Draft Environmental Assessment

Harris County Flood Control District Project ID H500-01-00-E002

Hunting Bayou Detention Basin

Houston, Harris County, Texas

HMGP-DR-1791-TX, Project No. 233

January 2012

FEMA

U.S. Department of Homeland Security
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TABLE OF CONTENTS

TABLES

LIST OF FIGURES

APPENDICES

LIST OF ACRONYMS

AIRFA	American Indian Religious Freedom Act
AJD	Approved Jurisdictional Determination
APE	Area of Potential Effect
AST	Aboveground Storage Tank
BG	Block Group
BMP	Best Management Practice
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERC-NFRAP	CERCLIS-No Further Remedial Action Planned
CFR	Code of Federal Regulations
CLI	Closed Landfill Inventory
COC	Chemical of Concern
CORRACTS	RCRA Corrective Action Sites
CT	Census Tract
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	Decibels
DCE	Dichloroethene
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ENSR	ENSR Corporation
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FMC	Fisheries Management Council
FPPA	Farmland Protection Policy Act
FWCA	Fish and Wildlife Coordination Act
GLO	General Land Office
HB&T	Houston Belt & Terminal Railroad Company
HCFCD	Harris County Flood Control District
HCOEM	Harris County Office of Homeland Security and Emergency Management
HFCs	Hydrofluorocarbons
HGB	Houston-Galveston-Brazoria
HGSD	Harris-Galveston Subsidence District
HHS	Health and Human Services
HMGP	Hazard Mitigation Grant Program
HUC	Hydrologic Unit Code
IH	Interstate Highway
LEP	Limited English Proficiency
LOMR	Letter of Map Revision
LPST	Leaking Petroleum Storage Tank
IPCC	Intergovernmental Panel on Climate Change

LIST OF ACRONYMS (Continued)

MAC	Moore Archeological Consulting, Inc.
MBTA	Migratory Bird Treaty Act
mph	Miles per hour
MSATs	Mobile Source Air Toxics
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Grave Protection and Repatriation Act
NDD	National Diversity Database
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Association
NOI	Notice of Intent
NPL	National Priority List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTCHS	National Technical Committee for Hydric Soils
NWI	National Wetland Inventory
PCL	Protective Concentration Limits
PFCs	Perfluorocarbons
PF01A	Palustrine, Forested, Temporarily Flooded
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
ROD	Record of Decision
ROW	Right of Way
SH	State Highway
SW3P	Stormwater Pollution and Prevention Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TCMP	Texas Coastal Management Program
TDEM	Texas Division of Emergency Management
THC	Texas Historical Commission
TOB	Top of Bank
TPDES	Texas Pollutant Discharge Elimination System
TPH	Total Petroleum Hydrocarbons
TPWD	Texas Parks and Wildlife Department
TRRP	Texas Risk Reduction Program
TSS	Total Suspended Solids
TWDB	Texas Water Development Board
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
VOC	Volatile Organic Compound

1.0 INTRODUCTION

1.1 Project Authority

On September 13, 2008, President Bush declared a major disaster resulting from Hurricane Ike damages (FEMA-1791-DR-TX). As a result of Hurricane Ike's rainfall inundating Houston, Texas, severe flooding damaged structures in the community surrounding the proposed project site. Harris County Flood Control District (HCFCD) has prepared and submitted an application for Federal Emergency Management Agency (FEMA) funding under the Hazard Mitigation Grant Program (HMGP). HCFCD has prepared and submitted the application through the Texas Division of Emergency Management (TDEM). FEMA is considering funding the construction of improvements to a stormwater detention basin to reduce the likelihood of future flooding in this area. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act which is a funding source for cost-effective measures that would reduce or eliminate the threat of future similar damage to a facility during a disaster.

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and FEMA's regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of this EA is to analyze the potential environmental impacts associated with the proposed project. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or issue a Finding of No Significant Impact (FONSI).

1.2 Project Location

The project site is approximately 75 acres and is located east of Homestead Road, west of Kirkpatrick Boulevard, south of Miley Street and north of the Union Pacific railroad tracks in northeast Harris County, Texas. A vicinity map of the project site is attached as Figure 1. Access to the site is either the Darien Street right-of-way (ROW) or a Centerpoint Energy high voltage transmission line ROW along the southern boundary of the project site. Hunting Bayou is located approximately 600 feet south of the project site. A topographic map and a 2010 aerial photograph, each with the project site boundary indicated, are attached as Figures 2 and 3. Appendix A includes site photographs that document the existing conditions of the project area.

1.3 Project Site History

The proposed project site was previously part of a larger 164-acre property owned by Houston Belt & Terminal Railroad Company (HB&T). The project site is an undeveloped 75-acre tract of land that is owned by HCFCD. The site was purchased by HCFCD from the HB&T for the purpose of establishing an offline stormwater detention basin. As a requirement of the purchase of the 75-acre tract, HCFCD was obligated to provide approximately 201,000 cubic yards of excavation to the railroad. To fulfill this contractual requirement, HCFCD designed and constructed the initial detention basin on the site.

In 2009, the existing basin was excavated to a depth of approximately 5 feet. The basin covers 21.65 acres within the top of banks and provides 205 acre-feet of stormwater detention. A one-foot deep grass-lined pilot channel was designed with a longitudinal slope of 0.2%. The bottom of the basin was graded with a transverse slope of 1% to provide positive drainage. The existing storm sewer system, which consists of two 10-foot by 10-foot reinforced concrete boxes (RCBs) and three 96-inch reinforced concrete pipes (RCPs), was utilized as an outfall structure of the basin. To make the detention basin

effective, a control structure with two low level 24-inch RCPs and two high level 4-foot by 4-foot RCBs was designed to be placed at the outfall and connected to the existing 10-foot by 10-foot RCBs.

Historical flooding problems on Hunting Bayou are primarily the result of flat topography and inadequate stormwater detention capacity to accommodate increased runoff from urban development within the watershed. The capacity of the bayou is frequently exceeded during storm events and widespread flooding occurs. The flooding problems are further compounded by inadequate storm sewers, lateral drainage ditches and tributary streams that retard runoff to the bayou.

Over the years, storms in the area have resulted in flooding that caused severe property damage. A summary of historical flood events on Hunting Bayou follows:

- September 1, 1979 – A thunderstorm with approximately five inches of rainfall in the area flooded the upper reach of Hunting Bayou, including a ten-block area of the Kashmere Gardens subdivision, forcing evacuation of 30 to 40 residents.
- January 23, 1980 – Approximately three inches of rain fell in four hours, flooding Hunting Bayou and resulting in damage to homes and forced evacuations.
- June 26, 1989 – Widespread flooding throughout the Houston area resulted from rainfall produced by a tropical storm. The flooding was particularly severe on Hunting Bayou and was the flood of record until June 2001. Approximately 200 residents in the Holiday Forest subdivision in the lower reach of Hunting Bayou were rescued by emergency personnel.
- June 5 through June 9, 2001 – A tropical storm produced rainfall that caused severe flooding throughout Harris County, including the Hunting Bayou watershed. Rainfall records indicate that the precipitation amounts in the Hunting Bayou watershed were in excess of a 0.2 percent (500-year) storm event. The June 2001 event is presently the flood of record for Hunting Bayou. It is estimated that more than 8,000 structures were damaged as a result of this storm. Total damages for all of Harris County were nearly $5 billion.
- September 13 through September 18, 2008 - Hunting Bayou was directly impacted from flooding associated with Hurricane Ike in 2008. Hurricane Ike made landfall at Galveston Island, Texas on September 13, 2008 and had a devastating impact throughout Harris County. The storm was a 110 miles per hour (mph) Category 2 hurricane at landfall and it tracked north-northwest through Harris County producing a devastating storm surge on the coast. Sustained winds of 60 to 70 mph and wind gusts of 80 to 90 mph were measured, and widespread flood and wind damage occurred throughout the county. Rainfall events were tracked during the storm by rain gauges maintained by Harris County Office of Homeland Security and Emergency Management (HCOEM) and the United States Geological Survey (USGS). Rain gauge data indicated that Hunting Bayou rose approximately 16 inches on September 13 and overall storm totals throughout Harris County averaged 10 to 13 inches with isolated amounts of 15 to 18 inches. This rainfall total is equivalent to between a 10% (10-year) and 1% (100-year) flood frequency across a large part of Harris County.

2.0 PURPOSE AND NEED

The purpose of the proposed project is to provide flood protection to the citizens in the Hunting Bayou area of Houston, Texas and reduce the loss of life and property due to natural disasters. The HMGP provides grants to state and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property damage due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The Disaster Mitigation Act of 2000 requires a FEMA-approved local mitigation plan in order to apply for HMGP project funding. HCFCD has completed a FEMA-approved mitigation plan that consisted of an action item to include the pursuit of cost-effective mitigation projects. For flood mitigation projects, HCFCD focused on areas that are known to be in flood-prone repetitive loss areas, such as the Hunting Bayou area. HCFCD used data from Hurricane Ike and prior flooding events to calibrate models and evaluate cost-effective solutions to flooding.

In addition to historical flooding, the risk of flooding is evident by the expansive floodplain along Hunting Bayou. The effective FEMA 100-year floodplain for Hunting Bayou covers approximately 2,820 acres, which is nearly 15 percent of the entire watershed. According to data provided by the Harris County Appraisal District, there are approximately 22,000 existing structures in the Hunting Bayou watershed, with approximately 6,500 of these in the FEMA 100-year floodplain.

As a result of the flooding in Hunting Bayou, the areas adjacent to the project site have experienced property damage to residential and commercial structures. Apart from flooding associated with Hurricane Ike, homes and businesses along Hunting Bayou experience frequent and severe flooding during storm events. When severe flooding occurs, residential structures are damaged, roads become impassible, and other critical infrastructure can be damaged and/or destroyed, which adversely affects public safety, health and welfare.

3.0 ALTERNATIVES

3.1 No-Action Alternative

The No-Action alternative would entail no stormwater detention improvements within the project area. The citizens of Harris County living adjacent to Hunting Bayou and its associated tributaries would be without adequate stormwater detention to prevent flooding. The community would remain vulnerable to flooding from storm events and could again experience flood inundation that could result in property damage to surrounding homes and businesses and lead to unnecessary costs to the local community.

3.2 Proposed Action – Construct an Improved Drainage System

Studies conducted by HCFCD indicate that the construction of an offline stormwater detention basin would significantly reduce the risk of flooding and the likelihood of future flood losses and damages to property in the project area. Based on these studies and the overlying need when severe flooding occurs in the project area, HCFCD prepared and submitted an application for FEMA funding under an HMGP grant to develop an offline stormwater detention basin north of Hunting Bayou.

The proposed project would be constructed entirely within an existing 75-acre tract of land east of Homestead Road and north of the Union Pacific railroad tracks, centered at 29°48'47.48"N, 95°17'55.86"W. The proposed action would include improving stormwater detention for Hunting Bayou by enlarging the existing initial basin with the addition of 244 acre-feet of storage for a total effective storage volume of 449 acre-feet. The basin bottom shall be graded with 1% cross slope to provide positive drainage.

In order to utilize the existing storm sewer outfall, the longitudinal slope of the main pilot channel is limited to 0.01%. Secondary pilot channels with slopes of 0.2% are proposed to facilitate the drainage. The proposed side slopes of the interim basin are 4(H):1(V). The basin would include a 20-foot maintenance berm and 10-foot wide backslope swales and interceptor structures approximately every 400 feet around the basin boundary. The top surface area of the basin would be approximately 50 acres. The berm elevation is typically set at 40 feet based on natural ground. The existing double 10-foot by 10-foot monolithic reinforced box culvert, as it enters the basin from the north, will be cut off and headwalls installed. This will act as one source of inflow into the basin. Similarly, the existing double 10-foot by 10-foot monolithic reinforced box culvert, as it exits the basin to the south, will be cut off and headwalls installed. This will act as the outfall to Hunting Bayou as well as an inflow from the rising waters on Hunting Bayou. Appendix B shows a plan view of the proposed project and a typical cross-section of the detention basin.

The proposed action would provide stormwater detention that would reduce flood water volumes during excessive rainfall events. This project would benefit the residents and businesses of Houston and Harris County along Hunting Bayou and associated tributaries by reducing peak volumes during excessive rainfall events.

3.3 Alternatives Considered and Dismissed

There were a number of alternatives considered but later eliminated. These alternatives were eliminated due to cost and/or feasibility and included slight modifications to the proposed project, including the size of the proposed basin. The alternatives with smaller detention basins were dismissed as they produced lower flood control benefits to the surrounding area.

4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

4.1 Physical Resources

4.1.1 Geology and Soils

The proposed project is located in the southeastern part of Texas in the physiographic region known as the Gulf Coast Coastal Prairie. The land surface in the Gulf Coast Coastal Prairie region is a nearly flat depositional plain rising from sea level to about 300 feet (Wermund E.G., 1996). Harris County is primarily drained by the Buffalo-San Jacinto Watershed (USGS Hydrologic Unit Code [HUC] 12040104).

The Geologic Atlas of Texas indicates the proposed project is underlain by Pleistocene-age deposits of the Lissie Formation (TWDB, 2010). Sediments of the Lissie Formation consist of clays, silts, sands, and very minor siliceous gravel. These sediments are fluvial in origin and located on fairly flat and featureless surfaces, except for numerous shallow depressions and pimple mounds.

The soils on the site are mapped as Bernard Urban land complex, Clodine-Urban land complex, and Lake Charles-Urban land complex (USDA, 2010). According to the National Hydric Soils List for Harris County produced by National Technical Committee for Hydric Soils (NTCHS) (February 2011), only Clodine-Urban land complex is listed as having hydric components.

Bernard-Urban land complex (Bg) The Bernard series map unit is described by the Natural Resources Conservation Service (NRCS) as a very deep, somewhat poorly drained and very slowly permeable soil located on uplands. It has a slightly acidic, very dark gray clay loam surface and very dark gray clay subsoil that is slightly acidic in the upper part and neutral to moderately alkaline in the lower part. Urban land consists of land covered by streets, parking lots, buildings and other structures of urban and built up areas.

Clodine-Urban land complex (Ce) The Clodine series consists of very deep, moderately well drained and moderately permeable soils located on uplands. These soils formed in loamy sediments of the Beaumont Formation of Pleistocene age and have a dark gray loam surface layer up to 10 inches thick. Urban land consists of land covered by streets, parking lots, buildings and other structures of urban and built up areas.

Lake Charles-Urban land complex (Lu) The Lake Charles series consists of very deep, moderately well drained and very slowly permeable soils on uplands. These soils formed in thick clayey sediments and have a very dark gray clay surface up to 20 inches thick. Urban land consists of land covered by streets, parking lots, buildings and other structures of urban and built up areas.

The Harris-Galveston Subsidence District (HGSD) has reported that subsidence between 1906 and 2000 is approximately six to seven feet within the project vicinity. HGSD also reports that subsidence of only 1 to 1.5 feet occurred between the years of 1978 and 2000, and there was a decline in subsidence from 1995 to 2000, with only 0 to 0.2 feet of subsidence occurring during that period (HGSD, 2010).

The Houston metropolitan area is not prone to earthquakes. The City of Houston contains approximately 86 mapped and historically active faults. These faults move very slowly and due to the clay below the surface, do not build up friction that results in earthquakes. (Moser, 2002)

The Farmland Protection Policy Act (FPPA) (P.L. 97-98, Sec. 1539-1549; 7 U.S. Code 4201, et seq.) was enacted to minimize the unnecessary conversion of farmland to non-agricultural uses as a result of federal actions. The Natural Resources Conservation Service (NRCS) is responsible for protecting significant agricultural lands from irreversible conversions that result in the loss of an essential food or environmental resource. Prime farmland is characterized as land with the best physical and chemical

characteristics for the production of food, feed, forage, fiber, and oilseed crops. This land is either used for food or fiber crops or is available for those crops, but is not urban, built-up land, or water areas. Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. The site is mapped as Bernard Urban, Clodine-Urban and Lake Charles-Urban land complex soils, which are not classified as prime farmland (USDA, 2010).

No-Action Alternative

The No-Action Alternative would have no impacts on the soils, geology, or prime or unique farmlands of the project area.

Proposed Action Alternative

The proposed project would cause disturbance to soils as part of the site preparation work. Soils would be excavated to construct the detention basin. Exposed soils could be subject to erosion. Silt fence and/or other storm water runoff best management practices (BMPs) would be utilized during construction. Effects to soils would be minor. The proposed project is not anticipated to have any effects to the geology of the project area.

The FPPA is intended to minimize the unnecessary conversion of farmland to non-agricultural uses as a result of federal actions. The proposed project would not affect soils defined by the NRCS as prime or unique farmland. In addition, the project site is land that is already committed to urban development and water storage. Therefore, the proposed project is not subject to compliance review by the NRCS under the FPPA.

4.1.2 Air Quality

The Clean Air Act (CAA) requires that states adopt ambient air quality standards. The standards have been established in order to protect the public from potentially harmful amounts of pollutants. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six air pollutants. These pollutants include sulfur dioxide (SO_2), particulate matter with a diameter less than or equal to ten micrometers (PM_{10}), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead. The EPA has designated specific areas as NAAQS attainment or non-attainment areas. Non-attainment areas are any areas that do not meet (or that contribute to ambient air quality in a nearby area that does not meet) the quality standard for a pollutant. Attainment areas are any areas that meet ambient air quality standards.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries). Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The project is located within Harris County, Texas, which is in the Houston-Galveston-Brazoria (HGB) Non-Attainment Area. The HGB Non-Attainment Area is designated as severe non-attainment for the 8-hour ozone standard with an attainment date as expeditiously as practicable, but no later than June 15, 2019 (TCEQ, 2010).

No-Action Alternative

The No-Action Alternative would have no impacts on air quality in the project area.

Proposed Action Alternative

During the construction phase of this project, there may be temporary increases in air pollutant emissions from construction activities, equipment, and related vehicles. The primary construction related emissions are particulate matter (fugitive dust) from site preparation and construction and non-road MSATs from construction equipment and vehicles. The primary MSAT emission related to construction is diesel particulate matter from diesel powered construction equipment and vehicles.

These emissions are temporary in nature (only occurring during actual construction) and it is not possible to reasonably estimate impacts from these emissions due to limitations of the existing models. The potential impacts of particulate matter emissions will be minimized by using dust control techniques such as covering or treating disturbed areas with dust suppression techniques, sprinkling, and other dust abatement controls, as appropriate. The MSAT emissions will be minimized by measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increasing use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate. Construction equipment with EPA designated Tier 2 and Tier 3 engines would be utilized to minimize emissions. Considering the temporary and transient nature of construction related emissions as well as the mitigation actions to be utilized, it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

4.1.3 Climate Change

The climate in Harris County, Texas can be classified as humid subtropical and characterized by hot, humid summers and cool winters. Harris County has an average annual temperature of 68.8°F and an average annual rainfall of 47.84 inches. Monthly average temperatures range from 51.8°F in January to 83.6°F in July. The highest temperature recorded was 109°F in September of 2000 and the lowest temperature recorded was 7°F in December of 1989. Monthly average rainfall amounts range from 2.98 inches in February to 5.35 inches in June. The highest monthly average rainfall recorded was 16.28 inches in June of 1989 and the lowest monthly average rainfall recorded was 0.04 inches in May of 1998. Snowfall is rare in Harris County with an average of 0.5 inches per year (NOAA, 2010).

Prevailing winds are from the southeast and south, except in January when frequent high pressure areas bring invasions of polar air and prevailing northerly winds. Temperatures are moderated by the influence of winds from the Gulf of Mexico, which results in mild winters and relatively cool summer nights. Another effect of the proximity to the Gulf of Mexico is abundant rainfall, except for rare extended dry periods. Monthly rainfall is evenly distributed throughout the year. Thundershowers are the main source of rainfall and precipitation may vary substantially in different sections of Harris County on a day-to-day basis. The project area is prone to flooding impacts from large tropical storms and hurricanes during late summer and early fall. Major named storms that have impacted the project area in the past few decades include Tropical Storm Claudette (July 1979), Tropical Storm Allison (June 2001), Hurricane Rita (September 2005), and Hurricane Ike (September 2008).

Most climate change scenarios project that greenhouse gas concentrations will increase through 2100 with a continued increase in average global temperatures. Many greenhouse gases, like water vapor and carbon dioxide (CO_2), occur naturally. Fuel burning and other human activities are adding large amounts of CO_2 and other gases to the natural mix at a faster rate than at any other time on record. Other important greenhouse gases produced by human activity include methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6). Due to uncertainties about future emissions and concentrations of greenhouse gases, their net warming effect in the

atmosphere, and the response of the climate system, estimates of future temperature change are uncertain. Advancements in model simulations, combined with more data on observed changes in climate have led to increased confidence in projections of future temperature changes. Recent climate change projections predict the average surface temperature of the earth is likely to increase by 2°F to 11.5°F by the end of the 21st century relative to 1980-1990, with a best estimate of between 3.2°F to 7.2°F.

According to the Intergovernmental Panel on Climate Change (IPCC), an increase in the average global temperature is very likely to lead to changes in precipitation and atmospheric moisture because of changes in atmospheric circulation and increases in evaporation and water vapor. Tropical storms and hurricanes are likely to become more intense, produce stronger peak winds, and produce increased rainfall over some areas due to warming sea surface temperatures, which act to energize tropical storms. Although warming will not be evenly distributed around the globe, most of North America is likely to warm more than the global average (IPCC, 2007).

No-Action Alternative

The No-Action Alternative would have no impacts on climate change.

Proposed Action Alternative

As described in section 4.1.2, during the construction phase of this project there may be temporary increases in air pollutant emissions from construction activities, equipment, and related vehicles. Considering the temporary and transient nature of construction related emissions, it is not anticipated that emissions from construction of this project will have any substantial effects on air quality in the area. Due to the small scale of the project, the proposed action would not measurably exacerbate climate change.

4.2 Water Resources

4.2.1 Water Quality

Water quality is an indicator of the overall health of an aquatic resource and the environment surrounding it. Numerous natural and anthropogenic factors can contribute to the water quality of an aquatic resource. The areas surrounding the project area are highly urbanized; therefore, non-point source pollution is an important factor affecting the water quality of the surrounding watershed. Land use within any watershed directly correlates to the volume of non-point source discharge into the system. The existing and projected land use patterns in the vicinity of the project area make the water quality of the system susceptible to degradation from non-point sources. These non-point source loadings vary with climatological patterns, such as significant rainfall events which typically produce an influx of pollutants from non-point sources.

The project area is in the Hunting Bayou watershed, located in central Harris County, northeast of downtown Houston. The watershed is almost completely contained within the city limits of Houston, Galena Park and Jacinto City. The watershed covers about 30 square miles and flows into the Houston Ship Channel via Hunting Bayou, the watershed's single primary stream. There are approximately 45 miles of open streams within the watershed, including the primary stream and tributary channels. The estimated population within the Hunting Bayou watershed is just over 91,000.

The watershed is highly urbanized, with a mixture of residential, commercial and industrial developments. The middle reach is the only area that contains open space of significant size and includes Herman Brown Park. Most of the new development in the watershed is redevelopment of residential or commercial structures.

The existing basin is largely a dry-bottom basin, with the exception of a series of channels that are located throughout the basin, which did not contain water during the site assessment. The nearest surface water feature to the project is Hunting Bayou, which is located south of the project site. According to the Texas Commission on Environmental Quality (TCEQ), Hunting Bayou Above Tidal is listed as an impaired water body due to bacteria and depressed dissolved oxygen levels that fail to meet assigned water quality standards (TCEQ, 2008). Bacteria impairments are generally the result of urban and agricultural non-point source pollution. Oxygen concentrations in the water column fluctuate under natural conditions, but severe depletion usually results from human activities that introduce large quantities of biodegradable organic materials into surface waters. In polluted waters, bacterial degradation of organic materials can result in a net decline in oxygen concentrations in the water. Oxygen depletion can also result from chemical reactions placing excessive chemical oxygen demand on receiving waters. Water quality is primarily regulated through Section 402 of the Clean Water Act.

No-Action Alternative

Construction of the detention basin would not occur as part of the No-Action Alternative and storm events would continue to flood the urban areas in Houston along Hunting Bayou. Flooding events would continue to inflict damage to surrounding properties. Water quality would be affected through continued non-point source pollution generated from the surrounding watershed.

Proposed Action Alternative

The proposed detention basin to be constructed will be a dry-bottom basin. The grass-lined channels in the basin will aid in removing Total Suspended Solids (TSS) from the aquatic system over the long term, resulting in cleaner and clearer water within the watershed. This project would benefit the landowners along Hunting Bayou downstream of the project area.

Potential adverse impacts to water quality associated with the construction of the proposed project include the potential for erosion and sedimentation during construction. Excavation and grading would be required for site preparation. During this period, stormwater runoff could carry sediment offsite into receiving water and possibly result in temporary increases in TSS. The impacts to receiving waterways downstream of this project would be temporary and minimal. HCFCD will prepare a Storm Water Pollution Prevention Plan (SW3P) and implement erosion and sedimentation control BMPs to minimize any detrimental effects to water quality during construction.

The project will disturb more than one acre. HCFCD will be responsible for obtaining a Texas Pollutant Discharge Elimination System (TPDES) storm water permit from TCEQ before the start of construction and complying with all permit conditions. Any effects to water quality associated with the construction of the new facility would be short term and minimized by the use of BMPs. The project is not expected to exacerbate bacterial levels to areas downstream of the project site. No long-term effects to water quality are expected as a result of the proposed project.

4.2.2 Waters of the United States, Including Wetlands

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged or fill material into waters of the U.S., including wetlands, pursuant to Section 404 of the Clean Water Act (CWA). Wetlands are identified as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. In addition, Executive Order (EO) 11990, Protection of Wetlands, directs federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands on federal property.

Under Section 404 of the CWA, a permit is required from the USACE for any activities involving the discharge of dredged or fill material into waters of the U.S., including wetlands and tidally influenced waters. Dependent on the scope and type of impacts to waters of the U.S., authorizations may be in one of two primary forms: general permits, which are issued for a specific category of similar activities and include nationwide permits defined in 33 CFR Part 30, and individual permits issued after individual review of the project, project alternative, and proposed mitigation.

A review of the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map of the area was conducted in order to identify the potential for wetlands and/or other waters of the U.S. There is one potential wetland area identified in the project area on the NWI map. Figure 4 displays the location of the potential wetland area identified by USFWS in relation to the project limits. The wetland area is identified by USFWS as Palustrine, Forested, and Temporarily Flooded (PF01A).

A wetland delineation of the proposed project site was performed by SWCA Environmental Consultants in October 2006 that identified three areas, totaling 1.47 acres, that meet the definition of wetlands. The wetland delineation performed was coordinated with the USACE. An Approved Jurisdictional Determination (AJD) was issued by the USACE on November 17, 2008 (SWG-2007-1864). The USACE determined that the project site contains jurisdictional wetlands, pursuant to Section 404 of the CWA. A copy of the AJD is included in Appendix C and the wetlands delineated by SWCA are represented on Figure 4.

The jurisdictional wetlands found on the project site are outside the boundary of the proposed detention basin and will not be impacted by the proposed project.

No-Action Alternative

The No-Action Alternative would have no impacts on waters of the United States, including wetlands, in the project area.

Proposed Action Alternative

The proposed project is not anticipated to impact waters of the U.S., including wetlands; therefore, a Section 404 permit under the CWA will not be required. There are no navigable waters in the area; therefore, the proposed project would not have compliance issues under Section 10 of the Rivers and Harbors Act of 1899. HCFCD is responsible for proper identification of wetlands and must ensure that there is no net loss of wetlands. Under EO11990 (Protection of Wetlands); HCFCD is responsible for coordinating with and obtaining any required Section 404 Permit(s) from the United States Army Corps of Engineers (USACE) prior to initiating work. The applicant shall comply with all conditions of the required permit. All coordination pertaining to these activities should be documented and copies forwarded to the State and FEMA as part of the permanent project files.

HCFCD will ensure that BMPs are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the Clean Water Act and Executive Order 11990.

4.2.3 Floodplains

EO 11988 (Floodplain Management) requires Federal agencies to avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. FEMA uses Flood Insurance Rate Maps (FIRMs) to identify the regulatory 100-year floodplain for the National Flood Insurance Program (NFIP). Consistent with EO 11988, a FIRM was examined during the preparation of this EA. According to the Harris County Texas FEMA FIRM Panels 48201C0685L and 48201C0695L, the entire project area is located in Flood Zone AE, which is within the 100-year floodplain (FEMA,

2007). Figure 4 displays the location of the 100-year flood zone identified by FEMA in relation to the project limits.

No-Action Alternative

Under the No-Action Alternative, no construction would occur and there would be no impacts to the floodplain.

Proposed Action Alternative

The proposed project facilities would impact the 100-year floodplain as the entire detention basin would be constructed within the 100-year floodplain. To comply with EO 11988, FEMA is required to follow the procedure outlined in 44 CFR Part 9 to ensure that alternatives to the proposed action have been considered. This process, also known as the 8-step planning process, has been applied to the proposed action and is included below.

Step 1 of the 8-step planning process is to determine whether the project is located in the floodplain. FEMA has determined that the proposed action alternative is located in a floodplain, as mapped by FIRM Panels 48201C0685L and 48201C0695L, dated June 18, 2007.

Step 2 is to notify and involve the public in the decision-making process, which will be incorporated into the notice of availability for this EA which will be published in the Houston Chronicle and online at www.fema.gov/pln/ehp/envdocuments/ea-region6.shtm.

Step 3 is to identify and evaluate practicable alternatives to locating the proposed project in the floodplain, including alternative sites and actions outside of the floodplain. Various size alternatives for the detention basin were considered, however, these alternatives would have also been located within the 100-year floodplain. Elevation of structures and roadways to mitigate flood impacts would also have been located in the 100-year floodplain. No alternative action or project site location exists outside of the 100-year floodplain that would meet the stated purpose and need of this project.

Step 4 is to identify impacts associated with occupancy and modification of the floodplain and support of floodplain development that could result from pursuing the proposed action alternative. Beneficial impacts would occur to the floodplain due to the reduction of flooding events in the Houston area. The previous flooding experienced within the project area is anticipated to be reduced as a result of the proposed project. Adverse impacts to structures, infrastructure, and public safety from flooding would be significantly reduced. The proposed detention basin would reduce the water surface elevations in the affected area by approximately 0.20 to 0.40 feet, with an average reduction of about 0.25 feet. The proposed project would add capacity to the 100-year floodplain. The proposed project is located within a developed area of Houston and it is not anticipated to encourage occupancy of the floodplain. The intent is to protect existing structures from flood risk.

Step 5 is to develop measures to minimize the impacts and restore and preserve the floodplain. Under the proposed action, impacts as a result of the project are beneficial and the proposed action will minimize the impact of floods on human health, safety and welfare. HCFCD would coordinate with the local floodplain administrator and obtain required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions would be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files.

Step 6 is to determine whether the proposed action is practicable and to reevaluate alternatives. FEMA has determined that there is no practicable alternative action or location outside of the floodplain that will address the purpose and need. Pursuing the no action alternative will result in structures and residents

remaining at risk for flood hazards. Construction of the Hunting Bayou detention basin would result in a reduction of flooding in the area. Pursuing the proposed action in the floodplain clearly outweighs the requirement of EO 11988.

Step 7 requires that the public be provided with an explanation of any final decision that the floodplain is the only practicable alternative. HCFCD must prepare and provide a Public Notice issued 15 days prior to the start of construction of any final decision where a proposed floodplain or wetland project is the only practicable alternative. Documentation of the final public notice is to be forwarded to FEMA for inclusion in the permanent project files.

Step 8 requires the review of the implementation and post-implementation phases of the proposed action to ensure that the requirements stated are fully implemented. The conditions of this HMGP application require the review of implementation and post-implementation phases to ensure compliance with EO 11988 and floodplain development requirements.

The proposed project is one of several ongoing projects the HCFCD has planned for Hunting Bayou. A Letter of Map Revision (LOMR) would eventually be submitted reflecting the construction of these projects.

4.3 Biological Resources

4.3.1 *Vegetation*

The project area is located in the Gulf Coast Prairies and Marshes natural region of Texas, which includes approximately 20,312 square miles (UT, 1978). Gulf coast prairies are nearly level with slow surface drainage and elevations ranging from sea level to approximately 250 feet above mean sea level (MSL). In addition to wildlife habitat, the prairies are used for crops, livestock grazing, and urban and industrial centers. It is estimated that as much as 99 percent of the coastal prairies in Texas have been converted to agricultural land (McMahan, et. al, 1984).

Gulf coast marshes are low, wet, marshy coastal areas commonly inundated with saline water, ranging from sea level to a few feet in elevation above MSL. These marshes support species of sedges, rushes, cordgrasses, reeds, and forbs, which provide beneficial wildlife habitat for numerous birds and marine fisheries. Many areas in the region have been invaded by noxious volunteer species such as honey mesquite (*Prosopis glandulosa*), smutgrass (*Sporobolus indicus*), and Chinese tallow (*Triadica sebifera*).

According to *The Vegetation Types of Texas*, the project area is within the Urban (Number 46) vegetation type (McMahan, et.al., 1984). This designation indicates that the vegetation in this region has largely been impacted by urbanization.

Vegetation within the project study area is characteristic of an urbanized park-like setting. Five general vegetation communities were observed within the project limits: herbaceous upland, scrub shrub upland, forested upland, palustrine scrub shrub wetland, and palustrine forested wetland. Photographs in Appendix A show the typical vegetation present within the project study area.

The dominant vegetation community throughout the project area is the herbaceous upland community consisting primarily of King Ranch bluestem (*Bothriochloa ischaemum*), fringed windmill grass (*Chloris ciliata*), sweetgum, Chinese tallow, water oak (*Quercus nigra*), and black gum (*Nyssa sylvatica*).

The scrub shrub and forested uplands located on the project site included Chinese tallow (*Sapum sebiferum*), Chinese privet (*Ligustrum sinese*), yaupon (*Ilex vomitoria*), and sweetgum (*Liquidambar styraciflua*) as the dominant shrub species. The vine species include pepper vine (*Ampelopsis arborea*)

and field blackberry (*Rubus arvensis*) while the dominant herbaceous species include immature Chinese tallow.

The wetland areas on the project site are dominated by sweetgum, black gum, Chinese tallow, eastern cottonwood (*Populus deltoides*), eastern baccharis (*Baccharis halimifolia*), dwarf palmetto (*Sabal minor*), hackberry (*Celtis occidentalis*), and arrowwood (*Viburnum dentatum*).

No-Action Alternative

Under the No-Action Alternative, there would be no impacts to vegetation on the project site.

Proposed Action Alternative

Under the proposed action alternative, there would be impacts to vegetation on the project site. Excavation activities would impact on-site habitat. Some trees located within the project footprint would be impacted; however, HCFCD will plant native tree species around the proposed detention basin perimeter and along the slopes, post construction. Herbaceous vegetation in the existing detention site would be impacted by construction activities, including excavation and the use of construction equipment. Impacts to vegetation are expected to be minimal, as herbaceous vegetation would re-vegetate the project area from natural seed source on the project site. Exposed side slopes would be manually re-vegetated using BMPs upon completion of construction to minimize soil erosion impacts. No wetland vegetation will be impacted as wetlands found on the project site are outside the boundary of the proposed detention basin.

4.3.2 Threatened and Endangered Species and Critical Habitat

4.3.2.1 Federal Regulations

Since 1973, the Endangered Species Act (ESA) has regulated a wide range of activities affecting flora and fauna classified as endangered or threatened. Reauthorized in 1988, provisions of the act apply only to species listed in the Federal Register as endangered or threatened. Under the provisions of the ESA, all federal agencies are required to undertake programs for conservation of threatened and endangered species and are prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or alter its critical habitat.

A species may be classified as “endangered” when it is in danger of extinction within the foreseeable future in all or a significant portion of its range. A “threatened” classification is assigned to a species likely to become endangered within the foreseeable future in all or a significant portion of its range. A “species” includes any species or subspecies of fish, wildlife, or plant. It also includes any variety of plant or any distinct population segment of any vertebrate species that interbreeds when mature. Excluded are those species of the Class Insecta deemed by the Secretary to be pests presenting an overwhelming and overriding risk to man. Additionally, actions affecting species proposed for listing would require the same coordination with state and federal agencies as those actions affecting listed species.

Specifically, the ESA prohibits acts, by anyone or any organization, including:

- The importation and exportation of endangered species from the U.S.,
- Taking (killing, capturing, collecting, harming, harassing, pursuing, hunting, trapping) within the United States and territorial waters,
- Taking on the high seas,
- Possessing, delivering, selling, carrying, transporting, or shipping any such species unlawfully taken within the United States or on the high seas, or

- Selling or offering for sale any such species in interstate or foreign commerce.

The USFWS and the National Marine Fisheries Service (NMFS) share responsibility for administration of the ESA. In general, the USFWS is responsible for terrestrial and freshwater species and migratory birds, while the NMFS regulates and protects marine species and anadromous fish. Additionally, the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service oversees importation and exportation of listed terrestrial plants.

The Federal list of endangered and threatened species and species of concern in Harris County is located in Table 1.

Table 1: Federal List of Endangered and Threatened Species and Species of Concern in Harris County

Common Name	Scientific Name	Federal Status	Habitat Description	Suitable on-site Habitat Present (Nearest NDD-EO)
AMPHIBIANS				
Houston Toad	*Anazyrus houstonensis*	E†	Sandy soil, breeds in ephemeral pools	No
BIRDS				
American Peregrine Falcon	*Falco peregrinus anatum*	DL†	Potential migrant. Winters along coast; occupies wide range of habitat during migration, including urban, concentrations along coast and barrier islands	TM
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL†	Potential migrant. Winters along coast; occupies wide range of habitat during migration, including urban, concentrations along coast and barrier islands	TM
Bald Eagle	*Haliaeetus leucocephalus*	DL	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water	No
Brown Pelican	*Pelecanus occidentalis*	SOC†	Near coastal and near shore areas; nests on islands and spoil banks	No
Mountain plover	*Charadrius montanus*	PT†	Nests on high plains or shortgrass prairie, on ground in shallow depression (breeding); shortgrass plains and bar, dirt (plowed) fields (non-breeding)	No
Red-cockaded Woodpecker	*Picoides borealis*	E†	Cavity nests in older pines (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly	No
Sprague's Pipit	*Anthus spragueii*	C†	Migrant, upland prairie, coastal grasslands	No
Whooping Crane	*Grus americana*	E†	Potential migrant through plains throughout most of the state to the coast; winters in coastal marshes of Aransas, Calhoun, and Refugio Counties	TM
FISH				
Smalltooth Sawfish	*Pristis pectinata*	E†	Young found close to shore in muddy and sandy bottoms, in sheltered bays, on shallow banks, and in estuaries or river mouths; Adults found in various habitat types (mangrove, reef, seagrass, and coral)	No

Table 1: Federal List of Endangered and Threatened Species and Species of Concern in Harris County

Common Name	Scientific Name	Federal Status	Habitat Description	Suitable on-site Habitat Present (Nearest NDD-EO)
MAMMALS				
Louisiana Black Bear	*Ursus americanus luteolus*	T†	Bottomland hardwoods; large, undisturbed forested areas	No
Red Wolf	*Canis rufus*	E†	Extirpated; formerly known throughout the eastern half of Texas in brushy and forested areas, as well as coastal prairies	No
REPTILES				
Green Sea Turtle	*Chelonia mydas*	T†	Gulf and bay system; shallow water seagrass beds, open water between feeding and nesting areas, barrier island beaches	No
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	E†	Gulf and bay system, adults stay within shallow waters of Gulf of Mexico	No
Leatherback Sea Turtle	*Dermochelys coriacea*	E†	Gulf and bay system	No
Loggerhead Sea Turtle	*Caretta caretta*	T†	Gulf and bay system primarily for juveniles, adults are pelagic	No
VASCULAR PLANTS				
Texas Prairie Dawn	*Hymenoxys texana*	E	Poorly drained, sparsely vegetated areas (slick spots) at the base of mima mounds in open grassland or almost barren areas on slightly saline soils that are sticky when wet and powdery when dry.	No

NOTES:
† Species is listed by the U.S. Fish and Wildlife Service, however, it is not listed to occur within this county by the Clear Lake office of the U.S. Fish and Wildlife Service (August 2010).

DL = Delisted Taxon
DM = Delisted Taxon, recovered, being monitored first five years
E = Endangered
T = Threatened
EO = Element of Occurrence
C = Candidate
NDD = Natural Diversity Database
SOC = Species of Concern
TM = Transitory Migrant
PT = Proposed Threatened

The bald eagle is listed by the USFWS as occurring within Harris County, however, the bald eagle has been delisted and is not protected by the ESA. The bald eagle is protected under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.

According to the Biological Assessment (BA) performed by AECOM in May 2010, no suitable on-site habitat was considered to be present for the Texas prairie dawn at the project site based on surveys conducted in April 2008. Due to its urban setting, the amount of anthropogenic activities on and around the project area and the amount of previous disturbance to the project site, the available on-site habitat was considered suboptimal for this species. A species specific survey for Texas prairie dawn was conducted by a plant taxonomist on November 13, 2006, prior to the construction of the interim basin. The survey was not conducted during flowering season, however no suitable habitat or associated species typical of the Texas prairie dawn were identified at the project site. Therefore, the proposed project would have no effect to the Texas prairie dawn.

Threatened or endangered transitory migrant species could potentially visit the site including the American and Arctic peregrine falcon, and whooping crane. These species are unlikely to be affected by the proposed project because of their high mobility.

No critical habitat exists in the project area and, therefore, the project will not modify critical habitat.

4.3.2.2 Listed Species Occurrence

Texas Parks and Wildlife Department (TPWD) was contacted on April 20, 2011, regarding their knowledge of recorded data about the documented presence or potential presence of listed species on or adjacent to the site. TPWD responded on April 28, 2011, with a search of the National Diversity Database (NDD) and stated that the database does not have information available at this time for the project area. However, the following federally listed species were documented within a 10-mile radius of the project site:

- Bald eagle (*Haliaeetus leucocephalus*), 1 occurrence (EOID 7972)
- Texas prairie dawn (*Hymenoxys texana*), 8 occurrences (EOIDs 3775, 1954, 4247, 17, 6856, 2110, 26, and 3565)
- Houston toad (*Anaxyrus houstonensis*), 1 occurrence (EOID 3159)

The absence of data does not mean there is an absence of threatened, endangered or rare species on or near the site. The NDD cannot be used for presence/absence determinations. Copies of correspondence with TPWD and USFWS can be found in Appendix C.

The State of Texas threatened and endangered species inventory compiled by TPWD was also consulted during the listed species assessment for the potential occurrence of these species and/or their habitats.

No-Action Alternative

Under the No-Action Alternative, there would be no impacts to endangered or threatened species.

Proposed Action Alternative

Based upon the information provided above, the proposed project will not affect the Texas prairie dawn. Suitable habitat for this species is not present on-site. Under Section 7 of the ESA, FEMA has determined that the proposed project will have no effect on any federally listed species.

4.3.3 Wildlife and Fish

The project area falls within the pine-oak forest subdivision of the Austroriparian Biotic Province (Blair, 1950) and includes portions of the coastal prairie (Tharp, 1939). The regional vegetation of the coastal prairies is characterized by tall bunchgrass, seashore saltgrasses, loblolly pine (*Pinus taeda*), yellow pine (*Pinus echinata*), red oak (*Quercus rubra*), post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), sweetgum, magnolia (*Magnolia grandiflora*), black gum, water oak and other species of oaks, elms, and ashes, as well as the highly diagnostic Spanish moss (*Tillandsia usneiodes*) and palmetto (*Sabal glabra*).

The vegetation present within the project study area could support limited diversity of wildlife species, such as small birds and mammals. Some mammalian species may continue to exist for years in these areas because of their ability to adapt to urban development. Typical mammals that could occur within the project area include nine-banded armadillo (*Dasypus novemcinctus*), Virginia opossum (*Didelphis virginiana*), house mouse (*Mus musculus*), common raccoon (*Procyon lotor*), and eastern cottontail (*Sylvilagus floridanus*).

The Fish and Wildlife Coordination Act (FWCA) protects fish and wildlife when federal actions result in a modification of a natural stream or body of water. If a modification of a natural stream or body of water is expected, coordination with the USFWS is required.

Section 305(b) of the Magnuson-Stevens Fishery Management and Conservation Act (1996) requires that the Fishery Management Councils (FMC) and other federal agencies identify and protect important marine and anadromous fish habitat, referred to as Essential Fish Habitat (EFH). EFH is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. The proposed project is located within Harris County, Texas which has been identified as containing tidally influenced waters. The proposed project does not contain and does not discharge stormwater into a tidally influenced tributary; therefore, the requirements of the Magnuson-Stevens Fishery Management and Conservation Act do not apply.

The proposed project is within the North American Flyway and neo-tropical migrants pass over the project area annually. The Migratory Bird Treaty Act (MBTA) protects many of these species and states that it is unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory birds, including the feathers or other parts, nests, eggs, or migratory bird parts. An MBTA survey was conducted by TCB, Inc. in June 2008 and can be found in Appendix C. This survey was conducted prior to the construction of the interim basin which involved the removal of existing trees and brush. Though the proposed project limits contain some forested uplands as described in the vegetation section of this EA, the proposed basin will be installed in an open area that has largely already been cleared of trees and shrubs.

No-Action Alternative

Under the No-Action Alternative, there would be no impacts to wildlife and fish.

Proposed Action Alternative

Under the proposed action alternative, wildlife may be temporarily displaced during construction activities. Burrows of small mammals could be destroyed during construction activities. The project would replace the existing habitat with a habitat that is very similar and it would be expected that any displaced wildlife would return post-construction to utilize the available habitat. Small mammals could re-establish burrows post-construction.

The proposed action alternative would not result in the modification of a natural stream or body of water. Coordination with the USFWS is not required pursuant to the FWCA.

HCFCD does not anticipate a take of migratory birds based on the habitat that is available at the project site.

4.4 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended requires federal agencies “to take into account” the “effect” that an undertaking would have on “historic properties”. Historic properties are those included in or eligible for inclusion in the National Register of Historic Places (NRHP) and may include archeological sites, buildings, structures, sites, objects, and districts. In accordance with the Advisory Council on Historic Places regulations pertaining to the protection of historic properties (36 CFR 800.4), federal agencies are required to identify and evaluate historic-age resources for NRHP eligibility and assess the effects that the undertaking would have on historic properties.

The American Indian Religious Freedom Act of 1978 (AIRFA) (P.L. 95-341; 92 Stat. 469; 42 U.S.C. 1996) resolves that it shall be the policy of the United States to protect and preserve for the American Indian, Eskimo, Aleut, and Native Hawaiian the inherent right of freedom to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. Federal agencies are directed to evaluate their policies and procedures to determine if changes are needed to ensure that such rights and freedoms are not disrupted by agency practices. The Act, a specific expression of First Amendment guarantees of religious freedom, is not implemented by regulations.

The Native American Grave Protection and Repatriation Act (NAGPRA) (P.L. 101-601, 25 U.S.C. 3001 et seq.) requires federal agencies and museums receiving federal funds to locate, inventory, and determine the ultimate disposition of cultural items, including Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony (NAGPRA materials) under their possession or control. The Act also requires consultation with appropriate Native American tribes, Native Alaskan, and Native Hawaiian organizations regarding the identification and affiliation of these materials as well as those resulting from subsequent intentional excavations and inadvertent discoveries.

A cultural resources investigation was conducted by Moore Archeological Consulting, Inc. (MAC) in April, 2005. The purpose of the investigation was to determine, through excavation of shovel tests during a pedestrian survey, whether potentially significant archeological deposits existed within the project area. No intact, potentially significant archeological deposits were encountered as a result of the survey and no further cultural resources investigations were recommended. The survey was submitted to the Texas Historical Commission (THC) for approval under the Antiquities Code of Texas and the THC approved the report and made a determination of no historic properties affected in June 2005. On July 15, 2010, the State Historic Preservation Officer (SHPO) determined that no additional survey of the project site was required and that the project could proceed. The MAC report and SHPO concurrence are included in Appendix C.

A search of the Texas Historic Sites Atlas (THC, 2010) resulted in no historical markers, national register properties, national register districts, cemeteries, or museums within 1,000 meters of the proposed project (i.e. the area of potential effect [APE]).

No-Action Alternative

The No-Action Alternative would have no effect on cultural resources in the area.

Proposed Action Alternative

Based on the MAC report, THC Atlas results, and consultation with the SHPO, FEMA has determined that the proposed action alternative will have no effect on historic properties. In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by HCFCD and access to the sensitive area will be restricted by HCFCD. The applicant will inform TDEM and FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

4.5 Socioeconomic Resources

4.5.1 Environmental Justice

EO 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority and low-income populations. This Executive Order also tasks federal agencies with ensuring that public notifications regarding environmental issues are concise, understandable, and readily accessible. Socioeconomic and demographic data were studied to determine if a disproportionate number of minority or low-income persons have the potential to be adversely affected by the proposed project.

The study area for Environmental Justice included Census Tract (CT) 2302, Block Group (BG) 5. The 2010 Census lists 100 percent of the residents within the study area as a minority consisting of Hispanics or Latinos, Black or African Americans, American Indians, Alaska Natives, Asians, Native Hawaiians and other Pacific Islanders. Of the 91 residents within the study area, 5.5 percent identify themselves as Hispanic or Latino and 91.2 percent identify themselves as Black or African American. The median family income within the project study area in 1999 was $33,750. The 2011 poverty guideline, per the US Department of Health and Human Services (HHS), is $10,890 for a one person family and $22,350 for a four person family.

EO 13166 "Improving Access with Limited English Proficiency" requires agencies to examine the services they provide, identify any need for services to those with Limited English Proficiency (LEP), and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. Census tract and block group data was obtained from the 2000 Census (2010 Census data is not yet available) for the population five years and over with the ability to speak English "Less than Very Well." The 2000 Census lists 1.3 percent of the Block Group 5 population as able to speak English less than "Very Well". None of the LEP populations would be discriminated against as a result of the proposed project.

No-Action Alternative

The No-Action Alternative would not have disproportionate impacts on minority or low-income populations.

Proposed Action Alternative

The proposed action alternative is not expected to have adverse or disproportionate impacts on minority or low-income populations. The benefits of the proposed project are expected to be proportional to all residents in the area.

4.5.2 Noise

Noise is generally defined as unwanted sound. The closest noise receptors to the proposed project site would be the surrounding residential areas to the north of the project site. Noise levels within and adjacent to the project area would increase during the proposed construction activities as a result of construction equipment and vehicular traffic. The noise levels generated would be limited to workday daylight hours for the duration of the construction work. Local noise ordinances from Section 30 of the Code of Ordinances of the City of Houston, Texas prohibit any person from conducting, permitting, or allowing any activity or sound source to produce a sound discernible at any location beyond the property lines of the property on which the sound is being generated that when measured exceeds 58 decibels (dB(A)) between the hours of 10:01 p.m. and 6:59 a.m. or 65 dB(A) between the hours of 7:00 a.m. and 10:00 p.m. Upon completion of the proposed project, noise would return to pre-construction levels.

No-Action Alternative

The No-Action Alternative would not result in impacts to noise receivers in the area.

Proposed Action Alternative

Construction of the proposed action alternative would result in a slight increase in noise during the construction of the facility. The increase in noise is expected to be minor and would not affect any sensitive noise receivers. Local noise ordinances would be adhered to and construction equipment would not be run between the hours of 10:01 p.m. and 6:59 a.m.

4.5.3 Traffic

Roadways in the immediate vicinity of the proposed project include Kirkpatrick Boulevard to the east and Homestead Road to the west. Miley Street is north of the project site and the Darien Street ROW transects the site from north to south. Homestead Road is located along the western boundary of the project site, does not provide direct access to the project site but continues south to intersect Interstate Highway (IH) 610 approximately 1,500 feet south of the project site. Miley Street runs east to west and is the southernmost street in the single family residential subdivision to the north of the project site. IH 610 is a major highway located approximately 0.35 mile south of the project site that provides access to the Houston metropolitan area.

No-Action Alternative

The No-Action Alternative would have no effect on transportation in the area.

Proposed Action Alternative

Implementation of the Proposed Project Alternative would likely cause a slight increase in daily traffic counts along Homestead Road. Contractors and project related construction would access the site via Homestead Road. This change in traffic patterns would be minor and temporary in nature and would return to pre-construction patterns once the proposed action is completed. No road closures would result from implementation of the proposed action alternative.

4.5.4 Public Service and Utilities

The project site is within the public service jurisdictions of the Houston Fire Department, Houston Police Department, Harris County Sheriff's Department and Harris County Constable Precinct 1.

No utilities were observed on the project site during the site assessment on March 31, 2011. Utilities observed adjacent to the project site included underground storm sewers and tower mounted high voltage transmission lines. Photographs of all utilities observed on and adjacent to the project site are included in Appendix A.

One grated inlet was observed on-site which likely lead to underground drainage pipes. This structure is likely utilized for stormwater drainage along the Darien Street ROW near the eastern boundary of the project site. Tower mounted electrical transmission lines are located along the southern boundary of the project site.

No-Action Alternative

The No-Action Alternative would have no effect on public services or utilities.

Proposed Action Alternative

The proposed action alternative would have no effect on public services or utilities nor would it increase the demand for such services. The existing grated inlet would be removed to allow for construction of the stormwater detention basin, increasing stormwater detention capacity and alleviation of potential flooding during storm events. Tower mounted high voltage transmission lines are outside of the southern project boundary and would not be impacted by the proposed project.

4.5.5 Public Health and Safety

Safety and security issues that were considered in this EA include the health and safety of area residents, the public at-large, and the protection of personnel involved in activities related to the implementation of the proposed project.

No-Action Alternative

The No-Action alternative could have a negative effect on the general safety of the residents within the proposed project area. Without augmentation of the current drainage system, Hunting Bayou and adjacent tributaries could continue to flood residential and commercial properties in the vicinity of the proposed project and affect downstream communities. Due to the increasing impervious cover within the watershed, the current stormwater drainage system was not designed to contain higher than peak stormwater events, which caused the project area to experience flooding and associated property damage as a result of Hurricane Ike.

Proposed Action Alternative

Proposed improvements to the stormwater drainage system would provide the local community and citizens of northeast Harris County along Hunting Bayou with flood protection due to the proposed facilities' ability to detain water during above peak volume storm events. Detention of flood waters as a result of construction of the proposed project would minimize future loss of property and/or life in the vicinity of the proposed project.

4.5.6 Hazardous Materials

Hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), are defined as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may; (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or; (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Hazardous materials and wastes are regulated in Texas by a combination of federal laws and state laws. Federal regulations governing the assessment and disposal of hazardous wastes include RCRA, the RCRA Hazardous and Solid Waste Amendments, Comprehensive Environmental Response, Compensation and Liability Act, Solid Waste Act, and Toxic Substances Control Act.

Visual observation of the project area did not reveal obvious existing or potential hazardous materials, substances, or conditions. No drums or other sources of potential hazardous materials were observed in the project area.

A Phase I Environmental Site Assessment (Phase I ESA) was conducted on the project site by Tetra Tech EM, Inc. (Tetra Tech) in June of 2005. This assessment found that 34 Environmental Data Resources, Inc. (EDR) listed sites occur within one mile of the project site, but determined that none of these sites

would have an adverse effect on the project site. This Phase I ESA also determined that one recognized environmental condition (REC) exists within the project site based on a lack of data regarding two aboveground storage tanks (ASTs). The ASTs were observed on the 1953 and 1962 historical aerial photographs but according to Tetra Tech's Phase I ESA, no records exist for these features. Tetra Tech recommended further sampling of the area immediately surrounding the ASTs to determine if historical impacts to soils existed.

In October of 2005, Tetra Tech conducted a Limited Phase II ESA based on evidence of the presence of potential ASTs presented in the Phase I ESA. Tetra Tech sampled four locations in the vicinity of the ASTs for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary-butyl ether (MTBE). Of the four sampling wells, Tetra Tech determined that none were "above associated laboratory reporting limits of Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCLs) for soil" in the vicinity of the ASTs. Based on a restrictive layer encountered, Tetra Tech recommended that additional soil sampling was necessary to sample beneath any resistant layers for potential petroleum hydrocarbons.

In response to Tetra Tech's recommendation for additional soil sampling at this location, ENSR Corporation (ENSR) conducted an additional Phase II ESA in the same location as Tetra Tech. ENSR based their report on the Tetra Tech's documentation of a trace amount of xylene in Sampling Location SB-02-1-1.5'. ENSR sampled three locations for TPH, volatile organic compounds (VOCs), and RCRA 8 metals. ENSR also classified the ASTs documented by Tetra Tech as a waste water treatment facility containing wastewater basins instead of the aboveground petroleum storage tanks. ENSR documented no chemicals of concern (COCs) at or above TRRP PCLs for VOCs or TPH in either soil or groundwater. ENSR also documented that no RCRA 8 metals exceeded Texas-Specific Background Concentrations except lead and barium. ENSR concluded that elevated concentrations of both lead and barium are likely the result of naturally occurring concentrations in the area and not due to contamination originating from the former wastewater treatment facility. ENSR recommended no further subsurface investigation of the site immediately surrounding the reported waste water tanks.

Executive Summaries from all three reports are included in Appendix D.

Multiple federal and state government environmental databases were recently searched by EDR on February 28, 2011. The Executive Summary and Radius Search Map of this EDR Database Report are included in Appendix D. Specific environmental databases searched are described in pages 1 - 4 of the EDR Database Report Executive Summary. No facilities or properties within the project limits were listed on the databases reviewed by EDR.

According to the EDR Radius Search Map, seven EDR listed sites occur within one mile of the project site and are detailed below in Table 2.

Table 2: EDR Listed Sites Occurring Within One Mile of the Project Site

EDR Site ID	Site Name	Database	Listed Location	Distance From Site (miles)	Status
1	United Transports Inc.	CERC-NFRAP	6505 Homestead Houston, Texas 77028	0.332	Archived/Inactive; No Reported Violations
A2	5600 Homestead	CLI	5600 Homestead Harris County, Texas	0.366	Active; No Reported Violations
B3	CSI	LPST	6701 North Loop E Houston, Texas 77028	0.374	Final Concurrence Issued; Case Closed
B4	Rapid Truck Repair	CERC-NFRAP	6701 North Loop E Houston, Texas 77028	0.374	Archived/Inactive; No Reported Violations

Table 2 (continued): EDR Listed Sites Occurring Within One Mile of the Project Site

EDR Site ID	Site Name	Database	Listed Location	Distance From Site (miles)	Status
A5	Star Stop 4	LPST	6929 North Loop E Houston, Texas 77028	0.377	Final Concurrence Issued; Case Closed
6	Texas Peter Bilt	LPST	6300 E North Loop Houston, Texas 77028	0.427	Final Concurrence Issued; Case Closed
7	Eltex Chemical & Supply Co	CORRACTS	4050 Homestead Rd Houston, Texas 77028	0.948	Active; No Reported Violations

Two sites (EDR Site ID 1 – United Transports Inc. and EDR Site ID B4 – Rapid Truck Repair) are listed as Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)-No Further Remedial Action Planned (CERC-NFRAP) or sites that have been assigned archived status in the inventory of the CERCLIS. As stated in the EDR report, archived status indicates that, to the best of the EPA's knowledge, assessment at that site has been completed and no further steps will be taken to list the site on the National Priorities List (NPL). Neither site is likely to affect the environment of the project site in the future.

One site (EDR Site ID A2 – 5600 Homestead) is listed in the Closed Landfill Inventory (CLI). This site was identified in the EDR report as a Type 1 landfill operated by the City of Houston. A Type 1 landfill is defined by the Texas Administrative Code (TAC), Title 30, Part 1, Chapter 330 as a standard landfill for the disposal of municipal solid wastes. No reports of soil or groundwater contamination have resulted from this site since its closure in 1992. Hunting Bayou, a probable hydraulic barrier to shallow subsurface groundwater flow, also exists between this site and the project site. The 5600 Homestead site is not likely to affect the environment of the project site in the future.

One site (EDR Site ID 7 – Eltex Chemical & Supply Co.) is listed in the RCRA Corrective Action Sites (CORRACTS) database as a handler and/or manufacturer of hazardous waste with recorded RCRA Corrective Action Activity. No reports of spills, releases, or other similar violations are reported in the EDR report for this facility. The Eltex Chemical & Supply Co. site is not likely to affect the environment of the project site in the future.

Three additional sites (EDR Site ID B3 – CSI, Site ID A5 – Star Stop 4, and Site ID 6 – Texas Peter Bilt) are listed in the Leaking Petroleum Storage Tanks (LPST) database operated by the TCEQ. All three sites are located south of Hunting Bayou, a probable hydraulic barrier to shallow subsurface groundwater flow. Both the Texas Peter Bilt site and CSI site were also identified on the 2005 Phase I ESA by Tetra Tech and determined not to be RECs of the project site. Due to their location, none of these three LPST sites are likely to affect the environment of the project site in the future.

Based on review of database records and site investigations, these seven sites do not represent RECs and are not likely to have the potential to affect the environment of the project site in the future.

No-Action Alternative

The No-Action alternative would not disturb any hazardous materials or create any potential hazard to human health.

Proposed Action Alternative

Construction of the proposed project does not have the potential of intercepting contaminated soils and/or groundwater from any of the referenced sites. One REC (two aboveground storage tanks utilized in

wastewater treatment) was identified in the 2005 Tetra Tech Phase I ESA. Two Limited Phase II ESAs were performed by Tetra Tech and ENSR in 2005 and 2008 respectively. While the Tetra Tech Phase II ESA recommended additional testing in the vicinity of the REC in 2005, ENSR determined in 2008 that no additional sampling was necessary. Based on these efforts, no REC at this location is likely to have the potential to affect the environment of the project site in the future.

The proposed action alternative would not disturb any hazardous materials or create any potential hazard to human health.

During construction activities, unusable equipment, debris, and material shall be disposed of in an approved manner and location. In the event significant items are discovered during implementation of the project, HCFCD will handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance with the requirements of local, state and federal agencies. HCFCD will take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area.

4.6 Cumulative Impacts

The CEQ regulations for implementing NEPA require an assessment of cumulative effects during the decision-making process for federal projects. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects considered for the proposed action were determined by combining the effects of the actions with other past, present, and reasonably foreseeable future actions.

The Hunting Bayou Federal Flood Control Project is a general re-evaluation of the Hunting Bayou element of the project for flood control, Buffalo Bayou and Tributaries, Texas. The general re-evaluation was initiated by HCFCD, acting as the Local Sponsor, in partnership with the USACE (the federal sponsor) pursuant to Section 211(f) of the Water Resources Development Act of 1996. The study has resulted in a recommended project consisting of 3.2 miles of channel widening and deepening to provide earthen trapezoidal sections of grass and concrete lined channel between US 59 and Englewood Railroad Yard, modification or replacement of 22 bridges, and the proposed offline detention basin discussed herein. The Project is currently under USACE review while the Environmental Impact Statement (EIS) is being drafted, with an estimated completion date of December 2013. While the HMGP project will contribute to the overall functionality of the Hunting Bayou Federal Flood Control Project, it will also function as a stand-alone mitigation project, funded separately from USACE-funded Project components, which will improve flooding risk in the immediate project area.

Project construction impacts on environmental resources are expected to be temporary and minimal as recommended practices for construction and maintenance are employed. No activities that violate existing state or federal water quality standards are anticipated. Local and regional governments (including Harris County as well as the City of Houston) include the management of stormwater through SW3Ps in their comprehensive planning efforts to control the discharge of pollutants. As urbanization in the project area continues at its current and projected rate and new projects are constructed, stringent requirements for stormwater management as well as BMPs are enforced to prevent cumulative impacts on water quality and quantity.

With appropriate implementation of regulation and control strategies, as discussed in more detail in the Water Quality section of this EA, it is expected that future potential effects to the area's water quality would be substantially reduced. The proposed project would not contribute to significant cumulative impacts to the area’s water quality.

No cumulative impacts to wetlands and waters of the U.S. will occur as there would be no direct effects to this resource as a result of the proposed project.

The proposed project, in combination with the current and future proposed projects along Hunting Bayou, would lead to temporary impacts to floodplains with a net long term increase in floodplain capacity. The proposed project would reduce the water surface elevations in the affected area by approximately 0.20 to 0.40 feet, with an average reduction of about 0.25 feet. These are preliminary estimates and are subject to change as the EIS is still in draft form. The cumulative effects to floodplains would be positive and beneficial to flood storage and damage reduction in the vicinity of the project area. No other cumulative effects to environmental resources beyond short term construction-related effects and long term beneficial effects are anticipated.

5.0 MITIGATION MEASURES

The NEPA guidelines and regulations define mitigation as (1) avoiding adverse impacts by not taking an action, (2) minimizing impacts by limiting the degree of action, (3) rectifying by repairing, rehabilitating, or restoring the affected environment, (4) reducing or eliminating impacts over time through preservation and maintenance activities and (5) compensating for an impact by replacing or providing substitute resources or environments.

During the development of the proposed project, mitigation measures were incorporated and considered in an effort to avoid and minimize impacts to the greatest extent practicable, while meeting the project purpose and need. The following list summarizes the conditions or mitigation measures to offset those impacts.

Geology and Soils – Silt fence and/or other storm water BMPs will be utilized during construction.

Air Quality – Dust control techniques, such as covering or treating disturbed areas with dust suppression techniques, sprinkling, and other dust abatement controls will be implemented during construction of the proposed project. Construction equipment with EPA designated Tier 2 and Tier 3 engines will be utilized during construction. The MSAT emissions will be minimized by measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increasing use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

Water Quality – A SW3P will be prepared and implemented, and a Notice of Intent (NOI) will be posted at the construction site. Erosion and sedimentation BMPs will be installed, monitored and maintained during construction to minimize any detrimental effects to water quality during construction. HCFCD will obtain a TPDES storm water permit from TCEQ before the start of construction and will comply with all permit conditions.

Waters of the U.S., including Wetlands – HCFCD is responsible for proper identification of wetlands and must ensure that there is no net loss of wetlands. Under EO11990 (Protection of Wetlands); HCFCD is responsible for coordinating with and obtaining any required Section 404 Permit(s) from the United States Army Corps of Engineers (USACE) prior to initiating work. The applicant shall comply with all conditions of the required permit. All coordination pertaining to these activities should be documented and copies forwarded to the State and FEMA as part of the permanent project files.

HCFCD will ensure that BMPs are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the Clean Water Act and Executive Order 11990.

Floodplains – HCFCD will coordinate with the local floodplain administrator and obtain required permits prior to initiating work. All coordination pertaining to these activities and applicant compliance with any conditions would be documented and copies forwarded to the state and FEMA for inclusion in the permanent project files. HCFCD must prepare and provide a Public Notice issued 15 days prior to the start of construction of any final decision where a proposed floodplain or wetland project is the only practicable alternative. Documentation of the final public notice is to be forwarded to FEMA for inclusion in the permanent project files.

Vegetation – Native tree species will be planted around the basin perimeter and along the slopes after construction is complete. Exposed side slopes will be manually re-vegetated using BMPs upon completion of construction. Non-invasive and non-exotic herbaceous species will be utilized for re-vegetation of exposed side slopes.

Cultural Resources – In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by HCFCD and access to the sensitive area will be restricted by HCFCD. The applicant will inform TDEM and FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

Noise – Construction of the proposed project will adhere to local noise ordinances and construction equipment will not operate between the hours of 10:01 p.m. and 6:59 a.m.

Hazardous Materials – Unusable equipment, debris, and material shall be disposed of in an approved manner and location. In the event significant items are discovered during implementation of the project, HCFCD will handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance with the requirements of local, state and federal agencies. HCFCD will take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area.

6.0 RESOURCE AGENCY COORDINATION, PUBLIC INVOLVEMENT, AND PERMITS

6.1 Agency Coordination

As part of the development of this EA, federal and state resource protection agencies were contacted. It is anticipated that permits and/or approvals would be necessary as described below in Section 6.3 of this Draft EA from local, state, and Federal regulatory agencies. The following agencies have been contacted regarding affected environment of the proposed project site. Resource agency comment request and response letters, if available, are attached in Appendix C.

- Texas Historical Commission
- United States Fish and Wildlife Service
- Texas Parks and Wildlife Department
- Texas Commission on Environmental Quality
- Texas Water Development Board
- General Land Office
- U.S. Army Corps of Engineers

6.2 Public Involvement

The public will be invited to comment on the proposed action and the Draft EA. A legal notice will be posted in the *Houston Chronicle* and on FEMA's website (http://www.fema.gov/plan/ehp/envdocuments/ea-region6.shtm). Additionally, the Draft EA will be made available for review for a period of 30 days at the Houston Public Library – McCrane-Kashmere Gardens branch located at 5411 Pardee, Houston, Texas 77026. A copy of the draft public notice is attached in Appendix E.

6.3 Permits

The HCFCD is required to obtain and comply with all required local, state, and federal permits and approvals prior to implementation of the proposed action alternative. Permits that may be required include:

- Grading and Erosion Control Permit – issued by Harris County
- Submission of project-specific documents necessary to comply with TCEQ's construction stormwater general permit
- Floodplain Development Permit – issued by Harris County
- In the event that archeological deposits, including any Native American pottery, stone tools, bones, or human remains, are uncovered, the project shall be halted and the applicant shall stop all work immediately in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. All archeological findings will be secured by HCFCD and access to the sensitive area will be restricted by HCFCD. The applicant will inform TDEM and FEMA immediately, and FEMA will consult with the SHPO. Work in sensitive areas shall not resume until consultation is completed and until FEMA determines that the appropriate measures have been taken to ensure complete project compliance with the NHPA and its implementing regulations.

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Figures

Appendix A

Site Photographs

Appendix B

Project Plan Layout and Typical Cross-Section

Appendix C

Resource Agency Correspondence and Previous Site Investigations

1 – Approved Jurisdictional Determination from USACE

2 – HCFCD Coordination with Resource Agencies
(TPWD, Texas GLO, TWDB, USACE, THC, TCEQ)

3 – Hunting Bayou Biological Assessment (AECOM May 2010) and USFWS Correspondence

4 – Threatened and Endangered Species Coordination with TPWD

5 – Migratory Bird Survey (TCB June 2008)

6 – Cultural Resources Survey (MAC June 2005)

Appendix D

2011 EDR Database Report Executive Summary, Radius Search Map and Executive Summaries of Prior Environmental Site Assessments

Appendix E

Public Notice