 2018 through 2020. As shown, the total emissions associated with construction activities are below the applicable General Conformity Rule *de minimis* thresholds of 100 tons per year for NO_x and $PM_{2.5}$; and 50 for VOCs. For completeness, emissions for CO, SO_2 and PM_{10} are also included.[88] Due to the reduced number of construction days and an on-site concrete plant for the Preferred Alternative, air emissions from construction during the Preferred Alternative are less than emissions associated with the Alternative A - Asphalt Runway. CO, NO_x, and $PM_{2.5}$, construction emissions would be reduced approximately 50% with the Preferred Alternative.

86 USEPA, Emissions Factors & AP-42, Compilation of Air Pollutant Emission Factors, http://www.epa.gov/ttn/chief/ap42/index.html#toc.

87 USEPA, Emission Inventory Improvement Program, Asphalt Paving, Chapter 17, Volume III, April 2001.

88 JFK is in Queens County, NY, which is designated by the USEPA as a (i) Moderate Nonattainment Area for the 2008 Eight-Hour Ozone (O3) Standard and (ii) a Maintenance Area for the 2006 PM2.5 standard. It is significant then that the precursors of O3 are NOx and VOC, the two pollutants subject to the General Conformity Rule of the Clean Air Act. By comparison, the pollutant NO2 does not apply to O3 formation and it is treated as a "criteria" pollutant under the NAAQS. Therefore, NO2 is viewed as an ambient (outdoor) air pollutant because of its potential effects on human health and the environment and not considered as a O3-precursor.

Table 4-4: Criteria Pollutant Emissions Associated with Construction of the Alternatives (tons per year)

Year	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	VOC
Runway Alternative A (Asphalt Rehabilitation)						
2018	**22**	**43**	**<1**	**7**	**3**	**6**
2019	**28**	**53**	**<1**	**13**	**4**	**8**
2020	**12**	**25**	**<1**	**5**	**2**	**4**
Preferred Alternative (Concrete Reconstruction)						
2018	**0**	**0**	**0**	**0**	**0**	**0**
2019	**26.6**	**62.1**	**0.1**	**14.2**	**4.8**	**10.4**
2020	**0**	**0**	**0**	**0**	**0**	**0**
***De Minimis* Threshold**	**NA**	**100**	**NA**	**NA**	**100**	**50**
Exceeds *De Minimis* Threshold? (Yes/No)	**--**	**No**	**--**	**--**	**No**	**No**

Source: KBE and EPA, *De Minimis Levels*, https://www.epa.gov/general-conformity/de-minimis-emission-levels, 2017 and 2018.
Note: NA = not applicable.

The Airport adheres to FAA Advisory Circular 150/5370 for all requirements concerning dust, other particulate matter, and emissions associated with construction on-airport. Emissions from construction activities may be further reduced by employing the following measures:

- Cover exposed surface areas with pavement or vegetation, as appropriate, in an expeditious manner;
- Reduce equipment idling times;
- Ensure contractor is knowledgeable of appropriate fugitive dust and equipment exhaust controls;
- Stabilize soil via cover or periodic watering;
- Use low or zero-emissions equipment; and
- Suspend construction activities during high-wind conditions.

4.3.2 Climate

The Council on Environmental Quality (CEQ) has indicated that climate should be considered in NEPA analyses and in 2016 released final guidance for federal agencies on how to consider the impacts of their actions on global climate change in their NEPA reviews, a Notice of Availability for which was published on August 5, 2016 (81 FR 51866). However, pursuant to Executive Order 13783,

"Promoting Energy Independence and Economic Growth," of March 28, 2017, the guidance has been withdrawn for further consideration.

GHG emissions associated with the two Alternatives' construction-related activities during the 2018 through 2020 construction period are summarized in **Table 4-5**. The GHG emissions are presented in metric tons of CO_2 equivalent (CO_2e) relevant to their Global Warming Potentials (GWPs).[89] Due to the reduced number of construction days for the Preferred Alternative (229 days versus 330 days for Alternatives A), total GHG emissions would be 50% lower for the Preferred Alternative compared to the Runway Alternative A.

Table 4-5: CO_2e Emissions Associated with Construction of the Alternatives (metric tons per year)

Year	CO_2e
Runway Alternative A	
2018	11,068
2019	15,531
2020	7,881
Total	34,480
Preferred Alternative	
2019 (Total)	17,227

Source: KBE, 2017.

4.3.3 Summary

JFK is located in an area currently designated by the USEPA as moderate nonattainment for the 2015 8-hour O_3 standard and maintenance for the 2006 $PM_{2.5}$ standard. The construction-related emissions associated for both the Preferred Alternative or Runway Alternative A are below the applicable General Conformity Rule *de minimis* thresholds for NO_x and VOCs (the principal precursors to ozone formation) and $PM_{2.5}$. Therefore, a Conformity Determination is not required and the Preferred Alternative or Runway Alternative A is presumed to comply with the SIP.

Based on the air quality assessment in this Section 4.3, the Preferred Alternative was selected over Runway Alternative A based in part on this air quality analysis. CO, NO_x, $PM_{2.5}$, and CO_2e construction emissions would be reduced approximately 50% with the Preferred Alternative

89 GWPs based on latest Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report (AR5), November 2014.

compared to the Runway Alternative A. The No Action Alternative would not affect air quality or climate.

4.4 Biological Resources (including Fish, Wildlife and Plants)

This section analyzes the potential impacts of the Preferred Alternative and Runway Alternative A on the existing biological resources identified in Chapter 3, Affected Environment, including ecological communities and vegetation, wildlife, and rare/protectecd species.

4.4.1 Ecological Communities and Vegetation

As set forth in Section 3.3.3, the Proposed Project Site currently consists of an asphalt-paved aircraft runway, associated taxiways, and service roads for supporting vehicular access and is largely unvegetated with the exception of several grass-covered areas that undergo regular mowing and landscaping. These disturbed/developed conditions are defined as ECNYS Mowed Lawn and Paved Road/Path communities, which are considered by the NYNHP as unranked cultural habitat communities that are distributed throughout New York State.

Based upon these existing conditions, the Proposed Project Site does not support natural or otherwise undisturbed ecological communities or significant vegatative associations. Accordingly, the Preferred Alternative and Alternative A - Asphalt Runway would not result in the removal of, or adverse effects to, important ecological communities or significant areas of vegetation. The two existing disturbed cultural ecological communities would remain in place or reduced in size and be replaced primarily with Paved Road/Path communities associated with the Proposed Project Site. The paved road/path community is defined as a road or pathway paved with asphalt, brick, stone, etc. There may be sparse vegetation rooted in cracks in the paved surface. As previously indicated, the communities are unranked cultural communities (i.e., communities that are created or altered by humans) that are distributed throughout the State of New York. As such, following implementation of the Preferred Alternative, the Proposed Project Site would support predominantly developed and largely unvegetated cultural habitats, similar to existing conditions.

Based upon the foregoing, no adverse effects to habitats or vegetation are anticipated as a result of the Preferred Alternative or the Runway Alternative A. The No Action Alternative would not affect ecological communities and vegetation.

4.4.2 Wildlife

Given the disturbed/developed and largely unvegetated conditions, continuous disturbance due to airport operations and active management of wildlife populations and habitats, the Proposed Project

Site does not represent a significant habitat area for wildlife. The observed/expected wildlife species assemblage is comprised primarily of a limited number of birds and mammals adapted to disturbed cultural habitats and a high degree of human activity. Further, the Proposed Project Site is terrestrial in nature and therefore, does not support surface waters appropriate as habitat for most amphibians and reptiles, fish or populations of other aquatic organisms. Based upon these existing conditions, the Proposed Project and any resident or transient wildlife species found in the Proposed Project Site does not represent significant integrated components of larger nearby ecosystems, including the New York City Special Natural Waterfront Area (SNWA) and NYSDEC Significant Coastal Fish and Wildlife Habitat (SCFWH) of the proximate Jamaica Bay estuarine complex or the associated NPS Jamaica Bay Wildlife Refuge.

Following implementation of the Preferred Alternative, it is anticipated that the wildlife species assemblage at the Proposed Project area would be comprised of a low diversity assemblage of common birds and mammals tolerant of developed conditions and a high degree of human activity, similar to existing conditions at the Proposed Project Site. Based upon the foregoing, redevelopment of the Proposed Projet Site under the Preferred Alternative, or Runway Alternative A, would not result in adverse effects to wildlife populations or habitat at the Proposed Project Site. Furthermore, no adverse effects are anticipated for the New York City (NYC) Special Natural Waterfront Area (SNWA) and NYSDEC Significant Coastal Fish and Wildlife Habitat (SCFWH) of the Jamaica Bay estuarine complex, or the associated NPS Jamaica Bay Wildlife Refuge, as a result of implementation of the Preferred Alternative or Runway Alternative A.

Under the Preferred Alternative or Alternative A, stormwater within the Proposed Project Site would be conveyed to Jamaica Bay via Outfall #10 and to Thurston Bay via Outfalls #17A and #22 under the airport's SPDES Permit (See **Figure 1-7**). A Soil and Groundwater Management Plan (SGWMP) designed to avoid or minimize potential adverse impacts to surface waters and other watershed components would be implemented in association with the Preferred Alternative or Alternative A. As such, no significant adverse stormwater impacts to wildlife or wildlife habitat within Bergen Basin or Jamaica Bay are anticipated.

Based upon these factors, no adverse effects are anticipated for the New York City (NYC) Special Natural Waterfront Area (SNWA) and NYSDEC Significant Coastal Fish and Wildlife Habitat (SCFWH) of the Jamaica Bay estuarine complex, or the associated NPS Jamaica Bay Wildlife Refuge, as a result of implementation of the Preferred Alternative or Runway Alternative A. The No Action Alternative would not affect wildlife resources.

4.4.3 Rare/Protected Species

As noted in Chapter 3, suitable habitat for the four species listed in the U.S. Fish and Wildlife Service (USFWS) Resources List for the Proposed Project area does not occur within or adjacent to the Proposed Project Site. However, NYNHP records exist for three NYS-listed birds at or proximate to the Proposed Project Site: Upland Sandpiper, Short-eared Owl and Northern Harrier. Based on existing conditions, significant nesting habitat for the three species does not occur at the Proposed Project Site. The grassed portions of the Proposed Project Site represent potential hunting/foraging habitat for the three birds, although the latter two species are actively managed within the Proposed Project Site and under the JFK WHMP.

A majority of Alternative A and the Preferred Alternative consists of repaving existing paved areas (approximately 106 acres), a 50-foot widening (approximately 9 acres), and additional taxiway and shoulder pavement that do not represent potential habitat for any of the three bird species. The proximity of the existing grassed habitat to paved airport taxiways and associated airport activity likely limits the overall value of the grassed habitat for the aforementioned species.

Taking these factors into account, no significant adverse impacts to Upland Sandpiper, Short Eared Owl and Northern Harrier are anticipated due to construction of the Preferred Alternative or Runway Alternative A. However, due to the existence of site-specific NYNHP records, consultations with the NYSDEC under 6 NYCRR Part 182 and the USFWS under Section 7 of the Endangered Species Act would be required for the Preferred Alternative or Runway Alternative A. The NYSDEC concurred in a letter dated August 23, 2018 that "the proposed activies will not adversely affect the upland sandpiper, short eared owl, or northern harrier". The August 23rd, 2018 letter is included in Appendix E.

The No Action Alternative would not affect rare and/or protected species.

4.5 Department of Transportation Section 4(f)

Section 4(f) properties were identified within one-mile of the Proposed Project Site and within the indirect effects area. The indirect effects area is defined by the DNL 65 dB noise contours for the No Action Alternative, Preferred Alternative and Runway Alternative A, including temporary noise exposure from construction. In comparison to the list of Section 4(f) properties within one-mile of the Proposed Project and the indirect effects area in the No Action Alternative, there is no increase or decrease in the number of Section 4(f) properties after implementation of the Preferred Alternative or the Alternative A Asphalt Runway. In addition, there are no Section 4(f) properties such as parks, recreation areas, wildlife/waterfowl refuges, or historic properties in the direct impact area for the No

Action Alternative, Alternative A Asphalt Runway, or Preferred Alternative, nor any of the properties directly adjacent.

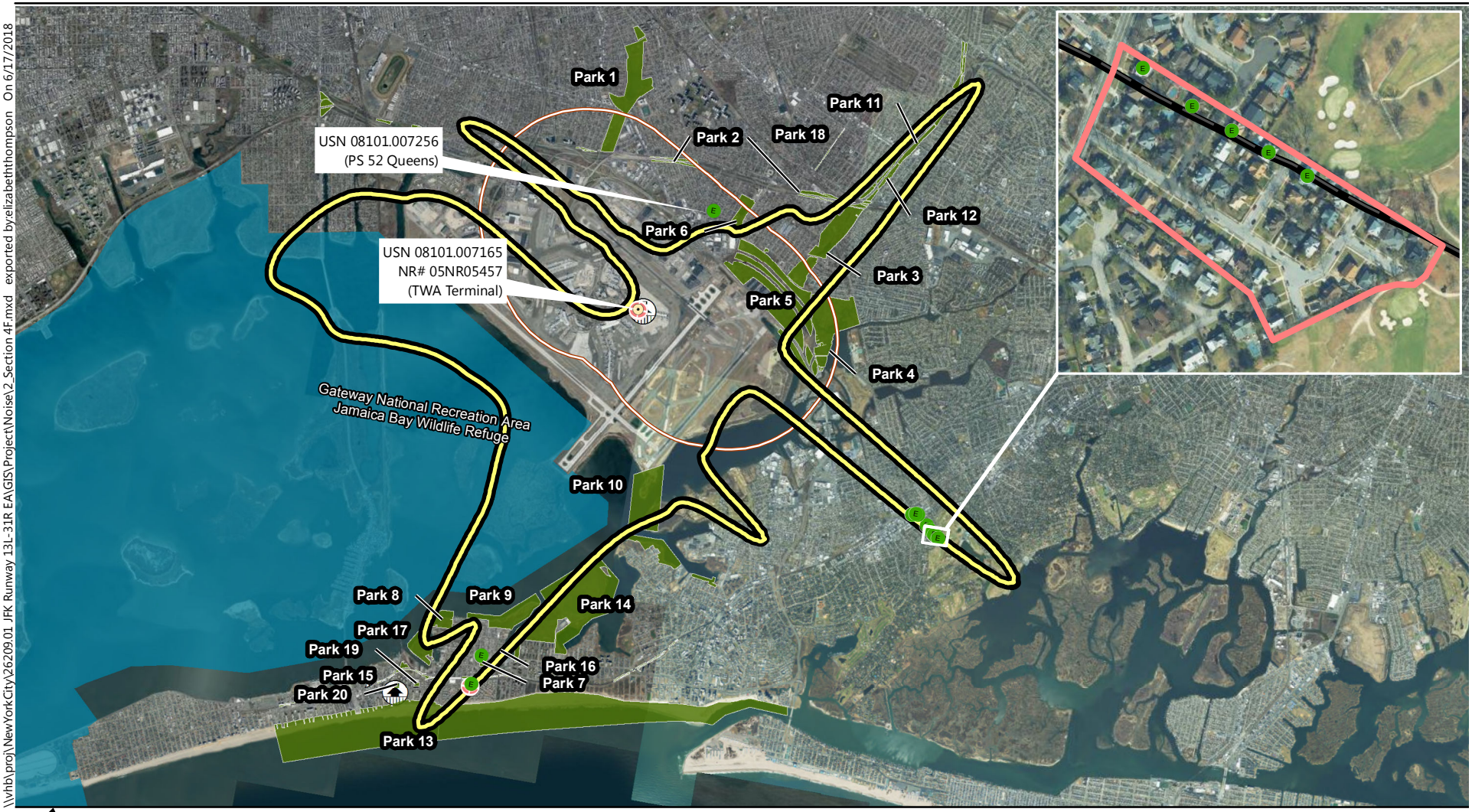
A list of Section 4(f) properties within one-mile of the Proposed Project Site and indirect effects areas is provided in **Table 4-6**.

Three parks would be included temporarily within the DNL 65 dB noise contour during construction of Runway Alternative A and the Preferred Alternative. The three additional parks are listed below with a designated number for identification in **Figure 4-9, Section 4(f) with Noise Contours**, which locates Section 4(f) properties within the indirect effects area and one-mile from the Proposed Project Site.

- **Park 18:** "225 Street Malls" (225 Street between 135 Avenue and 141 Avenue). This area is a median located between two streets.

- **Park 19:** "Beach Channel Playground" (B 80 Street, B 79 Street, Rockaway Beach Boulevard, Beach Channel Drive). Two sides of the Beach Channel Playground abut a cross street, and the playground is approximately 300 feet from a 4-lane street that is used by cars, trucks and buses.

- **Park 20:** "Hammel Playground" (Rockaway Beach Boulevard between Beach 84 Street and Beach 81 Street). The Hammel Playground abuts a 4-lane street that is used by cars, trucks and buses.



\\vhb\proj\NewYorkCity\26209.01 JFK Runway 13L-31R EA\GIS\Project\Noise\2_Section 4F.mxd exported by:elizabeththompson On 6/17/2018

0 7,500 15,000 Feet

Sources: New York City Department of Parks and Recreation (2016); NYS Orthos-imagery (2016); GATE data from the National Parks Service (2008).

- No-Action DNL 65 Noise Contour
- Preferred Alternative DNL 65 Noise Contour
- Context Study Area
- Flower Streets Historic District
- NYC Landmarks
- Parks
- Gateway National Recreation Area (GATE)
- National Register of Historic Places

NYS Building Unique Site Number Points

- Eligible
- Listed

*USN is the NYS Building Unique Site Number Points

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John F. Kennedy International Airport Reconstruction of Runway 13L-31R and Associated Taxiways DRAFT Environmental Assessment

Figure 4-9
Section 4(f) Resources with Noise Contours

Table 4-6: Section 4(f) Parks, Recreational Areas and Wildlife/Waterfowl Refuges within the One-Mile of Proposed Project Site and Indirect Effects Area			
	Resource	**Type**	**Location**
1	Baisley Pond Park	Community Park	N. Conduit Ave., 116 Ave. bet. 150 St., Suptin Blvd., and Baisley Blvd. S.
2	Belt Parkway	Parkway	Belt Pkwy. bet. Cross Bay Blvd. and Laurelton Pkwy.
3	Brookville Park	Community Park	S. Conduit Ave., 149 Ave. bet. 232 St. and 235 St.
4	Springfield Park	Community Park	Springfield Blvd., 183 St. bet. 145 Rd. and 149 Ave.
5	Hook Creek Park	Nature Area	Brookville Blvd., Huxley St. bet. 149 Ave. and Hook Creek Basin
6	Idlewild Park	Nature Area	149 Ave., Rockaway Blvd., Jamaica Bay bet. James Brown Pl. and Brookville Blvd.
7	Almeda Playground	Jointly Operated Playground	Beach 65 St. to Beach 66 St., Beach Channel Dr.
8	Brant Point Wildlife Sanctuary	Nature Area	Beach 72 St. bet. Bayfields Ave. and Hillmeyer Ave.
9	Dubos Point Wildlife Sanctuary	Nature Area	De Costa Ave. bet. Sommerville Basin and B. 65 St., Bayfield Ave. bet. B. 65 St. and B. 69 St.
10	Jamaica Bay Park	Nature Area	Mott Basin to the City Line
11	Laurelton Parkway	Parkway	121 Ave., N. Conduit Ave. bet. Laurelton Pkwy. Sr. Rd. S and Brookville Blvd.
12	Laurelton Playground	Neighborhood Park	Brookville Blvd. bet. 136 Ave. 137 Ave.
13	Rockaway Beach and Boardwalk	Waterfront Facility	Shore Front Pkwy. bet. Beach 109 St. and B. 73 St.
14	Rockaway Community Park	Community Park	Almeda Ave., Norton Ave. bet. Beach 58 St., Sommerville Basin and Beach 49 St., Conch Basin
15	Rockaway Freeway	Parkway	Rockaway Frwy. bet. Beach 108 St. and Regina Ave., Beach Channel Dr.
16	Thursby Basin Park	Undeveloped	Beach 63 St. bet. Elizabeth Rd. and Thursby Ave.
17	Vernam Barbadoes Peninsula	Nature Area	Amstel Blvd., Jamaica Bay

Table 4-6: Section 4(f) Parks, Recreational Areas and Wildlife/Waterfowl Refuges within the One-Mile of Proposed Project Site and Indirect Effects Area			
	Resource	**Type**	**Location**
18	225 Street Malls	Mall Streetscape	225 St. bet. 135 Ave. and 141 Ave.
19	Beach Channel Playground	Jointly Operated Playground	B 80 St., B 79 St., Rockaway Beach Blvd., Beach Channel Dr.
20	Hammel Playground	Playground	Rockaway Beach Blvd. bet. Beach 84 St. and Beach 81 St.

Source: VHB, from New York City Department of Parks and Recreation (2016) and National Parks Service (2008)

A project that does not physically use a Section 4(f) resource (e.g., a park) may still be considered to "constructively use" the resource if the project's impacts substantially impair the resource. According to Section 5.3.2 of the FAA 1050.1F Desk Reference, the threshold for a "constructive use" is established by the land use compatibility guidance in FAA's Part 150 noise compatibility planning regulations (14 CFR Part 150, Appendix A, Table 1). According to such regulations, "amusements, parks, resorts, and camps" are compatible land uses if located within the DNL 75 dB contour or less. Therefore, Parks 18, 19 and 20 are not "constructively used" pursuant to Section 4(f). Further, the location of each of these parks adjacent to roadways (some of which are four-lane streets) indicates that quietness is not an attribute of any of them.

In conclusion, there would be no significant impact to the Section 4(f) parks, recreation areas, wildlife refuge and historic properties as a result of implementing the Preferred Alternative or Runway Alternative A. The Preferred Alternative was selected because it would (a) not have a significant impact to Section 4(f) properties, (b) no additional Section 4(f) properties would be exposed to noise exposure during temporary construction when compared to Runway Alternative A, and (c) the shorter construction duration would decrease the temporary impacts to the historic properties. The No Action Alternative would not affect Section 4(f) properties.

4.6 Historical, Architectural, Archaeological, and Cultural Resources

The Section 4(f) properties identified within one-mile of the Proposed Project Site and the indirect effects area for the DNL 65 dB No Action Alternative and the Proposed Action includes historic properties listed on or eligible to the NRHP (**Table 4-7**). Simliar to the Section 4(f) parks listed in Section 4.5, there is no difference in noise impacts to Section 4(f) historic properties between the No Action Alternative and the Proposed Action. As a result, there would be no significant impact to the Section 4(f) historic properties following construction of the Proposed Action.

Table 4-7: Listed and Eligible Historic Properties within One-Mile of the Proposed Project Site and Indirect Effects Areas

USN Number	Resource	Address
5909.000019	St. Joachim Roman Catholic Church	614 Central Avenue, Cedarhurst
5909.000028	Temple Beth-El	40 Locust Avenue, Cedarhurst
5909.000073	St. Joachim School	620 Central Avenue, Cedarhurst
5909.000071	St. Joachim Rectory	614 Central Avenue, Cedarhurst
5909.000072	Possibly Related to St. Joachim School	124 McGlynn Place, Cedarhurst
8101.007210	Congregation Derech Emunoh Synagogue	199 Beach 67th Street, Queens
8101.009536	PS 42 Q	488 Beach 66th Street, Arverne
5901.002555	Private Residence – Flower Streets Historic District[1]	611 Broadway, Cedarhurst
5901.002557	Private Residence – Flower Streets Historic District	6 Rose Street, Lawrence
5901.002567	Private Residence – Flower Streets Historic District	6 Iris Street, Lawrence
5901.002568	Private Residence – Flower Streets Historic District	5 Iris Street, Lawrence
5901.002214	Private Residence – Flower Streets Historic District	5 Rose Street, Lawrence
8101.007165	Trans World Airlines – International Terminal	Van Wyck Expressway, Queens
8101.009399	Temple of Israel Synagogue (aka Beth Israel, Temple Israel, and Haven Ministries)	188 Beach 84th Street, Rockaway Beach
8202.007256	PS 52 Queens	178-37 146th Terrace, Jamaica

Source: VHB, from data provided by NYS Parks, Recreation & Historic Preservation Office
[1] The listed resources in the Flower Streets Historic District are only those in the district that are within the 65 DNL contour

Under Section 106, buildings that function as a house of worship or school are more susceptible to significant impact from alterations to setting and association that result from changes in noise levels, air quality, or shadows. Such facilities would experience a significant impact from a cultural resources standpoint, only if quiet or solitude is a variable of importance to the resources' significance. None of the listed or eligible resources in the indirect effects areas meet this standard.

Temple of Israel Synagogue[90] is a historic property that was added to the list of listed and eligible properties within the indirect effects area because it is within the temporary Construction Period Scenario DNL 65 dB contour for Runway Alternative A and the Preferred Alternative. A shift in noise impacts for Section 4(f) historic properties would only be temporary during construction.

In conclusion, the Preferred Alternative has been selected over Runway Alternative A for implementation of the Proposed Action because it can be completed in a shorter duration. The shorter construction duration would decrease the temporary impacts to the historic properties. The No Action Alternative would not affect historical, architectural, archaeological, and cultural resources.

4.7 Land Use

As noted in **Tables 4-8 and 4-9**, the land uses identified in the indirect effect areas of the No Action Alternative and Proposed Action do not show a significant difference in land uses within the DNL 65, 70, and 75 dB noise contours. The land use category and acreage, as well as households and population, within the DNL 65 dB and higher contours would be similar from the No Action Alternative to the Preferred Alternative or Runway Alternative A.

Table 4-8: Land Uses, Households, and Population within the DNL 65 dB and Higher Contours (No Action Alternative)

Land Use Category	Land Uses Exposed to DNL 65 dB and Higher (Acres)				Households	Population
	DNL 65-70	DNL 70-75	DNL 75+	Total		
Single and Two-Family Residential	593.0	35.4		628.5	9,038	27,222
Multi-Family Residential	42.1	0.5		42.7	1,262	2,865
Mixed Residential and Commercial	4.7	0.5		5.3	73	206
Commercial and Office	104.2	5.6		109.8	-	-
Industrial and Manufacturing	60.9	20.4		81.4	-	-
Transportation, Right of Way, Parking and Utilities	571.0	54.1	25.8	650.9	-	-
Public Facilities and Institutions	66.3	0.2		66.5	-	-
Open Space, Cemeteries, and Outdoor Recreation	980.8	217.2	33.1	1,231.1	-	-
Vacant	53.4	18.4	7.2	78.9	-	-
Airport Property	988.4	925.5	1,407.0	3,320.9	-	-
Water (Off Airport Property)	1,596.8	577.9	85.7	2,260.4	-	-
Total	**5,061.6**	**1,855.8**	**1,558.8**	**8,476.2**	**10,373**	**30,293**

90 13NR06491, USN 08101.009299

Land Use Category	Land Uses Exposed to DNL 65 dB and Higher (Acres)				Households	Population
	DNL 65-70	DNL 70-75	DNL 75+	Total		

NOTE: Summation of the individual acreages may not equal the total due to rounding.
SOURCE: Environmental Science Associates, 2018.

Table 4-9: Land Uses, Households, and Population within the DNL 65 dB and Higher Contours (Preferred Alternative and Runway Alternative A)

Land Use Category	Land Uses Exposed to DNL 65 dB and Higher (Acres)				Households	Population
	DNL 65-70	DNL 70-75	DNL 75+	Total		
Single and Two-Family Residential	593.7	35.5		629.2	9,035	27,216
Multi-Family Residential	42.2	0.5		42.7	1,259	2,857
Mixed Residential and Commercial	4.7	0.5		5.3	73	206
Commercial and Office	105.3	5.7		110.9	-	-
Industrial and Manufacturing	61.0	20.5		81.5	-	-
Transportation, Right of Way, Parking and Utilities	570.9	54.2	25.8	650.9	-	-
Public Facilities and Institutions	65.7	0.2		66.0	-	-
Open Space, Cemeteries, and Outdoor Recreation	979.7	217.2	33.1	1,230.1	-	-
Vacant	53.4	18.4	7.2	78.9	-	-
Airport Property	988.5	925.5	1,407.4	3,321.4	-	-
Water (Off Airport Property)	1,597.1	578.0	85.7	2,260.8	-	-
Total	**5,062.2**	**1,856.2**	**1,559.2**	**8,477.6**	**10,367**	**30,279**

NOTE: Summation of the individual acreages may not equal the total due to rounding.
SOURCE: Environmental Science Associates, 2018.

During the temporary construction phasing of the Preferred Alternative or Runway Alternative A, land uses north and south of the Airport that were previously outside of the DNL 65 dB noise contour, for the No Action Alternative, would be added within the contour. Whereas, land uses to the east and the west of the Airport that were previously inside the DNL 65 dB noise contour would be shifted outside the contour. This shift in noise exposure is due to tremporary reasignment of aircraft operations to Runways 4R-22L and 4L-22R (see Tables C-13 through C-16 in **Appendix C**).

In conclusion, there would be no significant shift among the land use categories and acreage within the DNL 65 dB and higher contours from the No Action Alternative to the Preferred Alternative or Runway Alternative A. The Preferred Alternative was selected because it would not significantly change the total number of acreage among the land use categories from the No Action Alternative,

Runway Alternative A, nor temporary construction noise exposure impacts from the Runway Alternative A. The No Action Alternative would have no affect on the land use categories and acreage within the DNL 65 dB and higher contour.

4.8 Socioeconomic Conditions, Environmental Justice Communities, and Children's Environmental Health and Safety Risks

This section analyzes the potential impacts of the Preferred Alternative and Runway Alternative A to socioeconomic conditions, environmental justice communities, and children's environmental health and safety risk as identified in Chapter 3, Affected Environment.

Socioeconomic Conditions

Socioeconomic impacts to be considered are typically those associated with relocation or other community disruption, transportation, planned development, and employment. The proposed improvements would be contained within JFK, therefore, there would be no relocation. Also, impacts to socioeconomic conditions within the communities surrounding JFK are not anticipated during construction of the Preferred Alternative, or Runway Alternative A. There would be an increase in temporary employment during construction. However, no employment growth is expected at Project completion.

Environmental Justice (EJ) Communities

An environmental justice analysis considers the potential of Federal actions to cause disproportionately high and adverse effects on low-income or minority populations. For the purposes of this EA, impacts to Environmental Justice Communities were assessed for the No Action Alternative, the implementation of the Preferred Alternative and Runway Alternative A, and during the temporary construction phase for both the Preferred Alternative and Runway Alternative A.

As mentioned in Chapter 3: Affected Environment, for the No Action Alternative, there are 28 Census Tracts with Environmental Justice Communities within the indirect effects area or DNL 65 dB contour. Because there would be no change in the DNL 65 dB contour from the No Action Alternative to both the Preferred Alternative and Runway Alternative A, no additional Census Tracts with Environmental Justice Communities would be added for these two alternatives.

During construction of both Runway Alternative A and the Preferred Alternative, 4 of the 28 Census Tracts with Environmental Justice Communities (to the east and west of JFK) would experience a temporary noise reduction (noise exposure would be below DNL 65 dB). In addition, portions of 4 Census Tracts with Environmental Justice Communities (Census Tracts 4098 and 4104 in Nassau County and 660 and 682 in Queens County) would experience a temporary noise increase (DNL 65 dB or higher) during construction of both Runway Alternative A and the Preferred Alternative. The 4

additional Census Tracts that would temporarily experience such impacts during construction are to the south and north of JFK. The 4 Census Tracts are considered Environmental Justice Communities because more than 56% of the population in each of these Census Tracts is minority, meeting the threshold established by the New York Metropolitan Transportation Council as a Minority Community (see **Table 4-10**).

Table 4-10: Census Tracts with Noise Exposure Changes During Construction

Census Tract	County	Population	Total Households	Median Household Income	Minority % of Population	% Below Poverty Line	Environmental Justice Community?[1]
Temporarily Exposed to Less than DNL 65 dB Noise Contour During Construction							
4113.02[2]	Nassau	6,824	1,919	$ 135,156	5.8%	1.8%	No
4114	Nassau	6,416	1,876	$ 111,528	20.7%	8.3%	No
4115	Nassau	2,675	917	$ 198,750	6.9%	2.3%	No
818	Queens	4,381	1,052	$ 54,265	**96.1%**	**25.6%**	**Yes**
838	Queens	6,247	1,715	$ 66,067	**87.0%**	11.3%	**Yes**
846.01	Queens	2,671	792	$ 63,971	**80.2%**	8.7%	**Yes**
846.02[3]	Queens	1,256	274	$ 56,167	**89.0%**	**22.7%**	**Yes**
892	Queens	8,047	2,617	$ 85,365	13.4%	2.9%	No
Temporarily Exposed to DNL 65 dB or Higher During Construction							
4098	Nassau	5,831	1,573	$ 100,335	**92.6%**	4.3%	**Yes**
4104	Nassau	5,230	1,460	$ 106,667	**83.8%**	6.1%	**Yes**
660	Queens	3,657	991	$ 93,906	**95.5%**	5.4%	**Yes**
682	Queens	1,278	382	$ 78,000	**100.0%**	9.4%	**Yes**

[1] Defined as Census Tracts that meet the thresholds for either minority or low-income community based on the NYMTC regional thresholds for defining environmental justice populations in Plan 2040: Appendix 4, Environmental Justice and Title VI, September 2013.

According to FAA Order 1050.1F, Desk Reference Chapter 12, the environmental review process should "identify disproportionately affected low income and minority populations; discuss alternatives that would reduce the effect on those populations; and describe possible mitigation to reduce the effect on the disproportionately affected low income and minority populations."

As set forth in Section 4.2 Noise, no reasonable runway operations are available to avoid the temporary noise impacts associated with the Construction Period Scenario while maintaining efficient operations at JFK with the remaining runways. The Port Authority has taken all prudent and feasible action to minimize these temporary noise impacts to the extent practicable, including shortening the

duration of temporary impacts by selecting the alternative with the shortest construction period (the Preferred Alternative). Further, the Environmental Justice communities that are temporarily impacted by construction of the Proposed Project will experience fewer noise impacts in the future because the need to close Runway 31L-31R for maintenance and repairs would be lower than if the runway were constructed with asphalt due to the durability of concrete (see discussion in **Section 2.3.3 – Runway Alternatives – Asphalt Rehabilitation versus Concrete Reconstruction**). In addition, as set forth in **Section 4.2.4**, during the construction period, the Port Authority will enhance its engagement with the communities that are temporarily impacted by noise, and will provide information on its website about runway usage during construction and progress of the construction. Permanent mitigation measures are not warranted because the noise impacts are temporary.

If Runway 13L-31R and its associated taxiways are not rehabilitated, emergency repairs of the pavement would be needed to maintain the safe operation of the Runway and associated taxiways, thereby resulting in on-going repeated closures of Runway 13L-31R. Eventually, the Runway could become unusable. In the event of a prolonged or permanent closure of Runway 13L-31R, the Environmental Justice communities temporarily impacted during construction may experience even greater noise impacts because of the need to shift aircraft operations to Runways 4L-22R and 4R-22L on a more prolonged basis.

Selection of the Preferred Alternative over Runway Alternative A would also result in air quality benefits. Temporary construction-related air emissions arising from both the Preferred Alternative and Runway Alternative A would be below de minimis thresholds, but such emissions for the Preferred Alternative would be lower than the emissions from construction of Runway Alternative A.

A public information session on the Proposed Project will be held to provide additional information regarding this project, an opportunity to ask questions about the project (including questions on Environmental Justice), and an opportunity to comment on the project for the official record. To ensure that the persons living in the Environmental Justice communities that would be impacted by temporary noise during construction of the Preferred Alternative have an opportunity for meaningful engagement, public outreach will be conducted to satisfy the requirements of FAA Order 1050.1F, Desk Reference Chapter 12, DOT Order 5610.2(a), and any other relevant regulations. Refer to **Chapter 5 – Public Involvement** for additional information.

No additional Environmental Justice communities would be impacted by increased noise exposure after implementation of the Preferred Alternative or Runway Alternative A compared to the No Action Alternative. Therefore, there would be no permanent significant adverse impacts to Environmental Justice populations due to implementation of the Preferred Alternative or Runway Alternative A, compared to the No Action Alternative.

Children's Environmental Health and Safety Risks

Health and safety risks for children are defined as risks to health or safety attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to. None of these resources would be significantly impacted by the Proposed Project. According to the Noise Sensitive Sites Exposed to Aircraft Noise Levels of DNL 65 dB and Higher in **Appendix C**, no significant increases in aircraft noise exposure over a noise sensitive area, including schools and day cares, are anticipated when comparing the No Action Alternative to the Preferred Alternative or Runway Alternative A. Thus, no adverse impacts to children's environmental health and safety are anticipated due to implementation of the Proposed Action compared to the No Action Scenario.

However, during construction of the Preferred Alternative or Runway Alternative A, the DNL 65 dB noise contour lines would temporarily shift, resulting in decreased noise exposure to the east and west of the Airport and increased noise exposure to the south and north of the Airport; however, these impacts would be temporary and would cease when construction is complete.

Temporary noise exposure shifts would occur during construction. However, there would be no significant noise impacts to children's health and safety between the No Action Alternative to the Preferred Alternative or Runway Alternative A. The No Action Alternative would have no affect on children's health and safety.

4.9 Secondary Induced Impacts

Due to the nature of the proposed activities, significant changes would not occur in use or function at JFK if the Preferred Alternative or Runway Alternative A were implemented compared to the No Action Alternative. Overall, the implementation of the Preferred Alternative would result in the presence of a new HSE taxiway and improved/widened taxiway fillets that would be compliant with FAA and TSA regulations and would address current limitations to taxiway entrance and exit approaches from Runway 13L-31R. The Proposed Project would not increase the permanent worker population, put undue stress on utilities or other Airport assets, or significantly alter the social or economic dynamics of the surrounding communities. Therefore, there would be no induced or secondary impacts associated with the implementation of the Preferred Alternative or Runway Alternative A.

4.10 Cumulative Impacts

The CEQ NEPA regulations (40 CFR 1508.7) define a cumulative impact as, "the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency, Federal or non-Federal,

or person undertakes such other actions." Cumulative impacts can result from individually minor, but collectively significant, past, present, and reasonably foreseeable future project improvements over a period of time. The following cumulative impact analysis was conducted to comply with the intent of FAA Order 1050.1F, DOT Order 5610.1C, and the CEQ guidance.

The implementation schedule of the Preferred Alternative would overlap with the construction of other projects at JFK. Cumulative impacts are not anticipated due to the implementation of the Preferred Alternative, as the minor and temporary impacts resulting from the proposed activities would be limited to the Preferred Alternative's direct impact areas, all of which would occur on previously-disturbed land, fill soils, paved, or developed areas.

4.10.1 Past Projects

Demolition of Hangars 3, 4, & 5. This project included the demolition of Hangars 3, 4, and 5 within the North Cargo Area at JFK. The hangars were located north of Runway 13L-31R and Taxiway C. Each of these Hangars was a three bay structure that occupied approximately 300,000 square feet of floor space. In July 2014, the FAA made a determination that the demolition of Hangars 3, 4, and 5 qualified for a Categorical Exclusion from preparation of a formal EA. At the time of demolition, which was completed in 2015, no plans for redevelopment had been proposed.

Runway 4R-22L Rehabilitation Project (2016-2018). This project included mill and/or overlay of the full 8,400 foot length of Runway 4R-22L to maintain a state-of-good-repair. The rehabilitation of Taxiways E and J, and the rehabilitation and improvement of Taxiways F and H were also included in this project. The Port Authority completed the NEPA process for this project in early 2017. Construction began in February 2017.

4.10.2 Current Projects

Rehabilitation of Taxiways Q, QG and Restricted Vehicle Service Road (2017-2019). This project is a mill and asphalt concrete overlay with improvements to lighting, signage, markings and drainage of the following JFK taxiways and service road:

- Taxiway Q, parallel to Runway 13R-31L, from Runway 13R to the west, to Taxiway N to the east;
- Taxiway QG from end to end; and
- Restricted Vehicle Service Road section parrallel to and adjacent to Taxiway Q.

The above mentioned Taxiway Q is a vital connection for aircraft departing on Runway 13R or arriving on Runway 13L. Taxiway QG provides access to and from hangars and cargo facilities at the

southwest section of JFK. This rehabilitation project also includes fillet widening at five adjacent intersections and was approved as a Categorical Exclusion in September 2016. Construction began in September 2017 and is expected to be complete by November 2019.

TWA Flight Center Hotel (2016-2021). This project includes the rehabilitation, restoration, and repurposing of the historic TWA Flight Center as part of a hotel in association with the construction of two new guest room buildings to the sides of the TWA Flight Center. This project entails demolishing non-historic elements on the project site, but the preservation of the TWA Flight Center (designed by Eero Saarinen and opened in 1962). Construction is expected to be complete by 2021. An EA was prepared in 2016 and a Finding of No Significant Impact (FONSI)/Record of Decision (ROD) was issued by the FAA in August 2016.

4.10.3 Reasonably Foreseeable Future Projects

Airfield Fuel Tank Installation (2018-2020). This project includes the installation of two permanent fuel tanks, each 81,240 barrels (bbls) (3,412,080 gallons) in capacity, two new jet fuel fill and suction lines, connections to existing utilities, a fire foam protection system including a fire protection building, stormwater discharge connection lines and a new stormwater lift station, new fencing, a new road segment added to an existing access road outside of the tank security fence on the fence's south side, an extension of the existing Bulk Fuel Farm (BFF) service road on the northside of the tanks to serve the tanks, and a new access driveway also south of the tanks. Construction is expected to start in summer 2018 and be completed by summer 2020. An Environmental Assessment was prepared for the Airfield Tank Installation project and a FONSI/ROD was issued by the FAA in April 2018.

North Cargo Redevelopment (2018-2020). This project is located within the North Cargo Area of Cargo Zone D and consists of three components: demolish existing Buildings 260/261, construct two cargo processing facilities, and realign and reconstruct Taxiways CA and CB to meet ADG VI standards. The Port Authority initiated the NEPA process in the second quarter of 2018, with the goal of a late 2018 demolition start date, depending on lease negotiations. It is currently anticipated that construction would be substantially complete by the first quarter of 2020. A draft Environmental Assessment was prepared and submitted to FAA in 2018.

JFK Vision Plan. The 2017 JFK Vision Plan includes high-level recommended improvements of JFK, including terminal reconfigurations, Airport Access, Airport roadways, Airport operations, and cargo. No specific projects have been identified during the writing of this *Reconstruction of Runway 13L-31R and Associated Taxiways Project's* EA. Document/s compliant with NEPA for projects associated with the 2017 JFK Vision Plan will be prepared as project/s are proposed.

4.10.4 Cumulative Impacts Emissions Inventory

It is anticipated that all current and reasonably foreseeable future projects listed in this Section 4.10 may result in new disturbance or direct impacts to the Airport's resources. The direct impact disturbance would result from demolition and excavation to existing structures or buildings outside of the Preferred Alternative's footprint. However, the listed projects are within previously developed locations and no direct impacts to significant natural or cultural resources would likely result.
In addition, the combined construction air emissions of the Preferred Alternative, the Aircraft Fuel Tank Installation Project, North Cargo Redevelopment, and the TWA Flight Center Hotel Project is a provided below in **Table 4-11** to assess whether the air quality *de minimis* standard is exceeded. The **Table 4-11** comparison indicates that the air quality *de minimis* standard is not exceeded.

Table 4-11:
Cumulative Criteria Pollutant Emissions from Construction Activities (tons per year)

YEAR	SOURCE	CO	VOC	NOx	SOx	PM2.5	PM10
RECONSTRUCTION OF RUNWAY 13L-31R AND ASSOCIATED TAXIWAYS a							
2019	Construction	26.6	10.4	62.1	0.1	4.8	14.2
NORTH CARGO REDEVELOPMENT b							
2019	Construction	6.4	20.2	7.4	0.0	0.4	1.0
TWA FLIGHT CENTER HOTEL c							
2019	Construction	0.0	0.0	0.0	0.0	0.0	0.0
2019	Operation	0.4	0.2	0.2	0.0	0.5	0.0
JFK FUEL TANK INSTALLATION d							
2019	Construction	0.0	0.0	0.0	0.0	0.0	0.0
2019	Operation	0.0	0.9	0.0	0.0	0.0	0.0
ALL PROJECTS							
2019	Construction and Operation	33.4	31.7	69.7	0.1	5.7	15.2

a. Air emissions associated with the Project's Preferred Alternative.
b. Air emissions associated with the North Cargo Redevelopment.
c. Air emissions associated with TWA Flight Center Hotel Project.
d. Air emissions associated with Aircraft Fuel Tank Installation Project.

4.11 Adverse Impacts That Cannot Be Avoided if the Preferred Alternative is Implemented

Based on this analysis, there would be no significant adverse impacts from the implementation of the Preferred Alternative as compared to the No Action Alternative.

4.12 Conclusion

There are no permanent significant impacts on resources as a result of the Preferred Alternative or Runway Alternative A when compared to existing conditions (i.e. the No Action Alternative). An assessment of the potential permanent impacts on the natural and human environment from the implementation of the Preferred Alternative as compared to the No Action Alternative or Runway Alternative A, showed no significant permanent impact among the selected resource categories of noise, air quality and climate, Section 4(f), historic, biological, land use, socioeconomic, Environmental Justice, and children. According to the noise modeling analysis discussed in Section 4.2 and **Appendix C**, there is no change in the DNL 65 dB and higher contour from the No Action Alternative to Runway Alternative A or the Preferred Alternative. Also, there are no known sensitive resources located within or adjacent to the Preferred Alternative's alignment. NYSDEC concurred that construction of the Preferred Alternative will not adversely affect the Upland Sandpiper, Short-eared Owl or Northern Harrier.

Construction of the Proposed Project would be limited to already disturbed areas that are reworked fill deposits emplaced after 1940. The temporary work spaces and access roads to the construction areas are existing facilities. During construction, the levels of air emissions for both Build alternatives are within the General Conformity Rule *de minimis* thresholds for NOx and VOCs and $PM_{2.5}$. Further, CO, NO_x, $PM_{2.5}$, and CO_2e emissions would be approximately 50% lower during construction of the Preferred Alternative compared to construction of Runway Alternative A.

The shift in locations of noise exposure during construction was analyzed in detail (see **Appendix C**). A number of households located outside of the DNL 65 dB contour for the No Action Alternative would be located within the contour to the south and north of the Airport during temporary construction. Meanwhile, households previously inside the DNL 65 dB contour for the No Action Alternative would be located outside the contour to the east and west of the Airport due to reassignment of aircraft to Runways 4R-22L and 4L-22R during Runway 13L-31R closure for both the Preferred Alternative and Runway Alternative A. As a result of this shift in the DNL 65 dB noise contour exposure, portions of 4 Census Tracts with Environmental Justice Communities (to the east and west of JFK) would experience a temporary noise reduction (noise exposure would be below DNL 65 dB). In addition, portions of 4 Census Tracts with Environmental Justice Communities (Census Tracts 4098 and 4104 in Nassau County and 660 and 682 in Queens County) would experience a temporary noise increase (DNL 65 dB or higher) during construction of both Runway Alternative A and the Preferred Alternative.

The shorter construction period for the Preferred Alternative compared to Runway Alternative A would also decrease noise impacts during construction by approximately 3 months. Additonally, the durablity of the concrete would result in less future closures for maintenance and rehabiliation. The

reduced closure duration and frequency would be beneficial to noise sensitive sites and the Environmental Justice Communities that would experience increased noise exposure during construction.

It is important to note that no reasonable runway operations are available to avoid the temporary noise impacts of the construction phase while maintaining efficient operations at JFK with the remaining runways. Due to the temporary nature of the noise impacts and no significant noise impacts when comparing the No Action Alternative to the Preferred Alternative, permanent mitigation measures are not warranted. **Table 4-12** below summarizes the impacts of the Preferred Alternative.

Table 4-12: Summary of Impacts of the Preferred Alternative

Environmental Impact Category*	Potential Permanent Environmental Impacts	Potential Temporary Environmental Impacts	Recommended Mitigation Measures	Notes
Air Quality and Climate	None	None	None	
Biological Resources (including fish, wildlife, and plants)	None (see Note)	None	None	
Coastal Resources	None	None	None	
Construction Impacts	None	See Section 4.1	None	See Section 4.2 Noise and Section 4.3 Air Quality
Department of Transportation, Section 4(f)	None	None	None	
Cumulative Impacts	None	None	None	
Hazardous Materials, Solid Waste, and Pollution Prevention	None	None	None	

Environmental Impact Category*	Potential Permanent Environmental Impacts	Potential Temporary Environmental Impacts	Recommended Mitigation Measures	Notes
Historic, Architectural, Archaeological, and Cultural Resources	None	None	None	
Land Use	None	See Section 4.7	None	Temporary shift of land uses to within the DNL 65 dB contour during construction
Natural Resources and Energy Supply	None	None	None	
Noise and Noise-Compatible Land Use	None	See Section 4.2	None	Temporary aircraft noise impacts due to construction-related runway closure for 229 days in 2019
Prime Farmlands	None	None	None	
Secondary Impacts	None	None	None	
Socioeconomic Conditions, Environmental Justice Communities, and Children's Environmental Health and Safety Risks	None	See Section 4.8	None	4 Census Tract Environmental Justice Communities temporarily exposed to DNL 65 dB and higher during construction
Visual Effects (Light Emissions and Visual Resources/Visual Character)	None	None	None	

Environmental Impact Category*	Potential Permanent Environmental Impacts	Potential Temporary Environmental Impacts	Recommended Mitigation Measures	Notes
Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)	None	None	None	

*The following documents were referenced for the identification of resources:
FAA Order 5050.4B National Environmental Policy Act (NEPA) *Implementing Instructions for Airport Actions*
FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*
FAA *Environmental Desk Reference for Airport Actions*

Council on Environmental Quality (CEQ) 40 CFR 1500 and Relevant GuidanceReconstruction of Runway 13L-31R and rehabilitation of associated taxiways is needed because the pavement is deteriorating. The Port Authority anticipates that the frequency of emergency repairs on Runway 13L-31R and its taxiways would increase, as would the frequency of Runway closures, if the Preferred Alternative is not selected. Eventually, continual deterioration would make Runway 13L-31R unusable and demand for the 3 remaining runways would increase with longer-term impacts to noise exposure for surrounding communities. Surrounding communities, including Environmental Justice Communities and noise sensitive sites proximate to JFK, could potentially experience longer periods of increased noise exposure beyond 2019 due to closure of the runway for safety concerns and a shift in aircraft operations to the remaining three runways at JFK.

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5. Public Involvement

5.1 Agency Coordination

Applicable correspondence is provided in Appendices E through G. Agency coordination was initiated through letter correspondence with the following agencies:

- New York City Department of City Planning, New York City Waterfront and Open Space Division
- New York State Department of Environmental Conservation, New York Natural Heritage Program
- New York State Department of State, Division of Coastal Resources
- New York State Office of Parks, Recreation, and Historic Preservation

5.2 Public Outreach

The Port Authority of New York and New Jersey (Port Authority) published a Notice of Availability of the Draft Environmental Assessment (EA), providing the public an opportunity to review and comment on the Runway 13L-31R Reconstruction and Taxiway Project at John F. Kennedy International Airport (JFK). Notice was published in daily papers (*Daily News* (Queens), *Greek National Herald*, *Newsday*, and *Sing Tao Daily*) and weekly papers (*El Especialito*, *Queens Chronicle*, *Queens Courier*, *Queens Gazette*, *Queens Ledger*, *Queens Times Ledger*, and *Queens Tribune*). It was also published on the Airport's website at http://www.panynj.gov/about/studies-reports.html (**Appendix H, Public Notifications**).

The following information was included in the public notifications:

THE PORT AUTHORITY OF NY & NJ
NOTICE OF AVAILABILITY, REQUEST FOR COMMENT and NOTICE OF PUBLIC INFORMATION SESSIONS
Draft Environmental Assessment
RECONSTRUCTION OF RUNWAY 13L-31R AND ASSOCIATED TAXIWAYS
John F. Kennedy International Airport, Jamaica, New York

In accordance with the National Environmental Policy Act of 1969 (NEPA), notice is hereby given that copies of a Draft Environmental Assessment (EA) for the proposed Reconstruction of Ruwnay 13L-31R and Associated Taxiways project at John F. Kennedy International Airport (JFK) are available for public review and comment at the following locations:

The Port Authority of NY & NJ
John F. Kennedy International Airport
General Manager's Office
Building 14, 2nd Floor
Jamaica, NY 11430
Hours: 8:00 am to 4:00 pm

The Port Authority of NY & NJ
Aviation Department
4 World Trade Center, 18th Floor
New York, NY 10007
Attn: Kathryn Lamond
Hours: 9:00 am to 5:00 pm

The Draft EA document for this project will be available at these locations until the close of the comment period, which is 5:00 PM on Monday, October 29, 2018. If you intend to view the document at the JFK Airport or World Trade Center locations, please contact Kathryn Lamond at klamond@panynj.gov to schedule an appointment at least one day before your visit. A copy of the Draft EA may also be viewed online at: http://www.panynj.gov/Pabout/studies-reports.html.

The Draft EA responds to all of the requirements of the Federal Aviation Administration for preparation of an EA under NEPA. The Port Authority of New York & New Jersey (Port Authority) is inviting the public to submit, in writing, comments on the Draft EA prepared for the Runway 13L-31R Reconstruction and Associated Taxiways project. The Port Authority is accepting comments on this Draft EA document until the official comment period closes on Monday, October 29, 2018. Comments must be received by 5:00 PM on Monday, October 29, 2018, in order to be considered. Written comments on the draft EA can also be sent directly to Kathryn Lamond of the Port Authority, 4 World Trade Center, 18th Floor, New York, NY 10007. Additionally, comments may be emailed to JFKEA@panynj.gov with the subject heading "JFK Runway 13L-31R." If you have any questions about this notice, please email Kathryn Lamond at klamond@panynj.gov.

INFORMATION SESSION

Additional information regarding this project, an opportunity to ask questions about the project, and an opportunity to provide written comments will be available through three Information Sessions. The details of the dates, times, and locations are listed below.

DATE: Monday October 15, 2018
TIMES: 6:00PM – 8:00PM
LOCATION: Queens Library at Peninsula
92-25 Rockaway Beach Boulevard
Rockaway Beach, NY 11693
Phone: (718) 634-1110

DATE: Tuesday October 16, 2018
TIMES: 6:00PM – 8:00PM
LOCATION: Crowne Plaza
138-10 135th Avenue
Jamaica, NY 11436
Phone: (718) 530-1160

DATE: Wednesday October 17, 2018
TIMES: 6:00PM – 8:00PM
LOCATION: Cradle of Aviation Museum
Charles Lindbergh Blvd
Garden City, NY 11530
Phone: (516) 572-4111

Sign language and translation services can be made available at the Information Sessions. If you are in need of assistance or require a reasonable accommodation, contact Kathryn Lamond at klamond@panynj.gov at least ten (10) days prior to the Information Sessions.

5.3 Public Comment Responses

The Draft EA was made available for review from September 27, 2018 to October 29, 2018. The Port Authority accepted public comments on the Draft EA until the official comment period closed on Monday, October 29, 2018. A total of twenty-nine comments were received. All comments and associated responses are summarized in a matrix provided in **Appendix I, Comments on the Draft EA & Responses to Comments**.

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Glossary of Terms

100-year floodplain — An area of land that would be inundated by a flood having a one percent chance of occurring in any given year. Also referred to as the base or 100-year flood.

500-year floodplain — An area of land that would be inundated by a flood having a 0.2 percent chance of occurring in any given year.

A

Advisory Circulars — The Advisory Circular (AC) provides a single, uniform, agency-wide system that the Federal Aviation Administration (FAA) uses to deliver advisory material to FAA customers, industry, the aviation community, and the public. They do not create or change a regulatory requirement.

Airbus A380 Aircraft – The world's largest passenger airliner. A double-deck, wide-body, four-engine jet airliner.

Aircraft Operations — The total number of aircraft movements in terms of landings (arrivals) plus takeoffs (departures) from an airport.

Air Operations Area (AOA) – The restricted access area of an airport primarily used for landing, takeoff, or surface maneuvering of aircraft, and related activities.

Airplane Design Group (ADG) Standard – ADG is defined in FAA Advisory Circular 150/5300-13. The FAA groups aircraft types among six groups based on wingspan and tail height.

Airplane Design Group VI (ADG) – ADG VI aircraft have a wingspan of 214′ to 262′ and tail height of 66′ to 80′.

Airport Layout Plan (ALP) — An airport plan is a scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed non-aviation areas and improvements thereon. The ALP requires FAA approval.

Ambient Air Pollutant Concentration — Concentration of a pollutant in the ambient air that can be sensed or measured at a monitoring site, and usually expressed as mass or volume of pollutant in a given volume of air.

Ambient, or Background, Noise Level — The level of noise that is all encompassing within a given environment for which a single source cannot be determined. It is usually a composite of sounds from many and varied sources near to and far from the receiver.

American Association of State Highway and Transportation Officials (AASHTO) – A standards setting body which publishes specifications, test protocols, and guidelines which are used in highway design and construction throughout the United States.

Approach Lighting System (ALS) – Provides the basic means to transition from instrument flight to landing. Operational requirements dictate the sophistication and configuration of an ALS for particular runways.

Apron — The defined area of the airport provided for the stationing of aircraft for the embarkment and disembarkment of passengers, the loading or unloading of cargo, and parking.

Aquifer — Rock or sediment that is saturated with water and sufficiently permeable to transmit water to wells, springs and streams.

Arrival — The act of an aircraft approaching and landing at an airport.

Attainment Area — An area that meets a National Ambient Air Quality Standards for a particular pollutant.

C

Census Tract — A relatively permanent statistical subdivision of a county delineated by a local committee of census data users for the purpose of presenting data. Census tracts are generally smaller than municipalities or minor civil divisions. The boundaries normally follow visible features, but may follow governmental unit boundaries and other non-visible features. Designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions at the time of establishment, census tracts average about 4,000 inhabitants.

Centerline (of a runway) **—** A line that vertically bisects a runway.

Centerline Lighting (CL) – A single light installed at uniform intervals along the runway centerline to provide a continuous lighting reference from threshold to threshold.

Criteria Pollutants — The six pollutants listed in the Clean Air Act that are regulated by the U.S. Environmental Protection Agency through the National Ambient Air Quality Standards (NAAQS) because of their health and/or environmental effects. The criteria pollutants are nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone, particulate matter, and lead.

D

Day-Night Average Sound Level (DNL) — A noise measure used to describe the average sound level over a 24-hour period, typically an average day over the course of a year. In computing DNL, an extra weight of 10 decibels is assigned to noise occurring between the hours of 10 PM and 7 AM to account for increased annoyance when ambient noise levels are lower and people are trying to sleep. DNL may be determined for individual locations or expressed in noise contours.

Decibel (dB) — Sound is measured by its pressure or energy in terms of decibels. The decibel scale is logarithmic. Therefore, a 3-dB increase is about

twice as loud (a 100 percent increase), and a 10-decibel increase in sound is approximately a tenfold increase in sound energy.

De minimis — So small as to be negligible or insignificant.

Demolition Waste — Any waste materials and rubble resulting from the demolition of buildings, pavement, roads or other structures. Demolition waste includes, but is not limited to, concrete, bricks, lumber, masonry, road paving materials, rebar and plaster.

Departure — The act of an aircraft taking flight and leaving an airport.

Direct Impacts — The physical effects of a proposed project that would occur in the same place as the project at the time when the project is completed.

Discharge — Any addition, direct or indirect, of oil and/or hazardous material to surface water, groundwater, the sewer system, ground surface, or subsurface.

Displaced Threshold — A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

E

Emission Factor — The rate at which a pollutant is emitted into the atmosphere by a source.

Endangered Species — An "Endangered" species is one that is in danger of extinction throughout all or a significant portion of its range.

Enplanements — The number of passengers boarding commercial aircraft at an airport. Enplanements do not include arriving or connecting passengers.

Existing Conditions — The current conditions, prior to future development, that serves as a foundation for analysis. For the purposes of this EA, Existing Conditions are 2018.

F

Federal Action — An action initiated by a Federal Agency that has effects that may be major and potentially subject to Federal control and responsibility.

Federal Aviation Administration (FAA) —A federal agency that constructs, operates, and maintains the National Airspace System and the facilities which are a part of the system; allocates and regulates the use of the airspace; ensures adequate separation between aircraft operating in controlled airspace; and through research and development programs, provides new systems and equipment to improve utilization of the nation's airspace.

Federal Aviation Regulations (FAR) — The body of Federal regulations relating to aviation. Published as Title 14 of the Code of Federal Regulations (CFR).

Fixed-base Operator – An organization granted the right by an airport to operate at the airport and provide aeronautical services such as fueling,

hangaring, tie-down and parking, aircraft rental, aircraft maintenance, flight instruction, and other services.

Flight Track — The path along the ground followed by an aircraft in flight.

Floodplain — The lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year (i.e., the area that would be inundated by a 100-year flood).

G

Gateway National Recreational Area – A 26,607 acre National Recreation Area in the Port of New York and New Jersey. It is managed by the National Park Service.

General Aviation — Non-commercial airline aviation, primarily privately-owned aircraft and corporate jets, including those making connections to commercial flights.

General Conformity Rule — The U.S. Environmental Protection Agency regulation codified at 40 CFR 93 Subpart A.

Groundwater Recharge/Discharge — Groundwater recharge refers to the addition of surface water to subsurface groundwater by infiltration through permeable soils. In some locations, groundwater may also discharge to the surface through springs or into lakes, rivers, or streams, particularly where groundwater levels are high and surface soils are permeable.

H

Habitat — The environment occupied by individuals of a particular species, population, or community.

Hazardous Material — Material, including, but not limited to, any material in whatever form which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious, or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or the environment, when improperly stored, treated, transported, disposed of, used, or otherwise managed.

Hazardous Waste — A waste, or combination of wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, an increase in serious irreversible, or incapacitating reversible illness, or pose a substantial present or potential hazard to human health, safety, public welfare, or the environment when improperly treated, stored, transported, used, disposed of, or otherwise managed.

High Intensity Runway Lighting (HIRL) – Runway edge lighting used to outline the edge of the runway during periods of darkness or restricted visibility conditions.

I

Instrument Landing System (ILS) – A precision runway approach aid based on two radio beams which provide pilots with vertical and horizontal guidance during an approach to land.

Glideslope – A ground device that uses lights to assist a pilot in landing an airplane at an airport.

Indirect Impacts — The consequences of a project's direct impacts. These impacts are generally not quantifiable and may occur over a larger area or a longer time frame.

Instrument Approach — A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

J

Jamaica Bay — A bay located south of JFK Airport. The Bay connects with Lower New York to the west through Rockaway Inlet and is the westernmost of the coastal lagoons on the south shore of Long Island.

Jamaica Bay Wildlife Refuge — A wildlife refuge south of JFK Airport and managed by the National Park Service as part of the Gateway National Recreation Area.

L

Low Income — Department of Transportation (DOT) Order 5610.2 defines Low Income persons as those whose "median household income is below the United States Department of Health and Human Services poverty guidelines." Council on Environmental Quality (CEQ) Guidelines state that Low Income populations should be identified using the annual statistical poverty thresholds developed by the U.S. Census Bureau.

Lead-in Lighting System (LDIN) – One or more series of flashing lights installed at or near ground level that provides visual guidance along an approach path.

Low Income — Department of Transportation (DOT) Order 5610.2 defines Low Income persons as those whose "median household income is below the United States Department of Health and Human Services poverty guidelines." Council on Environmental Quality (CEQ) Guidelines state that Low Income populations should be identified using the annual statistical poverty thresholds developed by the U.S. Census Bureau.

M

Maintenance Area — Any geographic area of the United States that had been previously designated by USEPA as a nonattainment area pursuant to the Clean Air Act Amendments of 1990 and subsequently redesignated to attainment.

Minority — According to the 2000 U.S. Census, a minority person is defined as an individual who is a member of one of the following population groups: Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian; Other Pacific Islander; some other race alone; and two or more races.

Mitigation — Actions that avoid, minimize, or compensate for potential adverse impacts.

Mitigation Measure — An action taken to alleviate negative impacts.

N

National Airspace System — The common network of U.S. airspace; air navigation facilities, equipment, services, airports, or landing areas; aeronautical charts, information, and services; rules, regulations, and procedures; technical information, manpower, and materials, all which are used in aerial navigation.

National Ambient Air Quality Standard (NAAQS) — Air quality standards established by USEPA to protect human health (primary standards) and to protect property and aesthetics (secondary standards).

National Environmental Policy Act of 1969, as amended (NEPA) — The Federal legislation that requires an interdisciplinary approach in planning and decision-making for federal-aid actions. The Act includes requirements for the contents of environmental impact statements that are to accompany every recommendation for major Federal actions significantly affecting the quality of the human environment. The interdisciplinary study approach includes the analysis of potential impacts to the natural, social, and economic environment.

National Park Service – An agency of the United States federal government that manages all national parks, many national monuments, and other conservation and historical properties with various title designations.

Nitrogen Oxides (NOx) — Poisonous and highly reactive gases produced when fuel is burned at high temperatures, causing some of the ambient nitrogen in the air to burn also.

Noise — Unwanted sound.

Noise Abatement Procedure — Procedure followed during either aircraft departures or arrivals to minimize the off-airport impacts of aircraft noise.

Noise Contour — Continuous lines of equal noise level usually drawn around a noise source. Noise contours often are drawn in 5-decibel increments and are generally used in depicting the noise exposure around airports, highways, and industrial plants.

Noise Exposure — The cumulative sound energy affecting a person over a specified period.

Noise Sensitive Area — An area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas (including areas with wilderness characteristics), wildlife refuges, and cultural and historical sites.

Nonattainment Area — Any geographic area of the United States that is in violation of any NAAQS and therefore has been designated by USEPA as nonattainment pursuant to the Clean Air Act Amendments of 1990.

O

Operation — A takeoff or landing by an aircraft. The arrival and subsequent departure of one aircraft is counted as two operations.

Outfall – The location where a river, drain, or sewer empties into the sea, a river, or a lake.

Ozone — A colorless, toxic gas formed by the photochemical reactions in the atmosphere of VOCs and nitrogen oxides with sunlight/heat.

P

Parallel Runways — Runway that are parallel. At JFK, Runways 13L-31R and 13R-31L are parallel and therefore are designated as L (left) or R (right).

Particulate Matter (PM) — Particulate matter is made up of small solid particles and liquid droplets (aerosols). Suspended particulates refer to particles of approximately 100 micrometers or less in diameter.

pH — pH is the measure of the acidity or alkalinity of water. Pure water has a pH of 7.0. Water with a pH less than 7.0 is acidic and water with a pH greater than 7.0 is alkaline. Most marine organisms prefer pH in the range of 6.5 to 8.5. The pH level in water is critical to the survival of aquatic plants and animals.

PM2.5 — Particulate matter that is made up of small solid particles and liquid droplets (aerosols), in which particles are 2.5 micrometers or less in diameter.

PM10 — Particulate matter that is made up of small solid particles and liquid droplets (aerosols), in which particles are 10 micrometers or less in diameter.

Pollutant — Substance in air, water, or soil that can cause disease or harm to the environment.

Pollution — Change in the physical, chemical, radiological, or biological quality of a resource (air, land, or water), caused by people or due to human activities, that is injurious to existing, intended, or potential uses of the resource.

ppm — Parts per million by volume.

Precision Approach Path Indicator (PAPI) – A visual aid that provides guidance information to pilots as they approach an airport for landing. It is generally located beside the runway approximately 300 meters beyond the landing threshold of the runway.

Precursor — A chemical compound that leads to the formation of a pollutant, e.g., VOCs and NOx are precursors to ozone formation.

R

Record of Decision (ROD) — The document that provides the FAA rationale for selecting the preferred alternative and the mitigation requirements to implement the project. The agency uses information in the Final Environmental Impact Statement to prepare the ROD.

Recreation — A value that considers the suitability of a wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.

Runway — A defined rectangular area on an airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees in the direction of aircraft travel, e.g., Runway 13, Runway 31.

S

Secondary Impacts — Reasonably foreseeable indirect consequences to the environment caused by a proposed project that would occur either in the future or in the vicinity of, but not the same location as, the direct impacts associated with the project.

Sole Source Aquifer — An aquifer designated by USEPA as the sole or principal source of drinking water for an area pursuant to § 1424(e) of the Federal Safe Drinking Water Act, as amended. USEPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

State Implementation Plan — The strategy to be used by a state to control air pollution in order that NAAQS violations will be eliminated.

Stormwater Runoff — The portion of precipitation that flows over land areas toward stream channels, lakes, or other water bodies.

T

Taxiway — A defined path within the airport established for the taxiing of aircraft and intended to provide a link between one part of the airport and the other.

Threatened Species — A "threatened" species is one that is likely to become endangered in the foreseeable future.

Threshold — The beginning of the portion of the runway that is available for takeoff or for landing.

Touchdown Zone Lighting— Installed on some precision approach runways to indicate the touchdown zone when landing under adverse visibility conditions.

U

United States Environmental Protection Agency (USEPA) — A federal agency responsible for administering programs that address environmental issues. USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress. All Environmental Impact Statements (EISs) prepared by federal agencies are filed with USEPA. Each week, EPA publishes in the *Federal Register* a Notice of Availability for all of the EISs filed the previous week. The USEPA Notice of Availability is the official start of the public comment/wait periods required under the Council on Environmental Quality's regulations implementing the National Environmental Policy Act. USEPA reviews EISs prepared by other federal agencies.

Upland — As used herein, any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands. Such areas occurring within floodplains are more appropriately termed nonwetlands.

U.S. Army Corps of Engineers (USACE) — A federal agency that administers Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act; its regulatory programs address wetlands and waterways protection.

V

Visual Approach — An approach conducted on an instrument flight rules (IFR) flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport. The pilot must, at all times, have either the airport or the preceding aircraft in sight. This approach must be authorized and under the control of the appropriate air traffic control facility. Reported weather at the airport must be ceiling at or above 1,000 feet and visibility of 3 miles or greater.

Volatile Organic Compounds (VOCs) — VOCs are a general class of compounds, containing various levels of hydrogen and carbon that are chemically active in the atmosphere. VOCs are created when fuels or organic materials are burned or evaporate into the atmosphere. Most hydrocarbons are presumed to be VOCs in the regulatory context, unless specified otherwise by USEPA.

W

Watershed — The contributing region or area from which surface runoff from precipitation flows into a stream or body of surface water.

Water Table — The upper elevation of the surface of the saturated zone.

Wetland — Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

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Appendices

Appendix A: Air Quality Report

Appendix B: Environmental Data Resources, Inc (EDR) Report

Appendix C: Noise Technical Report

Appendix D: JFK Airport Wildlife Hazard Management Plan

Appendix E: Biological Resources Filings and Correspondence

Appendix F: Coastal Resources Filings and Correspondence

Appendix G: Cultural Resources Filing, Correspondence and Table G-1

Appendix H: Public Notification

Appendix I: Comments on the Draft EA and Responses to Comments