

Chapter 7 ENVIRONMENTAL OVERVIEW

7.1 INTRODUCTION

This Environmental Overview conceptually evaluates the potential environmental impacts associated with each of the projects recommended in the Master Plan for the George Bush Intercontinental Airport (the Airport) and suggests the expected level of regulatory review required to satisfy state and federal environmental regulations. Before any recommended Master Plan element (or “proposed action”) that either (1) involves securing federal funds or (2) federal approval may be required, the potential environmental impacts arising from the action must be examined in accordance with the National Environmental Policy Act of 1969 (NEPA) and FAA Orders 5050.4B and 1050.1E. The level of NEPA review for any given project can range, in order of increasing complexity, from a Categorical Exclusion (CatEx), to an Environmental Assessment (EA), and finally to an Environmental Impact Statement (EIS). The three levels of NEPA environmental review can be described as follows:

Categorical Exclusion

A CatEx is generally the appropriate level of review when a proposed action is either (1) “not reasonably expected to change land use or cause environmental impacts” or (2) for certain actions that may cause environmental impacts, but do not involve extraordinary circumstances. Chapter 6 of FAA Order 5050.4B and Chapter 3 of FAA Order 1050.1E specify when a CatEx is an appropriate level of review for a given action.

Environmental Assessment

An EA is generally the appropriate level of review when a proposed action (1) cannot be categorically excluded, (2) normally requires an EA, and (3) does not cause a significant environmental impact (in context and in intensity). Chapter 7 of FAA Order 5050.4B and Chapter 4 of FAA Order 1050.1E specify when an EA is an appropriate level of review for a given action. If a small number of environmental resource categories would be only slightly impacted by an action, FAA will often require a “short form” EA, which incorporates a stream-lined, but diligent, review process.

Environmental Impact Statement

An EIS is generally the appropriate level of review when a proposed action (1) cannot be categorically excluded, (2) normally requires an EIS, (3) will not result in an issuance of a Finding of No Significant Impact (FONSI) during the EA review process, and (4) will cause a significant environmental impact (in context and in intensity). Chapter 8 of FAA Order 5050.4B and Chapter 5 of FAA Order 1050.1E specify when an EIS is an appropriate level of review for a given action.

It is important to note that while this chapter provides a general prediction of the level of environmental review for each action proposed in the Master Plan, it will not be until the coordination process occurs with Federal Aviation Administration (FAA) that the level of review is ultimately decided. This coordination is typically conducted when projects are a year or two from implementation. In the case of projects likely requiring a complex EA or EIS, airport management will coordinate with the FAA several years in advance of the implementation.

7.1.1 Scope of Environmental Review

When a series of actions is proposed to be implemented by an airport sponsor, FAA prohibits the sponsor from “diluting” the required level of review by treating each action as a separate and disconnected project without first determining each action’s potential independent utility. Reviewing related actions separately is sometimes referred to as “segmentation.” Actions are considered to have a dependent utility, or are “connected”, if they (1) trigger other actions which may require environmental review, (2) cannot proceed unless other actions are taken previously or simultaneously, or (3) are interdependent parts of a larger action and depend on the larger action for their justification*. Accordingly, this Environmental Overview considers the dependent (or independent) utility for each of the projects proposed in the Master Plan.

Another important aspect of the NEPA review process is the role of the “special purpose” laws, which are laws regulating the environment, but fall outside of the NEPA. Table 7-1 of FAA Order 5050.4B describes the 22 special purpose laws that affect the NEPA review process. Examples of two special purpose laws include regulations found in the Clean Air Act that govern General Conformity and those within the Clean Water Act that govern wetlands. Because special purpose laws usually require involvement from agencies outside of the FAA, projects that impact resource categories governed by these laws may require a laborious and time consuming process. This coordination is particularly important, because the scope and magnitude of the impact controlled by the special purpose law will generally (1) dictate the level of environmental review, and (2) drive the alternatives evaluation and selection process. Accordingly, it is important to consider the expected level of regulatory agency involvement when formulating the purpose and need and alternatives for a given project.

7.1.2 Impacts to Environmental Resource Categories

While the NEPA review process requires the FAA to consider the 18 environmental resources categories found in Appendix A of FAA Order 1051.1E, this Environmental Overview addresses only those resource categories where there is a likely or suspected impact from a given project. Importantly, these analyses are based only on information that is readily available and not on specialized surveys and analyses. The last section of this chapter provides recommended next steps to provide the Houston Airport System (HAS) with a strategy to implement the projects recommended in the Master Plan.

7.2 RECOMMENDED MASTER PLAN PROJECTS

The major near-term—Planning Activity Level (PAL)²⁵—recommendations include (1) the reconstruction of the Mickey Leland International Terminal (MLIT), (2) the replacement of the Terminal C North Concourse, (3) the construction of Taxiways NR and Taxiway SL, and (4) the extension of existing Runway 15R-33L. The major mid-term (PAL³³) recommendation involves the construction of new Runway 8C-26C between existing Runways 8L-26R and 8R-26L on the north side of the airfield. The major long-term (PAL⁴⁰) recommendations include the construction of an end-around taxiway and an extension of existing Runway 9-27.

A complete list of the projects recommended in the Master Plan is provided in Table 7-1.

7.3 PAL25 PROJECTS

As described in Section 7.1, FAA prohibits diluting the level of environmental review by segmenting a set of related development projects. The Master Plan identifies three major PAL²⁵ development projects, which are associated with dependent enabling projects (1) the Taxiway NR Extension and Terminal A Concourse Expansion Projects, (2) the Taxiway SL and support facilities projects, and (3) the MLIT, Aircraft Parking

*40 CFR 1508.25 (a) (1)

Aprons, and Terminal C North Concourse projects. Accordingly, these projects are considered to have dependent utility from an environmental review perspective and are analyzed as such in Section 7.3. The remaining PAL25 development projects have independent utility and are analyzed on an individual basis in Section 7.4.

7.3.1 PAL25 Projects with a Dependent Utility

7.3.1.1 Taxiway NR Extension and Terminal A Concourse Expansion Projects

Relocation and extension of Taxiway NR, immediately west of Terminal A, would help reduce airfield delay and congestion and would reduce taxi times for aircraft moving between the north and south sides of the airfield. Currently, Taxiway NR is a north-south taxiway that connects Taxiways WW and WB on the east side of Runway 15L-33R. The taxiway would connect Taxiway NR directly with Taxiway RA serving the south concourses, decreasing the distance and taxiing time of aircraft traveling between the north and south airfields. To facilitate the construction of Taxiway NR, three gates at Terminal A South would be demolished. The Terminal A Concourse Expansion Project would add three aircraft gates to the southern concourse of Terminal A. The concourse would be expanded on land currently serving as aircraft parking apron.

Air Quality

Construction-related activities for both projects would result in minor temporary impacts to local air quality. The extension of Taxiway NR would provide two-way taxi routes for aircraft transiting between the north and south airfields, thereby reducing airfield delay and taxi times. Accordingly, the proposed action would result in a modest long-term air quality improvement. Importantly, the extension of Taxiway NR and the relocation of three gates at Terminal A would not facilitate an increase in operational capacity at the Airport nor would it cause a change in runway utilization.

Water Quality

Although both projects would be located in areas that are currently developed with either airfield pavement or buildings, it is likely that soil would be exposed during the construction process.

| Table 7-1 PROJECTS RECOMMENDED IN THE MASTER PLAN | |
|---|--|
| Recommended Project | |
| PAL25 Projects | |
| 1. | Taxiway NR extension |
| 2. | Taxiway SL construction |
| 3. | Aircraft parking aprons |
| 4. | Runway 15L-33R extension |
| 5. | Taxiway design group standard upgrades |
| 6. | Terminal C North Concourse Replacement |
| 7. | Mickey Leland International Terminal and Central FIS expansion |
| 8. | Terminal A concourse expansion |
| 9. | Terminal C parking garage expansion |
| 10. | Ecopark 2 parking lot |

Table 7-1

PROJECTS RECOMMENDED IN THE MASTER PLAN *(continued)*

- 11. Cell phone lots construction
- 12. Cargo laydown area development
- 12. Fuel farm tank replacement
- 14. Support facilities relocation

PAL33 Projects

- 15. Runway 8C-26C construction
- 16. Taxiway RA and RB extension
- 17. Consolidated Terminal A/B processor
- 18. Terminal B concourses reconstruction
- 19. Terminal B parking garage reconstruction
- 20. Marriott south parking garage
- 21. Ecopark parking garage (Phase 1)
- 22. Terminal B/C pedestrian connector
- 23. Consolidated rental car (CONRAC) facility expansion (Phase 1)
- 24. East cargo expansion (Phase 1)
- 25. Fuel farm expansion

PAL40 Projects

- 26. End-around taxiway construction
- 27. Taxiway SD construction
- 28. Runway 9-27 extension
- 29. Terminal A concourse reconstruction
- 30. Terminal A parking garage reconstruction
- 31. Ecopark parking garage (Phase 2)
- 32. CONRAC facility expansion (Phase 2)
- 33. East cargo expansion (Phase 2)

Long-Term Concepts

- 34. Runway 9R-27L construction
- 35. Taxiway SM construction
- 36. Long-term terminal expansion

Hazardous Materials

Both projects would be located in previously developed/disturbed areas at the Airport and would require minor earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

By themselves, the projects would likely require a CatEx. However, given the dependent utility between the two projects, it is probable that a short form EA would be required due to possible cumulative impacts.

7.3.1.2 Taxiway SL, Support Facilities Projects

Construction of crossfield Taxiway SL would help reduce airfield delay and congestion related to aircraft moving between the north and south sides of the airfield, east of existing cross-field Taxiway SF.

Construction of the taxiway would require the reconfiguration of the interchange between John F. Kennedy (JFK) Boulevard and Will Clayton Parkway. The intersection of Will Clayton Parkway and the north and south airport roads would be relocated about 300 feet to the east of its existing location. This relocation would displace several buildings used by airport operations and cross a wooded area.

In support of the Taxiway SL Project, the Chelsea Flight Kitchen and facilities to maintain ground service equipment would be relocated to a new site along Wright Road south of the East Cargo ramp. The area has been cleared and is currently being used as a concrete batch plant and construction staging area. A majority of the project site is covered with turf grasses, but approximately 1.5 acres along the northern edge of the site are forested.

The current Airport vehicle maintenance facility is located north of Wright Road and east of Colonel Fisher Boulevard and would be replaced by a new facility on an 18.5-acre parcel east of Lee Road and south of Will Clayton Parkway. Other Airport maintenance facilities that may be displaced by the Taxiway SL project may also be relocated to this site. The site is wooded and has a two-acre wetland.

Air Quality

The Taxiway SL Project would provide two-way taxi routes for aircraft transiting between the north and south airfields, thereby reducing airfield delay and taxi times. Accordingly, the project would result in a modest long-term air quality improvement. Construction-related activities associated with Taxiway SL (demolition of existing structures, and relocation of the roadway intersection), the relocation of the support facilities, and the maintenance campus would result in minor temporary impacts to local air quality. Closure and relocation of the roadway intersection associated with Taxiway SL would also result in minor temporary increase in roadway congestion (but not traffic volumes) and associated traffic-related emissions due to periodic lane closures. Importantly, none of the projects would facilitate an increase in operational capacity at the Airport nor would they cause a change in runway utilization.

Biota

The Taxiway SL Project would require the clearance of trees along Will Clayton Parkway. The City of Houston's Code of Ordinances, Chapter 33, Article V requires that trees in public rights-of-way are preserved, and anyone that must remove a tree from public rights-of-way must mitigate the loss. To comply with this ordinance, trees in the right-of-way of Will Clayton Parkway should be preserved, or if this is not possible, replaced on Airport roadway rights-of-way with comparable species of trees with the same or larger diameters. Constructing the support facilities would require the removal of approximately 1.5 acres of loblolly pine–water oak woods and replacing the maintenance campus would remove as much as 18.5 acres of loblolly pine–water oak woods.

Water Quality

Although Taxiway SL would be located mostly on land that is currently paved or has buildings on it, it is likely that soil would be exposed during the construction process. Additionally, the support facilities and maintenance campus would be constructed on grass and forested land, and building structures and pavement on these areas would likely increase storm water runoff and potential water pollutant loads.

Wetlands

The footprint of the maintenance campus contains a wetland approximately two acres in size, as shown in Figure 7-1A. This wetland is likely to provide habitat for wildlife. Figure 7-1B depicts potential wetlands on the south airfield.

Floodplains

The entire proposed site for the support facilities is located in the 100-year floodplain. While mitigation is possible, it is likely that a significant impact to the existing floodplain would occur. Additionally, approximately four acres of the maintenance campus would encroach on the 100-year floodplain. While mitigation is possible, it is likely that a modest to significant impact to the existing floodplain would occur.

Secondary (Induced) Impacts

It is anticipated that local roadways would be temporarily impacted by periodic lane closures during construction of the new interchange between JFK Boulevard and Will Clayton Parkway. While these activities would probably be isolated to nighttime hours to minimize traffic impacts, it is likely that congestion, especially during peak traffic flows, and lane closures would impact local traffic patterns during daytime hours.

Hazardous Materials

The Taxiway SL project would be located in previously developed and disturbed areas at the Airport and require earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

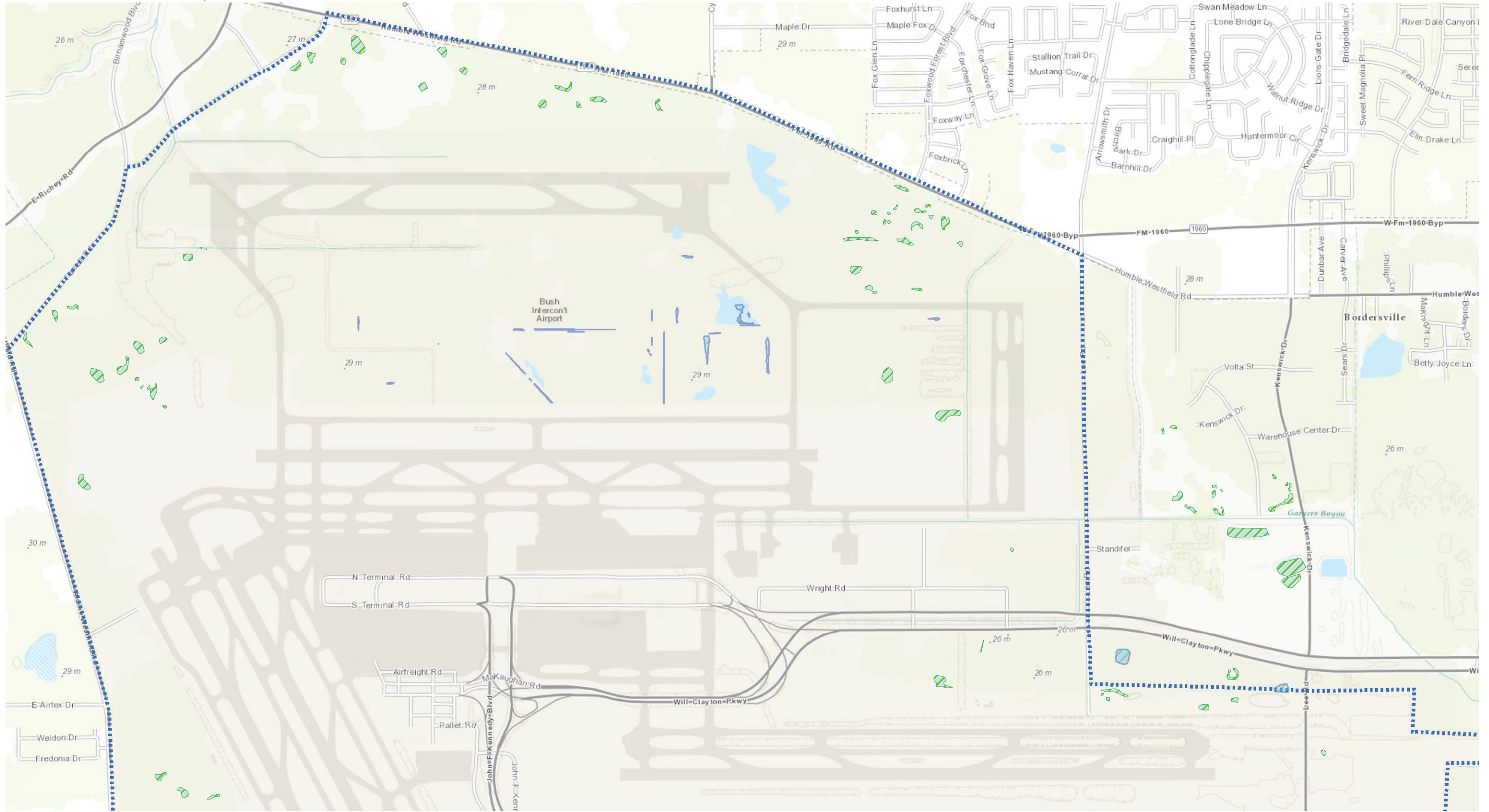
By themselves, the projects would likely require a CatEx. However, given the dependent utility between the three projects, a short form EA would probably be required due to possible cumulative impacts.

7.3.1.3 MLIT, Aircraft Parking Apron, and Terminal C North Concourse Replacement Projects

The MLIT Project would accommodate more wide-body aircraft and provide additional gates capable of accommodating international arrivals. Terminal D currently provides up to six positions for parking wide-body aircraft, depending on the aircraft parked at adjacent gates. The MLIT would increase the number of wide-body gates to 14. Virtually all of the area on which the new construction would occur is currently occupied by the terminal building and aircraft parking apron. The project also includes expansion of the central Federal Inspection Services (FIS) facility between the MLIT and Terminal E.

The Aircraft Parking Apron Project would involve the relocation of the existing remote parking apron displaced by construction of the two pier concourses and nearby taxi lanes associated with the MLIT Project. The existing apron can accommodate up to six wide-body aircraft, and is used daily by United Airlines and foreign airlines for remote aircraft parking. The parking apron area would be relocated to an area approximately 300 feet east of the extended centerline of Taxiway EB.

Formerly referred to as Terminal B Phase 2, the Terminal C North Concourse Replacement Project would be built to enable the demolition of the existing north concourse of Terminal C. The new concourse would be located on the north apron, west of the existing Terminal C north concourse and east of the B-north rotunda concourses. The project would provide 13 parking positions for narrow-body aircraft and would enable an increase in wide-body aircraft gates at the MLIT.



Source: Quadrant Consultants., 2013
 Prepared by: Quadrant Consultants Inc., 2013

LEGEND




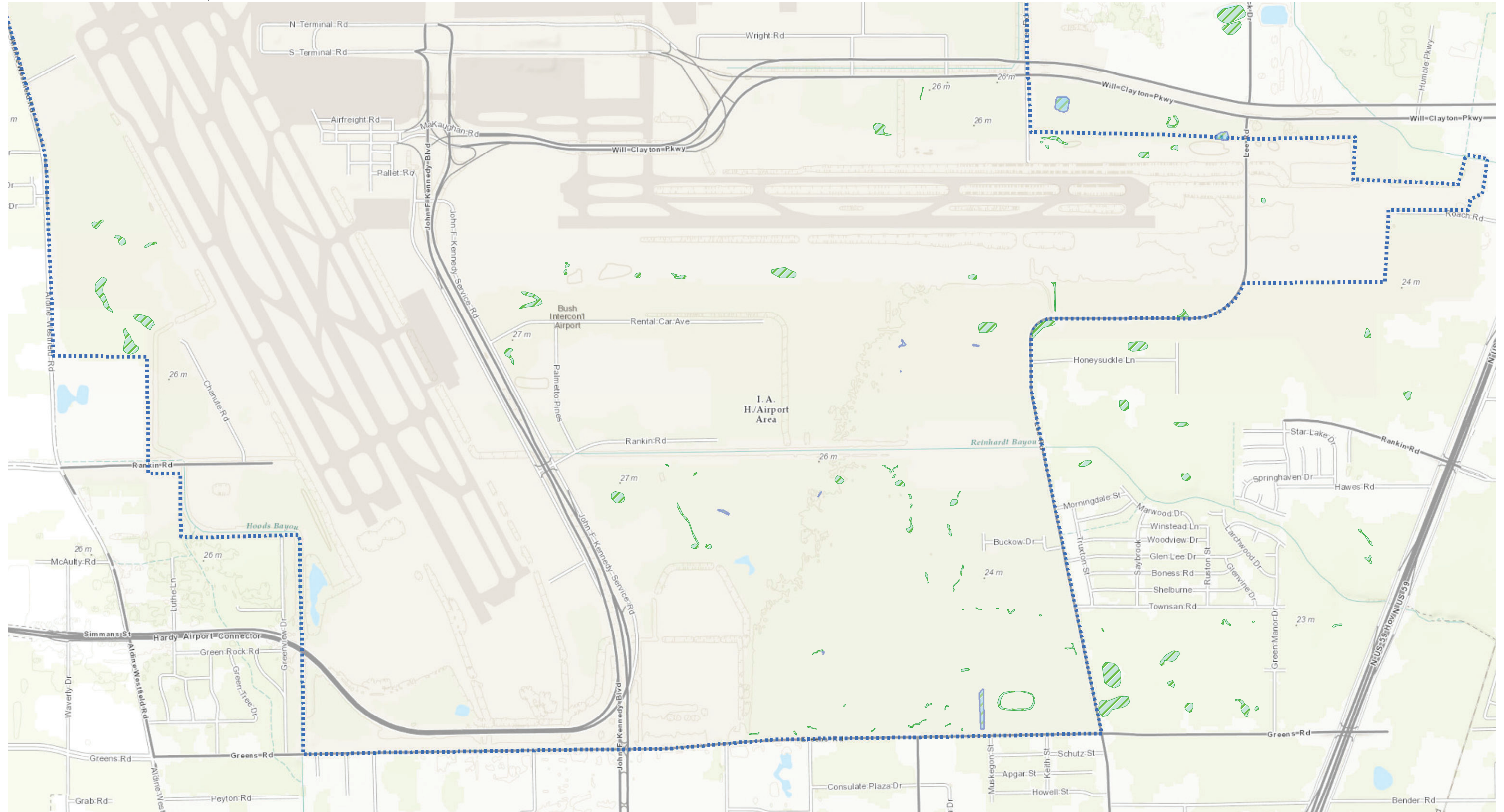
-  Airport Boundary
-  Delineated Wetland
-  Potential Wetland



Figure 7-1A
**Delineated and Potential Wetlands
 North Airport Area**



Source: Quadrant Consultants., 2013
 Prepared by: Quadrant Consultants Inc., 2013

LEGEND




-  Airport Boundary
-  Delineated Wetland
-  Potential Wetland



Figure 7-1B
 Delineated and Potential Wetlands
 South Airport Area

Air Quality

Construction-related activities associated with the projects would result in minor temporary impacts to local air quality.

Biota

The Aircraft Parking Apron Project would remove about 3 acres of loblolly pine–water oak woods.

Water Quality

Although no new impermeable surfaces would be created by the MLIT and Terminal C North Replacement Projects, underlying soil may be exposed during construction. The Parking Apron Project would be constructed on grass and forested land and pavement on this area would likely increase storm water runoff and potential water pollutant loads. Additionally, soil would likely be exposed during construction.

Wetlands

The project area is likely to contain a small wetland less than one-half acre in size, as shown in Figure 7-1A.

Floodplains

Approximately 20 acres of the aircraft parking apron would encroach on the 100-year floodplain. While mitigation is possible, it is likely that a modest to significant impact to the existing floodplain would occur.

Hazardous Materials

The MLIT and Terminal C North Replacement Projects would be located in previously developed/disturbed areas at the Airport and require earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

Because there is a dependent utility between the three projects and the Parking Apron Project would result in a significant encroachment on existing floodplains, possible impacts to wetlands, and would require extensive agency coordination, it is likely that the projects would require an EA.

7.3.2 PAL25 Projects with Independent Utility

7.3.2.1 Runway 15R-33L Extension

Runway 15R-33L, one of two parallel runways on the southwest side of the Airport, would be lengthened from 10,000 feet to 12,000 feet by adding 2,500 feet of runway to its south end and removing 500 feet from its north end. The proposed runway extension would provide a redundant long-haul departure runway in case Runway 15L-33R must be taken out of service (e.g., for maintenance or rehabilitation). In conjunction with this extension, the threshold for Runway 15R would be moved southward to be even with that of Runway 15L to reduce operational dependency between the runways. In addition, parallel Taxiway WP would also be extended by 2,500 feet to the south.

Noise

[this to be revised based upon completion of the ongoing noise modeling]

This section presents the noise assessment process for the entire airport and discusses the potential noise impacts associated with the extension of Runway 15R-33L. Since the configuration of runways at an airport

shapes its noise environment, changes in the runway configuration have the potential to affect new receptors, or affect existing receptors differently. Therefore, noise modeling was completed for the current and proposed runway configuration of the Airport to inform decision-makers as to how the Master Plan projects would change noise levels at off-Airport receptors.

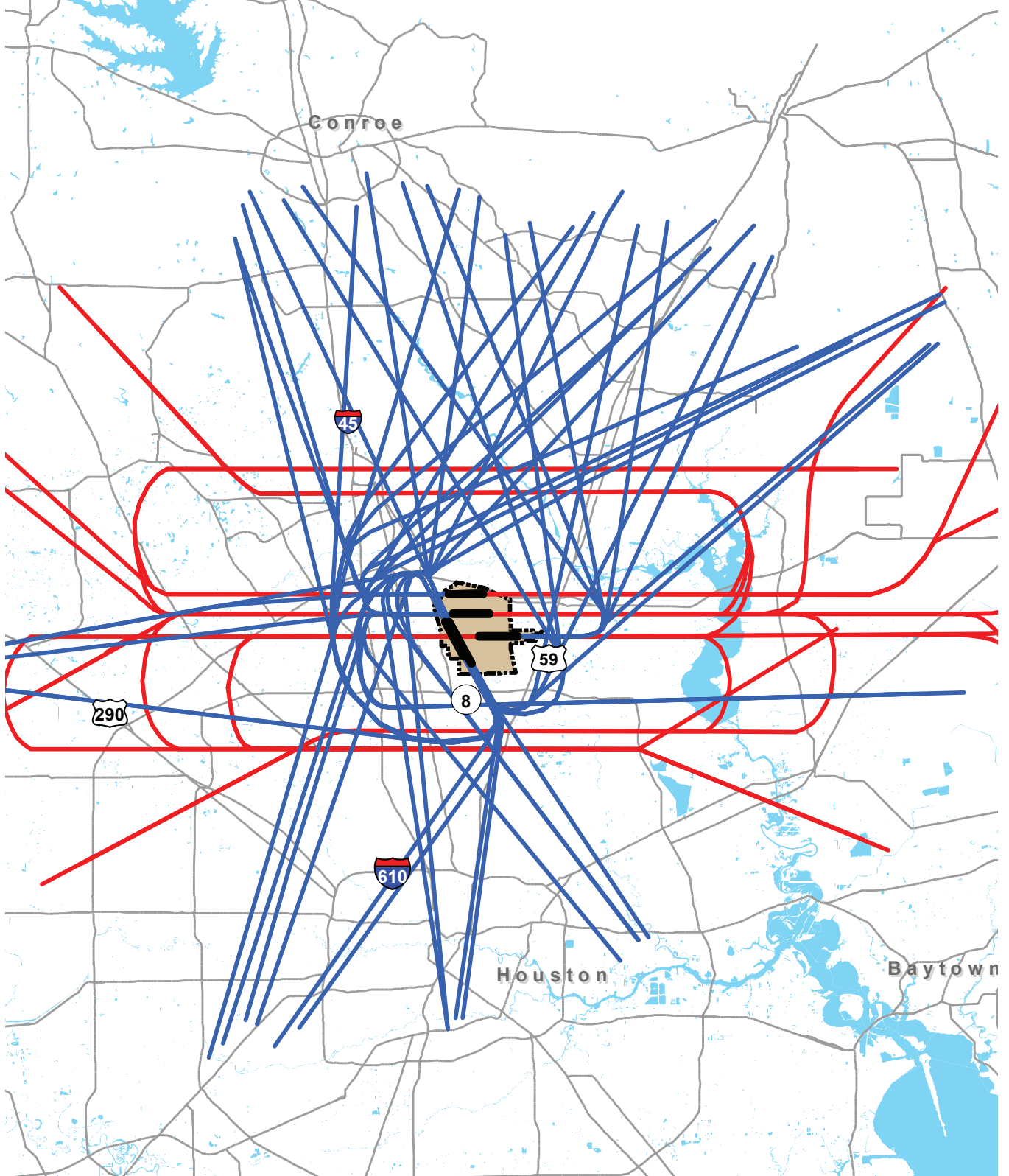
Noise levels around the Airport were estimated by using the most current version of the Integrated Noise Model (INM 7.0d) that the FAA provides for use at civil airports. The noise model requires input data on the number of airport operations by type of aircraft, arrival or departure, day or night, runway used, track of arrival or departure within 10 miles of the Airport, and departure flight stage (distance to destination).

Noise modeling for the existing airfield was completed using a flight schedule representative of an annual average day (AAD). An AAD flight schedule includes a number of flights approximately equivalent to the number of annual operations for a given year divided by 365. Aircraft types were assigned to INM-modeled aircraft as shown in Table 7-2.

The runway assigned to an aircraft departing or landing at the Airport depends on the wind direction, air traffic control procedures, and pilot preference. Under normal wind conditions, aircraft depart to the southeast on either Runway 15L or 15R and arrive from the east on either Runway 26L, 26R or 27. This is the West Flow pattern. When the wind is from the north, departing aircraft are generally assigned to either Runway 33L or 33R, while arriving aircraft are assigned to Runway 26L, 26R or 27. This is the North Flow pattern. When the wind is from the east, arriving aircraft are assigned to Runway 8L, 8R or 9, and departing aircraft are assigned to Runway 9, 15R or 15L. This is the East Flow pattern. Table 7-3 presents the percentages of operations under each flow pattern, and the number of such operations for the AAD associated with 2012 operational levels.

Aircraft fly into and out of the Airport along pre-set flight tracks that are published by the FAA and assigned by air traffic controllers. Pilots have some discretion as to the exact route flown, but most operations follow a relatively small number of typical tracks. These tracks are shown in Figure 7-2. For INM input, the arriving flights were classified onto 22 typical arrival tracks, and departing flights were classified onto 54 typical departure tracks depending on origin or destination and on wind flow conditions.

The INM calculates and reports noise as Day-Night Levels, or DNL. DNL has two components: the Equivalent Noise Level (Leq) for daytime noise and a weighted Leq for nighttime noise. Leq is the integrated energy of sounds experienced over a period of time such that the energy content is the same as that of a steady sound; the loudness of that steady sound, in decibels, is the value of Leq, also in decibels. INM divides the 24-hour day into daytime (7:00 am – 10:00 pm) and night-time (10:01 pm – 6:59 am) periods and weights the sound levels of nighttime flights with an additional 10 decibels. This weighting effectively counts each nighttime operation as ten daytime operations.



Source: FAA and Houston Airport System, 2013
Prepared by: Quadrant Consultants Inc., 2014

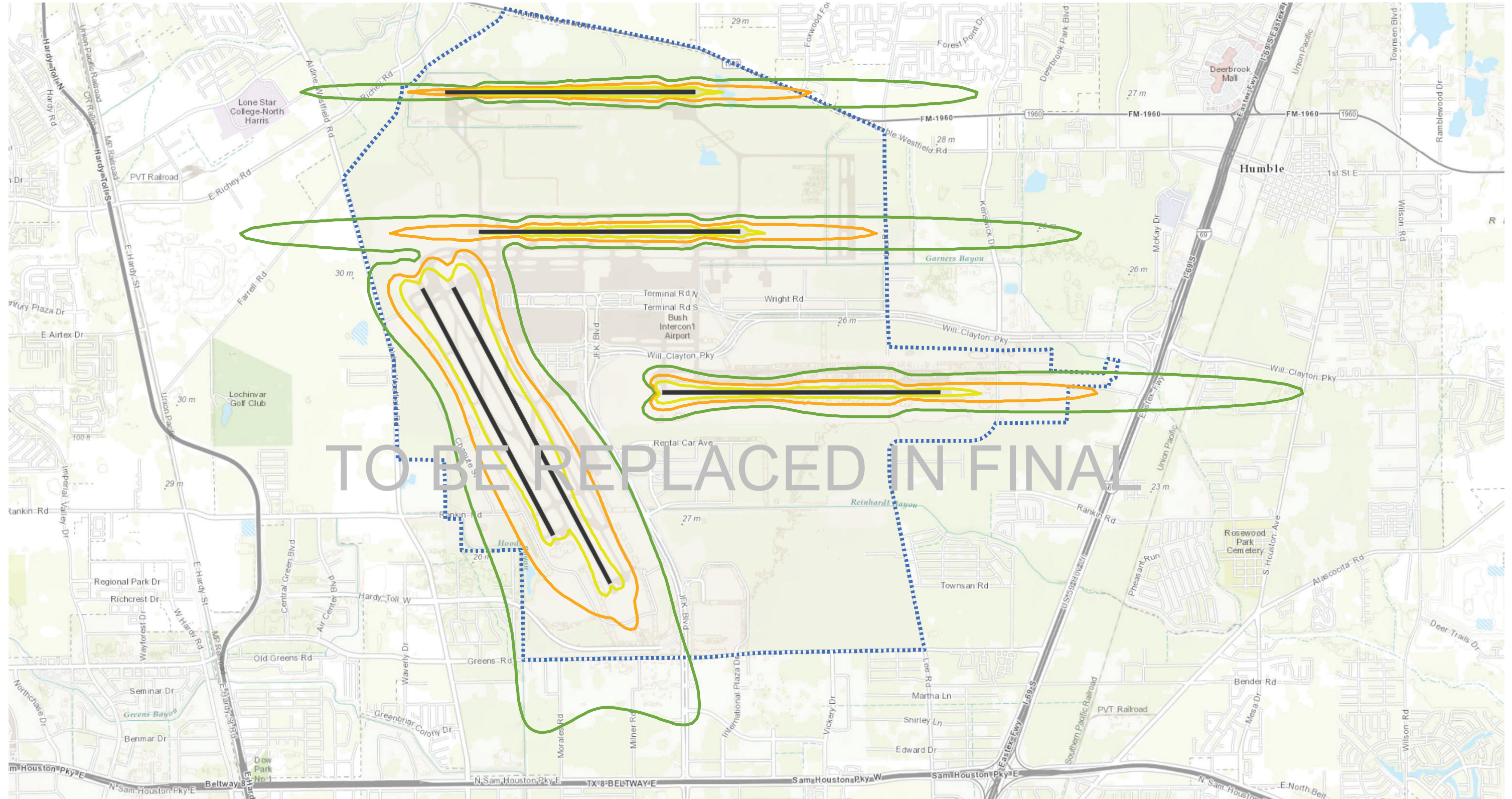
Leigh|Fisher

LEGEND

- Arrivals
- Departures








Figure 7-2
Typical Flights Tracks
at 25 miles from IAH 2012



Source: Quadrant Consultants., 2014
 Prepared by: Quadrant Consultants Inc., 2014

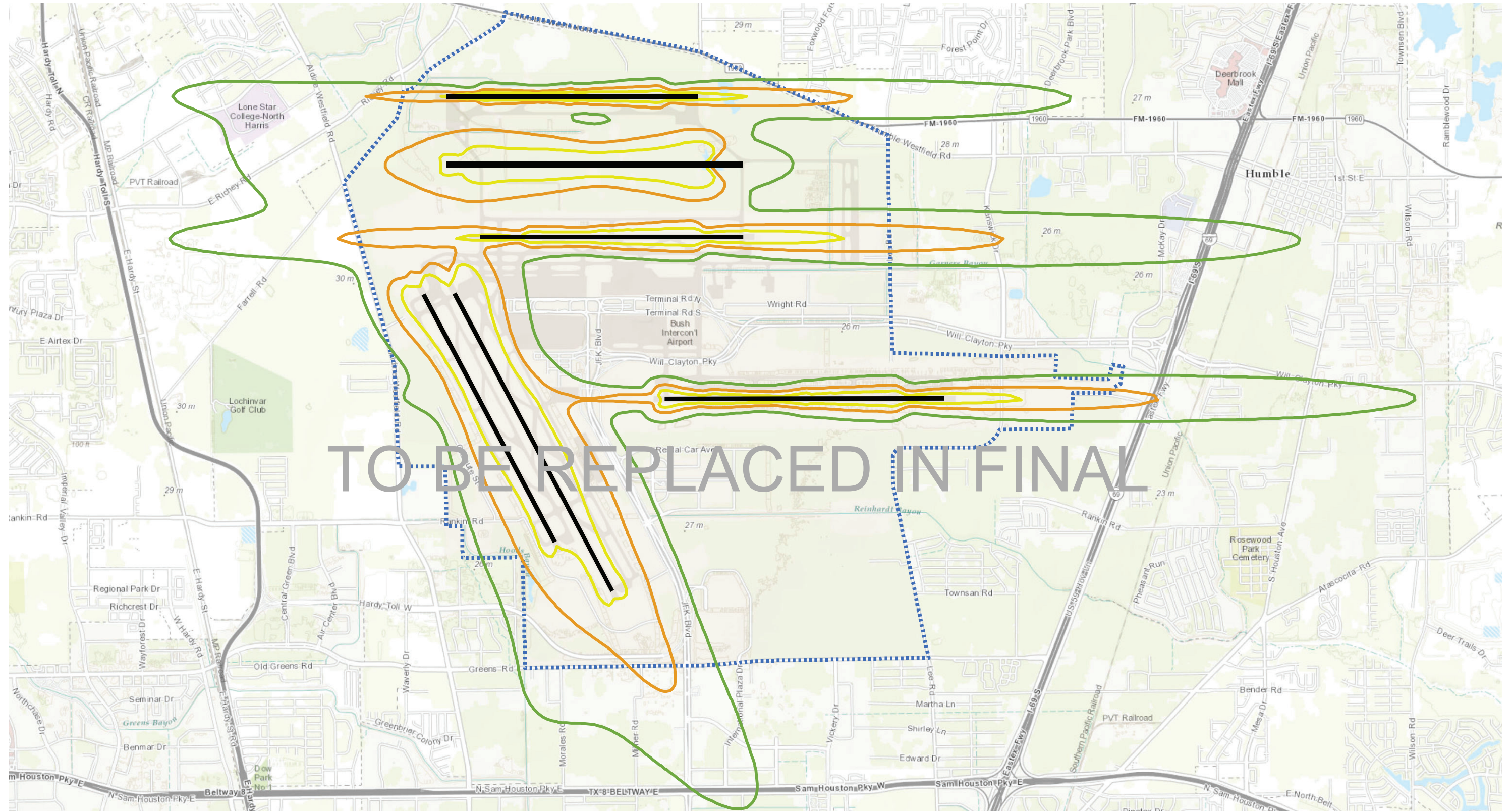


LEGEND

-  Airport Boundary
-  Airport Runway
-  DNL 65 Contour
-  DNL 70 Contour
-  DNL 75 Contour

Notes: These contours were generated for informational purposes only. Any future runway would be subject to a full environmental review, including generation of noise contours which would dictate the terms of any noise mitigation program.

Figure 7-3
 2012 Noise Contours



Source: Quadrant Consultants., 2014
 Prepared by: Quadrant Consultants Inc., 2014



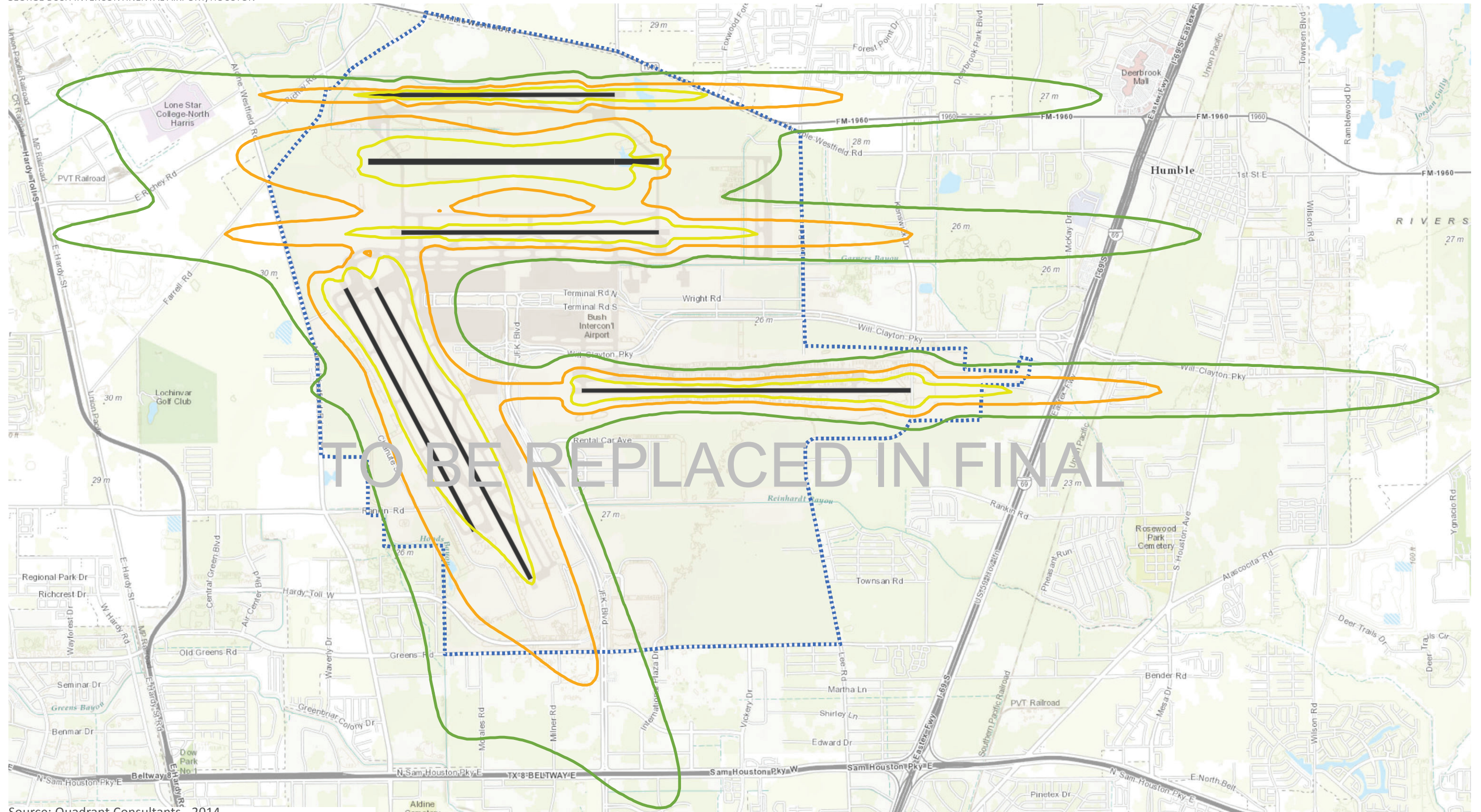
LEGEND

- Airport Boundary
- Airport Runway
- DNL 65 Contour
- DNL 70 Contour
- DNL 75 Contour

Notes:
 1. These contours were generated for informational purposes only. Any future runway would be subject to a full environmental review, including generation of noise contours which would dictate the terms of any noise mitigation program.

2. These contours were developed with forecast activity levels corresponding to 2028 according to the baseline forecast of aviation demand.

Figure 7-4
PAL33 Noise Contours



Source: Quadrant Consultants, 2014
 Prepared by: Quadrant Consultants Inc., 2014



LEGEND

- Airport Boundary
- Airport Runway
- DNL 65 Contour
- DNL 70 Contour
- DNL 75 Contour

Notes:
 1. These contours were generated for informational purposes only. Any future runway would be subject to a full environmental review, including generation of noise contours which would dictate the terms of any noise mitigation program.

2. These contours were developed with forecast activity levels corresponding to 2034 according to the baseline forecast of aviation demand.

Figure 7-5
PAL40 Noise Contours

Table 7-2
AIRCRAFT TYPES AND ASSOCIATED MODELED INM AIRCRAFT TYPES

| Aircraft Type | INM Type | Aircraft Type | INM Type |
|----------------------------------|----------|-----------------------------------|-----------|
| Airbus A300-600 | A300 | Boeing 777/777-200LR | 777-200ER |
| Airbus A319 | A319 | Boeing 777-300ER | 777-300ER |
| Airbus A320 | A320 | Canadair Regional Jet | CL601 |
| Airbus A380-800 | A380 | Canadair Regional Jet 700/705/900 | CRJ9-ER |
| Beechcraft Super King Air 200 | CNA441 | Cessna Caravan | CNA208 |
| Boeing (Douglas) MD-80 | MD81 | Cessna Citation Sovereign | CNA680 |
| Boeing (Douglas) MD-83/MD-88 | MD83 | Cessna Citation X | CNA750 |
| Boeing 737 | 737 | Cirrus SR20 | GASEPV |
| Boeing 737-300 | 737-300 | Dassault Falcon 900 | F10062 |
| Boeing 737-400 | 737-400 | Embraer 170 | EMB170 |
| Boeing 737-500 | 737-500 | Embraer 175 | EMB175 |
| Boeing 737-700 | 737-700 | Embraer 190/195 | EMB190 |
| Boeing 737-800/900 | 737-800 | Embraer RJ 135/140/145 | EMB145 |
| Boeing 747 (mixed configuration) | 747-200 | Fairchild Dornier Metro-Merlin 4 | DHC6 |
| Boeing 747-200 | 747-200 | Gulfstream V | GV |
| Boeing 747-400 | 747-400 | LearJet 45 | LEAR 35 |
| Boeing 747-800 | 747-8 | LearJet 60 | CAN 55B |
| Boeing 757-200 | 757-PW | McDonnell Douglas DC-10 | MD11GE |
| Boeing 757-300 | 757-300 | McDonnell Douglas DC-8-70 | DC870 |
| Boeing 767-200 | 767-CF6 | McDonnell Douglas MD-11 | MD11GE |
| Boeing 767-300 | 767-300 | McDonnell Douglas MD-80 | MD80 |
| Boeing 767-400 | 767-400 | McDonnell Douglas MD-90 | MD9025 |

Source: Quadrant Consultants, 2014.

Table 7-3
AIRCRAFT OPERATIONS BY FLOW PATTERN IN 2012

| Flow Direction | Percent | Average Daily Operations |
|----------------|---------|--------------------------|
| West | 69.5% | [to be provided] |
| East | 23.2 | [to be provided] |
| North | 7.3 | [to be provided] |
| Total | 100.0% | |

Source: LeighFisher, 2013.

The output from the INM noise model is a set of contour lines on a map, each contour line delimiting the area in which the DNL noise level resulting from aircraft operations is predicted to be at or higher than the contour interval. Three sets of contour lines are mapped: DNL 65, DNL 70 and DNL 75. Noise impacts would occur if the noise level reaches or exceeds DNL 65.

The Airport's current and future noise levels were modeled with the FAA-approved noise model INM 7.0d. Existing noise from Runway 15R-33L, shown in Figure 7-3, extends past the Airport boundary to industrial and commercial land uses south about one-half mile south of the Airport boundary.

By PAL33, the noise contour is expected to extend just past the Sam Houston Parkway, about one mile south of the Airport boundary as shown in Figure 7-4. This extension of the contour reflects growth in the total number of operations on both Runways 15R-33L and 15L-33R. If Runway 15R-33L were extended 2,500 feet to the south, some operations on Runway 15L-33R would move to Runway 15R-33L, so the noise contour would be expected to shift slightly to the west, but it would cover the same area. There is a residential area and a school in the southwest quadrant of the intersection of Aldine-Westfield Road and Greens Road that may be within the DNL 65 contour, and therefore could be affected by airport noise by extending Runway 15R-33L.

By PAL40, the expected noise contour for DNL 65, depicted on Figure 7-5, shows only a slight increase in area as compared to the PAL33 noise contour for DNL 65, because some of the growth in takeoff operations would be on Runways 8C-26C and 9-27. This condition would result in few additional noise receivers southwest of the Greens Road-Aldine Westfield Road intersection in PAL40 as compared to PAL33.

Department of Transportation Act, Section 4(f)

Although the extension of Runway 15R-33L will not result in an increase in aircraft operations, it is possible that the project would result in a change in runway use and new or increased noise impacts to surrounding communities. Noise sensitive, or "Section 4(f)", areas include residential, educational, health, and religious structures and sites, parks, recreational areas, wildlife refuges, and cultural and historical sites.

Air Quality

The proposed runway extension would add redundancy to the existing airfield layout, in the event that one of the other runways (suitable for wide-body or long-range aircraft operations) is closed for repair or maintenance. Importantly, the extension of Runway 15R-33L is not expected to facilitate an increase in aircraft operations. However, construction of the runway extension is likely to cause a large, albeit temporary, impact to local air quality, which may exceed the *de minimis* for nonattainment criteria air pollutants. The expected increase in emissions will be associated with earthmoving and paving activities. Additionally, it is possible that an increase in emissions will occur due to airfield delay (primarily on Runway 15L-33R) caused by construction activities during daytime operational hours.

Water Quality

Construction of the runway extension and associated taxiway would involve the disturbance of about 50 acres of land and paving a large portion of this area would likely significantly increase storm water runoff and potential water pollutant loads. Additionally, soil would likely be exposed during construction. The large areas of new runway pavement would also result in a small amount of water pollution due to oils, brake and tire particles on the runway.

Socioeconomic and Environmental Justice

The extension of Runway 15R-33L would likely cause noise-related impacts that would affect residents of the Greenbriar Colony neighborhood of Houston. This community is comprised primarily of African-American and Hispanic populations, except for a portion of the neighborhood along Grab Road, which has a majority Caucasian population. Additionally, Calvert Elementary School is located in the neighborhood. A more refined noise impact analysis may be required to determine if the project may disproportionately affect racial and ethnic minority populations.

NEPA Review Level

Given the (1) likely significant impacts to air quality, noise (including Section 4(f)), and environmental justice and (2) the likelihood that the project would be classified as a “major runway extension”, the project will require completion of an EA.¹ If the impacts exceed the thresholds of significance for the three identified environmental resources, it is possible that an EIS may be required.²

7.3.2.2 Taxiway Design Group Standard Upgrades

This project would provide for the widening of shoulders for taxiways on the airfield not currently meeting appropriate FAA Taxiway Design Group standards. These taxiways include Taxiway NA, RA, SA, SB, FA, FH, NP, and EB. These taxiways will be upgraded in accordance with the scheduled rehabilitation of the taxiway pavements.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality.

NEPA Review Level

This project would likely require a CatEx under FAA Order 1050.1E §310e.

7.3.2.3 Expansion of Terminal C West Parking Garage

This project would expand the Terminal C West Parking Garage, by seven levels and 2,000 parking spaces, to provide additional close-in public parking. The existing exit plaza would be replaced with a more compact exit plaza to create space for this garage expansion.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality. However, the addition of 2,000 additional parking spaces could result in a minor, but permanent, impact to air quality in the immediate vicinity of local roadways and intersections, given the large influx of new passenger vehicles and associated impacts to existing traffic patterns.

Secondary (Induced) Impacts

The addition of 2,000 new parking spaces and passenger vehicles is likely to cause a modest impact on local roadways and intersections by increasing congestion and altering existing vehicular use patterns. Additionally, construction vehicles would likely cause a minor temporary impact to local traffic patterns.

¹ A “major runway extension” is defined in Chapter 1, Section 9 (l) and in Section 702 (g) of FAA Order 5050.4B.

² Thresholds of significance for each environmental resource are defined in Table 7-1 of FAA Order 1050.1E.

Hazardous Materials

The project would be located in previously developed/disturbed areas at the Airport and require earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

The addition of 2,000 new parking spaces would likely cause increased traffic congestion and altered vehicular use patterns on local roadways and intersections resulting in modest and permanent impacts to air quality impact and local roadways. Additionally, the project does not appear to meet the definition for any CatEx categories. Accordingly, it is likely that a short form EA would be required.

7.3.2.4 Ecopark 2 Parking Lot on Will Clayton Parkway

The Ecopark 2 Parking Lot would involve constructing a second remote public parking lot north of Will Clayton Parkway and south of Wright Road. The parking lot would cover approximately 15 acres and provide 2,200 parking spaces. The new parking lot would displace now-vacant rental car parking facilities.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality. However, the addition of 2,200 additional parking spaces could permanently impact air quality in the vicinity of local roadways and intersections.

Water Quality

Although no new impermeable surfaces will be created, underlying soil may be exposed during construction.

Floodplains

Approximately five acres of the Ecopark 2 Parking Lot would encroach on the 100-year floodplain. While mitigation is possible, it is likely that a modest to significant impact to the existing floodplain would occur.

Secondary (Induced) Impacts

The addition of 2,200 new parking spaces and passenger vehicles is likely to cause a modest impact on local roadways and intersections by increasing congestion and altering existing vehicular use patterns. Additionally, construction vehicles would likely cause a minor temporary impact to local traffic patterns.

Hazardous Materials

The project would be located in previously developed/disturbed areas at the Airport and require earthmoving/grading activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

The addition of 2,200 new parking spaces would likely cause increased traffic congestion and altered vehicular use patterns on local roadways and intersections resulting in modest and permanent impacts to air quality impact and local roadways. Accordingly, it is likely that a short form EA would be required.

7.3.2.5 Cell Phone Parking Lots on Will Clayton Parkway and JFK Boulevard

This project involves construction of two new cell phone lots: one on Will Clayton Parkway just east of Ecopark 2, the other north of Rankin Road and east of JFK Boulevard. Both cell phone lots would provide approximately 120 covered parking spaces and restroom facilities. The Will Clayton Parkway cell phone lot would be approximately 3.5 acres in area and would serve vehicles entering the airport via Will Clayton Parkway and US 59. The JFK Boulevard cell phone lot would be approximately 6.4 acres in area, with the additional area used for commercial development, including a fueling station and potentially quick service restaurants or coffee shops. The Will Clayton Parkway parcel is heavily forested; the JFK parcel is partially forested.

Air Quality

Construction-related activities associated with both cell phone lots would result in a minor temporary impact to local air quality. However, the addition of 240 new parking spaces and supporting commercial development could permanently impact local air quality due to vehicle idling and increased traffic and congestion on local roadways and intersections.

Biota

The cell phone lots would require the removal of approximately 10 acres of loblolly pine–water oak woods.

Water Quality

The cell phone lots would be built on land that is currently forested and paving these areas would likely increase storm water runoff and potential water pollutant loads. Additionally, soil would likely be exposed during construction.

Wetlands

The Will Clayton Parkway cell phone lot may contain wetlands. If present, these wetlands could provide habitat for wildlife.

Floodplains

The entire Will Clayton Parkway cell phone lot would be located in the 100-year floodplain. While mitigation is possible, it is likely that a significant impact to the existing floodplain would occur.

NEPA Review Level

Given that permanent air quality and floodplain impacts would likely occur, wetlands may be present, and significant agency coordination would be involved; it is likely that the cell phone lot project would require at least a short form EA.

7.3.2.6 Cargo Laydown Area

The cargo laydown area would be located north of the East Cargo area and would involve clearing and grading the site to provide space for air cargo airlines to store cargo containers adjacent to the East Cargo apron. The project would eliminate obstructions to aircraft parking. The 8.6-acre site is currently wooded and would involve clearing all of the land and paving approximately two acres.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality. It is anticipated that the project would not result in an increase in cargo aircraft operations at the Airport.

Biota

The project would remove approximately 8.6 acres of loblolly pine–water oak woods.

Water Quality

The cargo laydown area would be located on mostly forested land and paving this area would likely increase storm water runoff and potential water pollutant loads. Additionally, soil would likely be exposed during construction.

Wetlands

The proposed cargo laydown area may contain wetlands. If present, these wetlands could provide habitat for wildlife.

NEPA Review Level

Assuming that no wetlands are identified in the area identified for development, the project would likely require a CatEX under FAA Order 1050.1E §310h. However, if wetlands are identified, then significant agency coordination would be involved, which would likely require a short form EA.

7.3.2.7 Fuel Farm Tank Replacement

Four small fuel tanks on the northwest corner of the fuel farm are scheduled for replacement due to their condition and age. The four tanks together store 2.1 million gallons of jet fuel. This project would replace the four tanks with two larger tanks that would store up to 3.6 million gallons of jet fuel.

Air Quality

Construction-related activities associated with removing and replacing the fuel tanks would result in a minor temporary impact to local air quality.

Hazardous Materials

Because the tank replacement would involve disturbing previously developed areas in which currently accommodates existing fuel tanks, it is possible that hazardous materials would be encountered during the replacement process.

NEPA Review Level

Assuming that the areas are not contaminated, the project would likely require a CatEx under FAA Order 1050.1E §310u. However, if contaminated areas are identified (which is possible given that it is a fuel farm), then significant coordination with TCEQ and EPA may be required, thus likely requiring a short form EA.

7.4 PAL33 Projects

The Master Plan identifies five PAL33 development projects, which have a dependent utility with each other. Accordingly, these projects are considered in Section 7.4.1 together with regard to the required

environmental review. The remaining PAL33 development projects have independent utility and are analyzed on an individual basis in Section 7.4.2.

7.4.1 PAL33 Projects with a Dependent Utility

7.4.1.1 Terminal B Improvements

The Master Plan recommends five development projects relating to improvements to Terminal B, which would occur in several phases. The first phase would include the construction of a new Terminal A/B processor building (including ticketing lobby, baggage claim, etc.) to the west of the original Terminal B building; the second phase would replace the original Terminal B building with the remainder of the new Terminal A/B Processor building. Additionally, the roadways to the north and south of Terminal B would be reconfigured to provide a departure curbside on the north side of the terminal and an arrival curbside on the south side.

The Terminal B improvements would also add two pier concourses to the north apron of Terminal B to replace two of the terminal's original rotunda concourses and add additional passenger gates. The project provides a net gain of nine narrow-body aircraft gates through more efficient use of the aircraft apron. During the first phase of the construction of the Terminal A/B processor, the employee parking lot east of existing Terminal B would be replaced by an eight-level public parking garage with 3,200 spaces. In addition to the Terminal B Parking Garage, the existing parking garage south of the Marriott Hotel would be replaced with a 1,800-space public parking garage. Construction of a walkway between Terminals B and C would allow passengers, which have passed through security screening checkpoints, to walk between the south concourses of each terminal building.

Biota

Although replacement of the Terminal B concourses would mostly occur on paved land, the additional apron area would be built on approximately six acres of unpaved airfield consisting of grasses and soil.

Air Quality

Construction-related activities associated with these projects would result in a minor temporary impact to local air quality. However, the addition of approximately 5,000 additional parking spaces could permanently impact air quality in the vicinity of local roadways and intersections.

Water Quality

Although replacement of the Terminal B concourses would mostly occur on developed land, the additional apron area would be built on approximately six acres of unpaved airfield consisting of grassland and soils and adding new pavement would likely increase storm water runoff and potential water pollutant loads.

Secondary (Induced) Impacts

The addition of approximately 5,000 parking spaces is likely to cause a noticeable impact on local roadways and intersections by increasing congestion and altering existing vehicular use patterns. Additionally, construction vehicles would likely cause a minor temporary impact to local traffic patterns.

Hazardous Materials

The projects would be located in previously developed areas at the Airport and require earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

Historical, Architectural, Archaeological, and Cultural Resources

Terminal B's original rotunda concourses may be considered historic structures and may be protected from demolition under the National Historic Preservation Act.

NEPA Review Level

The five recommended projects would likely require a CatEx on an individual basis. However, given the dependent utility between the projects, it is more probable that an EA would be required due to possible historical resource coordination and cumulative impacts.

7.4.2 PAL33 Projects with Independent Utility

7.4.2.1 New Runway 8C-26C and Supporting Taxiways

The Runway 8C-26C Project would involve the construction of a new 10,600-foot runway approximately 2,500 feet south of Runway 8L-26R and 2,500 feet north of Runway 8R-26L. Unlike Runways 8L-26R and 8R-26L, which are primarily used for arriving aircraft, Runway 8C-26C would be used primarily for departures. The east end of the new runway would align with the east end of Runway 8R-26L, and the west end of the new runway would align with the west end of Runway 8L-26R. This configuration would allow independent operations among the three northern runways.

This project also includes constructing several new taxiways to support the new runway, including a full parallel taxiway on the north side of the new runway; several runway entrance and exit taxiways; two relocated taxiways crossing Runway 8R-26L; and relocation of Taxiway EE to the north.

Noise

[to be provided upon completion of the noise modeling]

Department of Transportation Act, Section 4(f)

It is possible that the new runway would result in impacts to Section 4(f) resources in local communities.

Air Quality

The new runway is expected to facilitate an increase in aircraft operations, which would result in a sizeable and permanent impact to local air quality. Additionally, construction of the new runway is likely to cause a significant, albeit temporary, impact to local air quality that may exceed the *de minimis* for nonattainment criteria air pollutants. The expected increase in emissions will be associated with earthmoving and paving activities. It is also possible that an increase in emissions will occur due to airfield delay caused by construction activities during daytime operational hours.

Water Quality

Construction of the new runway and the associated taxiways would disturb soil in about 250 acres of airfield, which may result in soil erosion and resulting sediment deposition in streams. The new runway would also have a limited potential for causing water pollution due to oils, brake and tire particles on the runway.

Wetlands

Nine possible wetlands have been identified in the footprint of the proposed new runway.

Socioeconomic and Environmental Justice

It is possible that the new runway would result in noise-related impacts that would disproportionately affect minority residents in local neighborhoods.

NEPA Review Level

The Runway 8C-26C Project would be “a new runway to accommodate air carrier aircraft at a commercial service airport located in a Metropolitan Statistical Area” (FAA Order 5050.4B §903), and therefore would require an EIS.

7.4.2.2 Extension of Taxiways RA and RB

Extensions of Taxiways RA and RB to Taxiway SL would facilitate the efficient bi-directional movement of aircraft between the south and north airfield areas.

Air Quality

The taxiway project would provide two-way taxi routes for aircraft transiting between the north and south airfields, thereby reducing airfield delay and taxi times. Accordingly, the project would result in a modest long-term air quality improvement. However, construction-related activities associated with the extension would result in a minor temporary impact to local air quality.

Water Quality

The Taxiway RA and RB extensions would be constructed mostly on grassland, and paving this area would increase storm water runoff and potential water pollutant loads. Additionally, soil would be exposed during construction in limited areas.

NEPA Review Level

The Taxiway RA and RB extensions would likely require a CatEx under FAA Order 1050.1E §310e.

7.4.2.3 Ecopark parking garage (Phase 1)

This project would provide approximately 10,000 public parking spaces within the footprint of the existing EcoPark surface lot.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality. However, the addition of 10,000 additional parking spaces could result in a minor, but permanent, impact to air quality in the immediate vicinity of local roadways and intersections, given the large influx of new passenger vehicles and associated impacts to existing traffic patterns.

Secondary (Induced) Impacts

The addition of 10,000 new parking spaces and passenger vehicles is likely to cause a modest impact on local roadways and intersections by increasing congestion and altering existing vehicular use patterns. Additionally, construction vehicles would likely cause a minor temporary impact to local traffic patterns.

Hazardous Materials

The project would be located in previously developed/disturbed areas at the Airport and require earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

The addition of 10,000 new parking spaces would likely cause increased traffic congestion and altered vehicular use patterns on local roadways and intersections resulting in modest and permanent impacts to air quality impact and local roadways. Additionally, the project does not appear to meet the definition for any CatEx categories. Accordingly, it is likely that a short form EA would be required.

7.4.2.4 Consolidated Rental Car Center Expansion (Phase 1)

This project would expand the consolidated rental car facility (CONRAC) garage to the north, to provide approximately 388,000 square feet of additional ready-return parking spaces. The footprint of the impacted area is approximately 194,000 square feet.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality.

Water Quality

Construction of the proposed CONRAC expansion would expose about six acres of soil and make it susceptible to erosion.

NEPA Review Level

The CONRAC expansion would likely require a CatEx under FAA Order 1050.1E §310v.

7.4.2.5 East Cargo Expansion (Phase 1)

The East Cargo area is located north of the terminal complex, between Lee Road and the east ends of Runways 8L-26R and 8R-26L. The Master Plan envisions extending the East Cargo area approximately 1,000 feet eastward across current Lee Road, in two phases. Phase 1, an 18-acre site currently owned by HAS, would be built at PAL33. Phase 2, a 16.5-acre site directly north of the Phase 1 site, would be built at PAL40. This plan includes re-routing Lee Road to the east around both phases of the new cargo area.

Biota

The Phase 1 East Cargo Area Expansion Project would remove about 15 acres of loblolly pine–water oak woods.

Air Quality

Construction-related activities associated with the expansion project would result in a minor temporary impact to local air quality.

Water Quality

Construction of the Phase 1 East Cargo Area Expansion would expose soil in approximately 18 acres of land. The additional paved area would also increase impermeable surfaces and add water pollutants from aircraft

and ground equipment leaking engine oil, fuel, hydraulic fluid and other materials, which may migrate into streams.

NEPA Review Level

The East Cargo Area Expansion would likely require a CatEx under FAA Order 1050.1E §310h.

7.4.2.6 Fuel Farm Expansion

The fuel farm, located on the western edge of the Airport, would be expanded onto a 0.9-acre parcel just south of the existing site. The purpose of the expansion is to increase fuel storage capacity.

Biota

The expansion project would remove about 0.9 acre of loblolly pine–water oak woods.

Air Quality

Construction-related activities associated with the expansion project would result in a minor temporary impact to local air quality.

Water Quality

Expansion of the fuel farm would expose the soil in about 0.9 acres of undeveloped land. The additional paved area could add water pollutants from leaking equipment and tanks.

Wetlands

It is possible that the 0.9 acres of woods possibly affected by the fuel farm expansion includes isolated wetlands.

Hazardous Materials

Because the tank replacement would involve disturbing previously developed areas in close proximity to the existing fuel tanks, it is possible that hazardous materials would be encountered during the replacement process.

NEPA Review Level

If the potentially impacted wetlands require a regulatory permit, the fuel farm expansion would likely require a CatEx under FAA Order 1050.1E §310u. Should a permit be required, then it is likely that a short form EA would be required.

7.5 PAL40 Projects

The Master Plan identifies two major PAL40 development projects, which are associated with dependent utility projects—(1) the Runway 9-27 Extension and Taxiway SD Projects and (2) the Terminal A Concourse Expansion and Terminal A Parking Garage Projects. Accordingly, these projects are considered in Section 7.5.1 together with regard to the required environmental review. The remaining PAL40 development projects have independent utility and are analyzed on an individual basis in Section 7.5.2.

7.5.1 PAL40 Projects with Dependent Utility

7.5.1.1 Runway 9-27 Extension and Taxiway SD Projects

This project would extend Runway 9-27 approximately 2,000 feet to the east, for a total length of 12,000 feet, and would create an east-west runway equivalent in length to Runways 15L-33R and 15R-33L. In addition, the runway end lighting would be moved 2,000 feet to the east to accommodate the longer runway. The requisite runway safety area (RSA) and runway protection zone (RPZ) would also be moved 2,000 feet east, and trees within the RSA and RPZ would require removal. This concept assumes that the arrival threshold to Runway 27 would move 2,000 feet to the east to match the new runway end, but future analysis is recommended to determine if the arrivals threshold should remain in its existing location or shift east with the proposed departure end of the runway.

Taxiway SD would connect Taxiways RA and SB and would be used by aircraft queuing for departure on Runway 9-27.

Noise

[to be provided upon completion of the revised noise modeling]

Department of Transportation Act, Section 4(f)

Although the runway extension is not expected to facilitate an increase in aircraft operations, it is possible that the project would result in a change in runway use and impacts to local Section 4(f) resources may occur.

Biota

The runway extension would require the clearing of approximately eight (8) acres of loblolly pine–water oak forest and approximately 23 acres of early successional shrubs and herbaceous vegetation.

Air Quality

The runway extension is not expected to facilitate an increase in aircraft operations. However, construction activities (earthmoving and paving) are likely to cause temporary impacts to local air quality.

Water Quality

Construction of the runway extension would involve the disturbance of approximately 54 acres land and paving a large portion of this area would likely significantly increase storm water runoff and potential water pollutant loads. Additionally, soil would likely be exposed during construction. The large areas of new runway pavement would also result in a small amount of water pollution due to oils, brake and tire particles on the runway. In addition, the relocation of Lee Road would disturb approximately 16 acres of land.

Construction of Taxiway SD would expose approximately four acres of soil and make it susceptible to erosion.

Wetlands

One (1) potential wetland is in the footprint of the proposed parallel taxiway just north of the extension of Runway 9-27.

Floodplains

The runway extension would not impact the existing floodplain, although it would require clearing trees in about six (6) acres of the existing 100-year floodplain.

NEPA Review Level

Given the (1) likely significant impacts to air quality and noise (including Section 4(f)), (2) permitting requirements to address possible wetlands impacts, and (3) the likelihood the project would be classified as a “major runway extension”, the project will require completion of an EA.³ Because the impacts could possibly exceed the thresholds of significance for at least two identified environmental resources, it is possible that an EIS may be required.

7.5.1.2 Terminal A Concourse Expansion and Parking Garage Projects

The Terminal A concourse expansion would replace the current north, west and south concourses of Terminal A and add approximately 12 narrow-body aircraft gates. About six (6) acres of additional apron would also be built between the current apron and Taxiway NB for airplanes to access the new gates on the north end of the new concourse. The Master Plan proposes removal of the Terminal A processor (ticketing lobby and baggage claim), followed by construction of a parking garage in its place to increase parking capacity.

7.5.1.2.1 Air Quality

Construction-related activities associated with the Terminal A projects would result in a minor temporary impact to local air quality. The addition of additional parking spaces and passenger could modestly, but permanently, impact air quality in the vicinity of local roadways and intersections due to increased roadway congestion.

7.5.1.2.2 Water Quality

The Terminal A expansion would be built mostly on currently paved land, but additional apron area would be built on about six acres of mowed grass airfield, and paving this area would increase storm water runoff and potential water pollutant loads. Soil would be exposed during construction in limited areas. Soil would be exposed during construction in limited areas, thereby possibly increasing erosion.

7.5.1.2.3 NEPA Review Level

By themselves, the Terminal A projects would likely require a CatEx. However, given the dependent utility between the two projects, it is probable that an EA would be required due to possible cumulative impacts.

7.5.2 PAL40 Projects with Independent Utility

7.5.2.1 End-Around Taxiway

This proposed taxiway would link the west end of Runway 8L-26R and Taxiway NE south of proposed Runway 8C-26C. This taxiway would serve arrivals to Runway 8L-26R taxiing to the terminal complex, so that they do not have to cross Runway 8C-26C.

³ A “major runway extension” is defined in Chapter 1, Section 9 (l) and in Section 702 (g) of FAA Order 5050.4B.

Air Quality

The end-around taxiway would reduce runway crossings, but would increase aircraft taxi time. Although aircraft engine idle times and associated emissions would decrease, the increased travel distance would increase aircraft emissions. Accordingly, it is likely that emission reductions associated with decreased engine idle times would be exceeded by modest, but permanent, increases in emissions associated with additional travel distances.

Water Quality

Construction of the proposed taxiway would expose approximately 13 acres of soil and make it susceptible to erosion.

Wetlands

Five to seven potential wetlands are in the footprint of the proposed taxiway.

NEPA Review Level

The proposed end-around taxiway may require a CatEx under FAA Order 1050.1E §310e. However, given the likelihood of permitting requirements to address possible wetlands impacts and permanent air quality impacts, a short form EA may be required.

7.5.2.2 *Ecopark parking garage (Phase 2)*

This project would provide approximately 10,000 public parking spaces within the footprint of the existing EcoPark surface lot, adjacent to the eight-level phase 1 garage associated with PAL33.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality. However, the addition of 10,000 additional parking spaces could result in a minor, but permanent, impact to air quality in the immediate vicinity of local roadways and intersections, given the large influx of new passenger vehicles and associated impacts to existing traffic patterns.

Secondary (Induced) Impacts

The addition of 10,000 new parking spaces and passenger vehicles is likely to cause a modest impact on local roadways and intersections by increasing congestion and altering existing vehicular use patterns. Additionally, construction vehicles would likely cause a minor temporary impact to local traffic patterns.

Hazardous Materials

The project would be located in previously developed/disturbed areas at the Airport and require earthmoving activities. Therefore, it is possible that hazardous materials would be encountered during the construction process.

NEPA Review Level

The addition of 10,000 new parking spaces would likely cause increased traffic congestion and altered vehicular use patterns on local roadways and intersections resulting in modest and permanent impacts to air quality impact and local roadways. Additionally, the project does not appear to meet the definition for any CatEx categories. Accordingly, it is likely that a short form EA would be required.

7.5.2.3 Consolidated Rental Car Center Expansion (Phase 2)

This project would expand the consolidated rental car facility garage to the south, to provide approximately 260,000 square feet of additional ready-return parking spaces. The footprint of the impacted area is approximately 130,000 square feet.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality.

Water Quality

Construction of the proposed Consolidated Rental Car Center expansion would expose about four acres of soil and make it susceptible to erosion.

NEPA Review Level

The Consolidated Rental Car Center expansion would likely require a CatEx under FAA Order 1050.1E §310v.

7.5.2.4 East Cargo Expansion (Phase 2)

The second phase of the proposed East Cargo expansion provides for continuing the expansion of the East Cargo area by an additional 16.5-acres north of the Phase 1 expansion site.

Biota

The proposed Phase 2 East Cargo Expansion would remove about 16.5 acres of loblolly pine–water oak woods.

Air Quality

Construction-related activities associated with the project would result in a minor temporary impact to local air quality.

Water Quality

Construction of the proposed Phase 2 East Cargo Expansion would expose the soil in 16.5 acres of land. The additional paved area of the East Cargo expansion would add water pollutants from aircraft and ground equipment leaking engine oil, fuel, hydraulic fluid and other materials, and occasional spills of these substances may migrate into streams.

Wetlands

It is possible that the proposed project area may contain isolated wetlands.

NEPA Review Level

If potential impacts to wetlands do not require a regulatory permit, the proposed Phase 2 East Cargo Expansion would likely require a CatEx under FAA Order 1050.1E §310h. If a permit is required, then it is likely that a short form EA would be required.

7.6 Concepts Beyond the Planning Horizon

These conceptual projects may be considered once aviation demand exceeds 40 million annual enplaned passengers, which is not expected until after the planning time horizon of this Master Plan.

7.6.1 Runway 9R-27L

If aviation demand continues to grow, it may be necessary to add a new runway parallel to Runway 9-27 on the south side of the terminal complex. This runway would be designated Runway 9R-27L and constructed 1,200 feet south of current Runway 9-27 at a length of 9,000 feet. Additional runway exits and taxiways would also be built, and the safety areas for Runway 9R-27L would be cleared and graded. Runway 9R-27L would also require relocation of a segment of Lee Road about 1,000 feet to the south. Construction of Runway 9R-27L would require clearing about 200 acres of loblolly pine–water oak woods.

Runway 9R-27L would be “a new runway to accommodate air carrier aircraft at a commercial service airport located in a Metropolitan Statistical Area” (FAA Order 5050.4B §903), and therefore would require an EIS. The associated taxiways would also be part of the new runway project and therefore would be included in the EIS.

7.6.2 Crossfield Taxiway SM

Crossfield Taxiway SM would provide an additional connection between the north and south airfields. Taxiway SM would replace existing Taxiway SF, enabling long-term terminal expansion and extension of the automated people mover in the future. Because it is unknown that the taxiway construction would temporally align with other future expansion projects, it is assumed that no dependent utility exists between the projects.

The Crossfield Taxiway SM would likely require a CatEx under FAA Order 1050.1E §310e.

7.6.3 Long-Term Terminal Expansion Options

Multiple options for long-term terminal expansion are preserved beyond the master planning horizon. With removal of Taxiway SF, the terminal complex can be expanded to the east. On the north, an additional double-loaded concourse can be attached to the MLIT, and on the south, Terminal E could accommodate another double-loaded concourse. Several buildings would be relocated to enable these concourse expansions, most notably the FAA Airport Traffic Control Tower for an expansion of Terminal E. The additional piers on Terminal E and the MLIT would be built on currently paved areas and would not affect wooded areas or grasslands.

Alternately, terminal expansion could be provided by a linear terminal north of Runway 9-27, east of proposed Taxiway SL and south of Will Clayton Parkway. The linear terminal option site comprises about 105 acres, of which 61 acres would be apron, 16 acres would be buildings and the remaining 28 acres would be mowed grass. Most of this land is currently wooded.

Both long-term terminal options would likely require an EA.

7.7 Next Steps to Address Potential Environmental Impacts

This section of the chapter provides recommended next steps to provide the HAS with a strategy to implement the projects recommended in the Master Plan.

7.7.1 Air Quality

Because the Airport is located in a region designated as severe nonattainment for ozone (precursors of which are nitrogen oxides—NO_x—and volatile organic compounds—VOC), project emissions must remain below the *de minimis* thresholds outlined in 40 CFR 93.153 in order to demonstrate General Conformity. The *de minimis* levels for both NO_x and VOC in a severe nonattainment area are 25 tons per year. In addition to construction emissions, emissions associated with airfield delay may result from significant

development projects, such as a major runway extension or new runway. Accordingly, the runway extension and new runway projects may need to be phased over multiple years to ensure that no single year of construction exceeds the 25 tons of NO_x per year threshold. It is important to note that new or increased air service arising from a development project is also subject to the requirement of General Conformity, even if the emissions associated with construction activities do not exceed the *de minimis*.

HAS was successful in incorporating a comprehensive inventory of emissions associated with a large number of future development projects in the Texas State Implementation Plan (SIP) in 2009. While some of the projects identified in the SIP are recommended by this Master Plan, several others are not. If future recommended development projects have been included in the SIP, then General Conformity has been demonstrated. To demonstrate General Conformity for the projects recommended in the Master Plan, but not included in the SIP, HAS is strongly encouraged to perform a comprehensive emissions inventory update to the SIP. Careful coordination with FAA and TCEQ will be required to determine the scope and timing of the inventory effort. Should HAS elect not to update the SIP with emissions associated with many of the future development projects (those that may exceed the *de minimis*), it may be required to fully mitigate those emissions to zero, which could result in severe delays to the implementation of certain projects.

7.7.2 Biota

Although unlikely, any project that involves encroachment on an undisturbed or undeveloped area may contain habitats that support threatened and endangered species. Accordingly, a comprehensive wildlife survey should be performed at the Airport in order to determine the presence of any habitats that may support threatened or endangered species.

7.7.3 Water Quality

To prevent and minimize soil erosion and resulting sediment deposition in nearby waterways during construction, HAS should ensure that contractors follow best management practices, which include:

- Planting temporary vegetation on bare soil during construction to prevent erosion.
- Installing silt fences around bare soil in construction areas to prevent eroding soil from entering streams.
- Placing hay bales and hay socks around storm water inlets and in swales to prevent eroded soil from reaching streams.
- Fuelling construction equipment in contained areas with sufficient impermeable containment capacity to prevent accidental spills of hazardous substances from polluting soil, groundwater or streams.

HAS should also develop a Construction Storm Water Pollution Prevention Plan (SWPPP), which is the initial step in the storm water management process. Upon developing an SWPPP, HAS should then begin coordination with TCEQ and the US Environmental Protection Agency to secure a National Pollutant Discharge Elimination System (NPDES) permit.⁴ The NPDES permit program controls water pollution by regulating point sources (e.g., the Airport) that discharge pollutants into waters of the United States. HAS must obtain a permit if its discharges go directly to surface waters. The NPDES permitting process can be a time-intensive effort, therefore, a long-lead time ahead of major construction projects is advised.

⁴ NPDES permits are regulated under the 40 CFR 122 of the Clean Water Act.

7.7.4 Wetlands

A Nationwide Permit may cover impacts to waters of the United States regulated by the US Army Corps of Engineers (USACE)—commonly referred to as wetlands—encroached by the proposed developments, but conditions generally apply, including avoidance, mitigation, and replacement of the wetland loss. A formal delineation of any area suspected of containing wetlands should be performed to confirm the presence of any jurisdictional waters and, if present, coordination with USACE should begin well before implementing the project to determine if HAS could include the project under a Nationwide Permit or if an individual Section 404 Permit would be required.⁵ The Section 404 permitting process can be a time-intensive effort, therefore, a long-lead time ahead of major construction projects is advised.

7.7.5 Floodplains

It is recommended that HAS coordinate with the Harris County Flood Control District, TCEQ, USACE, and the Federal Emergency Management Agency prior to implementing any project that may encroach upon an existing floodplain.

7.7.6 Hazardous Materials

Prior to implementing a project where it is suspected or known that hazardous materials may be present, a Phase 2 EDDA should be performed to identify areas of contamination.⁶ This will help to minimize accidental worker exposure and the possible spread of contaminated materials to the surrounding environment.

7.7.7 Secondary (Induced) Impacts

For projects that may cause impacts associated with increased congestion or altered traffic patterns, a level of service analysis should be performed to determine the magnitude of these impacts on local roadways, intersections, and the surrounding community. Projects that would benefit from this type of study include:

- Projects that involve the relocation or changes in geometry of roadways and intersections
- Projects that require medium- to long-term roadway or lane closures
- Construction of new parking garages
- Expansion of existing parking garages

⁵ Section 404 of the Clean Water Act regulates impacts to jurisdictional waters of the US.

⁶ FAA Order 1050.19B provides guidance on the scope and process of Environmental Due Diligence Audits on airport property.