

**U.S. DEPARTMENT OF TRANSPORTATION**  
**Federal Highway Administration**

**RECORD OF DECISION**

June 2014

Grand Parkway (State Highway 99)

Segments H and I-1

From United States Highway (US) 59 North/Interstate Highway (I) 69

to I-10 East

Montgomery, Harris, Liberty, and Chambers Counties, Texas

CSJs: 3510-07-003, 3510-08-001, 3510-09-001, 3510-09-002, and 3510-10-001

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**EXHIBIT 1: Grand Parkway Segments H and I-1 Selected Alternative**

**APPENDIX A: List of Mitigation Measures and Commitments**

**APPENDIX B: FEIS Comments and Comment Response Matrix**

## **I. INTRODUCTION AND SUMMARY**

This Record of Decision (ROD) documents the Federal Highway Administration's (FHWA) decision to select an alternative for Segments H and I-1 of the Grand Parkway, State Highway 99 (SH 99), from United States Highway (US) 59 North (N)/Interstate Highway (I) 69 to I-10 East (E). This approval documents FHWA's selection of the Preferred Alternative as is described in the Final Environmental Impact Statement (FEIS) dated February 2014. As set forth in this ROD, the Preferred Alternative best serves the need and purpose for this project.

The proposed Grand Parkway, SH 99, is planned as a 180+ mile circumferential new location transportation facility around the Houston metropolitan area. The entire proposed facility will traverse Harris, Montgomery, Liberty, Chambers, Galveston, Brazoria, and Fort Bend Counties, Texas, and provide access to radial highways, such as I-10, I-45, US 290, US 59, SH 249, SH 288, etc.

For Segments H and I-1, the alternative alignments were developed within the project area to fulfill the need and purpose of the project, to minimize potential environmental impacts, and to respond to public/landowner and resource agency comments. A Recommended Alternative (Recommended Alternative 10) was identified in the Draft Environmental Impact Statement (DEIS) dated May 2011.

After consideration of the agency and public comments received on the DEIS, as well as updated environmental data, a Preferred Alternative (Preferred Alternative 10R) was selected and evaluated in the FEIS. This selection was based, in accordance with 23 Code of Federal Regulations (CFR) 771.125, on the best overall public interest with input from public and resource agencies and analysis and comparison of the potential effects on the physical, biological, and human environments of each alternative alignment. The revisions creating the Preferred Alternative 10R include two separate alignment revisions on Farm-to-Market (FM) Road 1485, two separate alignment revisions due to the development north and south of FM 1960, and two separate alignment revisions south of US 90. In May 2013, a Meeting with Affected Property Owners (MAPO) was held to present one of the minor alignment modifications in the proximity of FM 1960. The MAPO was held to inform the newly impacted property owners of the alignment shift. A complete description of the Preferred Alternative, henceforth referred to as the Selected Alternative, is provided in detail in the FEIS Volume I, Section 2.5.3. As set forth in this ROD, the Selected Alternative best serves the need for and purpose of this project, avoids and minimizes impacts, and responds to public/agency comments.

The Grand Parkway Segments H and I-1 project, as described, is included the Houston-Galveston Area Council's (H-GAC) 2013-2016 Transportation Improvement Plan (TIP) and the long-range plan (2035 RTP Update). The USDOT determined that the 2035 RTP Update and

the 2013-2016 TIP conformed to the requirements of the State Implementation Plan (SIP) for the Houston-Galveston ozone non-attainment area by the EPA and FHWA on July 17, 2013, and July 19, 2013, respectively. The project is also included in the H-GAC Congestion Management Program.

The Grand Parkway Segments H and I-1 project has been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, purpose, alternatives, environmental issues, impacts, and appropriate mitigation measures. FHWA has reviewed all of the relevant documentation and materials. Based upon our own independent review and analysis, we find that the February 2014 Final Environmental Impact Statement Grand Parkway State Highway 99 Segments H and I-1 analyzed and considered all the relevant potential environmental impacts and issues; therefore, the project as proposed meets all federal requirements.

This ROD is executed in conformance with the Council on Environmental Quality (CEQ) regulation implementing the National Environmental Policy Act of 1969 (NEPA) and documents FHWA compliance with NEPA and all other applicable federal statutes, regulations, and requirements. The sections that follow provide information that has been essential in the decision-making process. Several public meetings have occurred to provide information regarding the Grand Parkway Segments H and I-1 project and receive comments on the project. A project Internet website ([www.grandpky.com](http://www.grandpky.com)) was also developed and maintained to provide project information and receive comments.

## **II. DECISION**

The FHWA decision is to approve the Selected Alternative (see Exhibit 1 in this ROD), which is a 37.4-mile, four-mainlane, controlled-access toll road facility with intermittent frontage roads located within a 400-foot right-of-way (ROW) and will be built to accommodate a 70-mile-per-hour design speed. The Selected Alternative begins in Montgomery County at US 59 N/I-69 and extends 37.4 miles to I-10 E in Chambers County, Texas. Subsequent to the issuance of the Notice of Intent (NOI) to prepare an Environmental Impact Statement for the Grand Parkway Segments H and I-1 project, the Texas Transportation Commission in conjunction with the FHWA and American Association of State Highway Transportation Officials (AASHTO) dually designated US 59 from Interstate 610 N in Houston to Fostoria Road in Liberty County as I-69. As a result, the Grand Parkway Segments H and I-1 project now has a project termini in Montgomery County with US 59/I-69.

The Selected Alternative is a combination of Representative Alternative segments: A-4, B-2, and C-3, as adjusted (FEIS Volume 1, Section 2.5.3), to minimize potential impacts (see Exhibit 1 in this ROD). The Selected Alternative also involves construction of direct connector ramps at US 59 N/I-69 and I-10 E to provide for fully directional interchanges. Identifying these

Representative Alternative segments as the Selected Alternative are based upon their ability to meet the need and purpose of the project, public and agency input, and the minimization and avoidance of environmental resources and human environment, including indirect and cumulative impacts (FEIS Volume 1, Chapters 5 and 6).

The basis for this ROD is supported by the information provided in the FEIS and supporting technical documents; the associated administrative record; and input received from the public and interested local, state, and federal agencies. The FHWA considered the potential impacts of the project and alternative courses of action under NEPA while balancing the need for safe and efficient transportation with national, state, and local environmental protection goals. FHWA notes that its statutory responsibility under 23 United States Code (USC) 109(h) is to reach a project decision that is in the best overall public interest, taking into account the need for safe, fast, and efficient transportation and public services, while eliminating or minimizing adverse natural environmental and community effects.

With respect to the process of avoiding and minimizing natural environmental and community effects, the alternatives analysis process included efforts to balance impacts across different resources. In accordance with USC Title 23, Chapter 1, Section 109 (c)(2)(B), development of the Grand Parkway alignments included consideration for context-sensitive solutions and guidance provided in the FHWA publication, "Flexibility in Highway Design" (published by FHWA in 1997). As stated in the FHWA guidance, "For each potential project, designers are faced with the task of balancing the need for the highway improvement with the need to safely integrate the design into the surrounding natural and human environments." Also, in applying context-sensitive solution principles, the alternative development process engaged the public in balancing community, cultural, aesthetic, environmental, and transportation needs.

The FHWA decision provides the necessary environmental approval under NEPA for the construction of this new location highway facility within Montgomery, Harris, Liberty, and Chambers Counties. The Grand Parkway Segments H and I-1 is needed because there are inefficient connections between suburban communities, major radial roadways, local ports, and industries; the current and future transportation demand exceeds capacity; many roadways within the study area of Segments H and I-1 have a high crash rate; and there is an increasing strain on transportation infrastructure from population and economic growth. The purpose of the project is to provide system linkage, enhance mobility and safety, and provide infrastructure to support population growth. This type of facility is the design concept that best satisfies the need and purpose of the project to efficiently provide congestion relief, increased local and regional mobility, and increased capacity for hurricane evacuation needs.

The Grand Parkway Segments H and I-1 will also provide an additional hurricane emergency evacuation route for the Greater Houston area consistent with Minute Order No. 82325 signed October 25, 1984. The circumferential route connects to numerous radial facilities that are often

congested during an evacuation. As an example, when as many as 2 million people fled the Houston metroplex before Hurricane Rita on September 22, 2005, evacuees followed roadways leading to Austin, San Antonio, and Dallas. Severe congestion ensued and contra-flow lanes were eventually opened. The Grand Parkway Segments H and I-1 could alleviate a portion of the congestion during mass evacuations, thus creating safer and more efficient evacuation conditions.

The ROW for the Selected Alternative will encompass approximately 1,933 acres of new transportation ROW. The Selected Alternatives will include fully-directional interchanges at US 59 N/I-69 and I-10 E. In addition, there are proposed "grade separated interchanges" with access ramps where the Selected Alternative crosses the following locations: US 59 N/I-69/ Union Pacific Railroad (UPRR), Galaxy Road, FM 1485, Future Kingwood Drive, UPRR railroad crossing, US 90/UPRR, FM 1960/UPRR, FM 1413, SH 146, and FM 565. Overpasses with no access to the cross-streets are planned for the following locations: Montgomery planned thoroughfare (Lake Houston), Loop 494 and UPRR, Mansion Road, County Road (CR) 615, FM 686, UPRR, CR 479, and Hatcherville Road. Preliminary design of the Selected Alternative proposes continuous frontage roads where Segment H parallels FM 1485. This section will be reconstructed in a frontage road configuration for overall improved traffic operations. In addition, all floodways will be bridged or culverted.

The estimated total project cost for the proposed Segments H and I-1, per the Project Cost Estimate Review (March 2014), is \$1.734 billion. Construction for Phase I is estimated to begin in 2016, with a projected opening year of 2019. Construction of the ultimate project will be completed with construction of Phase II, with a projected construction completion year and open to traffic in 2025.

Environmental issues and proposed mitigation related to the construction of the Selected Alternative are detailed in the following sections.

### **III. ALTERNATIVES CONSIDERED**

Throughout the transportation planning and project development process, a wide range of alternatives was considered using appropriate levels of environmental and engineering analysis. The alternatives were analyzed and advanced for more detailed study based on their ability to meet the identified project needs, their impact on the environment, and input received from the public, elected officials, and the environmental resource agencies. A detailed discussion of the alternative development is included in the FEIS (Volume I, Chapter 2) and its supporting documentation. The alternatives considered included: No-Build, transportation system management (TSM) measures; travel demand management (TDM) measures; and Modal Transportation Improvements (e.g., bus transit, high-occupancy vehicle (HOV) lanes, and rail transit).

Additionally, a free or non-toll Build Alternative (controlled access, four-lane freeway on new location) was eliminated from detailed study. The non-toll Build Alternative will not be consistent with the 2035 Regional Transportation Plan (RTP) Update that identifies the addition of tolled facilities such as the Grand Parkway Segments H and I-1. Tolled facilities were determined necessary in order to fund transportation projects that could address current congestion and future growth in the H-GAC planning region. The 2035 RTP Update is consistent with 2001 Texas Legislation Senate Joint Resolution 16 that, upon voter approval, amended the Texas State Constitution to create Texas Mobility Fund and authorized grants and loans of money and issuance of obligations for financing the construction, reconstruction, acquisition, operation, and expansion of state highways, turnpikes, toll roads, toll bridges, and other mobility projects. H-GAC has included tolling as an integral part of its financial planning strategy for the Grand Parkway as documented in their 2035 RTP Update plan.

Only the new controlled-access tolled highway (known as the Build Alternative) was found to fully meet the need and purpose for the project and was advanced for detailed study in the FEIS. The No-Build Alternative was advanced for baseline comparisons for the Build Alternative.

#### **A. No-Build Alternative**

The No-Build Alternative does not include the construction of Segments H and I-1 of the Grand Parkway. This alternative transportation mode consists of a continuation of the existing transportation facilities, including the construction of planned and/or committed roadways in the study area. Committed improvements are those projects included in the construction 2035 RTP Update, excluding new construction of the Grand Parkway Segments H and I-1 project, and includes all TSM, TDM, and modal transportation improvements. Based on analysis of these components individually and collectively, it was found that although the No-Build Alternative will result in some improvements to regional congestion due to planned improvements to the existing roadway network listed in the 2035 RTP Update, it does not adequately address the purpose and need for the proposed project.

The No-Build Alternative does not adequately address the need and purpose for the project. It will not reduce congestion or improve mobility on existing roadways within the study area and does not provide the needed hurricane evaluation for the Houston region. However, the No-Build Alternative was retained as a basis for comparison with the alternatives carried forward for detailed study.

## **B. Build Alternative**

### *1. Universe of Alternatives*

The transportation build alternatives known as the "universe of alternatives" were developed from three sources:

- Results from the Corridor Analysis Tool (CAT), a Geographic Information System (GIS)-based spatial analysis software
- Existing and previously-studied corridors, including those found in the Texas Department of Transportation's (TxDOT) Environmental Overview of the Grand Parkway, the City of Houston's 2007 Major Thoroughfare Map, the Mont Belvieu Comprehensive Plan, the H-GAC's 2035 RTP Update, and 2005 public hearing exhibits for transfer of the Lake Houston Wilderness Park from Texas Parks and Wildlife Department (TPWD) to the City of Houston
- Alternatives generated by the study team incorporating public and agency input

To evaluate the universe of alternatives, a broad set of initial criteria was used. To be conservative, an 800-foot-wide corridor was established for identifying potential impacts. The universe of alternatives was studied in multidiscipline team workshops using professional judgment and input received from the first series of public scoping meetings. The study team performed a constraints analysis on the universe of alternatives. Due to both agency and public input, it was determined early in scoping that parklands and any potential habitat for threatened and endangered species should be avoided whenever possible.

### *2. Preliminary Alternatives*

Corridors were assessed utilizing alternatives analysis screening criteria, and those warranting further study were assessed as preliminary alternatives. The preliminary alternatives traversed a wide band of the study area and were divided into three sections—A, B, and C—for further analysis. The section limits were established where several alternatives passed through a common point of intersection before dispersing again. This common point was used as a natural divide between adjacent sections. Section A begins at US 59 N/I-69 and proceeds east, ending near the East Fork of the San Jacinto River, east of the Lake Houston Wilderness Park. Section B proceeds southeast from Section A, crossing FM 1960, and staying southwest of Dayton to approximately 1 mile south of US 90. Section C proceeds south from Section B, through the City of Mont Belvieu, to I-10 E. The portions of the alternatives within each section were then independently studied and compared for impacts. This allowed the study team to compare the alternatives at a more detailed level and then combine various sections to create more flexibility in consideration of the overall alternatives.

The 800-foot-wide corridor was used to quantify the impacts of the preliminary alternatives for comparison. The study team obtained outputs of all quantifiable impacts through CAT analysis. To complete the evaluation of preliminary alternatives, a second series of public scoping meetings was held on May 8 and 9, 2007. The universe of alternatives and preliminary alternatives were presented, as well as the recommendations for reasonable alternatives. Public input was evaluated and incorporated into the preliminary alternatives evaluation. Multidiscipline team workshops were conducted to review the technical analyses, public input, project purpose and need, and to recommend the alternatives to be carried forward for further study.

### *3. Transportation Mode Study*

An analysis was conducted for the 10 Reasonable Alternatives against the No-build Alternative.

### **Build Alternatives**

The alternatives analysis process followed a sequential and logical methodology designed to evaluate alternatives for their ability to meet the purpose and need of the proposed project. Other considerations included avoidance and/or minimization of adverse environmental impacts and public input. Alternatives that met these criteria were advanced to the next phase of study. Alternative improvement measures comprising TSM, TDM, bus transit, rail transit, and HOV/HOT lanes alternatives were eliminated from detailed study.

### *4. Reasonable Alternatives*

Following refinement, the preliminary alternatives recommended for further study within each of the three sections were combined to form complete end-to-end reasonable alternatives from US 59 N/I-69 to I-10 E for a comprehensive analysis of impacts for each alternative. All possible combinations from the three different sections were formed. The result was 10 reasonable build alternatives plus the No-Build Alternative, resulting in 11 total reasonable alternatives. The reasonable alternatives to be carried forward for further study are listed in Table 1. Within the Segments H and I-1 study area, the 10 Reasonable Build Alternatives will meet the purpose and need of the project while avoiding and/or minimizing potential environmental impacts.

**Table 1: Reasonable Alternatives**

Reasonable Alternative	Description
1	No-Build
2	A-2, B-1, C-2
3	A-2, B-1, C-3
4	A-2, B-2, C-2
5	A-2, B-2, C-3
6	A-2, B-5, C-6
7	A-4, B-1, C-2
8	A-4, B-1, C-3
9	A-4, B-2, C-2
10	A-4, B-2, C-3
11	A-4, B-5, C-6

Source: Study Team, 2007

#### *5. Recommended Alternative*

After careful review of public and agency input and environmental, engineering, and traffic criteria, Reasonable Alternative 10 (A-4, B-2, C-3) was selected as the Recommended Alternative evaluated in the DEIS and to be carried forward into the FEIS for further detailed evaluation. A discussion of the reasons for selection of Alternative 10 is discussed below.

#### Description of the Recommended Alternative Alignment

The northern portion of the Recommended Alternative provides direct connectivity with Grand Parkway Segment G. This connection to Segment G is important as it allows traffic direct access to I-45, which is officially designated as an evacuation route. Without a direct connection to Segment G, evacuating traffic from Segment H headed to I-45 will have to exit onto US 59 N/I-69 and travel south in order to get to Grand Parkway Segment G. The southern portion of the Recommended Alternative also provides a direct connection to Grand Parkway Segment I-2. This also provides improved connectivity during evacuations.

On the north end, the Recommended Alternative follows the existing FM 1485 alignment. This is beneficial for the Lake Houston Wilderness Park as it provides direct access for traffic to and from the Grand Parkway Segments H and I-1. An important benefit of the Recommended Alternative on the north end is the safety improvement to FM 1485. The Recommended Alternative includes the reconstruction of FM 1485 from a two-lane roadway,

to a pair of one-way non-tolled frontage roads with two travel lanes in each direction on either side of the Grand Parkway Segments H and I-1 toll facility. In addition to increasing the capacity on FM 1485, the Recommended Alternative is projected to reduce the average daily traffic (ADT) on FM 1485 from 28,800 vehicles per day (vpd) in 2039 under the No-Build Alternative to 22,400 vpd in the Build Alternative. The increase in capacity for FM 1485 and the reduction in traffic volume will result in a reduction in the crash rate and an improvement in safety. These benefits are applicable to Reasonable Alternatives 7-11. The central portion of the Recommended Alternative is located closer to the center of the study area, which has the benefit of serving a greater portion of the study area. This is directly reflected by the higher travel demand attracted by Reasonable Alternatives 4, 5, 6, 9, 10, and 11. This is evident when comparing Reasonable Alternative 8 and the Recommended Alternative, for example. These alternatives follow the same alignment in the north and south and the only difference is in the central portion of the alternative where Reasonable Alternative 8 is comprised of Preliminary Alternative B-1 (closer to Dayton) and the Recommended Alternative is comprised of Preliminary Alternative B-2. The weighted ADT volume for the Recommended Alternative as a whole is 5,000 vpd more than for Reasonable Alternative 8 in the year 2039.

The southern portion of the Recommended Alternative lies west of the UPRR, improving transportation system connections for what is currently an underserved area. With SH 146 located east of the UPRR, a new facility located west of the UPRR will help support the economic growth this area is anticipated to experience in the future. Location of the proposed Grand Parkway Segments H and I-1 at a distance greater than 1 mile from SH 146 will better complement the area transportation network than having the Grand Parkway Segments H and I-1 either along or immediately adjacent to the existing SH 146 facility. As such, the Recommended Alternative, which passes west of the UPRR and SH 146, is more favorable than Reasonable Alternatives 2, 4, 7, and 9, which all pass between the UPRR and SH 146. The Recommended Alternative is also more favorable than Reasonable Alternatives 6 and 11, the westernmost corridors closer to Cedar Bayou, due to the floodplain and drainage impacts associated with these alternatives. All of the benefits described in the southern portion of the study area are realized by Reasonable Alternatives 3, 5, 8 and 10.

Considering the benefits in the northern, central, and southern portions of the study area discussed above, the Recommended Alternative is the alternative that best realizes the benefits described in all three portions of the study area.

The Recommended Alternative (A-4, B-2, C-3) is proposed as a four-lane rural controlled-access toll road on a new location meeting the purpose and need of the proposed project.

The Recommended Alternative will begin at US 59 N/I-69 and continue to I-10 E, and will consist of an open-ditch design within a 400-foot-wide ROW.

#### *6. Selected Alternative*

Subsequent to the August 2011 public hearings, coordination with the public, stakeholders, and adjacent property owners resulted in a slightly modified or revised alignment of Recommended Alternative 10 to create the Preferred Alternative 10R (Selected Alternative) (Exhibit 1). The primary goal in the consideration of an alignment revision was to continue to practice avoidance as well as working with property owners to determine the alignment that best fit the purpose and need of the proposed project as well as accommodating the property owners' plans for their tracts. A MAPO was held in May 2013 to present an alignment shift in the proximity of FM 1960. This alignment shift was made to address comments received from the public hearing, as well as the opportunity to practice avoidance of impacts to residential properties. The MAPO was held to inform the newly-impacted property owners of the alignment shift. The property owners that were previously impacted were also invited to attend the meeting. The Preferred Alternative 10R (Selected Alternative) was carried forward in the FEIS for further detailed evaluation.

#### Description of the Selected Alternative Alignment Revisions

The revisions creating the Selected Alternative include two separate alignment revisions on FM 1485, two separate alignment revisions due to development north and south of FM 1960, and two separate alignment revisions south of US 90. Refer to FEIS Volume 1, Section 2.5.3, for a detailed description of the revisions. Other than these minor revisions, the Preferred Alternative 10R (Selected Alternative) in the FEIS was equivalent to the Recommended Alternative as presented in the DEIS.

The Selected Alternative combines Sections A-4, B-2, and C-3, and is approximately 37.4 miles in length, beginning at Community Drive on US 59 N/I-69 approximately 1.5 miles south of FM 1485. It then bridges over Loop 494 and the UPRR line and continues in a northeasterly direction for approximately 3 miles crossing Caney Creek. The alignment proceeds, turning near Peach Creek where it overlaps with FM 1485 north of Lake Houston Wilderness Park for approximately 3.5 miles and also crosses the East Fork San Jacinto River. The Selected Alternative continues east of FM 1485 for roughly 2.5 miles before turning southeast for approximately 13 miles, crossing over the UPRR line, FM 1960, and US 90 approximately 3 miles east of Dayton. Approximately 3 miles south of US 90, it turns in a southwesterly direction crossing FM 1413 and traversing south while staying west of the UPRR line. It then turns east bridging over the railroad and crosses SH 146 and FM 565 west of Mont Belvieu. The Selected Alternative eventually terminates at I-10 E near the I-2 segment of Grand Parkway. Approximately 3 miles of the Selected Alternative follows

existing FM 1485 with the remaining 34.4 miles on a new location. The Selected Alternative includes the reconstruction of FM 1485 from a two-lane roadway to a pair of one-way non-tolled frontage roads with two travel lanes in each direction on either side of the Grand Parkway Segments H and I-1 toll facility.

Selected Alternative is proposed as a four-lane, rural, controlled-access toll road on a new location and will fulfill the purpose and need of the proposed project. The total length of the Selected Alternative is approximately 37.4 miles and will require approximately 1,933 acres of ROW.

The Selected Alternative is the alternative that best realizes the benefits described in all three portions of the study area. This ROD approves the selection of the Preferred Alternative 10R alignment, as presented in the FEIS Volume 1, Section 2.5.3, as the Selected Alternative. The Selected Alternative best serves the need for and the purpose of this project.

### **C. Conclusion**

Table 2 below summarizes the impacts within the ROW for each of the Reasonable Alternatives as well as the Selected Alternative. The FEIS documents the process used to identify the Selected Alternative, and by closer examination of each option within the project area, the Selected Alternative is the Environmentally Preferred Alternative based on analysis and comparison of the potential effects on the physical, biological, and human environments of each alternative alignment and public and agency input from the public involvement process. In accordance with USC Title 23, Chapter 1, Section 109 (c)(2)(B), development of the Grand Parkway Segments H and I-1 project alignments included consideration for context-sensitive solutions and guidance provided in the FHWA publication, "Flexibility in Highway Design" (published by FHWA in 1997). As stated in FHWA guidance, "For each potential project, designers are faced with the task of balancing the need for the highway improvement with the need to safely integrate the design into the surrounding natural and human environments."

The Selected Alternative provides the best opportunity to avoid and minimize impacts to the natural, social, and cultural environment while meeting the transportation need and purpose for the area. The impacts of the Selected Alternative were calculated using the most detailed design, which is a 400-foot ROW width except at interchanges with US 59/I-69, US 90, and I-10 E, where the ROW expands to accommodate the interchanges. Approximately 1,933 acres of new ROW will be required for the Selected Alternative to accommodate the transportation facility, as well as utility line adjustments. Public feedback and preference was taken into consideration throughout the alternatives analysis evaluation. In addition to public meetings, coordination meetings with regulatory agencies have been held.

The analysis documented in the FEIS Volume I, public and agency feedback, as well as continuous updates to land use data and public and agency coordination since the publication of the DEIS in May 2011 and publication of the FEIS in May 2014, resulted in a Selected Alternative based on environmental constraints, engineering constraints, and public preference.

In determining the Environmentally Preferred Alternative, the FHWA and TxDOT balanced the impacts and factors of each alternative. Avoidance, minimization, and mitigation to natural resources as described in the FEIS will continue as the project develops. Table 2 presents the impacts by alternative alignment, including the Selected Alternative as compared to the other alignment alternatives as they were presented in the FEIS (February 2014).

**Table 2: Environmental Constraints Matrix for the Reasonable Alternatives and the Selected Alternative**

Reasonable Alternative	Length (miles)	Land Use												Natural Resources										Cultural Resources				Noise	Socioeconomic/EJ				Water Wells		Hazmat							
		Commercial (acres)	Agricultural (acres) <sup>b</sup>	Residential (acres)	Schools (acres)	Churches (acres of parcels) <sup>f</sup>	Industrial (acres)	Preliminary Platted (acres)	Undeveloped Platted (acres)	Managed Lands (acres)	Other Undeveloped (acres)	Total Proposed ROW (acres)	Visual and Potential Access Impacts	Wetlands		Streams		Threatened and Endangered Species	Species of Concern	Wildlife Habitat <sup>d</sup>	Floodway	100-Year Floodplain (acres)	Prime Farmlands (acres)	Century Farms	Recorded Archeological Sites	Archeological High Probability Areas (acres)	Historic Resources	Cemeteries	Number of Representative Noise Receivers	Residential Displacements <sup>g</sup>	Commercial Displacements	Churches Displaced	Changes in Community Cohesion	Environmental Justice Issues	Public	Private	Regulated Sites	Oil Wells	Other Sites of Concern			
														Forested Wetlands (acres)	Non-Forested Wetlands (acres)	Impaired Streams Crossed	Ecologically Significant Streams Crossed																									
1	0	0	0	0	0	0	0	0	0	0	0	0	No	0	0	-	-	-	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	38.2	0	1008	56	0	0	31	22	132	0	603	1852.1	Yes	4.4	40.9	-	2	-	-	674.9	38.5	84.1	906	-	0	1981	0	0	48	6	0	0	Yes	Yes	5	2	4	8	2			
3	39.4	0	1058	56	0	0	34	22	132	0	608	1910.3	Yes	23.7	38.6	-	2	-	-	694.8	38.5	84.1	917	-	0	996	0	0	49	6	0	0	Yes	Yes	5	2	8	9	2			
4	35.4	0	922	41	0	0	31	22	132	0	568	1716.4	Yes	2.8	19.1	-	2	-	-	635.5	46.4	129.0	900	-	0	1622	0	0	7	10	0	0	Yes	Yes	3	2	3	15	2			
5	36.6	0	972	41	0	0	34	22	132	0	574	1774.5	Yes	22.1	16.8	-	2	-	-	655.4	46.4	129.0	911	-	0	1637	0	0	8	10	0	0	Yes	Yes	3	2	7	16	2			
6	35.4	0	634	53	0	0	32	37	132	0	827	1715.0	Yes	27.3	23.1	3 <sup>h</sup>	2	-	-	808.6	57.9	183.0	1071	-	0	1180	0	0	35	7	0	0	Yes	Yes	3	1	6	13	2			
7	39.7	6	1008	152	0	7	35	0	0	0	717	1924.8	Yes	6.1	41.2	-	3	-	-	663.9	35.4	113.6	941	-	0	2040	1	0	120	37	3	2	Yes	Yes	9	3	7	8	4			
8	41.0	6	1058	152	0	7	38	0	0	0	727	1987.9	Yes	25.4	38.8	-	3	-	-	683.7	35.4	113.6	952	-	0	2055	1	0	121	37	3	2	Yes	Yes	9	3	11	9	4			
9	36.9	6	922	138	0	7	35	0	0	0	681	1789.1	Yes	4.5	19.3	-	3	-	-	824.4	43.3	158.6	935	-	0	1681	1	0	79	41	3	2	Yes	Yes	7	3	6	15	4			
10	37.4	6	972	138	0	7	29	0	0	0	595	1813.3	Yes	23.8	17.0	-	3	-	-	644.3	36.2	158.6	946	-	0	1696	1	1	80	41	3	2	Yes	Yes	7	3	10	16	4			
10R <sup>a</sup>	37.4	7	1072	130	2	3	22	0	0	11	687	1933.0	Yes	26.5	15.5	-	3	-	-	664.8	43.26	158.6	960	-	0	1696	1	0	38	77	19	1	No	No	7	0	9	11	9			
11	37.0	6	634	150	0	7	36	16	0	0	944	1793.9	Yes	28.9	23.3	3 <sup>h</sup>	3	-	-	797.5	54.5	212.5	1106	-	0	1239	1	0	107	38	3	2	Yes	Yes	7	2	9	13	4			

Source: Study Team, 2007

<sup>h</sup> The same stream (Cedar Bayou) is crossed 3 different times

"-" No resource located within alternative

<sup>a</sup> Preferred/Selected Alternative

<sup>b</sup> Acreages have been determined using H-GAC data

<sup>c</sup> 7 acres of church parcels consist of two separate parcels that contain one church each that would be displaced; 10R would displace 3 acres of church property, but only one church structure

<sup>d</sup> Acreages presented are a summary of wetlands, forested wetlands, non-forested wetlands, and forested areas. These acreages exclude agricultural land.

<sup>e</sup> 10R represents 2014 land use updates. Displacements are greater in 10R primarily as a result of the shift to avoid the cemetery north of FM 1485 (which was discovered after the DEIS).

#### **IV. SECTION 4(f) AND SECTION 6(f)**

The Department of Transportation Act of 1966 (as amended and codified in 49 USC, Section 303) prohibits the Secretary of Transportation from approving any program or project that "...requires the use of publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance...or land of an historic site of national, state, or local significance...unless there is no feasible or prudent alternative to the use of such land, and such program includes all possible planning to minimize harm to such [land]...from such use". Section 6(f) of the Land and Water Conservation Fund Act prohibits the conversion of property acquired or developed with a grant under the Land and Water Conservation Fund Act to a non-recreational site without the approval of the U.S. Department of Interior's (DOI) National Park Service. Section 6(f) directs the DOI to ensure that replacement lands of equal value, location, and usefulness are provided as conditions to such conversions.

As part of the NEPA process, FHWA has evaluated the Grand Parkway Segments H and I-1 project for Section 4(f) and Section 6(f) impacts pursuant to 49 USC, Section 303(c) and 23 CFR, Section 774. A *de minimis* Section 4(f) evaluation was prepared to address the potential impacts from the proposed project, as well as efforts to avoid, minimize, and mitigate impacts to the Lake Houston Wilderness Park. The proposed construction of the Selected Alternative will potentially impact 10.84 acres of the park; however, it will not adversely affect the features, attributes, or activities that qualify the Lake Houston Wilderness Park as a recreation area, and subsequently a Section 4(f) resource. The Selected Alternative will improve access to the Lake Houston Wilderness Park by enhancing the existing access points, which complies with the City of Houston's Lake Houston Wilderness Park Master Plan dated March 24, 2009. The improved park entrance design will be determined at a later date during the design phase of the project, with coordination with TxDOT, TPWD, and the City of Houston. No other parks or recreation areas, publicly-owned parklands, wildlife or waterfowl refuges, or known historic sites will be directly impacted by the Selected Alternative.

A Section 106 review and consultation proceeded in accordance with the First Amended Programmatic Agreement among the FHWA, TxDOT, the Texas State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP) regarding the implementation of Transportation Undertakings (PA-TU), as well as the Memorandum of Understanding (MOU) between the Texas Historical Commission (THC) and TxDOT.

TxDOT determined that four historic-age resources (Sites 031a, 031b, 038a, and 038b) are previously determined or recommended eligible for listing in the National Register of Historic Places (NRHP), FEIS Volume 1, Section 4.2.1.4, and Appendix J. Because the design is preliminary and detailed design plans are not yet available, it is not currently possible to evaluate effects to historic-age resources. Further information concerning the avoidance of direct and indirect impacts to NRHP-eligible resources will be addressed farther along in the

project development process. TxDOT Environmental Affairs Division (ENV) will make the final determinations of eligibility and effects and will coordinate with SHPO.

Over 56 percent of the area of potential effect (APE) was not tested. This included parcels where access was unobtainable, and the area of the alignment shift at FM 1960. These areas will need to be examined by a qualified archaeologist once right of entry has been secured. Additionally, 11 percent of the APE has previously been tested. These previous surveys did not locate any cultural resources within the current APE. The remaining 33 percent of the APE was examined for cultural resources. One previously unknown archaeological site was discovered (41MQ300) and its significance was evaluated by the project archeologist, under the supervision of TxDOT ENV archeologists. The site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the 33 percent that was tested. The coordination with THC was submitted on August 19, 2013, and THC concurred with the findings and recommendations.

If archeological sites are identified within the Selected Alternative, additional investigations may be necessary to determine if they are eligible for nomination to the NRHP. If unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA-TU and MOU, including development of a mitigation plan. This mitigation plan will be developed by TxDOT in consultation with the THC and FHWA. Design modifications may be sufficient to reduce the severity of the effect to a non-adverse level. Mitigation of unavoidable adverse effects typically includes archeological data recovery and full archival documentation. Section 4(f) coordination will only be performed for archeological sites warranting preservation in place.

No other publicly-owned recreation areas or parks will be directly affected by or are directly adjacent to the Selected Alternative. Therefore, no Section 4(f) or Section 6(f) public land takes are anticipated for any of the alternatives, nor is there a constructive use to any known Section 4(f) property by the Selected Alternative.

## **V. MEASURES TO MINIMIZE HARM**

During the project development process, refinements were made to the various alternatives to avoid or minimize impacts to sensitive environmental resources, where possible. Design and construction of Grand Parkway Segments H and I-1 project will include all practicable measures to continue to minimize harm to the environment. The FEIS presents detailed analyses and results to assess potential environmental impacts by the Selected Alternative (FEIS Volume I, Sections 4.1 through 4.22). For the resources/issues that will be impacted by the Selected Alternative, the following sections provide a summary of the impacts, the measures taken to

minimize harm, and the commitments to continue to minimize potential harm through the associated proposed mitigation. TxDOT and FHWA will require and ensure that all agencies/entities involved with the development of Grand Parkway Segments H and I-1 project follow all commitments of this ROD, mitigation regulations, and specific mitigation measures developed for this project and approved by TxDOT and FHWA.

## **A. Land Use**

The majority of the ROW consists of non-urban land uses. The Selected Alternative will convert developed and undeveloped land, forestland, and agricultural land to transportation use. In more-developed areas, impacts may also include visual and access-related issues relative to residences and communities. In rural areas, the decrease in farmland acreage and disruption of the physical fabric of farms will be the primary issues. Additional impacts to the entire study area may involve the expansion of residential and commercial development, especially in the vicinity of newly-created intersections.

All practicable avoidance and minimization of impacts to land use were used in the identification of the Selected Alternative. Grade separations will be provided for all railroad crossings and major arterial roadways that cross the Selected Alternative to avoid termination of through-travel, and there will be no frontage roads except where required along FM 1485. Final ROW and access determinations will be evaluated during the design phase.

## **B. Community Impacts**

### *1. Social*

Community impacts expected as a result of the Selected Alternative include potential increase in property values adjacent to the project, particularly around interchanges; potential degradation of aesthetics and community character for individual single-family homes and the residential developments adjacent to the facility; and temporary construction impacts.

The Environmental Justice (EJ) Evaluation for the Selected Alternative indicated that the potential for disproportionately high and/or adverse impacts on the minority and/or low-income population will be low. The Origin and Destination analysis showed that no significant EJ impacts will result from the project and none of the proposed displacements (Table 2) are located within a block group with a median household income below that of the current poverty guidelines. Therefore, the Selected Alternative is in compliance with Executive Order (EO) 12898 on EJ and Title VI of the Civil Rights Act of 1964, 42 USC Section 2000d, et seq; and, it is also in compliance with EO 13166 on Persons with Limited English Proficiency.

Consideration was also given to the fact that this project will be a toll road. The results of the analysis indicated that there will be no disproportionate impact of a tolled versus non-tolled roadway in terms of minority and/or low-income populations. As a result, no project-specific mitigation related to environmental justice will be necessary.

Impacts to community facilities and services were minimized to the greatest extent possible. The Selected Alternative will displace one church, Peach Creek Baptist Church, and take approximately 3 acres of the front parking lot from East River Baptist Church. Additionally, the Selected Alternative will improve access to the Lake Houston Wilderness Park by enhancing the existing access points, which complies with the City of Houston's Lake Houston Park Master Plan dated March 24, 2009. No cemeteries are located within the proposed ROW for the Selected Alternative.

Existing roads used for property access that may be split by the Selected Alternative will be realigned in accordance with TxDOT policies to accommodate the property owner's access needs. All commitments between the City of Houston (Lake Houston Wilderness Park) and TxDOT will be honored for the Selected Alternative.

Additionally, 77 residential (including 19 barns and sheds) 19 commercial structures, one church and two utility displacements will result by the Selected Alternative. In addition to the potential displacements, an aerial easement will be required from the Kingwood College north of Community Drive for a direct connector from westbound Grand Parkway to northbound US 59 N/I-69. Proposed ROW is also required from the parcel containing the Fighting 15 Volunteer Firefighters storage structure located on FM 1485 just east of the Lake Houston Wilderness Park. However, the Fighting 15 Volunteer Firefighters storage structure will not be displaced, and access to community services is not anticipated to be affected.

Acquisition of ROW will be completed in accordance with TxDOT's Procedures for Purchase of Right-of-Way and the provisions of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

Every effort has been made in the selection of the Selected Alternative to avoid or minimize adverse effects to sensitive resources. During the construction phase, short-term effects related to noise and dust will be minimized. Traffic delays will be minimized through coordination among TxDOT, contractors, and affected neighborhoods or landowners (in the areas immediately adjacent to the proposed ROW), and by developing a construction schedule that will allow for a minimum delay for movement across the proposed ROW. Also, efforts will be made to provide appropriate construction detours, informative signage, and access to residences, farms, businesses, and community facilities where practicable. Grade separations will be incorporated into the design of the Selected Alternative, allowing

adequate movement of school buses and emergency vehicles across the proposed Segment C project area.

## *2. Economics*

The Grand Parkway Segments H and I-1 project will have positive impacts on the local, regional, and state economies across the cumulative horizon years. The economic impacts from construction expenditures are projected to be positive and relatively large during the years of Phase I construction (i.e., 2016 through 2018). As funding becomes available for Phase II, there will be another cycle of positive economic impact. After the Phase I and Phase II construction periods, there will be a negative economic impact in the years immediately following. The reversal reflects the relative economic negative impact following the pronounced spending that is suddenly curtailed at the completion of the project construction. In the absence of similar construction spending patterns, the labor and capital dedicated for the construction activities leave the area for opportunities elsewhere.

The proposed project is expected to bring employment and economic activity to the Houston regional and statewide economies. The combined (of the different impact categories) cumulative (over the entire 2016-2039 analysis horizon) total employment impact is projected to amount to almost 21,100 job-years in the Houston Region and 24,500 job-years Statewide. Corresponding economic activity (Gross Regional Product) impacts are projected to measure \$2.1 billion and \$2.4 billion in increased value-added for the Houston Region and Statewide, respectively. TxDOT will enter into one or more agreements with the counties in which the Grand Parkway is located. These agreements will provide for the assignment of responsibilities for the development and financing of the various segments of the Grand Parkway, including provisions relating to the use of the toll revenues from segments of the Grand Parkway to pay for the costs of the other segments. Under the existing agreements, TxDOT and the counties agreed that the Grand Parkway will be developed under definitive project agreements in which toll revenues from each segment of the Grand Parkway will not be used for any purpose other than the development of Grand Parkway until the ultimate scope is completed.

Overall, the Selected Alternative will encourage economic growth and jobs in Montgomery, Harris, Liberty, and Chambers Counties and the entire Houston region.

## *3. Pedestrians and Bicyclists*

The Selected Alternative will not adversely impact any existing bicycle or pedestrian network. No new bicycle or pedestrian facilities are proposed for the controlled-access portion of the facility. The restriction of bicycle and pedestrian use of a controlled-access facility is permitted under Texas Transportation Code 545.0651. The proposed project will

consider sidewalks on the non-tolled portion. Where sidewalks are considered, they will be compliant with the Texas Accessibility Standards, the Americans with Disabilities Act Accessibility Guidelines, and TxDOT's bicycle and pedestrian standards. The Grand Parkway Segments H and I-1 project, as proposed, will accommodate existing and future crossings for both pedestrians and bicyclists at intersections, bridges, and over/underpasses affecting or providing direct access to designated pedestrian or bicycle facilities. In the event that a bicycle or pedestrian facility is in place prior to the proposed project, the facility will be reconstructed to maintain continuity and function. The flow of bicycle and pedestrian traffic may be affected by the Grand Parkway Segments H and I-1 at grade separations with access ramps. The proposed project will minimize adverse effects to bicyclists and pedestrians by providing crosswalks, walk signals, and appropriate signage at grade-separated intersections (entrance ramp access points).

### **C. Visual and Aesthetic Qualities**

Construction of the Selected Alternative will have a visual impact on adjacent areas. Visual impacts will take two forms: views of the proposed highway from various points along the alternatives; and views from the proposed highway of the surrounding landscape. Entrance and exit ramps will be lighted; therefore, the presence of roadway illumination light fixtures as well as additional light cast from these fixtures could be considered additional negative visual and aesthetic impacts.

The Selected Alternative will be constructed predominantly at-grade with vegetated roadsides, ROW, and medians. The amount of elevated roadway structure will be limited to areas where the proposed project will cross another roadway or a rail line. Potential views of the at-grade portions of the roadway will be obscured or minimized by the relatively flat topography and forest vegetation. Views of the surrounding landscape from the proposed project could be considered a beneficial impact as travelers pass through a predominantly forested and rural vista marked by dense forests, waterways, and scattered agricultural pastoral scenes. Viewshed opportunities may be enhanced at elevated grade separations that will allow motorists expanded views of agricultural fields and pastures, pine-hardwood forests, and rural and suburban communities.

The proposed project will be designed to create an aesthetically and visually pleasing experience for the user and all viewers of the facility. An example of aesthetic treatments that may be proposed will be the placement of vegetative buffer strips along the ROW lines of the Selected Alternative.

### **D. Soils and Farmlands**

Prime and statewide important farmland soils were avoided where practicable. However, due to the large acreage of these soils in Montgomery, Harris, Liberty, and Chambers Counties, the

Selected Alternative will have an unavoidable effect on approximately 960 acres of prime farmland soils. Bisection of farms that will occur under the Selected Alternative will convert existing farmland or prime farmland soils to transportation land use. Where possible, the Selected Alternative was aligned along existing property lines to minimize the splitting or fragmentation of farms. The use of silt fences and other erosion control measures during construction will prevent erosion of native soils and reduce the runoff of soil particles into area streams. Furthermore, implementing revegetation of native species along constructed corridors will help prevent future erosion after construction and thereby increase the success rate of any revegetation.

To the maximum extent possible and where required, material excavated from the road cuts will be used as fill material. If suitable soils are not found within the ROW, they will be obtained from other sites within a reasonable haul distance of the project.

Soil erosion and sedimentation will be minimized by the use, where practicable and feasible, of best management practices (BMP).

No impacts to the study area's topography, soils, or geologic resources are anticipated as a result of the Selected Alternative.

The need for mitigation of geologic resources is not anticipated. Mitigation for prime farmlands is not anticipated to be necessary, per the Natural Resources Conservation Service (NRCS) ranking.

## **E. Air Quality**

The Houston area is in attainment for all the criteria pollutants except for 8-hour ozone (O<sub>3</sub>). The U.S. Environmental Protection Agency (EPA) designates the Houston-Galveston-Brazoria area, including Montgomery, Harris, Liberty, and Chambers Counties, as a marginal O<sub>3</sub> non-attainment area in accordance with the 2008 8-hour O<sub>3</sub> standard. The EPA regulations require that a non-attainment area demonstrate that its RTP and TIP conform to the intent of the SIP to attain the 8-hour O<sub>3</sub> standard by the year 2019. It is noted that the Houston-Galveston area has until July 20, 2013, to demonstrate conformity of its RTP and TIP in accordance with the 2008 8-hour O<sub>3</sub> standard. Additionally, the Houston-Galveston area has until 2015 to attain the 2008 8-hour O<sub>3</sub> standard. The proposed Grand Parkway Segments H and I-1 project is included in H-GAC's 2035 RTP Update and FY 2013–2016 TIP, as amended. This 2035 RTP Update and the 2013–2016 TIP, as amended, were found to conform with the SIP by the EPA and FHWA on July 17, 2013, and July 19, 2013, respectively.

A qualitative mobile source air toxic (MSAT) assessment has been provided relative to various alternatives of MSAT emissions and has acknowledged that the Build Alternative of the project may result in increased exposure to MSAT emissions in certain locations, although the

concentrations and duration of exposures are uncertain, and because of the uncertainty, the health effects from these emissions cannot be estimated (see FEIS Volume I, Section 4.4.4).

Emissions from diesel-powered and other construction equipment will occur under the Selected Alternative. These construction emissions will be temporary in nature. As each task is completed, the equipment will move out of the immediate area.

## **F. Noise Analysis**

Traffic noise from the Selected Alternative will impact 18 representative receivers, all representing a total of 38 residences and one business. Noise abatement measures were analyzed for the receiver locations impacted by the Selected Alternative. In determining and providing abatement measure for traffic noise impacts, primary consideration was given to exterior areas where frequent human use occurs and lower noise levels will be of benefit. The FEIS indicated that noise barriers will not be feasible and/or reasonable at these locations and therefore are not proposed for incorporation into the Selected Alternative subject to the completion of the project design, utility evaluation, and polling of adjacent owners (see FEIS Volume I, Section 4.5.3).

## **G. Water Quality**

### *1. Surface Water*

Quality and quantity of stormwater runoff will be altered by the Selected Alternative in two ways: (1) direct effects from construction, and (2) effects from long-term operation of the roadway.

Construction of the Selected Alternative will produce changes in the quantity and quality of the runoff from the paved roadway. The Selected Alternative will encompass only a small percentage of the watershed for each of the streams it crosses. According to the 2010 Texas 303(d) list, one waterbody (Cedar Bayou Above Tidal [Segment ID 0902]) has impaired segments that cross the Selected Alternative. No impacts to the constituent of concern by the proposed project are anticipated.

TPWD identifies three ecologically important stream segments within the Grand Parkway Segments H and I-1 study area. Caney Creek, from the confluence with East Fork San Jacinto River upstream to its headwaters northeast of New Waverly in Walker County, serves an important biological function by providing bottomland hardwood habitat that displays substantial overall habitat value and high biodiversity. East Fork San Jacinto River, from the confluence with Caney Creek in Harris County upstream to US 190 in Walker County, functions as groundwater recharge of the Chicot aquifer, and its aquatic habitat displays substantial overall value, including high water quality, high biodiversity of aquatic life, and high aesthetic value. Luce Bayou, from the confluence with Lake Houston in Harris

County upstream to its headwaters in Liberty County, provides bottomland hardwood and aquatic habitats with substantial overall value. Impacts on three ecologically substantial stream segments from increased surface water runoff will occur as a result of the Selected Alternative.

Because the Selected Alternative has an ROW area substantially greater than 5 acres, TxDOT will be required to comply with the Texas Council on Environmental Quality (TCEQ) Texas Pollution Discharge Elimination System (TPDES) General Permit for Industrial Activity. An NOI in accordance with the TPDES will be coordinated with TCEQ prior to construction activities stating that TxDOT will have a Storm Water Pollution Prevention Plan (SWPPP) in place during construction. The project SWPPP will be prepared pursuant to the TxDOT manual, Storm Water Management Guidelines of the Construction Activities. To minimize impacts to water quality during construction, the proposed project will utilize both temporary and permanent erosion control practices from TxDOT's manual, 2004 Standard Specifications for Construction of Highways, Streets, and Bridges. These practices will be in place prior to and during the construction period, and will be maintained throughout the construction of the proposed project. The SWPPP includes an erosion control plan and specifications to prevent/minimize sediment-laden runoff from entering the study area streams. The erosion control plan may include, but is not limited to, the use of silt fence, inlet protection barriers, hay bales, sediment traps and/or basins, and seeding or sodding of excavated soil. Exposure of the soil surface will be minimized during any clearing activities in order to maintain soil integrity. At the completion of construction, the TxDOT specifications, *Seeding for Erosion Control* will be followed to restore and reseed all disturbed areas.

TxDOT has its own stormwater management guidelines and BMPs for construction activities that will be used in development of the SWPPP. Once construction has been completed, a Notice of Termination will be filed per permit requirements. Additionally, in accordance with Clean Water Act Section 402 where stormwater from the proposed construction project will discharge to a Municipal Separate Storm Sewer System (MS4), the MS4 permittee will be notified of the construction activity.

## 2. *Groundwater*

The Selected Alternative will have a nominal impact to regional groundwater resources. A review of well records and published groundwater reports of the TCEQ and the Texas Water Development Board (TWDB) indicated that a total of seven public water supply wells and no private water wells are located within the proposed ROW of the Selected Alternative; however, structures associated with the Peach Creek Oaks Consumers Water Company are located with the proposed ROW.

Avoidance and minimization of impacts to the public and private water supply wells have been incorporated into the preliminary design of the Selected Alternative and will be refined during final design of the project. Measures will include minor alignment shifts to minimize the impact to sources of water protection areas and/or avoid direct impact to the public and private water supply wells. Any water supply wells affected by construction will be mitigated using measures such as providing a new well or connection to the public water system, if feasible. Wells taken out of service will be sealed in accordance with the specifications outlined by the Water Well Drillers Advisory Council.

A stormwater management plan will be developed in accordance with FHWA and TxDOT criteria to reduce the risk of contaminating local aquifers. The stormwater management basins will collect and control spills of hazardous materials, sediments, and other particulates found in highway runoff. The use of established BMPs will be employed to prevent highway stormwater runoff from entering the aquifer at wellheads.

An emergency spill control pollution prevention plan will be developed and coordinated with local officials. Special stormwater management measures will be designated to isolate potentially hazardous spills, for treatment and removal, before entering an aquifer. The BMPs listed in the FEIS, Section 7.3.1, will be considered and incorporated into the plans during the final design of the proposed project.

## **H. Waters of the U.S., Including Wetlands and Vegetative Communities**

The Selected Alternative was developed in accordance with EO 11990, Protection of Wetlands, which directs federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands on federal property. The identification of wetlands was conducted in a phased approach. In the first phase, color aerial photographs, National Wetland Inventory (NWI) maps, and published soil survey maps were reviewed to determine the location of potential wetlands within the Reasonable Alternatives. Observations at locations in which right of entry was granted were used to verify desktop findings. In the next phase, field delineations were conducted on 49 percent of the ROW of the Selected Alternative where access was granted. Where access was granted for on-site investigations, the boundaries of the potential wetland areas were flagged and transferred to an aerial background image managed with GIS, and classified as agricultural, forested, or non-forested wetlands. The wetlands were also characterized as adjacent or isolated. This process allowed the study team to avoid wetland impacts where possible and to minimize those impacts that were unavoidable. Properties without access required evaluation of aerial photographs and digital area calculations to determine acreage.

Six vegetation communities will potentially be impacted by the Selected Alternative: agricultural vegetation, agricultural wetland, forest, non-forested wetland, forested wetland, and riparian

zones. The Selected Alternative encompasses a total of 1,933 acres. Approximately 70 percent, or 1,533 acres, has designated vegetative land covers. This vegetative acreage does not include residential, commercial, industrial, transportation, streams and canals, lakes, or other areas that are not included in the six vegetation types. Impacts do not account for potential bridging scenarios.

Effort was made during the development and advancement of the Selected Alternative to avoid and minimize impacts to wetlands and vegetative communities to the greatest extent possible.

Per the MOU with the TPWD, Texas Administrative Code (TAC) 43(1)(2)(B)(22.2), coordination will be initiated with the TPWD if the project met any of the coordination triggers. The coordination triggers were met by the proposed project because the proposed project:

- Does involve more than 1 acre of new ROW within floodplains or creek drainages in rural or undeveloped urban areas; does not involve a channel realignment involving the creation of new drainageways or other excavation impacting more than 1 acre of mature woody vegetation.
- Does affect dense mature brush or woody vegetation, including any significant remnant native vegetation (e.g., undisturbed native prairie or bottomland hardwood, etc.).
- Is within range of suitable habitat for any federal- or state-listed threatened or endangered species.

Therefore, coordination with the TPWD will be required. The proposed project does not have previous environmental clearance. During the next phase of design, the Grand Parkway Association (GPA) and TxDOT will determine if the proposed project:

- Does not require channel modifications to streams, rivers, or water.
- Does not involve mitigation plans or otherwise involve proposals to redress project impacts on fish, wildlife, or plant resources.

As part of the U.S. Army Corps of Engineers (USACE) Section 404 permit process, a draft compensatory wetland mitigation plan will be developed and coordinated with the appropriate agencies. This plan will outline in detail the specific commitments that TxDOT will make to compensate accordingly for impacts to wetlands and vegetative communities.

Per the USACE Section 404(b)(1) guidelines, mitigation includes measures which avoid, minimize, and/or compensate for unavoidable losses to resources that cannot be further minimized. The assessment of mitigation measures (avoidance, minimization, and compensation) is an integral part of the NEPA/Section 404 process. The preferred means of mitigation is avoidance, which is inherent in impact evaluation analysis and alternative development/assessment. For those adverse impacts that cannot be avoided, other mitigation efforts must be considered. These efforts first include minimization of potentially adverse

impacts, and second, compensation for those remaining adverse impacts that cannot be further reduced.

Preliminary mitigation options include on-site mitigation and off-site mitigation. On-site mitigation (i.e., immediately adjacent to the new highway) may include stabilization of disturbed stream banks, revegetation, and creation or enhancement of wetlands within the final Grand Parkway Segments H and I-1 ROW. Creation or enhancement of wetlands will primarily involve development of shallow forested wetlands very similar in function and value to the forested wetlands impacted during roadway construction.

Off-site mitigation for wetlands, such as the purchase of credits at a mitigation bank or permittee-responsible mitigation, must be designed to reestablish, to the extent reasonable, similar wetland functions, values, and types as the pre-existing site. Off-site mitigation will be conducted in the same geographic vicinity or in proximity to and most likely within the same watershed as the project, particularly for wetlands. Waters of the U.S. mitigation may include expanding existing wetlands, restoration with hydrophytic species, or regulating water levels in impoundments or streams.

Natural resource agencies (including TPWD, USFWS, USACE, EPA, and TCEQ) will be involved in decisions regarding the appropriate type of mitigation, mitigation ratios, and the location, size, and character of the mitigation. A compensatory mitigation plan will be submitted to the USACE as part of the Section 404 permit review process.

## **I. Wildlife**

Impacts to wildlife can in part be assessed through examining the impacts to vegetation and aquatic habitats. Potential impacts can be attributed to direct impacts from construction machinery, the loss of wildlife habitat, habitat fragmentation, and wildlife/vehicle collision mortalities. Construction-related impacts will be short-term and primarily occur during initial ROW clearing activities. The project will be implemented in full compliance with all provisions and regulations outlined in and pursuant to the Migratory Bird Treaty Act (16 USC 703-711).

The potential impacts to the aquatic environment caused by the Selected Alternative will differ in response to the number and type of roadway crossing present, aquatic habitat area, and major stream channel relocations required.

Initial mitigation measures in the planning process of the project minimized the probable occurrence of habitat (vegetation communities) and wetland impacts through route location (avoidance). Construction of the project will impact vegetative communities that provide wildlife habitat. It is anticipated that a non-wetland component will be included in the mitigation plan to compensate for impacts to non-regulated natural resources (FEIS Volume 1, Section 7.7.5, Habitat Mitigation-Non-Regulatory). Impacts to wildlife and habitat resources can be minimized

through the use of a combination of any of the BMPs listed in the FEIS Volume 1, Section 7.8 of Chapter 7 (Mitigation and Permitting). Coordination with the appropriate resource agency will ensue (per the TPWD MOU) should wildlife and habitat or sensitive natural resource areas be encountered during construction.

## **J. Threatened and Endangered Species**

The FEIS evaluated two state-listed threatened species, three state-listed species of concern, and two rare plant communities that had been documented within a 1.5-mile radius of the study area.

### **Rafinesque's Big-Eared Bat (*Corynorhinus rafinesquii*)**

Rafinesque's big-eared bat is a medium-sized bat with long rabbit-like ears (27-37 millimeters). The bat has large facial glands protruding from each side of its snout. Its fur is grayish-brown above and conspicuously bicolored underneath; it has a forearm length of 39-43 millimeters and weighs 7-13 grams. Rafinesque's big-eared bats roost in cave entrances, hollow trees, abandoned buildings, and under bridges in the forests of southeastern United States. Like others in the order Chiroptera, these bats are insectivores (eat only insects). They also hibernate during the winter. Rafinesque's big-eared bat has the potential or a known presence in multiple counties in eastern Texas, including Harris, Liberty, and Montgomery Counties within the study area. Because the reasonable alternatives may contain suitable habitat, a survey for Rafinesque's big-eared bat habitat will be conducted prior to construction once right of entry is obtained to ensure that the proposed project will not have an impact on the species.

### **Bald Eagle (*Haliaeetus leucophalus*)**

The bald eagle is a large raptor generally weighing 7 to 10 pounds, with a wingspan sometimes reaching more than 7 feet. Adult bald eagles are easily recognized with their stark white coloration on the head contrasting with a solid black or dark brown body. Bald eagles are opportunistic predators and commonly feed on water birds, bottom dwelling fish, and turtles in Texas. In Texas, bald eagles nest from October to July in nests measuring up to 6 feet in width and weighing hundreds of pounds. In Texas, the winter and nesting range for the bald eagle is generally restricted to the eastern portion of the state. Because the reasonable alternatives may contain suitable habitat, a survey for bald eagles and their habitat will be conducted once right of entry is obtained and prior to construction to ensure that the proposed project will not have an impact on the species.

### **Correll's False Dragon-Head (*Physostegia correllii*)**

Correll's false dragon-head is a perennial herbaceous plant that flowers from May to September. Extent populations of Correll's false dragon-head are found in Texas, Louisiana, and Mexico. Habitat for this plant in Texas includes riverbanks, stream sides, creek beds,

roadside ditches, and irrigation canals. Because the reasonable alternatives may contain suitable habitat, a survey for Correll's false dragon-head and their habitat will be conducted once right of entry is obtained and prior to construction to ensure that the proposed project will not have an impact on the species.

### **Threeflower Broomweed (*Thurovia triflora*)**

Threeflower broomweed is an herbaceous annual endemic to coastal Texas. Threeflower broomweed is found in black clay soils of remnant grasslands, tidal flats, and sparsely-vegetated, saline areas in coastal prairie. Threeflower broomweed blooms from September to October. Because the reasonable alternatives may contain suitable habitat, a survey for threeflower broomweed and associated habitat will be conducted once right of entry is obtained and prior to construction to ensure that the proposed project will not have an impact on the species.

### **Texas Windmill-Grass (*Chloris texensis*)**

Texas windmill-grass is a tufted perennial grass that flowers in October and November. Texas windmill grass occurs in open or barren areas within prairies along the Texas coast. Microhabitat for Texas windmill grass includes sandy openings on or at the base of pimple mounds. The reasonable alternatives could contain habitat for Texas windmill grass. A survey for Texas windmill grass and associated habitat will be conducted once right of entry is obtained and prior to construction, to ensure that the proposed project will not have an impact on the species.

### **Loblolly Pine-White Oak-Southern Red Oak Series (*Pinus taeda-Quercus alba-Quercus falcata* series) and Water Oak-Willow Oak Series (*Quercus nigra-Quercus phellos* series)**

The loblolly pine-white oak-southern red oak series occurs within the study area. Additionally, the rare water oak/willow oak vegetation series is known to occur within the Lake Houston Wilderness Park and surrounding areas. This vegetation supports many animal species, such as the state threatened Rafinesque's big-eared bat, that depend on mature, bottomland hardwood habitats. The water oak/willow oak habitat is a deciduous bottomland hardwood forest located in often inundated floodplains of East Texas. Plant species commonly associated with this vegetation series include sweetgum, cherrybark oak (*Q. pagoda*), ash (*Fraxinus* spp.), and overcup oak (*Q. lyrata*). Ironwood, eastern hop-hornbeam (*Ostrya virginiana*), deciduous holly (*Ilex decidua*), and Florida maple (*Acer barbatum*) often compose the understory of this vegetation series. Because both of the rare vegetative series are reported by TPWD Natural Diversity Database as occurring within the study area, a survey to assess the location and extent of these series will be conducted once right of entry is obtained and prior to construction, to ensure that the proposed project will not have an impact on the series.

In addition to the known species listed above, the state-threatened white-faced ibis, wood stork, swallowtail kite, Louisiana pine snake, northern scarlet snake, and timber rattlesnake require the forested, forested wetland, and wetland habitats existing within the proposed study area and potentially in the Selected Alternative. In addition, habitat for the Bachman's sparrow and red-cockaded woodpecker could potentially occur within the open pine wood landscapes of the Selected Alternative. Although these species are mobile and can seek shelter in adjacent habitats, the proposed project will potentially impact these species' habitat. Surveys to identify the locations of potential habitat for these species will be conducted prior to construction activities to avoid and/or minimize adverse impacts to these species.

Remnant prairie habitats or improved pastures within the Selected Alternative could provide habitat for the white-tailed hawk, smooth green snake, and Texas prairie dawn-flower. Surveys to identify potential prairie habitat for these species will be conducted prior to construction activities to avoid and/or minimize adverse impacts to these species.

Impacts to aquatic state-threatened species, such as the creek chubsucker, paddlefish, alligator snapping turtle, Louisiana pigtoe, Sandbank pocketbook, Texas pigtoe, and Texas heelsplitter, will be minimized by bridging streams and rivers located in the Selected Alternative. The use of temporary and permanent BMPs to control sediment and runoff will further minimize impacts of the proposed project; therefore, no impacts are expected to occur to these species. Once right of entry is obtained for the entire project area, additional investigations will be conducted to determine if potential aquatic threatened and endangered species or their habitat occurs within the Selected Alternative.

## **K. Floodplains**

### *1. Hydrology and Drainage*

The Selected Alternative will cross 23 water resources: five major streams, 13 minor streams/ditches, and five ponds. The Selected Alternative will increase the amount of impervious area within the watersheds, resulting in increased surface runoff. The increased surface runoff will not be considered substantial because of the required drainage (mitigation) facilities that will be incorporated into the project designs (see FEIS, Volume I, Section 4.10.1).

The Selected Alternative has the potential to impact overland sheet flow patterns due to the construction of the roadway and associated structures. Therefore, sheet flow patterns will be considered when designing cross-drainage structures due to the lack of natural drainage features and the flat topography in the area.

## 2. *Floodways and Floodplains*

The Selected Alternative will impact 43.26 acres of floodway, 158.55 acres of 100-year floodplain, and will impact 0.35 percent of the floodplain within the study area. A floodplain assessment was prepared for each alternative, including the Selected Alternative, and follows the guidance of FHWA's Technical Advisory T 6640.8A: Guidance for Preparing and Processing Environmental and Section 4(f) Documents. Avoidance of this resource during the development of the alternative alignments was carefully balanced with avoidance of other sensitive resources in the study area.

The Selected Alternative will encroach on the following streams and their associated regulatory floodways and floodplains: Caney Creek, East Fork San Jacinto River, Peach Creek, Cedar Bayou, and Luce Bayou. The 43.26 acres of floodways and 158.55 acres of floodplains represents substantially more acreage than will be impacted by the project because final design will include bridging most, if not all, of the floodways and much of the floodplain acreage found within the ROW.

Restoration and preservation of the natural and beneficial values associated with the floodplains will include a detailed hydraulic analysis and minor alignment modifications during final design and the implementation of BMPs during construction. Some of the BMPs may include:

- Vegetative fencing to restrict contractor access to sensitive areas
- Limiting construction staging to locations outside the floodplains, or minimizing the size of the staging area
- Implementation of an SWPPP to protect water quality
- Implementation of a stormwater management plan to prohibit increases in water velocity
- Revegetation of cleared areas within the floodplains that are needed for construction
- Analyzing the use of other BMPs on a location-by-location basis

The Selected Alternative was located to minimize encroachment on regulatory floodways and floodplains and maintain a transverse encroachment to the extent possible. The Selected Alternative was shifted to some degree to avoid wetlands and longitudinal encroachments. All floodways will be bridged or culverted by the Selected Alternative, and further avoidance and minimization of floodplain encroachments will be considered during preliminary and final design of the Selected Alternative.

An at-grade highway facility for Grand Parkway Segments H and I-1 will not result in substantial increases in flooding in the study area. Bridge structures and/or culverts will be

used to allow passage of the base flood without increasing the established FEMA base flood levels

Avoidance of floodways and floodplains during the development of the reasonable alternatives was carefully balanced with avoidance of other sensitive resources in the study areas. The Selected Alternative was chosen based on its ability to best meet the purpose and need of the project while minimizing impacts to the natural, physical, and social environment. The hydraulic design for this project will be in accordance with current FHWA and TxDOT design policies. The facility will permit the conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing significant damage to the facility, stream, or other property. The proposed project will not increase the base flood elevation to a level that will violate applicable floodplain regulations and ordinances.

### *3. Floodplain Determination*

In accordance with 23 CFR §650.113, the FHWA shall not approve a proposed action that includes a significant floodplain encroachment unless it finds that the proposed encroachment is the only practicable alternative. The location and design of all the proposed build alternatives avoids and minimizes, to the extent practicable, longitudinal encroachments into floodplains in the study area. None of the build alternatives would result in a significant encroachment into floodplains in the study area. Stream crossing culverts and bridges will be included in the final project design to ensure that during a flood period evacuation and emergency vehicle routes would be maintained and that the natural floodplain values of the study area would not be lost. The design of the Selected Alternative will conform to all applicable state and local floodplain protection standards as described in the FEIS. As a result, implementation of Selected Alternative meets the requirements of both Executive Order 11998 and 23 CFR 650, Subpart A.

#### **L. Wild and Scenic Rivers**

The Selected Alternative will not result in impacts to wild and scenic rivers in association with the construction or operation of the proposed project. The proposed project is not located near any river segment listed on the Nationwide Rivers Inventory (NRI) or identified as a National Wild and Scenic River.

#### **M. Coastal Barriers**

The Selected Alternative will not result in impacts to coastal barriers in association with the construction or operation of the proposed project. The proposed project is located outside any coastal barrier systems and will not have any impacts to coastal barrier resources.

## **N. Coastal Zone Management**

The southern limit of the proposed project abuts the Coastal Management Zone (CMZ) boundary; however, the Selected Alternative will occur outside of the CMZ area. Coordination with the Coastal Coordination Council under the Texas Coastal Management Program is not required.

## **O. Essential Fish Habitat**

The Grand Parkway Segments H and I-1 study area contains Cedar Bayou which is mapped as a tidally influenced water north of I-10 E by the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries). Cedar Bayou is mapped as tidally influenced up to 1.4 miles on the north side of I-10 E west of Mont Belvieu and could potentially contain essential fish habitat (EFH). The Selected Alternative does not intersect Cedar Bayou in the tidally-influenced area. NOAA Fisheries also has mapped the East Fork San Jacinto River to approximately 3 miles upstream of Lake Houston as containing EFH. The Selected Alternative does not intersect the area of the East Fork San Jacinto River. Therefore, no impacts to EFH are anticipated under the Selected Alternative.

## **P. Cultural Resources**

In accordance with the Programmatic Agreement among FHWA, the THC, the Advisory Council on Historic Preservation, and TxDOT, and in accordance with the MOU between TxDOT and THC, TxDOT consulted with the SHPO regarding the project's potential to affect non-archeological historic properties. It has been determined that the Selected Alternative will not impact any previously-recorded NRHP-listed or eligible historic properties. Furthermore, the Selected Alternative will not impact any Recorded Texas Historic Landmarks.

The study team evaluated the potential for the proposed undertaking to affect archeological historic properties (36 CFR 800.16(l)) or SALs (13 TAC 26.12) in the APE. The APE comprises the existing ROW within the project limits and areas of new ROW or easements. Section 106 review and consultation proceeded in accordance with the First Amended Programmatic Agreement among the FHWA, TxDOT, the SHPO, and the ACHP regarding the implementation of Transportation Undertakings (PA-TU), as well as the MOU between the THC and TxDOT.

The laws and regulations (36 CFR 800.16(l)) require the consideration of the impacts of the proposed project on cultural resources, such as archeological sites and historic structures. TxDOT operates under several formal agreements that expedite its compliance with these laws and regulations.

Not all cultural resources are afforded equal treatment in the planning process under applicable cultural resources laws. Historic properties and SALs are those objects, sites, and structures that have characteristics requiring those resources be given further consideration in the project

planning process. Projects should avoid and minimize impacts to historic properties and SALs when possible. They should resolve the effects of impacts, usually through some mitigation measures, when avoidance is not possible.

The following section provides a formal account of the investigations and findings with appropriate citations to regulations and agreements. These results are discussed in more detail in the corresponding FEIS (Volume I, Section 3.18.4), along with formal findings made in compliance with the applicable laws, regulations, and agreements.

### 1. *Archeological Resources*

Known site locations were researched using the THC's online Texas Archeological Sites Atlas. As a result of the official archeological records review, no previously-recorded sites were identified within the Grand Parkway Segments H and I-1 Selected Alternative ROW. An archeological survey report was prepared, reviewed, and coordinated with the SHPO and THC. The coordination was submitted on August 19, 2013, and THC concurred with the findings and recommendations. TxDOT further asked for THC's concurrence to allow the remainder of the survey to be deferred and to allow the NEPA process to continue and for property acquisition to proceed. TxDOT will be obligated to complete the survey and coordinate the results with THC once the remainder of the proposed ROW has been acquired.

Section 106 consultation with federally recognized Native American tribes with a demonstrated historic interest in the area was initiated on February 22, 2008. The tribal consultation comment period ended on July 26, 2013, without any expressions of concern.

Archeological fieldwork was conducted by qualified archeologists between June 21 and July 3, 2012, on the Selected Alternative. Only one previously unknown site (41MQ300) was found and its significance was evaluated by the project archeologist, under the supervision of TxDOT ENV archeologists. During the duration of the project, the Texas Archeological Sites Atlas, maintained by the THC, was accessed at various times to identify previously-recorded archeological sites and historic properties, and previous archeological work in the vicinity of the APE.

Site 41MQ300, located during the survey of a previous alignment of Segment H, is located within the APE and is a low-density, prehistoric scatter representing a short-term occupation by an unidentified cultural group, with a small historic mid-to-late 20th century component consisting of a single metal wire fragment. The site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archeological work is recommended for the site.

Over 56 percent of the APE was not tested due to lack of access. These areas will need to be examined by a qualified archaeologist once right of entry has been secured. Additionally, 11 percent of the APE has previously been tested. These previous surveys did not locate any cultural resources within the current APE. The remaining 33 percent of the APE was examined for cultural resources. One previously-unknown archaeological site was discovered. No further archaeological work is recommended for the 33 percent that was tested.

The project will be coordinated according to the First Amended Programmatic Agreement among the FHWA, TxDOT, the THC, and the ACHP regarding the implementation of Transportation Undertakings (PA-TU) and the MOU between TxDOT and the THC (13 TAC 26.14(e)(1) and 43 TAC 2.24(e)(1)) to ensure that any archeological materials associated with the construction of the project will be properly evaluated, including any accidental discovery situations that arise following the archeological field survey. If archeological materials or human remains are identified within the ROW during construction, or a department-designated material source, all construction and related activities must cease. The find is to be reported to the TxDOT project inspector or the area engineer in accordance with TxDOT's Emergency Discovery Guidelines. If archeological materials or human remains are introduced into the ROW or easements in materials obtained from a material source under option to the contractor, all use of materials from the source must cease. The find must be reported to TxDOT project inspector or the area engineer in accordance with TxDOT's Emergency Discovery Guidelines. The No-Build Alternative will not result in archeological resources impacts associated with the construction or operation of the proposed project.

## *2. Non-Archeological Historic Resources*

There are a total of four previously-determined or recommended NRHP Eligible resources within the project APE. Two of these resources were previously determined NRHP eligible. Both resources are components of the Dayton Canal rice irrigation system. Resource 039a is the Big Ditch drainage ditch and Resource 039b is the Main Canal. These resources were evaluated in the Historic Resources Summary Report (HRSR) as to whether or not they are contributing to the overall canal system. Both resources are recommended Contributing to the eligible Dayton Canal system. Two additional historic-age resources were identified within the APE and recommended NRHP Eligible in the HRSR. Resources 030a and 030b are a house and garage in the Craftsman Bungalow style located at 2669 FM 1485 in Harris County.

Because the design is preliminary and detailed design plans are not yet available, it is not currently possible to evaluate effects to historic-age resources. Further information concerning the avoidance of direct and indirect impacts to NRHP eligible resources will be

addressed further along in the project development process. TxDOT ENV will make the final determinations of eligibility and effects and will coordinate with SHPO.

## **Q. Hazardous Materials**

Construction of the Selected Alternative could have additional impacts on potential hazardous materials sites. However, risks can be minimized by conducting Phases I and II Environmental Site Assessments (ESA) according to American Society for Testing and Materials (ASTM) standards to identify, avoid, and mitigate hazardous materials sites. Additional assessment will be conducted during the ROW acquisition and negotiation phase, or as soon as practical after right of entry is obtained. If hazardous materials concerns are confirmed, then preventive action plans will be developed to avoid or minimize impacts to project activities. If hazardous materials are found during the construction phase, then TxDOT standard guidelines will be followed. If deemed appropriate, an asbestos inspection will be performed at each structure prior to demolition to determine the presence of asbestos. If suspect material is encountered, a mitigation plan for the removal and disposal of hazardous materials will be developed according to federal, state, and local regulations. The project's plans, specifications, and estimates will disclose areas of asbestos and lead-based paint that will be disturbed. Special provisions will be developed for asbestos-related activities, notifications, required licenses, and monitoring.

Based on the Railroad Commission of Texas (RRC) records, 10 well sites are located within the Selected Alternative ROW. Due to the inaccuracy of the well bore data, additional verification of the exact location of all the wells will be required for the Selected Alternative. The Selected Alternative will also cross 64 oil/gas pipelines. The petroleum pipelines do not appear to have a positive or negative impact within the study area. During ROW acquisition, additional investigation will be required to determine if removal or adjustments to the pipelines will be necessary. If proper precautions are taken, impacts related to petroleum lines within the Selected Alternative alignment should be minimal.

During the ROW acquisition and negotiation process, well operators/owners will be contacted to determine appropriate actions to take for each site. Wells will be plugged and abandoned according to applicable plugging and supervision requirements provided in TAC Title 16, Part 1, Chapter 3, Section 3.14, under the jurisdiction of the RRC. Well plugging will need to be performed by cementing companies, service companies, or operators approved by the RRC. TxDOT standard specification Item 103, Disposal of Wells, will be required if well sites are not plugged prior to construction.

## **R. Railroads**

The Selected Alternative will cross four rail lines in the project corridor owned by UPRR. In each case, the individual track will not be impacted by the proposed project due to an elevated roadway structure anticipated at the crossing locations. TxDOT will coordinate with UPRR for

access, design, and construction phasing during the design/build phase of the project. No long-term adverse impact to any railroad line or operation is anticipated from the Selected Alternative.

## **S. Energy**

The Selected Alternative will require short-term energy consumption during construction activity. The short-term construction-related energy consumption could be offset by the operational energy efficiencies gained with the use of an improved transportation facility over many decades.

The Selected Alternative could improve fuel efficiencies as traffic moves from the existing roadway network to the new facility, thereby improving traffic mobility (uniform speeds, less congestion) across the study area. The designation of the proposed project as a toll road is not expected to result in an adverse impact to energy resources. The proposed project is anticipated to be an electronic toll collection facility. An electronic toll collection system provides operational efficiencies and will help reduce the stop-and-go conditions that are associated with conventional cash booths at toll plazas, resulting in lower consumption of energy resources.

## **T. Construction Impacts**

The Selected Alternative will result in construction impacts affecting the residents within the study area and the traveling public in the vicinity. These impacts may include, but will not be limited to:

- Temporary degradation of air, noise, and water quality
- Temporary disruption of traffic for residents, businesses, and travelers, including maintenance, control, and safety concerns
- Public health and safety hazards
- Stockpiling and disposal of construction materials and waste
- Use of borrow areas and the construction and use of haul roads
- Temporary disruption of utilities

The construction impacts listed above are temporary in nature. An approximate estimate of construction time for Segments H and I-1 is two to four years for the Phase I construction. A more precise construction duration will be established during the final design phase. As funding becomes available, Phase II construction timelines will be developed. Postings on up-to-date project status and milestone construction schedules will be available on the GPA website at [www.grandpky.com](http://www.grandpky.com). During the construction phase of the proposed project, temporary increases in air pollutant emissions may occur from construction activities. The potential impacts of particulate matter emissions will be minimized by using fugitive dust control

measures, such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

Construction work on the proposed project will require a USACE Section 404 permit. One of the conditions for a USACE Section 404 permit is that appropriate sediment controls must be implemented and maintained throughout the construction phase. The contractor will be required to apply BMPs for erosion and sedimentation control. Effects to water quality resulting from erosion and sedimentation, as well as pollutants such as chemicals, sewage, and other harmful waste, will be strictly controlled in accordance with TxDOT's *Seeding for Erosion Control Manual*. Temporary erosion control features will consist of berms, dikes, temporary seeding, sediment traps, geotextile fiber mats, silt fences, hay bales, slope drains, mulches, crushed stone, and any other measures applicable under TxDOT guidelines.

Construction activities normally occur during the daylight hours when high noise levels are more tolerable. Receivers are not expected to be exposed to construction noise for extended periods. Disruption of normal activities as a result of construction noise is not anticipated. Provisions will be incorporated in the construction plans and specifications that require the contractor to make reasonable efforts on noise abatement measures, such as work hour adjustments and proper equipment maintenance.

Construction work will be planned and scheduled in order to maintain the flow of traffic on the existing roadway network and minimize adverse impacts on travelers. Traffic control measures will be implemented through traffic control plans and construction contract specifications as outlined in TxDOT guidelines. Because of the limited nature of traffic disturbance on existing streets, most of the traffic control practices will use flagging operations and temporary widening of existing roads.

The contractor will comply with all federal, state, and local laws, including Occupational Health and Safety Administration (OSHA) regulations governing safety, health, and sanitation. Reasonable safety measures and safeguarding actions will be taken in order to protect the life, health, and property of project personnel and the general public in connection with roadway construction. The contractor will develop a site-specific health and safety plan for areas that are determined to have risks associated with potential hazardous materials contamination.

Roadway and bridge construction activities will involve excavation of possibly unsuitable materials, placement of embankments, and use of materials such as crushed aggregates, asphalt, and cement. Stockpiling and disposal of excavation and construction materials may be considered aesthetically displeasing by some residents and businesses along the project corridor. Stockpiling will be a temporary condition and will cause no adverse permanent impacts with the use of BMPs for erosion control measures. The contractor will place erosion

and pollution control measures on haul roads, construction exits, borrow pits, embankments, and areas designated for disposal of waste materials.

## **U. Indirect Effects**

Indirect effects are defined as those "...which are caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems..." (40 CFR, Section 1508.8).

The study team followed a seven-step approach to evaluate indirect effects based on the 2010 TxDOT Guidance on Preparing Indirect and Cumulative Impact Analyses. Using this guidance, the study team established an Area of Influence (AOI) based on the H-GAC's Traffic Analysis Zone (TAZ) boundary and a 15-minute travel shed. A TAZ is a special area delineated by state and/or local transportation officials for tabulating traffic-related data, especially journey-to-work and place-of-work statistics. A TAZ usually consists of one or more census blocks, block groups, or census tracts.

Potential indirect effects could include the following:

- Loss of vegetation and continued fragmentation of habitat could occur along the boundaries of the Selected Alternative resulting from future construction of residential and commercial properties.
- Loss to waters of the U.S., including wetlands, from development indirectly related to the project, including placement of fill and degradation of function through encroachment and as a result of increased runoff.
- Effects on floodplains from roadway projects include increases in stormwater runoff due to changes in land use and increased development that may be accelerated by improved mobility and managed congestion on the transportation system on land surrounding the proposed facility.
- Improvement to access and travel patterns as it relates to system linkage, mobility, safety, and lack of infrastructure to support population growth.
- Changes in travel patterns and access could result in improvements to vehicular access to places of employment, markets, goods or services, residential uses, and public facilities due to increased vehicular mobility.
- Expedited and localized economic growth due mainly to increases in land rents, market capture, and related development pressures associated with increased visibility and

improved north-south mobility and access in the northeast region of the greater metropolitan area.

- Change in the viewshed or ambient light.
- Impact to cultural resource sites from development projects on private property.

In summary, construction of the Selected Alternative will result in indirect impacts to various ecological and socioeconomic resources throughout the AOI. The severity of the anticipated indirect impacts ranges from minor to less than significant depending on the resource. Beneficial indirect impacts are anticipated in terms of enhanced travel patterns, increased accessibility and traffic congestion management, economic efficiency benefits related to travel, and increased employment and economic activity throughout the Greater Houston region. The anticipated indirect effects to the resources evaluated in this analysis are not likely to be substantial, as outlined in FEIS Table 5-12 (Volume I, Section 5.7.2), which lists the indirect effects anticipated as a result of the Selected Alternative.

Avoidance and minimization associated with indirect effect types of impacts may be accomplished through local land use controls and coordination with regulatory agencies. Local controls, such as land use plans, zoning regulations, and subdivision and land development ordinances, could allow for specific site flexibility to allow for avoidance or minimization of regulated resources. However, these types of commitments are not the responsibility of the FHWA and TxDOT since they do not have either the authority or the responsibility to commit federal funds to the mitigation of impacts not directly attributable to transportation projects or the actions of others not within their direct control (EO 13274). As a result, these possible indirect effects do not require mitigation by a transportation agency.

## **V. Cumulative Impacts**

Cumulative effects include a project's direct and indirect effects, as well as other actions that are not caused by the project, but in combination with the project, add to the overall effect, whether adverse or beneficial, on the environment. The Cumulative Impacts Analysis (CIA) as provided in the FEIS (Volume I, Chapter 6) follows the requirements and process outlined in 23 CFR 771, the FHWA Technical Advisory 6640.8A, the Transportation Research Board's (TRB) National Cooperative Highway Research Program (NCHRP) Report 466: Desk Reference for Estimating the Indirect Effect of Proposed Transportation Projects, Considering Cumulative Effects Under the National Environmental Policy Act, Questions and Answers Regarding the Consideration of Past Actions in Cumulative Effects Analysis, CEQ's memorandum Guidance on the Consideration of Past Actions in Cumulative Effects Analysis, TxDOT's Guidance on Preparing Indirect and Cumulative Impact Analyses, and Revised Guidance on Preparing Indirect and Cumulative Impact Analyses. The CEQ regulations for implementing the NEPA define Cumulative Effects as: "The impact on the environment which results from the incremental

impact of the action (project) 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 actions taking place over a period of time..." (40 CFR 1508.7).

The study team followed an eight-step approach to evaluate cumulative effects based on the 2010 TxDOT's Guidance on Preparing Indirect and Cumulative Impact Analyses. Using this guidance, the Study Team established resource study areas (RSA) for each resource identified in the indirect effects analysis for further study. Four resources were carried through the cumulative effects analysis: Land Use, Environmental Justice, Air Quality, and Water Resources (Water Quality and Waters of the U.S., Including Wetlands). Cumulative effects to these resources under the No-Build Alternative and Selected Alternative will be similar as new residential subdivisions and associated infrastructure continue to develop within the AOI, summarized as follows:

- Land Use – Approximately 25,944 acres of foreseeable/induced development will occur within the RSA as a result of the Selected Alternative.
- Environmental Justice – The economic impact of tolling will be higher for the low-income individuals because the cost of paying tolls will represent a higher percentage of household income than for non-low-income households. Not maintaining a prepaid toll transponder account will impact any user, including low-income users, because the cost of paying the accumulated toll charges without an account will represent a higher toll rate than toll charges affiliated with a prepaid account. It is reasonable to assume that there will be a cumulative impact on environmental justice populations upon build-out of the toll system due to the economic impacts of tolling and the difference in travel time should non-toll alternatives be utilized by low-income populations. However, given the layout and orientation of the regional system and examination of the traffic data associated with the origin-destination analysis, it is not anticipated that users (including low-income users) will be affected by travelling the entire length of the entire system during the course of normal activities.
- Air Quality – The cumulative impact on air quality from the proposed project and other reasonably foreseeable transportation projects is addressed at the regional level by analyzing the air quality impacts of transportation projects in the 2035 RTP Update and the 2013-2016 TIP. The proposed project and the other reasonably foreseeable transportation projects were included in the 2035 RTP Update and the 2013-2016 TIP, and have been determined to conform to the SIP. When combined, planned transportation improvements, revised EPA fuel and vehicle regulations, and fleet turnover are anticipated to have a cumulatively beneficial impact on air quality.

- Water Quality/Waters of the U.S., Including Wetlands – New development induced as a result of the Selected Alternative could result in an increase in impervious cover and greater volumes of runoff causing erosion to enter surface waters. Cumulative impacts are likely to be related to land use changes in and around the watershed. Cumulative impacts within all watersheds in the RSA may be up to approximately 114,000 acres of waters of the U.S. and wetlands (or 20 percent of waters of the U.S. and wetlands within the RSA) when compared to the No-Build Alternative.

The FEIS Summary of RSAs (Step 2) and Health of Resources (Step 3) for the CIA is contained within the FEIS Table 6-4 (Volume I, Section 6.2), which lists the resource categories that were found to have both direct and potential indirect impacts from the Selected Alternative and which were considered in this cumulative analysis as being: Land Resources, Environmental Justice, Air Quality, and Water Resources (Water Quality, Waters of the U.S., Including Wetlands).

Finally, as required by NEPA, appropriate mitigation for direct impacts will occur at the project level. Because of these mitigation measures, the Selected Alternative is not anticipated to have a substantial cumulative impact on the above resources.

#### **W. Regional Indirect and Cumulative Effects of Tolled Facilities and Managed Lanes**

As required by NEPA, appropriate mitigation for direct impacts will occur at the project level. Because of these mitigation measures, the regional proposed tolled roadway network is not anticipated to have a substantial cumulative impact on the resources considered in this ROD.

## **VI. MONITORING OR ENFORCEMENT PROGRAM**

All commitments and conditions of approval stated in the FEIS regarding mitigation measures and commitments (FEIS Volume 1, Chapter 7) and agency and public coordination (FEIS Volume I, Chapter 9) will be monitored by FHWA, TxDOT, and other appropriate federal, state, and local agencies to insure compliance per the appropriate approved permit(s). All commitments and conditions will be included in the Environmental Permits, Issues, and Commitments (EPIC) sheets of the project's final design plans.

## **VII. COMMENTS RECEIVED ON THE FEIS**

The Notice of Availability for the Final Environmental Impact Statement for Segments H and I-1 of the Grand Parkway, SH 99, was published in the Federal Register and Texas Register on May 9, 2014. The review period officially closed on June 9, 2014. A total of two comment letters were received on the FEIS. The agencies that provided comments on the FEIS included the EPA and the TPWD. The EPA's letter stated that all previous comments had been addressed in the FEIS. The comments from the TPWD were reviewed and fully considered.

Responses to these comments are included in Appendix B. Copies of both letters are also included in Appendix B.

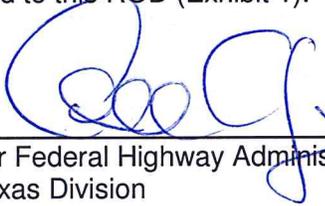
## VIII. CONCLUSION

Based upon the information presented in the FEIS and supporting technical documents, the associated administrative record, and input received from the public and interested local, state and federal agencies, the FHWA decision, after its own independent review and consideration of the referenced information, is to provide approval for the construction of Segments H and I-1 of the Grand Parkway as a new location toll road facility within Montgomery, Harris, Liberty, and Chambers Counties. This decision chooses the Selected Alternative, described in the Grand Parkway Segments H and I-1 FEIS dated February 2014, as a four-lane controlled-access toll road with intermittent frontage roads located within a 400-foot ROW. The Selected Alternative is approximately 37.4 miles long and will be built to accommodate a 70-mile-per-hour design speed. The Selected Alternative begins in Montgomery County at US 59 N/I-69 and ends at I-10 E in Chambers County.

An exhibit of the Selected Alternative is attached to this ROD (Exhibit 1).

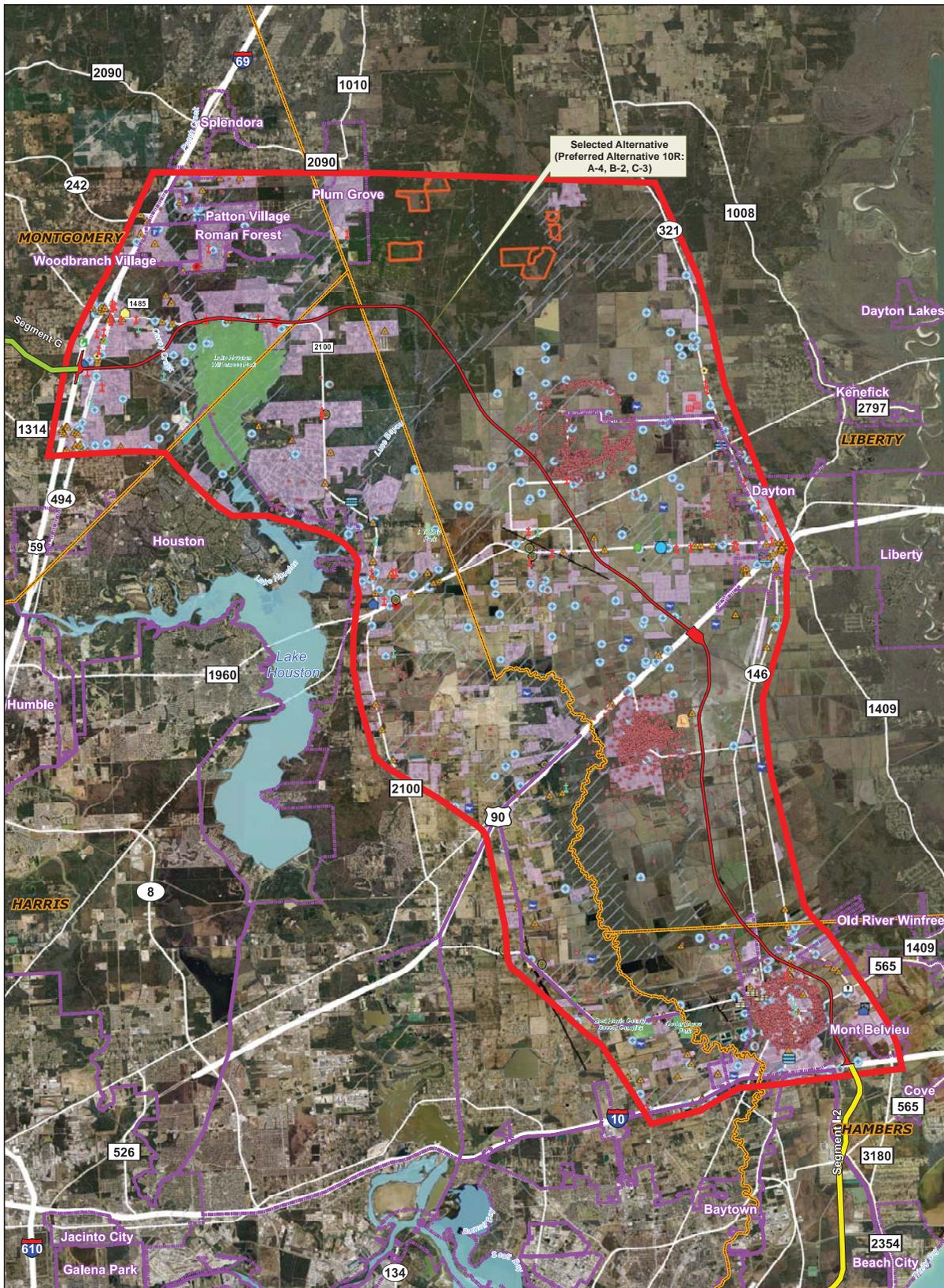
Date: \_\_\_\_\_

6/24/2014

  
\_\_\_\_\_  
For Federal Highway Administration  
Texas Division

## EXHIBIT 1

### Grand Parkway Segments H and I-1 Selected Alternative



Selected Alternative  
(Preferred Alternative 10R:  
A-4, B-2, C-3)

Legend	
Segment H and I-1	City
Interstate Highway	County
US Highway	Developed Area
State Highway	Park
State Highway	100-year Floodplain
Gas	Major Public Facility (PCW)
Electric	Cell Site Tower
Water Body	Electric Substation
Segment G	Hazmat
Segment J-1	Oil Well
Railroad	Water Well
Public Facility	Railroad
Courthouse	Facility (Type)
Fire Station	Cell Tower
Library	Petroleum Plant
Montgomery Co. Pol. & Office	Process Storage
Museum	Resale Terminal
Police Station	Sub Station
Post Office	Airport
TOLL Pl. Box	School
	Cemetery
	Church
	Lone Bayou PUD Water Plant
	Refinery
	Wastewater Plant
	Landfill



**THE GRAND PARKWAY**

**SH 99: US 59 (N)/I-69 to I-10 (E)  
Grand Parkway  
Segments H and I-1**

**EXHIBIT: 1  
Selected Alternative**

Source: Study Team, 2012

## APPENDIX A

### List of Mitigation Measures and Commitments

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## **Grand Parkway (State Highway 99) Segments H and I-1 Mitigation Measures per the Final Environmental Impact Statement (FEIS)**

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- No frontage roads, except where required along Farm-to-Market Road (FM) 1485. Grade separations will be provided for all major arterial roadways and railroad crossings, allowing for adequate movement of school buses and emergency vehicles under the proposed facility. Final right-of-way (ROW) and access determinations would be evaluated during the design phase.
- Where possible, the alignment will be placed along and close to existing property lines to minimize the splitting or fragmentation of farms and other properties.
- Existing roads used for property access that may be split by the Selected Alternative will be realigned in accordance with TxDOT policies to accommodate the property owner's access needs.
- Additional meetings will be held as required during the environmental process to discuss specific community and landowner concerns prior to construction of the Preferred Alternative.
- Relocation assistance will be provided, per TxDOT guidelines, for structures that will be displaced.
- Vegetation within the ROW would remain in place to the extent feasible and practicable in order to minimize impacts to soils and reduce erosion.
- The use of silt fences and other erosion control measures during construction will prevent erosion of native soils and reduce the runoff of soil particles into area streams.
- Revegetation of native species along constructed corridors will help prevent future erosion after construction and thereby increase the success rate of any revegetation.
- To the maximum extent possible and where required, material excavated from the road cuts would be used as fill material. If suitable soils are not found within the ROW, they would be obtained from other sites within a reasonable haul distance of the project.
- Soil erosion and sedimentation would be minimized by the use, where practicable and feasible, of a combination of any of the following generally recommended methods. Other best management practices (BMP) not specifically identified below may be appropriate to address unanticipated site conditions:
  - Limit the surface area of unprotected soil exposed to erosion at any one time during construction activities. Stage clearing of vegetation as needed to keep pace with construction, rather than clearing far in advance.
  - Upgrade unstable ground underlying the proposed action by means of various engineering activities: the addition of extra sub-base materials to buffer the paved roadway from effects of shrinking and swelling ground, lime-stabilization, and avoidance of cut or fill slopes greater than 10 degrees.

- 
- Where such slopes are unavoidable, other means of protection may be required, such as geotechnical fabrics, reduction of top-slope loads, and/or shoring of the toe of the slopes.
- Revegetate disturbed areas as soon as possible using nature's seasonal cycles to an advantage.
  - Use native plant species, particularly long-lived, rapid growing species requiring minimum maintenance. An excellent mixture consists of little bluestem (*Schizachyrium scoparium*), hairy grama (*Bouteloua hirsuta*), sideoats grama (*Bouteloua curtipendula*), and various annual wildflowers. Weedy species, such as King Ranch bluestem (*Bothriochloa ischaemum*), should not be used as they become invasive to natural areas outside of the ROW.
  - Limit duration of exposure of soils to erosion to the shortest possible time.
  - Stage mulching and seeding to closely follow the progression of construction operations, particularly on high cuts and fills.
  - Protect native vegetative cover (where active construction is not required) from equipment traffic and personnel parking. Natural vegetative areas not destined for active construction should be clearly marked as equipment-free areas. All construction personnel should be clearly instructed in the identification and restricted use of equipment-free areas.
  - Coordinate construction activities to provide the least interference with agricultural operations.
  - Reduce the volume and velocity of construction runoff.
  - Utilize temporary measures such as berms, dikes, dams, sediment basins, and slope drains to control surface drainage.
  - Construct earth or brush berms along the top and/or bottom edges of embankments to intercept runoff during construction.
  - Utilize temporary slope drains to carry runoff from cuts and embankments to the bottom of slopes.
  - Complete permanent drains and slope protection at the earliest practical time.
  - Stabilize permanent soil berms by placing rock rubble on the downslope side, further reducing loss of soil moisture.
  - Mulch and/or chipped vegetation may be used to reduce soil erosion on slopes, newly-constructed embankments, and revegetated areas.
  - Permanent erosion control features would be installed at the earliest practicable time.
  - Efforts would be made to mitigate for temporary air quality impacts during construction, including minimizing or eliminating unnecessary idling of construction vehicles and employing a combination of watering, chemical stabilization, and vehicle speed reduction techniques.

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- The contractor would be required to adhere strictly to dust control measures as outlined in the current TxDOT specifications, which would help minimize air quality impacts.
  - Any debris material not disposed of in a landfill would be mulched. Open burning of waste, such as vegetative material, would not be allowed.
  - Provisions would be incorporated into the construction plans and specifications that require the contractor to make reasonable efforts on noise abatement measures, such as work hour adjustments and proper equipment maintenance.
  - Grass-lined swales and stormwater management ponds will be used to minimize the adverse effect of highway runoff to surface water quality.
  - A Notice of Intent (NOI) will be prepared and filed with the Texas Commission on Environmental Quality (TCEQ) and Environmental Protection Agency (EPA) per 40 CFR 122 prior to the issuance of a Texas Pollutant Discharge Elimination System (TPDES) construction stormwater discharge permit, per Section 402 of the Clean Water Act (CWA). The TPDES permit requires completion of a Stormwater Pollution Prevention Plan (SWPPP) in order to avoid adverse impacts potentially resulting from construction stormwater runoff discharges. TxDOT has its own stormwater management guidelines and BMPs for construction activities that will be prepared pursuant to the TxDOT manual, *Storm Water Management Guidelines for Construction Activities*. A SWPPP will be prepared prior to construction and followed throughout the construction phases to minimize the discharge of sediment-laden stormwater to study area streams. The SWPPP may include, but is not limited to, the use of silt fences, inlet protection barriers, hay bales, and seeding or sodding. As part of the SWPPP, TxDOT staff or a designee will be required to inspect both stabilized and unstable areas of the construction site for evidence of, or the potential for, pollutants entering waters of the U.S. via stormwater runoff through a drainage system. Summary reports of these inspections will be written and retained as part of the SWPPP. Once construction has been completed and the disturbed areas achieve 70 percent stabilizing vegetative cover, a Notice of Termination will be filed per permit requirements.
  - Mitigation for impacts listed previously will incorporate the following BMPs at appropriate stages during construction. To the extent feasible, temporary erosion control measures will be installed prior to ground disturbing activities and maintained regularly throughout the various phases of construction. The erosion control plan will be phased to coincide with construction activities to ensure maximum protection throughout the construction process. At the completion of construction, the TxDOT specifications, *Seeding for Erosion Control*, will be followed to restore and reseed all disturbed areas. For erosion control, sod will be utilized and will remain in place until the area has been stabilized. For sedimentation, a combination of silt fencing and hay bale dikes will be utilized and will remain in place until project completion. The existing ditches will be used for retention storage during construction. For post-construction BMPs, a combination of retention and vegetative filter strips will be utilized to control total suspended solids after construction. Vegetation within the existing ditches will be reestablished after construction and would act as vegetative filter strips.

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Other areas of ROW will be seeded with native species of grasses, shrubs, or trees as needed.

- Final design will include further consideration of bridging floodplains, and all culverts and bridges will be designed so as not to impact water levels or hydrograph timing of the channels.
- Minor alignment shifts will be made to minimize impacts to source water protection areas and/or avoid direct impacts to the public and private water supply wells.
- Any water supply wells affected by construction will be mitigated using measures such as providing a new well or connection to the public water system, if feasible. Wells taken out of service will be sealed in accordance with the specifications outlined by the Water Well Drillers Advisory Council.
- A stormwater management plan will be developed according to FHWA and TxDOT criteria to reduce the risk of contaminating local aquifers. Stormwater management basins will collect and control spills of hazardous materials, sediments, and others particulates found in highway runoff. The use of established BMPs will be employed to prevent highway stormwater runoff from entering the aquifer at wellheads.
- An emergency spill control pollution prevention plan will be developed and coordinated with local officials prior to construction. Special stormwater management measures will be designed to isolate potentially hazardous spills, for treatment and removal, before entering groundwater.
- Selected Alternative would require a Section 404 permit, Section 401 water quality certification, and an appropriate mitigation plan.
- In accordance with CWA Section 402, where stormwater from the proposed construction project will discharge to a Municipal Separate Storm Sewer System (MS4), the MS4 permittee will be notified of the construction activity per the FEIS (Volume I, Section 4.6.3), which further discusses the permitting of stormwater discharge.
- Efforts to avoid wetland impacts will continue through the design phase of the proposed Grand Parkway Segments H and I-1. Avoidance measures will also likely include spanning major drainages along the Selected Alternative.
- Mitigation for stream impacts will be evaluated and provided separately from wetland mitigation.
- Landscaping will be limited to seeding and replanting the ROW with native species of plants where possible. A mix of native grasses and native forbs will be used to revegetate the ROW, as available.
- Impacts to wildlife and habitat resources can be minimized through the use of a combination of any of the following generally recommended methods or other BMPs not specifically identified below, but that may be appropriate to address unanticipated site conditions:

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- Minimize the crossing of flowing streams and utilize bridge spans to the greatest extent (as opposed to fill) to minimize impacts on riparian and aquatic communities.
  - Have the ROW surveyed to identify significant wildlife areas, high-quality vegetation, and sensitive features such as caves, springs, and colonial nesting areas.
  - Particularly dangerous wildlife crossings (i.e., where culverts, bridge spans, etc., are not practicable) can be fenced to divert wildlife through wooded areas along the ROW to culverts or bridge spans where crossings can be more safely made.
  - Limit the use of herbicides and other chemicals for ROW maintenance.
  - In accordance with EO 13112 on Invasive Species and Executive Memorandum on Beneficial Landscaping, landscaping would be limited to seeding and/or planting of the ROW with native species of grasses, shrubs, or trees. Soil disturbance would be minimized to ensure that invasive species would not establish in the ROW.
  - Schedule mowing for ROW maintenance to facilitate the natural reseeding of indigenous spring and autumnal herbaceous communities.
  - Thoroughly clear areas identified as harboring oak wilt infestation and properly dispose of all plant material. All working surfaces (blades, buckets, etc.) of equipment used in clearing and grading such areas should be cleaned with a strong bleach or chlorine (hypochlorite) solution prior to use in other areas.
  - Minimize the use of construction haul work roads and minimize construction traffic impact areas. Work road areas would be restored following construction to as-good-as or better-than conditions that existed prior to construction.
  - Because of safety requirements, no trees can be left within 30 feet of the roadway without roadside protection. Trees outside this safety zone, which are not affected by construction, will be preserved.
  - If nesting or wintering migratory bird species or rookeries are identified on or along the route, deferring especially loud or noisy activities in the adjacent areas until after the birds have left the area would reduce negative impacts to these species.
  - A cursory nest survey will be conducted once right of entry is obtained by qualified personnel prior to construction. To avoid impacts to migratory birds, any active breeding areas found during the cursory survey will be avoided entirely during the breeding season of any migratory birds identified within the project area. In accordance with the MBTA, no vegetation will be removed containing nests, eggs, or young should clearing occur during the nesting and breeding season. If a nest, eggs, or young of a ground-dwelling bird is observed before or during construction, the participating agencies will be notified and the steps would be taken to avoid impacts to the bird and the nest. Every effort will
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be made to prevent migratory birds from nesting in the project area during the breeding season.

- Surveys for threatened and endangered species and their preferred habitat will be conducted for the Selected Alternative prior to construction activities to ensure the proposed project will have no effect on the listed species. TPWD will be coordinated with and species-specific mitigation strategies will be developed to avoid, minimize, and/or compensate for any potential impact to a threatened or endangered species.
- Compensation for bottomland hardwood forest impacts will be considered and addressed in the compensatory mitigation plan.
- A location hydraulic study will be performed during the design phase of the project.
- The project will comply with the Montgomery, Harris, Chambers, and Liberty Counties "floodplain program."
- Further avoidance and minimization of floodplain encroachments will be considered during preliminary and final design of the Selected Alternative. Access points to the Grand Parkway Segments H and I-1 will be located outside of the floodplains to the greatest extent practicable to minimize the potential for future floodplain development.
- Floodplain mitigation measures may include cross-drainage structures or long bridge structures to allow sheet flow to be unchanged relative to existing conditions. Hydraulic structures will be designed pursuant to TxDOT and FHWA standards to accommodate periods of high flows without impacting downstream areas. Mitigation of impacts will include BMPs during construction and detention facilities to offset increased flows.
- The proposed project will not increase the base flood elevation to a level that would violate applicable floodplain regulations or ordinances.
- If archeological materials or human remains are identified within the ROW during construction, or a department-designated material source, all construction and related activities must cease. The discovery is to be reported to the TxDOT project inspector or the area engineer in accordance with TxDOT's Emergency Discovery Guidelines. If archeological materials or human remains are introduced into the ROW or easements in materials obtained from a material source under option to the contractor, all use of materials from this source must cease and the discovery must be reported to the TxDOT project inspector or the area engineer in accordance with TxDOT's Emergency Discovery Guidelines.
- TxDOT will be obligated to complete the archeological surveys on properties requiring access, and will coordinate the results with THC once the remainder of proposed ROW has been acquired.
- Mitigation and commitments outlined in the *de minimis* Section 4(f) Evaluation for the Lake Houston Wilderness Park will be followed during the design phase of the project.

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- If hazardous materials are found during the construction phase, then TxDOT standard guidelines will be followed.
  - Asbestos and lead-based paint investigations for all structures impacted by the proposed project will be addressed during the ROW acquisition process prior to construction.
  - If an undocumented hazardous materials site is encountered during construction, a detailed evaluation will need to occur.
  - Where practicable, visual mitigation measures for streetlights and/or security lighting that will be expected in some areas could include naturally-vegetated medians, minimized ROW clearing, incorporation of design specifications to blend into the landscape, and promotion of roadside native wildflower planting programs. Native plants will be considered for roadside vegetation, where practicable, to improve the aesthetics and to control the introduction and growth of invasive species, landscape planting, and revegetation of natural areas impacted by construction.
  - Wherever practicable, existing trees within the proposed ROW could be retained to block the view of the roadway from adjacent properties.
  - As currently proposed, the roadway lighting system will be restricted to those areas where entrance/exit ramps and a mainlane toll facility or toll gantries are located and would consist of low-impact, downward-directional lighting.
  - The design of the facility would follow TxDOT's Green Ribbon Project (43 TAC 11).
  - During the construction phase, short-term effects related to noise and dust will be minimized. Traffic delays will be minimized through coordination among TxDOT, contractors, and affected neighborhoods or landowners (in the areas immediately adjacent to the proposed ROW), and by developing a construction schedule that would allow for a minimum delay for movement across the proposed ROW.
  - Efforts will be made to provide appropriate construction detours, informative signage, and maintenance of access to residences, farms, businesses, and community facilities where practicable. Potential development associated with the construction of the Build Alternatives could have additional impacts on potential hazardous material sites. However, risks can be minimized by conducting Phase I ESAs according to ASTM standards to identify, avoid, and mitigate hazardous material sites. If hazardous materials are found in the construction phase, TxDOT standard guidelines will be followed.
  - Temporary aboveground storage tanks (AST) containing oil and diesel will be regulated and would require control measures for spills and leaks.
  - Full compliance with all regulatory requirements of agencies (e.g., TPWD, USFWS, USACE, EPA, TCEQ).
  - Oil and gas wells located within the Preferred Alternative would be required to be plugged. Requirements for the proper procedures in plugging these types of wells are provided in the TAC, Title 16, Part I, Chapter 3, Section 3.14 under the
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jurisdiction of the RRC.

- The construction contractor would obtain the necessary permits and clearances for borrow pits and project-specific locations (PSL) identified outside the project ROW.
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## APPENDIX B

### FEIS Comments and Comment Response Matrix

## Segments H and I-1 FEIS Comments and Responses

Comment Category	Comment	Response
<b>A</b>	<b>Environmental Consequences</b>	
A1	<p>TPWD states that the concerns expressed in the September 21, 2011, correspondence remain applicable to the proposed project. TPWD encourages GPA and TxDOT to incorporate TPWD's previous recommendations and to continue to find ways to minimize impacts to these resources and mitigate for impacts.</p>	<p>Comment noted. Throughout the planning process, TxDOT has worked diligently to avoid and minimize impacts to the natural and human environment through the alternatives analysis process. Any unavoidable impacts to regulated resources will be addressed during the Clean Water Act Section 404 permitting process. Mitigation will be in compliance with the USACE under 33 CFR 332 Compensatory Mitigation for Losses of Aquatic Resources (73 Federal Register 19596, April 10, 2008), the Clean Water Act Section 404(b)(1) Guidelines, and the Galveston District Stream Condition Assessment Standard Operating Procedure for Compensatory Stream Mitigation (2013).</p>
A2	<p>Section 4(f) Properties: TPWD is aware of the Preferred Alternative would result in the removal of 10 acres of LHWP. Communication related to the alternative modification to allow for improved park access was submitted to TxDOT, but was not included in the FEIS. Because TPWD granted the park to the City of Houston with restrictions, modification of the park deed to accommodate transfer of land to TxDOT will require authorization by the TPW Commission. At the appropriate point in the process, please work directly with TPWD Land Conservation Director Mr. Ted Hollingsworth to facilitate the process.</p>	<p>TPWD's June 17, 2013, letter referencing modification to allow for improved park access was included in the FEIS, volume II, Appendix J, <i>De Minimis</i> Evaluation.</p> <p>TxDOT has addressed and incorporated the design modification requests and these were presented at the December 2013 Public Hearing. As a result, a letter of support for the project was sent by the City of Houston on February 11, 2014 and is also included in Appendix J of the FEIS.</p> <p>During the appropriate time of the planning process, coordination will take place with Ted Hollingsworth of the TPWD regarding the land transfer as requested.</p>
<b>B</b>	<b>Mitigation and Permitting</b>	
B1	<p>Section 7.7.3: The FEIS mentioned tentative mitigation opportunities for waters of the U.S. and stated further coordination would occur prior to finalization of mitigation plans. Please contact Mr. Mike Morgan in TPWD's Coastal Fisheries Division to evaluate the appropriate wetland and stream mitigation plans.</p>	<p>Mike Morgan in TPWD's Coastal Fisheries Division will be contacted through the permitting process to evaluate the appropriate wetland and stream mitigation plans as requested. Ultimately, mitigation must be in compliance with the USACE under 33 CFR 332 Compensatory Mitigation for Losses of Aquatic Resources (73 Federal Register 19596, April 10, 2008), the Clean Water Act Section 404(b)(1) Guidelines, and the Galveston District Stream Condition</p>

## Segments H and I-1 FEIS Comments and Responses

Comment Category	Comment	Response
		Assessment Standard Operating Procedure for Compensatory Stream Mitigation (2013).
B2	<p>TPWD requests that TxDOT and GPA mitigate for all wetland and stream impacts, including the full range of functions and services provided by those wetlands, transitional and adjacent upland habitats, by conserving a tract or tracts of land of sufficient size and diversity to replace those functions and services. TPWD and the conservation community are aware of undeveloped riparian lands, including jurisdictional wetlands, with frontage on the San Jacinto River adjacent to LHWP, and downstream from Lake Houston, that might serve as suitable compensation for the proposed impacts. Please contact Ted Hollingsworth to discuss potential mitigation lands.</p>	<p>Mr. Ted Hollingsworth will be contacted through the permitting process to discuss available and suitable compensation areas as requested. Ultimately, mitigation must be in compliance with the USACE under 33 CFR 332 Compensatory Mitigation for Losses of Aquatic Resources (73 Federal Register 19596, April 10, 2008), the Clean Water Act Section 404(b)(1) Guidelines, and the Galveston District Stream Condition Assessment Standard Operating Procedure for Compensatory Stream Mitigation (2013).</p>
B3	<p>Section 7.7.4, 7.7.5: TPWD recommends GPA prepare a mitigation plan to provide compensatory mitigation for those habitats listed in Section 4 of the FEIS where impacts from the proposed project cannot be avoided or minimized. This would include impacts to species and habitats covered under federal law and state resource habitat types not covered by state or federal law. At a minimum, TPWD recommends a replacement ratio of 1:1 for state resource habitat types.</p>	<p>TxDOT will provide mitigation in compliance with the USACE under 33 CFR 332 Compensatory Mitigation for Losses of Aquatic Resources (73 Federal Register 19596, April 10, 2008) and the Galveston District Stream Condition Assessment Standard Operating Procedure for Compensatory Stream Mitigation (2013).</p>
B4	<p>If project-specific mitigation for state resource habitat types as considered under the 1998 MOU between TPWD and TxDOT is not feasible, TPWD recommends these impacts be considered during the Interagency 2013 MOU Implementation Team review of state-wide aggregated impacts for the purpose of mitigation.</p>	<p>TxDOT will refer the mitigation plan as it is developed to the 2013 MOU Implementation Team.</p>



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**Region 6**

**1445 Ross Avenue, Suite 1200  
Dallas, TX 75202-2733**

June 6, 2014

RECEIVED ON  
JUN 09 2014  
TEXAS DIVISION  
FHWA

Mr. Gregory Punske, P.E.  
District Engineer, District B (South)  
Federal Highway Administration  
Federal Office Building, Room 826  
300 East 8<sup>th</sup> Street  
Austin, TX 78701

RE: Final Environmental Impact Statement (FEIS) for Grand Parkway (State Highway 99)  
Segments H and I-1 From US HWY 59 (N) IH 69 to 1-10 (E), Texas

Dear Mr. Punske:

In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) regulations for implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas, has completed its review of the above FEIS prepared by the U.S. Federal Highway Administration and the Texas Department of Transportation for the Grand Parkway Association project, Segments H and I-1, located in Montgomery, Liberty, Harris and Chambers counties, Texas.

EPA provided comments on the Draft Environmental Impact Statement (DEIS) on September 21, 2011, in which the DEIS was rated as "EC-2", i.e., EPA has "environmental concerns and requests additional information". EPA is pleased that the FEIS includes additional analysis of the proposed action to address our concerns. We have no additional comments and look forward to the receipt of the Record of Decision document.

Thank you for the opportunity to comment on the FEIS. If you have any questions or concerns, please contact Michael Jansky of my staff at (214) 665-7451 or via email at [jansky.michael@epa.gov](mailto:jansky.michael@epa.gov) or assistance.

Sincerely,

*Michael Jansky, P.E.*

*for* Craig Weeks  
Acting Chief, Office of  
Planning and Coordination



June 9, 2014

Life's better outside.®

Ms. Julia Ragsdale  
Environmental Affairs Division  
Texas Department of Transportation  
125 E. 11<sup>th</sup> Street  
Austin, TX 78701-2483

Commissioners

Dan Allen Hughes, Jr.  
Chairman  
Beeville

Ralph H. Duggins  
Vice-Chairman  
Fort Worth

T. Dan Friedkin  
Chairman-Emeritus  
Houston

Roberto De Hoyos  
Austin

Bill Jones  
Austin

James H. Lee  
Houston

Margaret Martin  
Boerne

S. Reed Morian  
Houston

Dick Scott  
Wimberley

Lee M. Bass  
Chairman-Emeritus  
Fort Worth

Carter P. Smith  
Executive Director

Re: Final Environmental Impact Statement for Grand Parkway (SH 99) Segments H and I1 from US 59 (N) to IH 10 (E), Montgomery, Harris, Liberty, and Chambers Counties. (CSJ: 3510-07-003, 3510-08-001, 3510-08-003, 3510-07-002, 3510-09-001, 3510-10-001)

Dear Ms. Ragsdale:

Texas Parks and Wildlife Department (TPWD) received your request to review the above-referenced Final Environmental Impact Statement (FEIS). Department staff reviewed the information provided for possible impacts to fish and wildlife resources of the State and offer the following comments and recommendations.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code, Section 12.0011, which can be found online at <http://www.statutes.legis.state.tx.us/Docs/PW/htm/PW.12.htm#12.0011>. For tracking purposes, please refer to TPWD project number ERCS-9058 in any return correspondence.

### Project Description

Texas Department of Transportation (TxDOT) and the Grand Parkway Association (GPA) propose to construct Segments H and I1 of the Grand Parkway in Montgomery, Harris, Liberty, and Chambers counties. Grand Parkway Segments H and I1 are part of a more than 180-mile circumferential loop around the greater Houston metropolitan area. Segments H and I1 are two separate segments, but for the purposes of this study are considered one segment from US 59 (N) to IH 10 (E). Segment H begins at US 59 (N) near New Caney, continues south to US 90, and is proposed as a 4-mainlane at-grade controlled access toll highway with proposed grade separations at major intersections within a 400-foot right-of-way (ROW). Segment I1 begins where Segment H ends at US 90, continues south to IH 10 (E) near Mont Belvieu, and will have the same highway design and ROW width as Segment H. The recommended alternative, 10R, will be approximately 37 miles in length and require 1,933 acres of new ROW.

FEIS Section 4.0 Environmental Consequences

The preferred alternative 10R would have the following impacts to waters of the United States (U.S.), wetlands, and vegetative communities as summarized from the referenced tables in the FEIS:

Table 4–24: Potential Waters of the U.S. Within the Reasonable Alternatives

Alternative	Potential Waters of the U.S. (ac)
10R	22.9

Table 4–25: Potential Wetland Impacts Within the Alternatives

Alternative	Agricultural (ac)			Non-Forested Wetland (ac)		
	Adjacent	Isolated	Total	Adjacent	Isolated	Total
10R	217.28	68.09	285.37	2.71	12.79	15.50
	Forested Wetland (ac)			Total Wetland Impacts (ac)		
10 R	Adjacent	Isolated	Total	Adjacent	Isolated	Total
Continued	2.52	24.01	26.53	222.51	104.89	327.4

Table 4–26: Potential Impacts to Vegetative Communities within the Alternatives

Habitat Type	Acreage
Agricultural Wetlands	285.37
Agricultural Vegetation	741.75
Total Agricultural	1027.12
Forested	596.19
Forested Wetland	26.53
Total Forested	622.72
Non Forested Wetland	15.5
Riparian Zones	24.21
Total Vegetation Impacts	1689.55

TPWD previously expressed concerns regarding impacts to resources including forested uplands, wetlands, and ecologically significant stream segments in correspondence dated September 21, 2011 (attached). Concerns expressed in that correspondence remain applicable to the proposed project. TPWD encourages the GPA and TxDOT to incorporate TPWD’s previous recommendations and to continue to find ways to minimize impacts to these resources and mitigate for impacts. Additional recommendations regarding mitigation are provided below.

#### *Section 4(f) Properties*

TPWD is aware that the preferred alternative 10R would result in the removal of 10 acres of Lake Houston Wilderness Park. TPWD has worked closely with the City of Houston and TxDOT to develop an alternative that would allow for improved access to the park and still meet TxDOT and GPA's transportation needs. Communication related to this modification was submitted to TxDOT on February 26, 2013 and June 17, 2013 (attached), but was not included in the FEIS.

Because TPWD granted this park to the City of Houston with restrictions, modification of the park deed to accommodate transfer of land to TxDOT will require authorization by the TPW Commission. At the appropriate point in the process, please work directly with TPWD Land Conservation Director Mr. Ted Hollingsworth to facilitate this process. He can be reached at (512) 389-4520.

#### FEIS Section 7.0 Mitigation and Permitting

##### *7.7.3 Waters of the U.S., Including Wetlands Mitigation*

The FEIS mentioned tentative mitigation opportunities for waters of the U.S. and stated that further coordination with the U. S. Army Corp of Engineers (USACE) and various agencies, including TPWD, would occur prior to finalization of mitigation plans. Please contact Mr. Mike Morgan in TPWD's Coastal Fisheries Division to evaluate the appropriate wetland and stream mitigation plans. He can be reached at (281) 534-0146.

TPWD notes that all waterways and associated floodplains, riparian corridors, and wetlands provide valuable wildlife habitat and should be protected to the maximum extent possible, regardless of jurisdictional status. TPWD requests that TxDOT and GPA mitigate for all wetland and stream impacts, including the full range of functions and services provided by those wetlands, transitional and adjacent upland habitats, by conserving a tract or tracts of land of sufficient size and diversity to replace those functions and services. TPWD and the conservation community are aware of undeveloped riparian lands, including jurisdictional wetlands, with frontage on the San Jacinto River adjacent to the Lake Houston Wilderness Park, and downstream from Lake Houston, that might serve as suitable compensation for the proposed impacts. Please contact Mr. Ted Hollingsworth at the telephone number provided above to discuss potential mitigation lands.

##### *Habitat Mitigation Regulatory (7.7.4) and Non Regulatory (7.7.5)*

TPWD recommends GPA prepare a mitigation plan to provide compensatory mitigation for those habitats listed in Section 4 of the FEIS (summarized above)

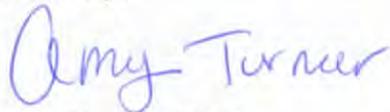
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where impacts from the proposed project cannot be avoided or minimized. This would include impacts to species and habitats covered under federal law (wetlands and associated habitats, threatened or endangered species) and state resource habitat types not covered by state or federal law (riparian areas, native prairies, certain types of bottomland hardwoods). At a minimum, TPWD recommends a replacement ratio of 1:1 for state resource habitat types.

If project-specific mitigation for state resource habitat types as considered under the 1998 Memorandum of Understanding (MOU) between TPWD and TxDOT is not feasible, TPWD recommends these impacts be considered during the Interagency 2013 MOU Implementation Team review of state-wide aggregated impacts for the purpose of mitigation. TPWD identifies the impacts that would occur as a result of the Grand Parkway Segments H & I as impacts that deserve special consideration based on the quantity of impacts occurring as a result of this one project, the increase in cumulative impacts to adjacent undeveloped property due to new access as a result of the proposed roadway, and the mid-to-high quality of the habitat being directly impacted.

If you have any questions regarding these and prior TPWD comments, please contact me at (361) 576-0022 or Mr. Mike Morgan at (281) 534-0146.

Sincerely,



Amy Turner, Ph.D.  
Wildlife Habitat Assessment Program  
Wildlife Division

AJT:gg.ERCS-9058

Attachments