



November 10, 2016

Mr. Alejandro Flores
Chief Hydrologist
Dannenbaum Engineering Corporation
3100 West Alabama St.
Houston, TX 77098

**RE: Preliminary Environmental Investigation
City of Jersey Village Long-term Flood Recovery Plan
City of Jersey Village, Harris County, Texas**

Dear Mr. Flores:

The letter report below summarizes the findings in the desktop review of publicly available information, including: a Regulatory Database Report, Sanborn Fire Insurance Maps, a City Directory Report, Historical Aerial Photographs, United States Geological Survey (USGS) Topographic Maps, a Waters of the U. S. (WOUS) Overview, and a Threatened and Endangered Species Overview for the 2,261.59-acre (ac.) tract proposed by the City of Jersey Village. For ease of discussion we categorized these locations geographically into four quadrants: western, northern, southern, and eastern quadrants. Please refer to the **2014 Aerial Photograph with Quadrant Boundaries** located in **Attachment A**.

Western Quadrant

The western quadrant (516.70 ac.) is located west of Jones Road including area both north and south of State Highway (SH) 290.

Regulatory Database Report

The Regulatory Database Report is used to identify sites that have real or potential Recognized Environmental Conditions (RECs) including, but not limited to, Leaking Petroleum Storage Tanks (LPSTs), spills and accidents database, and landfills. For more detailed information please refer to the Mapped Sites Summary and the Environmental Database Report (EDR) in **Attachment B**.

Table 1: Mapped Sites Summary for the Western Quadrant

Database	Number of Entries
FINDS	33
TX Ind. Haz Waste	31
TX UST	23
TX TIER 2	22
ECHO	21
RCRA NonGen / NLR	14
TX AST	12
EDR Hist Auto	12
RCRA-CESQG	10
TX SPILLS	7
ICIS	7

Table 1: Mapped Sites Summary for the Western Quadrant cont.

Database	Number of Entries
TX LPST	6
EDR Hist Cleaner	5
RCRA-SQG	5
TX IHW CORR ACTION	5
TX AIRS	5
TX NPDES	5
TX DRYCLEANERS	4
RCRA-LQG	3
US AIRS	3
TX VCP	3
TX GCC	3
TRIS	2
TX SWF/LF	2
TX ENF	2
SEMS-ARCHIVE	1

Sanborn Fire Insurance Map

According to EDR, No Sanborn Fire Insurance Maps depicting the subject property (western quadrant) were available.

City Directory Report

Crouch Environmental Services Inc. (CESI) has researched city directories back to 1966 or to the earliest year available for address ranges listed in the table below.

Table 2: Area Searched Table

Street Address	Ranges Searched
Charles Road	11711-11220 both even and odd addresses
Senate Street	8602-7210 both even and odd addresses

The majority of the addresses searched are personal residences which are rarely identified as RECs. Businesses, such as dry cleaners and gas stations, pipelines, and railroads have a high potential for ground water and soil contamination and are frequently but not always identified as RECs. A Phase I Environmental Site Assessment (ESA) can be conducted to identify these specific concerns. For additional information, please refer to the EDR City Directory Report located in **Attachment B**.

Historic Aerial Photographs

Historical aerial photographs, dated 1938 to 2014, were reviewed for historical land use. In 1944, the black and white imagery depicts Harris County Flood Control District (HCFCD) Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou) as a naturally-occurring tributary exhibiting a riparian buffer and unconfined flow. Adjacent areas exhibit open fields and agriculture use including rice farming in areas exhibiting poorly drained soils and natural depressions. There is no apparent change in land use in the 1953 aerial photograph. Between 1978 and 1989, HCFCD Unit No. E135-00-00 was channelized to accommodate sheet flow from residential and commercial development occurring in the vicinity. The 1996 aerial photograph utilizes infrared imagery, but does not depict any change in land-use. The 2004 color infrared aerial photography depicts an increase of residential and commercial development. There is no apparent change in land use in the 2009, 2010, or 2014 aerial photographs. Historical aerial imagery is available in the EDR in **Attachment B**.



Historic USGS Topographic Maps

Historic USGS topographic maps from 1915 to 2016 were reviewed for historical land use. The earliest available USGS topographic maps for the western quadrant are from 1915, 1916, 1918, and 1920. This topographic map indicates the quadrant is between 120 to 115 feet above mean sea level (AMSL). The 1955 USGS topographic map displays several symbols including pipelines and wells (other than water) along SH-290. The Southern Pacific System Railroad extends parallel to SH-290. The 1982 USGS topographic map depicts HCFCU Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou) as an intermittent, channelized feature. The words "sewage disposal" appear on the 1995 topographic map north of SH-290 and west of Jones Road. The 1995 USGS topographic map depicts the residential development around the channelized tributary HCFCU Unit No. E135-00-00. In 2010, the label for the sewage disposal area is no longer evident on the topographic map. Additional development is depicted on the 2013 USGS topographic map. Please refer to topographic maps located in the EDR in **Attachment B**.

Waters of the U. S. Overview

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) floodplain maps (Panel Number 48201C0440M, effective June 9, 2014) were examined to determine if the subject property is within the 100-year floodplain. Of the total western quadrant area, 8.5 percent is located within the 100-year floodplain. A **2014 Aerial Photograph with FEMA Floodplain Data** is included in **Attachment A**.

National Wetland Inventory

The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps were reviewed to determine if the subject property contains NWI wetlands. **Twenty-one** NWI features were present within the western quadrant. A **2014 Aerial Photograph with NWI Data** is included in **Attachment A**.

Table 3: NWI Features

Feature Class	Feature Type	Feature Type
PFO1A	Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded	8
PEM1A	Palustrine Emergent, Persistent, Temporarily Flooded	4
PSS1A	Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Temporarily Flooded	2
PFO1Ad	Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded, Partially Drained/Ditched	2
PEM1Ad	Palustrine Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched	2
PSS1Ad	Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Temporarily Flooded, Partially Drained/Ditched	1
PFO1C	Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded	1
PEM1C	Palustrine Emergent, Persistent, Seasonally Flooded	1



National Hydrography Dataset

According to the USGS National Hydrography Dataset (NHD), the subject property is located within the **Buffalo-San Jacinto Watershed** (Hydrologic Unit Code [HUC] 12040104). Major NHD flowline features including HCFCU Unit No. E135-00-00 and a catchment are present within the quadrant and are detailed below. A **2014 Aerial Photograph with NHD Data** is included in **Attachment A**.

Table 4: NHD Features

NHD Com ID	Reach Code	Feature Type
113252169	12040104001786	Canal/Ditch (HCFCU Unit No. E135-00-00; western portion in quadrant extent)
113252211	12040104001802	Canal/Ditch (HCFCU Unit No. E135-00-00; eastern portion in quadrant extent)
113252155	12040104001782	Canal/Ditch

The Harris County Flood Control Light Detection and Ranging Data

The HCFCU light detection and ranging (LIDAR) data were reviewed to examine the existing ground elevations on the subject property. The majority of the quadrant is approximately 120 to 112 feet AMSL. The lowest elevation, approximately 106 feet AMSL, is in the bed of HCFCU Unit No. E135-00-00. The highest elevation, approximately 120 feet AMSL, is located in the northwest portion of the western quadrant within a commercial development property. A **2014 Aerial Photograph with HCFCU LIDAR Elevation Data** is included in **Attachment A**.

Soils

Three soil series are mapped in this quadrant by the Natural Resources Conservation Service (NRCS) and are detailed on subsequent pages. A **2014 Aerial Photograph with NRCS Soil Survey Data** is included in **Attachment A**.

Table 5: Soils

Soil Name	Symbol	Component	Hydric?	Texture in Upper 18 Inches
Addicks loam	Ad	Addicks	YES (90%)	Loam
		Unnamed (inclusion)	NO (10%)	
Aris fine sandy loam	Ap	Aris	YES (90%)	Silt Loam
		Unnamed (inclusion)	NO (10%)	
Clodine fine sandy loam, 0-1 percent slope	Cd	Clodine	YES (85%)	Loam and Silt Loam
		Katy	NO (10%)	
		Gessner	YES (5%)	



Threatened and Endangered Species Overview

Habitat Types Identified within the Western Quadrant

- **Urban:** This habitat type consists of impervious surfaces such as roadways, parking lots, residential homes, and driveways.
- **Herbaceous uplands:** This habitat type consists of mowed and maintained herbaceous roadway ROWs, open fields, residential lawns, maintained parkland, and other recreational areas.
- **Wooded, maintained uplands:** This habitat type consists of maintained parkland and maintained roadway ROW medians.
- **Open water:** This habitat type consists of HCFC Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou), upland-cut, man-made drainage ditches, and other associated stormwater drainage infrastructure.
- **Forested uplands:** This habitat type consists of areas exhibiting canopy cover dominated by woody vegetation 20 feet (6 meters) or taller.
- **Forested wetlands:** This habitat type consists of low-lying areas dominated by woody vegetation 20 feet (6 meters) or taller, intermittent flooding and/or ponding, and poorly-drained, hydric soils.

U.S. Fish and Wildlife Service Coordination

The USFWS Information, Planning, and Conservation System (IPaC) was reviewed for federally-listed species with the potential to be impacted by the proposed project. Species listed by USFWS exclusively regarding wind-related project activities were not considered in this assessment. No critical habitat of any federally or state-listed species was identified as occurring within the quadrant. Potential habitat for **one** federally-listed species, the Texas prairie dawn (*Hymenoxys texana*), was identified as potentially occurring on the subject property. The IPaC Trust Resource Report is available in **USFWS Coordination in Attachment C**.

Texas Parks and Wildlife Coordination

Texas Parks and Wildlife (TPWD's) response to CESI indicated that listed species are documented in the **Texas Natural Diversity Database (NDD) Data** within a 10-mile radius of the subject property located in **Attachment D**. A record of correspondence with TPWD is also located in **TPWD Coordination in Attachment D**.

Listed Species with Potentially Suitable Habitat Available within the Western Quadrant

Based on desktop review and agency coordination, potentially suitable habitat for **one federally-listed species** exists on the subject property. Potentially suitable habitat for **three state-listed threatened** species and **eight state-listed rare** species exists on the subject property and are reported in the table on the following pages.



Table 6: TPWD Listed Species with Potentially Suitable Habitat Available on the Subject Property

Common Name	Scientific Name	TPWD Preferred Habitat	Potential Habitat on Subject Property	State Status	Federal Status
*Bald Eagle	<i>Haliaeetus leucocephalus</i>	Rivers and large lakes; nests in tall trees or on cliffs near water.	Perennial open water in vicinity: Jersey Lake and White Oak Bayou	Threatened	Not Listed
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Moist meadows, pasturelands, river floodplains, pine scrub, farm ponds.	Roadside ditches	Rare	Not Listed
Creek chubsucker	<i>Erimyzon oblongus</i>	Small rivers and creeks, headwaters; spawns in river mouths or pools, riffles, lake outlets, upstream creeks	Tributary to White Oak Bayou	Rare	Not Listed
Henslow's sparrow	<i>Ammodramus henslowii</i>	weedy fields or cut-over areas with bare ground, bunch grasses, vines and brambles,	Maintained open fields	Rare	Not Listed
Mountain plover	<i>Charadrius montanus</i>	Shortgrass prairie, ground in shallow depression, bare, dirt (plowed) fields,	Maintained open fields, Converted cropland into a detention basin	Rare	Not Listed
Timber rattlesnake	<i>Crotalus horridus</i>	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland.	Forested riparian buffers on HCFCD Unit No. E135-00-00 banks	Threatened	Not Listed
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Wooded brushy areas and tallgrass prairies, open fields, farmyards and forest edges.	Wooded fence rows, maintained open fields	Rare	Under Review
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Threatened	Not Listed
Southeastern myotis bat	<i>Myotis austroriparius</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Rare	Not Listed
Giant sharpstem umbrellasedge	<i>Cyperus cephalanthus</i>	Saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions	Depressions exhibiting fine sandy loam soils	Rare	Under Review
Texas prairie dawn	<i>Hymenoxys texana</i>	Poorly drained depressions; mima mounds; slightly saline, sandy soils,	Herbaceous uplands with sandy soils	Endangered	Endangered
Texas tauschia	<i>Tauschia texana</i>	Loamy soils in deciduous forests or woodlands on river and stream terraces;	Riparian buffers on White Oak Bayou banks	Rare	Not Listed

Sources:

http://www.tpwd.state.tx.us/gis/ris/es/ES_Reports.aspx?county=Harris (Accessed November 2, 2016)

<https://ecos.fws.gov/ipac/project/FVQ3QUDFOVCRHB7GZTVHQ3RMK4/resources> (Accessed November 2, 2016)

*Although the Bald Eagle is no longer federally-listed on the ESA, this species is still protected under the Bald and Golden Eagle Protection Act.



Migratory Bird Treaty Act (MBTA)

The USFWS IPaC, located in **Attachment C**, was reviewed for federally listed migratory birds with the potential to be impacted by the proposed project. Of the 27 listed species listed in the region, potentially suitable habitat was identified as:

- Forested uplands
- Forested wetlands
- Maintained and unmaintained roadsides
- Grasslands and prairies
- Scrubby and brushy forest
- Hedgerows
- Weed patches
- Flooded fields
- Open grassy fields
- Herbaceous wetlands
- Golf courses
- Riparian areas
- Fence lines and utility poles
- Forested wetlands with nearby
- City parks
- Woodland edges
- Semi-open forest

Prior to conducting any construction activities having the potential of incurring a take, an MBTA survey may be conducted to assess the potential of suitable habitat and species.

The USFWS has statutory authority and responsibility for enforcing the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. Take is defined in regulations as: 'pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect'.

The USFWS is presently pursuing a Programmatic Environmental Impact Statement (PEIS) to evaluate approaches for developing an authorization mechanism for the incidental take of migratory birds. However, no incidental take permit is currently authorized and take of any birds considered 'migratory' is illegal.



Northern Quadrant

The northern quadrant (640.39 ac.) is located east of Jones Road, west of Senate Avenue, and north of HCFC Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou) including the northern bank.

Regulatory Database Report

The Regulatory Database Report is used to identify sites that have real or potential RECs including, but not limited to, LPSTs, spills and accidents database, and landfills. For more detailed information please refer to the Mapped Sites Summary and the EDR in **Attachment B**.

Table 7: Mapped Sites Summary for the Northern Quadrant

Database	Number of Entries
FINDS	11
TX UST	8
TX LPST	6
EDR HIST AUTO	6
TX Ind. Haz Waste	5
ECHO	5
RCRA-LQG	5
TX DRYCLEANERS	2
TX GCC	2
TX TIER 2	2
RCRA NonGen / NLR	2
RCRA-SQG	1
NPL	1
SEMS	1
US ENG CONTROLS	1
US INST CONTROL	1
ROD	1
PRP	1
EDR HIST CLEANER	1

Sanborn Fire Insurance Map

According to EDR, No Sanborn Fire Insurance Maps depicting the subject property (northern quadrant) were available.

City Directory Report

CESI has researched city directories back to 1966 or to the earliest year available for address ranges listed in the table below.

Table 8: Area Searched Table

Street Address	Ranges Searched
Senate Street	8602-7210 both even and odd addresses

The majority of the addresses searched are personal residences which are rarely identified as RECs. Businesses, such as dry cleaners and gas stations, pipelines, and railroads have a high potential for ground water and soil contamination and are frequently but not always identified as RECs. A Phase I ESA can be conducted to identify these specific concerns. For additional information, please refer to the EDR City Directory Report located in **Attachment B**.



Historic Aerial Photographs

Historical aerial photographs, dated 1938 to 2014, were reviewed for historical land use. In 1944, the black and white imagery depicts HCFCD Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou) as a naturally-occurring tributary exhibiting a riparian buffer and unconfined flow. Adjacent areas exhibit open fields and agriculture use including rice farming in areas exhibiting poorly drained soils and natural depressions. There is no apparent change in land use in the 1953 aerial photograph. Between 1978 and 1989, HCFCD Unit No. E127-00-00 was channelized to accommodate sheet flow from residential and commercial development occurring in the vicinity. The 1996 aerial photograph utilizes infrared imagery, but does not depict any change in land-use. The 2004 color infrared aerial photography depicts an increase of residential and commercial development. There is no apparent change in land use in the 2009, 2010, or 2014 aerial photographs. Historical aerial imagery is available in the EDR in **Attachment B**.

Historic USGS Topographic Maps

Historic USGS topographic maps from 1915 to 2013 were reviewed for historical land use. The earliest available USGS topographic maps for the northern quadrant are from 1915, 1916, 1918, and 1920. This topographic map indicates the northern quadrant is between 124 to 100 feet AMSL. The 1955 USGS topographic map displays several symbols including pipelines and wells (other than water) along SH-290. The Southern Pacific System Railroad extends parallel to SH-290. The words "Golf Course" appear on the 1955 USGS topographic map. The 1970 USGS topographic map depicts HCFCD Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou) as an intermittent, channelized feature and the words "Long Meadows Country Club" replace "Golf Course". The HCFCD Unit No. E127-00-00 appears as channelized west of SH-290 and as naturally occurring east of SH-290. The words "sewage disposal" appear on the 1995 topographic map north of SH-290 and west of Jones Road. The 1995 USGS topographic map depicts the residential development around the channelized tributary HCFCD Unit No. E135-00-00. In 2010, the label for the sewage disposal area is no longer evident on the topographic map. Additional development is depicted on the 2013 USGS topographic map. Please refer to historic USGS topographic maps located in the EDR in **Attachment B**.

Waters of the U. S. Overview

Federal Emergency Management Agency

The FEMA floodplain maps (Panel Number 48201C0440M, effective June 9, 2014) were examined to determine if the subject property is within the 100-year floodplain. Of the total northern quadrant area, 29.5 percent is located within the 100-year floodplain. A **2014 Aerial Photograph with FEMA Floodplain Data** is included in **Attachment A**.

National Wetland Inventory

The USFWS NWI maps were reviewed to determine if the subject property contains NWI wetlands. **Twenty-three** NWI features were present within the northern quadrant. A **2014 Aerial Photograph with NWI Data** is included in **Attachment A**.

Table 9: NWI Features

Feature Class	Feature Type	Number of Recorded Features
PUBHx	Palustrine Unconsolidated Bottom, Permanently Flooded, Excavated	14
PFO1A	Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded	5
PFO1C	Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded	2
PSS1C	Palustrine Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded	2



National Hydrography Dataset

According to the USGS NHD, the subject property is located within the **Buffalo-San Jacinto Watershed** (Hydrologic Unit Code [HUC] 12040104). Major NHD flowline features including HCFCU Unit No. E135-00-00, HCFCU Unit No. E127-00-00, and HCFCU Unit No. E100-00-00 (White Oak Bayou) are present within the northern quadrant and are detailed on subsequent pages. A **2014 Aerial Photograph with NHD Data** is included in **Attachment A**.

Table 10: NHD Features

NHD Com ID	Reach Code	Feature Type
113252211	12040104001802	CanalDitch (HCFCU Unit No. E135-00-00)
113252385	12040104000686	CanalDitch (HCFCU Unit No. E127-00-00)
113252337	12040104000048	StreamRiver (HCFCU Unit No. E100-00-00 [White Oak Bayou])

The Harris County Flood Control Light Detection and Ranging Data

The HCFCU LIDAR data were reviewed to examine the existing ground elevations on the subject property. The majority of the northern quadrant is approximately 100 to 120 feet AMSL. The lowest elevation, approximately 100 feet AMSL, is in the bed of HCFCU Unit No. E100-00-00 (White Oak Bayou). The highest elevation, approximately 120 feet AMSL, is located in the portion of the northern quadrant within a commercial development property.

Soils

One soil series is mapped in this northern quadrant by the NRCS and is detailed below. A **2014 Aerial Photograph with NRCS Soil Survey Data** is included in **Attachment A**.

Table 11: Soils

Soil Name	Symbol	Component	Hydric?	Texture in Upper 18 Inches
Addicks loam	Ad	Addicks	YES (90%)	Loam
		Unnamed (inclusion)	NO (10%)	

Threatened and Endangered Species Overview

Habitat Types Identified within Northern Quadrant

- **Urban:** This habitat type consists of impervious surfaces such as roadways, parking lots, residential homes, and driveways.
- **Herbaceous uplands:** This habitat type consists of mowed and maintained herbaceous roadway ROWs, open fields, residential lawns, maintained parkland, and other recreational areas.
- **Herbaceous wetlands:** This habitat type consists of low-lying areas exhibiting herbaceous vegetation, intermittent flooding and/or ponding, and poorly-drained, hydric soils.
- **Wooded, maintained uplands:** This habitat type consists of maintained parkland and maintained roadway ROW medians.
- **Open water:** This habitat type consists of the remnant watercourse of HCFCU Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou) and its current channelized course, HCFCU Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou), upland-cut, man-made drainage ditches, and other associated stormwater drainage infrastructure.



U.S. Fish and Wildlife Service Coordination

The USFWS IPaC was reviewed for federally-listed species with the potential to be impacted by the proposed project. Species listed by USFWS exclusively regarding wind-related project activities were not considered in this assessment. No critical habitat of any federally or state-listed species was identified as occurring within the quadrant. Potential habitat for **one** federally-listed species, the Texas prairie dawn (*Hymenoxys texana*), was identified as potentially occurring on the subject property. The IPaC Trust Resource Report is available in **USFWS Coordination in Attachment C**.

Texas Parks and Wildlife Department Coordination

TPWD's response to CESI indicated that listed species are documented in the **Texas Natural Diversity Database (NDD) Data** within a 10-mile radius of the subject property located in **Attachment D**. A record of correspondence with TPWD is also located in **TPWD Coordination in Attachment D**.

Listed Species with Potentially Suitable Habitat Available within the Northern Quadrant

Based on desktop review and agency coordination, potentially suitable habitat for **one federally-listed species** exists on the subject property. Potentially suitable habitat for **three state-listed threatened** species and **eight state-listed rare** species exists on the subject property and are reported in the table below:

Table 12: TPWD Listed Species with Potentially Suitable Habitat Available on the Subject Property

Common Name	Scientific Name	TPWD Preferred Habitat	Potential Habitat on Subject Property	State Status	Federal Status
*Bald Eagle	<i>Haliaeetus leucocephalus</i>	Rivers and large lakes; nests in tall trees or on cliffs near water.	Perennial open water in vicinity: Jersey Lake and White Oak Bayou	Threatened	Not Listed
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Moist meadows, pasturelands, river floodplains, pine scrub, farm ponds.	Roadside ditches	Rare	Not Listed
Creek chubsucker	<i>Erimyzon oblongus</i>	Small rivers and creeks, headwaters; spawns in river mouths or pools, riffles, lake outlets, upstream creeks	Tributary to White Oak Bayou	Rare	Not Listed
Henslow's sparrow	<i>Ammodramus henslowii</i>	weedy fields or cut-over areas with bare ground, bunch grasses, vines and brambles,	Maintained open fields	Rare	Not Listed
Mountain plover	<i>Charadrius montanus</i>	Shortgrass prairie, ground in shallow depression, bare, dirt (plowed) fields,	Maintained open fields, Converted cropland into a detention basin	Rare	Not Listed



Common Name	Scientific Name	TPWD Preferred Habitat	Potential Habitat on Subject Property	State Status	Federal Status
Timber rattlesnake	<i>Crotalus horridus</i>	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland.	Forested riparian buffers on HCFCD Unit No. E135-00-00 banks	Threatened	Not Listed
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Wooded brushy areas and tallgrass prairies, open fields, farmyards and forest edges.	Wooded fence rows, maintained open fields	Rare	Under Review
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Threatened	Not Listed
Southeastern myotis bat	<i>Myotis austroriparius</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Rare	Not Listed
Giant sharpstem umbrellasedge	<i>Cyperus cephalanthus</i>	Saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions	Depressions exhibiting fine sandy loam soils	Rare	Under Review
Texas tauschia	<i>Tauschia texana</i>	Loamy soils in deciduous forests or woodlands on river and stream terraces;	Riparian buffers on White Oak Bayou banks	Rare	Not Listed

Sources:

http://www.tpwd.state.tx.us/gis/ris/es/ES_Reports.aspx?county=Harris (Accessed November 2, 2016)

<https://ecos.fws.gov/ipac/project/FVQ3QUDFOVCRHB7GZTVHQ3RMK4/resources> (Accessed November 2, 2016)

*Although the Bald Eagle is no longer federally-listed on the ESA, this species is still protected under the Bald and Golden Eagle Protection Act.

Migratory Bird Treaty Act (MBTA)

The USFWS IPaC, located in **Attachment C**, was reviewed for federally listed migratory birds with the potential to be impacted by the proposed project. Of the 27 listed species listed in the region, potentially suitable habitat was identified as:

- Forested uplands
- Forested wetlands
- Maintained and unmaintained roadsides
- Grasslands and prairies
- Scrubby and brushy forest
- Hedgerows
- Weed patches
- Flooded fields
- Open grassy fields
- Herbaceous wetlands
- Golf courses
- Fence lines and utility poles
- Forested wetlands with nearby
- City parks
- Woodland edges
- Semi-open forest
- Riparian areas

Prior to conducting any construction activities having the potential of incurring a take, an MBTA survey may be conducted to assess the potential of suitable habitat and species.

The USFWS has statutory authority and responsibility for enforcing the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. Take is defined in regulations as: 'pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect'.



The USFWS is presently pursuing a PEIS to evaluate approaches for developing an authorization mechanism for the incidental take of migratory birds. However, no incidental take permit is currently authorized and take of any birds considered 'migratory' is illegal.



Southern Quadrant

The southern quadrant (416.09 ac.) is located east of Jones Road, west of Senate Avenue, and south of HCFC Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou) including the southern bank.

Regulatory Database Report

The Regulatory Database Report is used to identify sites that have real or potential RECs including, but not limited to, LPSTs, spills and accidents database, and landfills. For more detailed information please refer to the Mapped Sites Summary and the EDR in Attachment B.

Table 14: Mapped Sites Summary for the Southern Quadrant

Database	Number of Entries
FINDS	23
TX Ind. Haz Waste	23
ECHO	13
TX UST	12
RCRA NonGen / NLR	12
TX TIER 2	9
EDR Hist Auto	8
TX LPST	6
TX AST	6
ICIS	4
RCRA-CESQG	4
TX VCP	3
TX NPDES	3
US AIRS	3
TX IHW CORR ACTION	3
TX GCC	2
TX APAR	2
TX SPILLS	1
TX IOP	1
RCRA-LQG	1
NY MANIFEST	1
TX AIRS	1

Sanborn Fire Insurance Map

According to EDR, No Sanborn Fire Insurance Maps depicting the subject property (southern quadrant) were available.

City Directory Report

CESI has researched city directories back to 1966 or to the earliest year available for address ranges listed in the table below.

Table 15: Area Searched Table

Street Address	Ranges Searched
Jersey Drive	16621-16318 both even and odd addresses
Charles Road	11711-11220 both even and odd addresses
Senate Street	8602-7210 both even and odd addresses



The majority of the addresses searched are personal residences which are rarely identified as RECs. Businesses, such as drycleaners and gas stations, pipelines, and railroads have a high potential for ground water and soil contamination and are frequently but not always identified as RECs. A Phase I ESA can be conducted to identify these specific concerns. For additional information, please refer to the EDR City Directory Report located in **Attachment B**.

Historic Aerial Photographs

Historical aerial photographs, dated 1938 to 2014, were reviewed for historical land use. In 1944, the black and white imagery depicts HCFCD Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou) as a naturally-occurring tributary exhibiting a riparian buffer and unconfined flow. Adjacent areas to the historic riparian buffer exhibit open fields and agriculture use including rice farming in areas exhibiting poorly drained soils and natural depressions. There is no apparent change in land use in the 1953 aerial photograph. Between 1978 and 1989, HCFCD Unit No. E127-00-00 was channelized to accommodate sheet flow from residential and commercial development occurring in the vicinity. The 1996 aerial photograph utilizes infrared imagery, but does not depict any change in land-use. The 2004 color infrared aerial photography depicts an increase of residential and commercial development. There is no apparent change in land use in the 2009, 2010, or 2014 aerial photographs. Historical aerial imagery is available in the EDR in **Attachment B**.

Historic USGS Topographic Maps

Historic USGS topographic maps from 1915 to 2013 were reviewed for historical land use. The earliest available USGS topographic maps for the quadrant are from 1915, 1916, 1918, and 1920. This topographic map indicates the southern quadrant is between 124 to 100 feet AMSL. The historic drainage patterns for White Oak Bayou and its associated tributaries are depicted with the topographic gradient trending east-southeast. The 1955 USGS topographic map displays several symbols including pipelines and wells (other than water) along SH-290. The Southern Pacific System Railroad extends parallel to SH-290. The words "Golf Course" appear on the 1955 USGS topographic map. The 1970 USGS topographic map depicts HCFCD Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou) as an intermittent, channelized feature and the words "Long Meadows Country Club replace "Golf Course". The HCFCD Unit No. E127-00-00 appears as channelized west of SH-290 and as naturally occurring east of SH-290. The words "sewage disposal" appear on the 1995 topographic map north of SH-290 and west of Jones Road. The 1995 USGS topographic map depicts the residential development around the channelized tributary HCFCD Unit No. E135-00-00. In 2010, the label for the sewage disposal area is no longer evident on the topographic map. Additional development is depicted on the 2013 USGS topographic map. Please refer to historic USGS topographic maps located in the EDR in **Attachment B**.

Waters of the U. S. Overview

Federal Emergency Management Agency

The FEMA floodplain maps (Panel Number 48201C0440M, effective June 9, 2014) were examined to determine if the subject property is within the 100-year floodplain. Of the total southern quadrant area, 10.9 percent is located within the 100-year floodplain. A **2014 Aerial Photograph with FEMA Floodplain Data** is included in **Attachment A**.

National Wetland Inventory

The USFWS NWI maps were reviewed to determine if the subject property contains NWI wetlands. **Seven** NWI features were present within the southern quadrant. A **2014 Aerial Photograph with NWI Data** is included in **Attachment A**.

Table 16: NWI Features

Feature Class	Feature Type	Number of Recorded Features
PFO1A	Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded	7



National Hydrography Dataset

According to the USGS NHD, the subject property is located within the **Buffalo-San Jacinto Watershed** (Hydrologic Unit Code [HUC] 12040104). Major NHD flowline features including HCFCU Unit No. E127-00-00 and a catchment are present within the quadrant and are detailed below. A **2014 Aerial Photograph with NHD Data** is included in **Attachment A**.

Table 17: NHD Features

NHD Com ID	Reach Code	Feature Type
113252399	12040104000688	CanalDitch
113252385	12040104000686	CanalDitch (HCFCU Unit No. E127-00-00)

The Harris County Flood Control Light Detection and Ranging Data

The HCFCU LIDAR data were reviewed to examine the existing ground elevations on the subject property. The majority of the southern quadrant is approximately 124 to 96 feet AMSL. The lowest elevation, approximately 96 feet AMSL, is in the bed of HCFCU Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou). The highest elevation, approximately 124 feet AMSL, is located on SH-290 in the southern portion of the southern quadrant.

Soils

Two soil series are mapped in this quadrant by the NRCS and are detailed below. A **2014 Aerial Photograph with NRCS Soil Survey Data** is included in **Attachment A**.

Table 18: Soils

Soil Name	Symbol	Component	Hydric?	Texture in Upper 18 Inches
Addicks loam	Ad	Addicks	YES (90%)	Loam
		Unnamed (inclusion)	NO (10%)	
Clodine fine sandy loam, 0 to 1 percent slopes	Cd	Clodine	YES (85%)	Loam and Silt Loam
		Katy	NO (10%)	
		Gessner	YES (5%)	

Threatened and Endangered Species Overview

Habitat Types Identified within Southern Quadrant

- **Urban:** This habitat type consists of impervious surfaces such as roadways, parking lots, residential homes, and driveways.
- **Herbaceous uplands:** This habitat type consists of mowed and maintained herbaceous roadway ROWs, open fields, residential lawns, maintained parkland, and other recreational areas.
- **Wooded, maintained uplands:** This habitat type consists of maintained parkland and maintained roadway ROW medians.
- **Open water:** This habitat type consists of HCFCU Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou), upland-cut, man-made drainage ditches, and other associated stormwater drainage infrastructure.
- **Forested uplands:** This habitat type consists of areas exhibiting canopy cover dominated by woody vegetation 20 feet (6 meters) or taller.
- **Forested wetlands:** This habitat type consists of low-lying areas dominated by woody vegetation 20 feet (6 meters) or taller, intermittent flooding and/or ponding, and poorly-drained, hydric soils.

U.S. Fish and Wildlife Service Coordination

The USFWS IPaC was reviewed for federally-listed species with the potential to be impacted by the proposed project. Species listed by USFWS exclusively regarding wind-related project activities were not considered in this assessment. No critical habitat of any



federally or state-listed species was identified as occurring within the quadrant. Potential habitat for one federally-listed species, the Texas prairie dawn (*Hymenoxys texana*), was identified as potentially occurring on the subject property. The **IPaC Trust Resource Report** is available in **USFWS Coordination in Attachment C**.

Texas Parks and Wildlife Department Coordination

TPWD's response to CESI indicated that listed species are documented in the **Texas Natural Diversity Database (NDD) Data** within a 10-mile radius of the subject property located in **Attachment D**. A record of correspondence with TPWD is also located in **TPWD Coordination in Attachment D**.

Listed Species with Potentially Suitable Habitat Available within the Southern Quadrant

Based on desktop review and agency coordination, potentially suitable habitat for **one federally-listed species** exists on the subject property. Potentially suitable habitat for **three state-listed threatened** species and **eight state-listed rare** species exists on the subject property and are reported in the table below:



Table 19: TPWD Listed Species with Potentially Suitable Habitat Available on the Subject Property

Common Name	Scientific Name	TPWD Preferred Habitat	Potential Habitat on Subject Property	State Status	Federal Status
*Bald Eagle	<i>Haliaeetus leucocephalus</i>	Rivers and large lakes; nests in tall trees or on cliffs near water.	Perennial open water in vicinity: Jersey Lake and White Oak Bayou	Threatened	Not Listed
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Moist meadows, pasturelands, river floodplains, pine scrub, farm ponds.	Roadside ditches	Rare	Not Listed
Creek chubsucker	<i>Erimyzon oblongus</i>	Small rivers and creeks, headwaters; spawns in river mouths or pools, riffles, lake outlets, upstream creeks	Tributary to White Oak Bayou	Rare	Not Listed
Henslow's sparrow	<i>Ammodramus henslowii</i>	weedy fields or cut-over areas with bare ground, bunch grasses, vines and brambles,	Maintained open fields	Rare	Not Listed
Mountain plover	<i>Charadrius montanus</i>	Shortgrass prairie, ground in shallow depression, bare, dirt (plowed) fields,	Maintained open fields, Converted cropland into a detention basin	Rare	Not Listed
Timber rattlesnake	<i>Crotalus horridus</i>	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland.	Forested riparian buffers on HCFCD Unit No. E135-00-00 banks	Threatened	Not Listed
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Wooded brushy areas and tallgrass prairies, open fields, farmyards and forest edges.	Wooded fence rows, maintained open fields	Rare	Under Review
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Threatened	Not Listed
Southeastern myotis bat	<i>Myotis austroriparius</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Rare	Not Listed
Giant sharpstem umbrellasedge	<i>Cyperus cephalanthus</i>	Saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions	Depressions exhibiting fine sandy loam soils	Rare	Under Review
Texas tauschia	<i>Tauschia texana</i>	Loamy soils in deciduous forests or woodlands on river and stream terraces;	Riparian buffers on White Oak Bayou banks	Rare	Not Listed

Sources:

http://www.tpwd.state.tx.us/gis/ris/es/ES_Reports.aspx?county=Harris (Accessed November 2, 2016)

<https://ecos.fws.gov/ipac/project/FVQ3QUDFOVCRHB7GZTVHQ3RMK4/resources> (Accessed November 2, 2016)

*Although the Bald Eagle is no longer federally-listed on the ESA, this species is still protected under the Bald and Golden Eagle Protection Act.



Migratory Bird Treaty Act (MBTA)

The USFWS IPaC, located in **Attachment C**, was reviewed for federally listed migratory birds with the potential to be impacted by the proposed project. Of the 27 listed species listed in the region, potentially suitable habitat was identified as:

- Forested uplands
- Forested wetlands
- Maintained and unmaintained roadsides
- Grasslands and prairies
- Scrubby and brushy forest
- Hedgerows
- Weed patches
- Flooded fields
- Open grassy fields
- Herbaceous wetlands
- Golf courses
- Riparian areas
- Fence lines and utility poles
- Forested wetlands with nearby
- City parks
- Woodland edges
- Semi-open forest

Prior to conducting any construction activities having the potential of incurring a take, an MBTA survey may be conducted to assess the potential of suitable habitat and species.

The USFWS has statutory authority and responsibility for enforcing the MBTA. The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. Take is defined in regulations as: 'pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect'.

The USFWS is presently pursuing a PEIS to evaluate approaches for developing an authorization mechanism for the incidental take of migratory birds. However, no incidental take permit is currently authorized and take of any birds considered 'migratory' is illegal.



Eastern Quadrant

The eastern quadrant (693.36 ac.) is located east of Senate Avenue including area both north and south of HCFC Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou).

Regulatory Database Report

The Regulatory Database Report is used to identify sites that have real or potential RECs including, but not limited to, LPSTs, spills and accidents database, and landfills. For more detailed information please refer to the Mapped Sites Summary and the EDR in **Attachment B**.

Table 20: Mapped Sites Summary for the Eastern Quadrant

Database	Number of Entries
FINDS	14
EDR Hist Auto	9
ECHO	8
TX TIER 2	6
TX UST	5
TX LPST	4
TX Ind. Haz Waste	4
RCRA NonGen / NLR	4
EDR Hist Cleaner	3
ICIS	2
TX IHW CORR ACTION	2
TX AST	1
RMP	1
TX NPDES	1
TX DRY CLEANERS	1
RCRA-CESQG	1
HMIRS	1

Sanborn Fire Insurance Map

According to EDR, No Sanborn Fire Insurance Maps depicting the subject property (eastern quadrant) were available.

City Directory Report

CESI has researched city directories back to 1966 or to the earliest year available for address ranges listed in the table below.

Table 21: Area Searched Table

Street Address	Ranges Searched
Senate Street	8602-7210 both even and odd addresses

The majority of the addresses searched are personal residences which are rarely identified as RECs. Businesses, such as dry cleaners and gas stations, pipelines, and railroads have a high potential for ground water and soil contamination and are frequently but not always identified as RECs. A Phase I ESA can be conducted to identify these specific concerns. For additional information, please refer to the EDR City Directory Report located in **Attachment B**.



Historic Aerial Photographs

Historical aerial photographs, dated 1938 to 2014, were reviewed for historical land use. In 1944, the black and white imagery depicts HCFCU Unit No. E100-00-00 (White Oak Bayou) as a naturally-occurring watercourse exhibiting a riparian buffer and unconfined flow. Adjacent areas exhibit open fields and agriculture use including rice farming in areas exhibiting poorly drained soils and natural depressions. There is no apparent change in land use in the 1953 aerial photograph. Between 1978 and 1989, HCFCU Unit No. E100-00-00 was channelized to accommodate sheet flow from residential and commercial development occurring in the vicinity. Jersey Village High School and Post Elementary school appear in the 1978 aerial imagery. Jersey Lake appears with the additional residential development. The 1996 aerial photograph utilizes infrared imagery, but does not depict any change in land-use. The 2004 color infrared aerial photography depicts an increase of residential and commercial development. There is no apparent change in land use in the 2009, 2010, or 2014 aerial photographs. Historical aerial imagery is available in the EDR in **Attachment B**.

Historic USGS Topographic Maps

Historic USGS topographic maps, dated 1915 to 2013, were reviewed for historical land use. The earliest available USGS topographic maps for the quadrant are from 1915, 1916, 1918, and 1920. These topographic maps indicate elevations in the eastern quadrant are between 115 to 100 feet AMSL. The historic drainage patterns for White Oak Bayou and its associated tributaries are prevalently depicted. The conveyance of HCFCU Unit No. E100-00-00 (White Oak Bayou), labeled Rolling Oaks on the 1955 historical aerial, and HCFCU Unit No. E127-00-00 is depicted in the eastern quadrant. The 1955 USGS topographic map displays several symbols including pipelines and wells (other than water) along SH-290. The Southern Pacific System Railroad extends parallel to SH-290. The words "Fairbanks" appears on the 1955 USGS topographic map above residential development. Jersey Lake (112 feet AMSL) is depicted. The 1970 USGS topographic map depicts HCFCU Unit No. E135-00-00 (Tributary 19.82 to White Oak Bayou) as an intermittent, channelized feature. The 1995 USGS topographic map depicts the residential development around the channelized tributary HCFCU Unit No. 135 00 00. Additional development is depicted on both the 2010 and 2013 USGS topographic maps. Please refer to historic USGS topographic maps located in the EDR in **Attachment B**.

Waters of the U. S. Overview

Federal Emergency Management Agency

The FEMA floodplain maps (Panel Number 48201C0440M, effective June 9, 2014 and Panel Number 48201C0445M, effective June 9, 2014) were examined to determine if the subject property is within the 100-year floodplain. Of the total eastern quadrant area, 42.9 percent is located within the 100-year floodplain. A **2014 Aerial Photograph with FEMA Floodplain Data** is included in **Attachment A**.

National Wetland Inventory

The USFWS NWI maps were reviewed to determine if the subject property contains NWI wetlands. **Eleven** NWI features were identified within the eastern quadrant. A **2014 Aerial Photograph with NWI Data** is included in **Attachment A**.

Table 22: NWI Features

Feature Class	Feature Type	Number of Recorded Features
PEM1C	Palustrine Emergent, Persistent, Seasonally Flooded	8
PFO1A	Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded	2
PUBHx	Palustrine Unconsolidated Bottom, Permanently Flooded, Excavated	1



National Hydrography Dataset

According to the USGS NHD, the subject property is located within the **Buffalo-San Jacinto Watershed** (Hydrologic Unit Code [HUC] 12040104). Major NHD flowline features including HCFCU Unit No. E100-00-00 (White Oak Bayou, north of confluence), are present within the quadrant and are detailed below. A **2014 Aerial Photograph with NHD Data** is included in **Attachment A**.

Table 23: NHD Features

NHD Com ID	Reach Code	Feature Type
113252473	12040104000047	StreamRiver (HCFCU Unit No. E100-00-00 [White Oak Bayou]) upstream from confluence in quadrant extent)
113252337	12040104000048	StreamRiver (White Oak Bayou)
113252385	12040104000686	StreamRiver (HCFCU Unit No. E127-00-00)

The Harris County Flood Control Light Detection and Ranging Data

The HCFCU LIDAR data were reviewed to examine the existing ground elevations on the subject property. The majority of the eastern quadrant is approximately 106 to 82 feet AMSL. The lowest elevation, approximately 82 feet AMSL, is in the bed of HCFCU Unit No. E100-00-00 (White Oak Bayou). The highest elevation, approximately 106 feet AMSL, is located in the northeast portion of the quadrant within a residential subdivision.

Soils

Two soil series are mapped in this quadrant by the NRCS and are detailed below. A **2014 Aerial Photograph with NRCS Soil Survey Data** is included in **Attachment A**.

Table 24: Soils

Soil Name	Symbol	Component	Hydric?	Texture in Upper 18 Inches
Addicks loam	Ad	Addicks	YES (90%)	Loam
		Unnamed (inclusion)	NO (10%)	
Gessner fine sandy loam, 0 to 1 percent slopes, ponded	Ge	Gessner	YES (95%)	Loam and Silt Loam
		Clodine	YES (3%)	
		Katy	YES (2%)	

Threatened and Endangered Species Overview

Habitat Types Identified within the Eastern Quadrant

- **Urban:** This habitat type consists of impervious surfaces such as roadways, parking lots, residential homes, and driveways.
- **Herbaceous uplands:** This habitat type consists of mowed and maintained herbaceous roadway ROWs, open fields, residential lawns, maintained parkland, and other recreational areas.
- **Wooded, maintained uplands:** This habitat type consists of maintained parkland and maintained roadway ROW medians.
- **Open water:** This habitat type consists of HCFCU Unit No. E127-00-00 (Tributary 19.05 to White Oak Bayou), HCFCU Unit No. E100-00-00 (White Oak Bayou), upland-cut, man-made drainage ditches, and other associated stormwater drainage infrastructure.
- **Forested uplands:** This habitat type consists of areas exhibiting canopy cover dominated by woody vegetation 20 feet (6 meters) or taller.
- **Forested wetlands:** This habitat type consists of low-lying areas dominated by woody vegetation 20 feet (6 meters) or taller, intermittent flooding and/or ponding, and poorly-drained, hydric soils.



U.S. Fish and Wildlife Service Coordination

The USFWS Information, Planning, and Conservation System (IPaC) was reviewed for federally-listed species with the potential to be impacted by the proposed project. Species listed by USFWS exclusively regarding wind-related project activities were not considered in this assessment. No critical habitat of any federally or state-listed species was identified as occurring within the eastern quadrant. Potential habitat for **one** federally-listed species, the Texas prairie dawn (*Hymenoxys texana*), was identified as potentially occurring on the subject property. The IPaC Trust Resource Report is available in **USFWS Coordination** in **Attachment C**.

Texas Parks and Wildlife Department Coordination

TPWD's response to CESI indicated that listed species are documented in the **Texas Natural Diversity Database (NDD) Data** within a 10-mile radius of the subject property located in **Attachment D**. A record of correspondence with TPWD is also located in **TPWD Coordination** in **Attachment D**.

Listed Species with Potentially Suitable Habitat Available within the Eastern Quadrant

Based on desktop review and agency coordination, potentially suitable habitat for **one federally-listed species** exists on the subject property. Potentially suitable habitat for **three state-listed threatened** species and **eight state-listed rare** species exists on the subject property and are reported in the table on the following pages.



Table 25: TPWD Listed Species with Potentially Suitable Habitat Available on the Subject Property

Common Name	Scientific Name	TPWD Preferred Habitat	Potential Habitat on Subject Property	State Status	Federal Status
*Bald Eagle	<i>Haliaeetus leucocephalus</i>	Rivers and large lakes; nests in tall trees or on cliffs near water.	Perennial open water in vicinity: Jersey Lake and White Oak Bayou	Threatened	Not Listed
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Moist meadows, pasturelands, river floodplains, pine scrub, farm ponds.	Roadside ditches	Rare	Not Listed
Creek chubsucker	<i>Erimyzon oblongus</i>	Small rivers and creeks, headwaters; spawns in river mouths or pools, riffles, lake outlets, upstream creeks	Tributary to White Oak Bayou	Rare	Not Listed
Henslow's sparrow	<i>Ammodramus henslowii</i>	weedy fields or cut-over areas with bare ground, bunch grasses, vines and brambles,	Maintained open fields	Rare	Not Listed
Mountain plover	<i>Charadrius montanus</i>	Shortgrass prairie, ground in shallow depression, bare, dirt (plowed) fields,	Maintained open fields, Converted cropland into a detention basin	Rare	Not Listed
Timber rattlesnake	<i>Crotalus horridus</i>	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland.	Forested riparian buffers on HCFC Unit No. E135-00-00 banks	Threatened	Not Listed
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Wooded brushy areas and tallgrass prairies, open fields, farmyards and forest edges.	Wooded fence rows, maintained open fields	Rare	Under Review
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Threatened	Not Listed
Southeastern myotis bat	<i>Myotis austroriparius</i>	Cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Concrete culverts, and abandoned man-made structures	Rare	Not Listed
Giant sharpstem umbrellasedge	<i>Cyperus cephalanthus</i>	Saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions	Depressions exhibiting fine sandy loam soils	Rare	Under Review
Texas prairie dawn	<i>Hymenoxys texana</i>	Poorly drained depressions; mima mounds; slightly saline, sandy soils,	Herbaceous uplands with sandy soils	Endangered	Endangered
Texas tauschia	<i>Tauschia texana</i>	Loamy soils in deciduous forests or woodlands on river and stream terraces;	Riparian buffers on White Oak Bayou banks	Rare	Not Listed

Sources:

http://www.tpwd.state.tx.us/gis/ris/es/ES_Reports.aspx?county=Harris (Accessed November 2, 2016)

<https://ecos.fws.gov/ipac/project/FVQ3QUDFOVCRHB7GZTVHQ3RMK4/resources> (Accessed November 2, 2016)

*Although the Bald Eagle is no longer federally-listed on the ESA, this species is still protected under the Bald and Golden Eagle Protection Act.



Migratory Bird Treaty Act (MBTA)

The USFWS IPaC, located in **Attachment C**, was reviewed for federally listed migratory birds with the potential to be impacted by the proposed project. Of the 27 listed species listed in the region, potentially suitable habitat was identified as:

- Forested uplands
- Forested wetlands
- Maintained and unmaintained roadsides
- Grasslands and prairies
- Scrubby and brushy forest
- Hedgerows
- Weed patches
- Flooded fields
- Open grassy fields
- Herbaceous wetlands
- Golf courses
- Riparian areas
- Fence lines and utility poles
- Forested wetlands with nearby
- City parks
- Woodland edges
- Semi-open forest

Prior to conducting any construction activities having the potential of incurring a take, an MBTA survey may be conducted to assess the potential of suitable habitat and species.

The USFWS has statutory authority and responsibility for enforcing the MBTA. The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. Take is defined in regulations as: 'pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect'.

The USFWS is presently pursuing a PEIS to evaluate approaches for developing an authorization mechanism for the incidental take of migratory birds. However, no incidental take permit is currently authorized and take of any birds considered 'migratory' is illegal.



Conclusion

This Preliminary Environmental Investigation was prepared as a preliminary desktop review. This investigation is not intended to replace a Phase I ESA, a formal Waters of the U.S. Wetland Delineation, or a Threatened and Endangered Species Assessment. It was beyond the scope of this task to make recommendations or collect field data. CESI is equipped to provide these services if requested and will be able to utilize these preliminary reviews as a foundation to future surveys and reports for this project.

It was a pleasure working with you and your team on this project. If you have any questions regarding the findings in this preliminary environmental investigation, please do not hesitate to contact me at (713) 868-1043 or claire@crouchenvironmental.com.

Sincerely,



Claire Garvin
Director of Environmental Service

Attachments:

Attachment A: **Exhibits**

- Vicinity Map
- 2014 Aerial Photograph with Quadrant Boundaries
- 2014 Aerial Photograph with Subject Property
- 2014 Aerial Photograph with FEMA Floodplain Data
- 2014 Aerial Photograph with National Hydrography Dataset
- 2014 Aerial Photograph with National Wetlands Inventory Data
- 2014 Aerial Photograph with NRCS Soil Series Data
- 2014 Aerial Photograph with HCFCD LIDAR Elevation Data

Attachment B: **EDR Reports**

- EDR DataMap Area Study
- EDR DataMap Area Study Map
- The EDR City Directory Image Report
- The EDR Aerial Photo Decade Package
- EDR Historical Topo Map Report with QuadMatch
- Mapped Sites by Quadrant

Attachment C: **USFWS Coordination**

- The IPaC Trust Resource Report

Attachment D: **TPWD Coordination**

- Texas Natural Diversity Database (NDD) Data
- TPWD E-mail Correspondence
- TPWD Annotated County List of Rare Species for Harris County
- Listed Species in Harris County Habitat Descriptions



Attachment A

Vicinity Map

2014 Aerial Photograph with Quadrant Boundaries

2014 Aerial Photograph with Subject Property

2014 Aerial Photograph with FEMA Floodplain Data

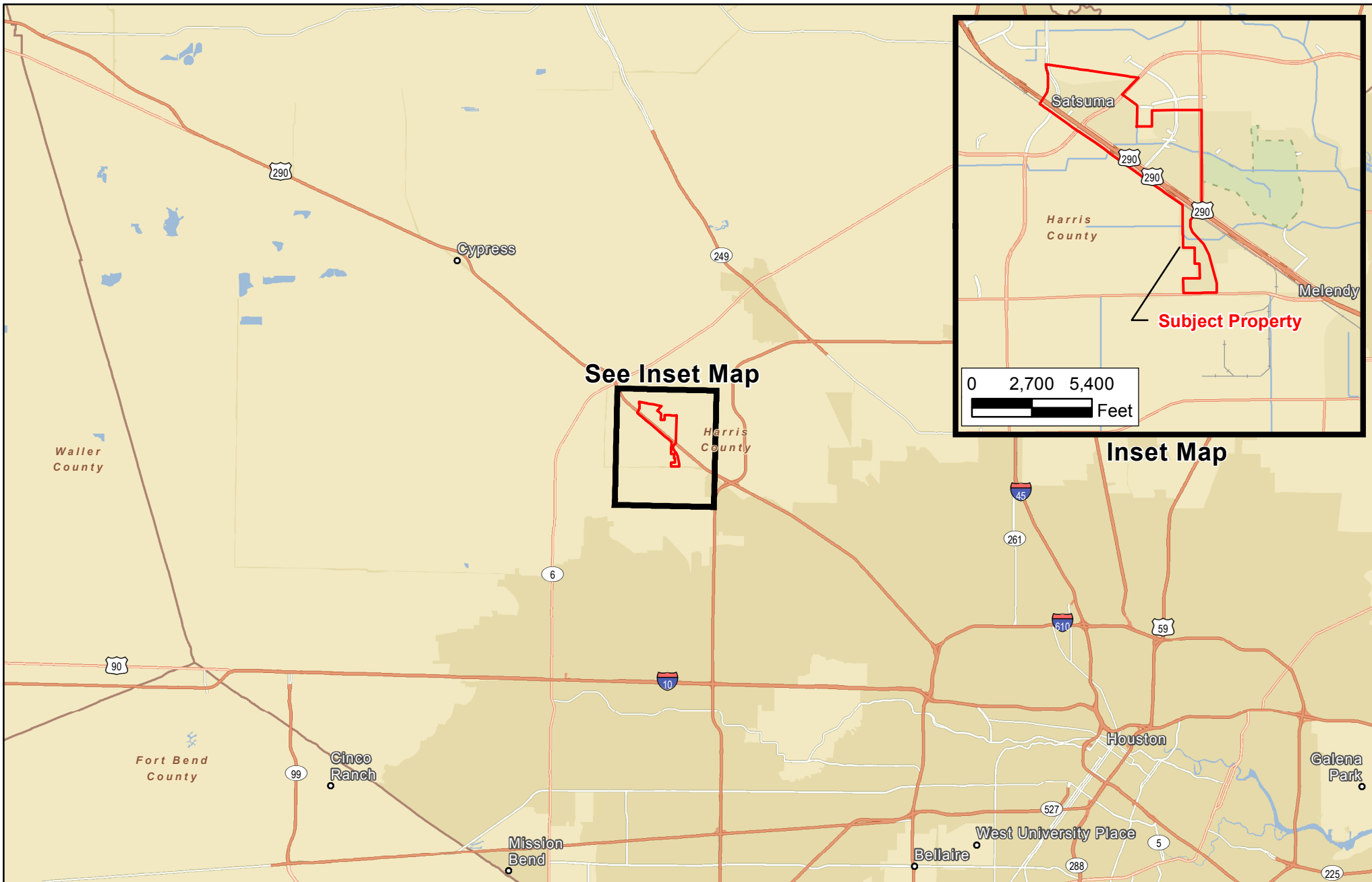
**2014 Aerial Photograph with National Hydrography
Dataset**

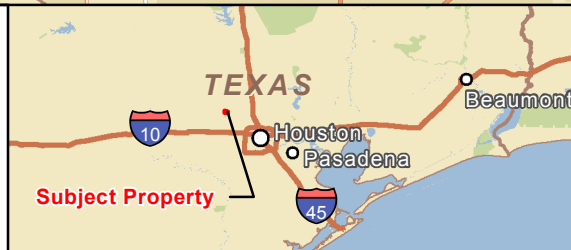
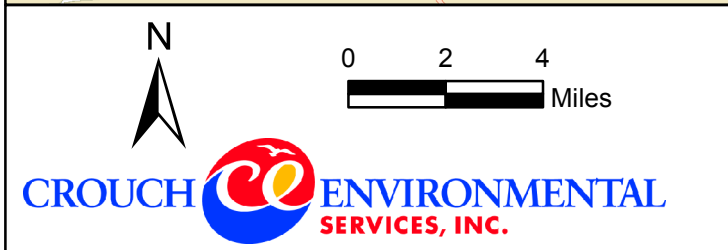
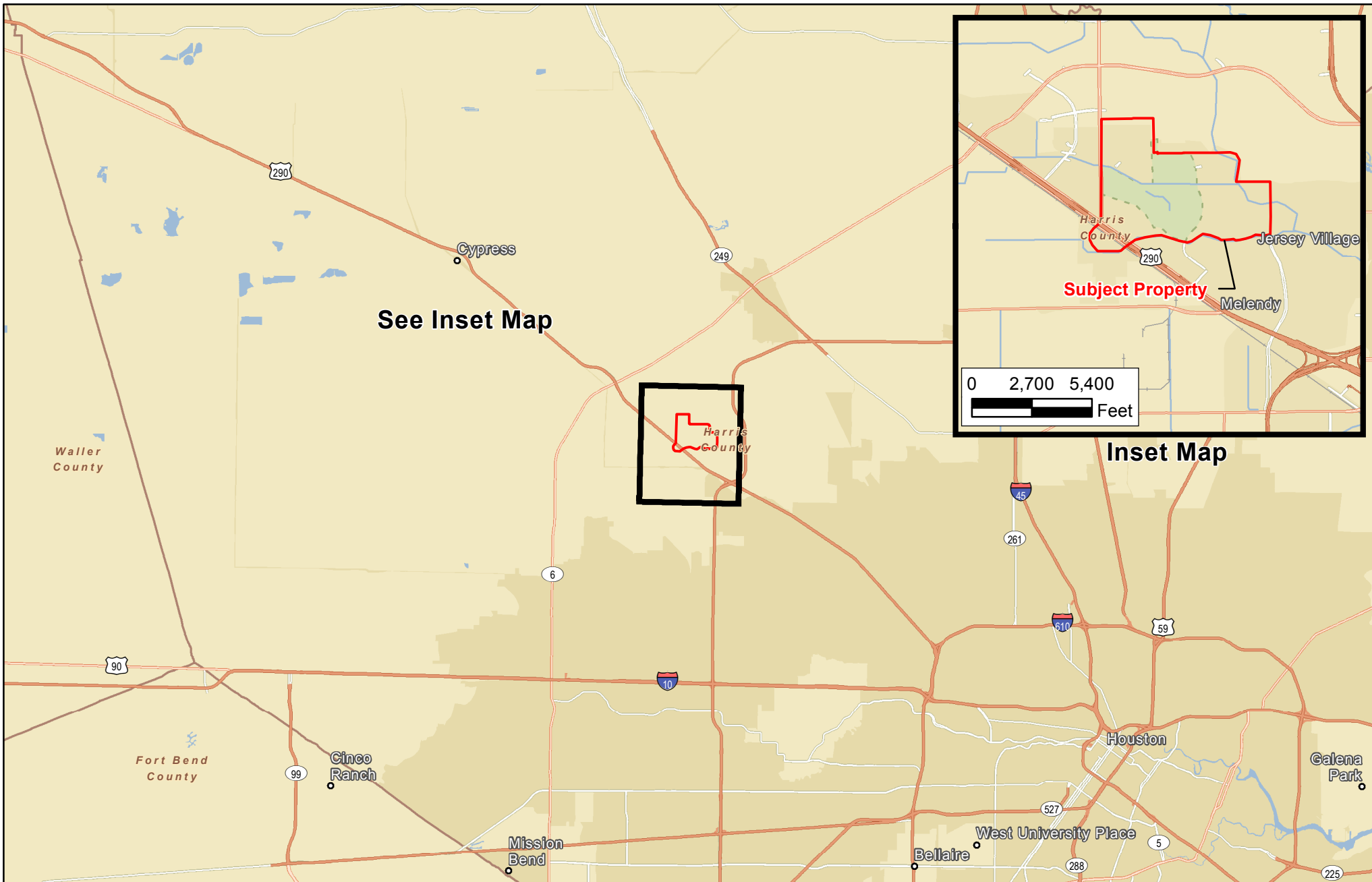
**2014 Aerial Photograph with National Wetlands Inventory
Data**

2014 Aerial Photograph with HCFCD LIDAR Elevation Data

2014 Aerial Photograph with NRCS Soil Survey Data



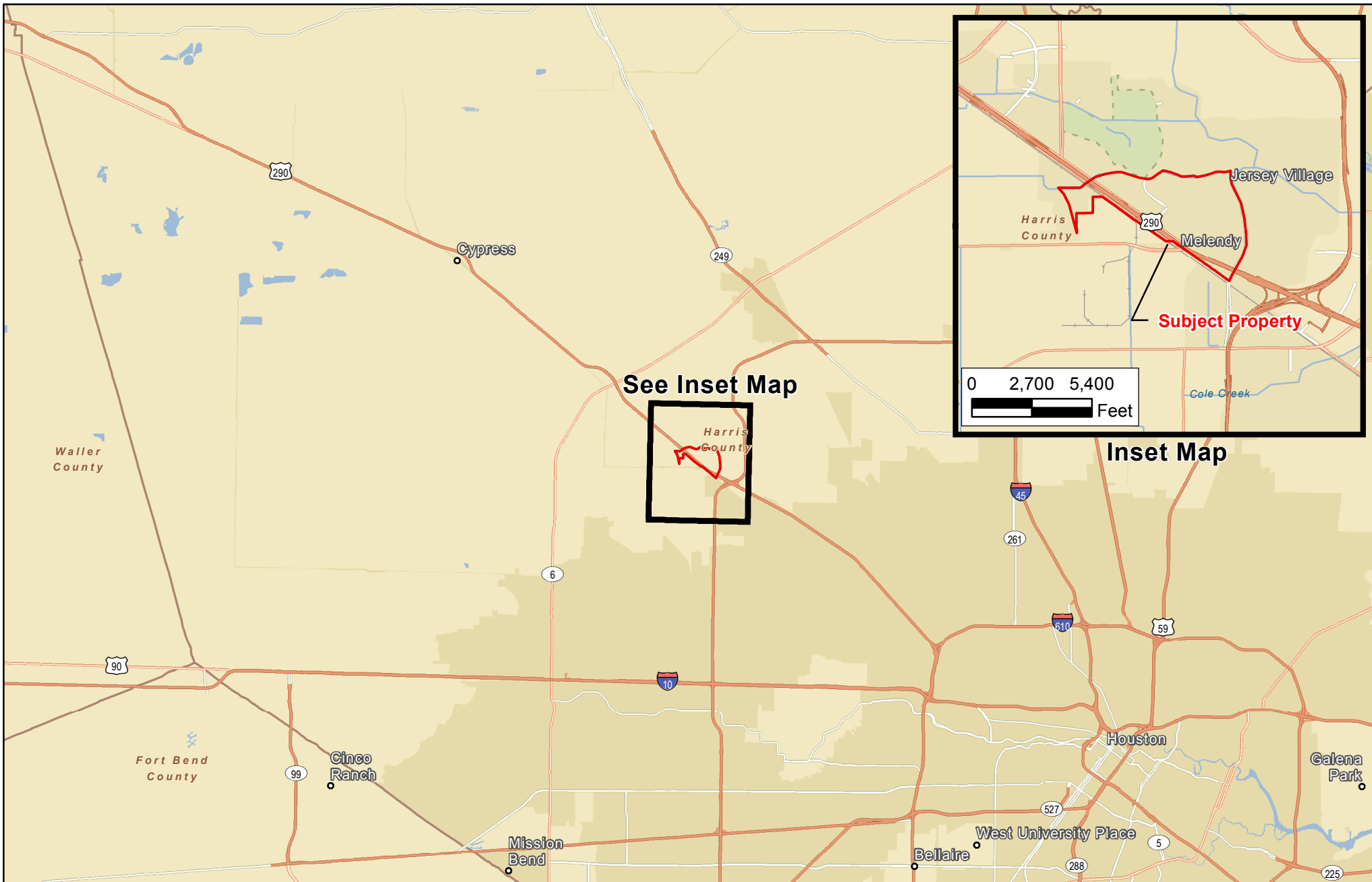




Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Northern Quadrant

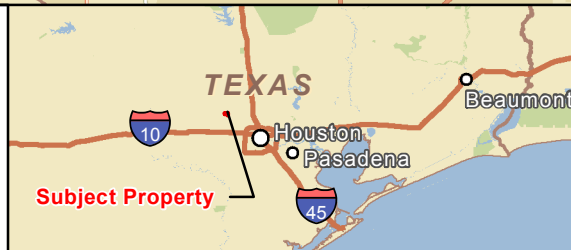
VICINITY MAP

Harris County, Texas



See Inset Map

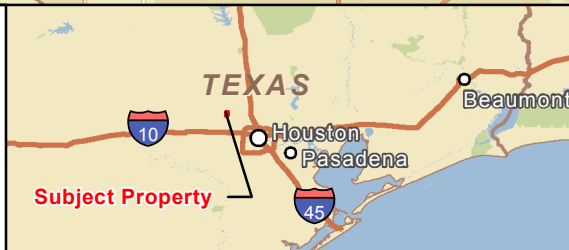
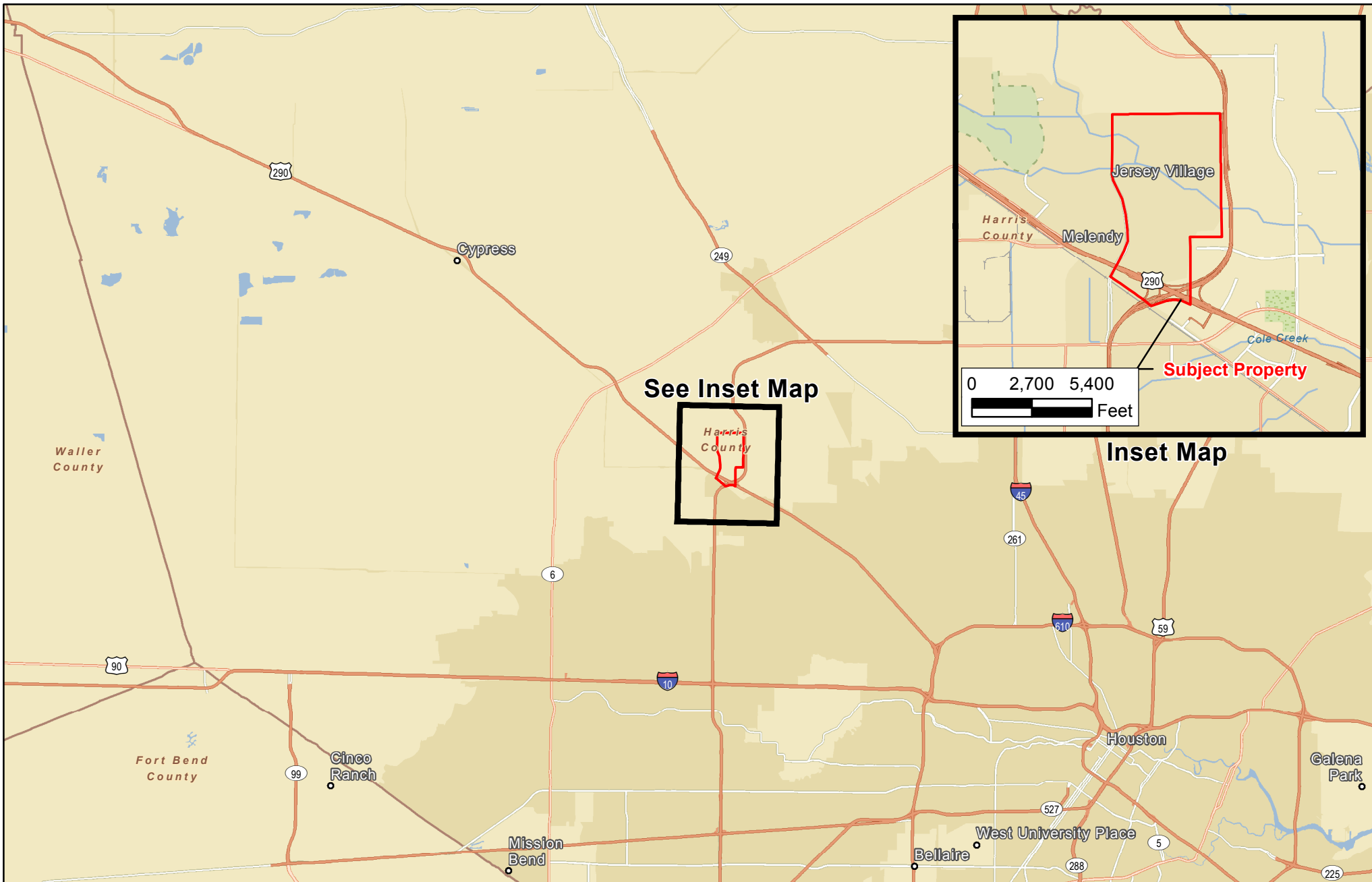
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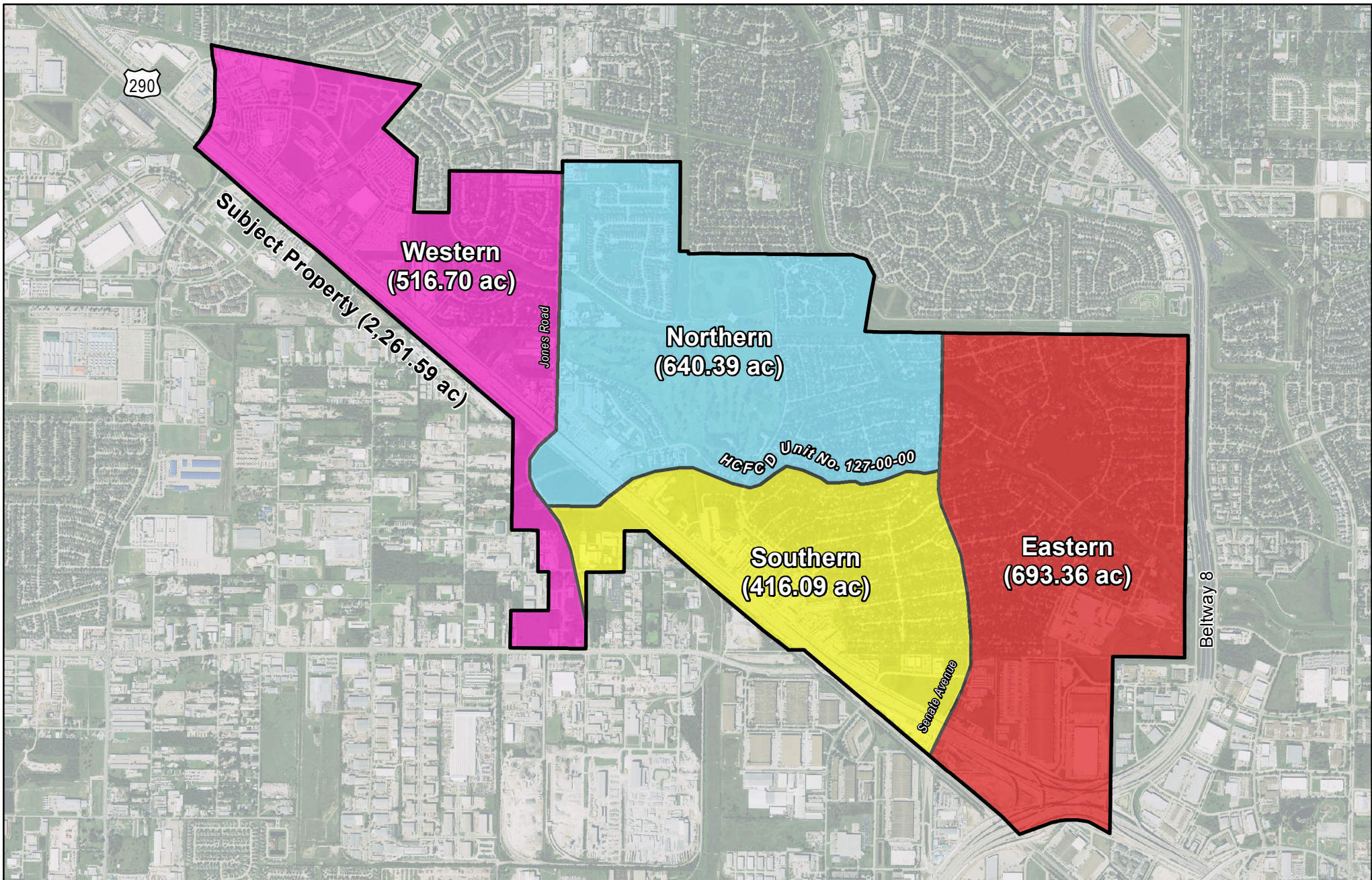


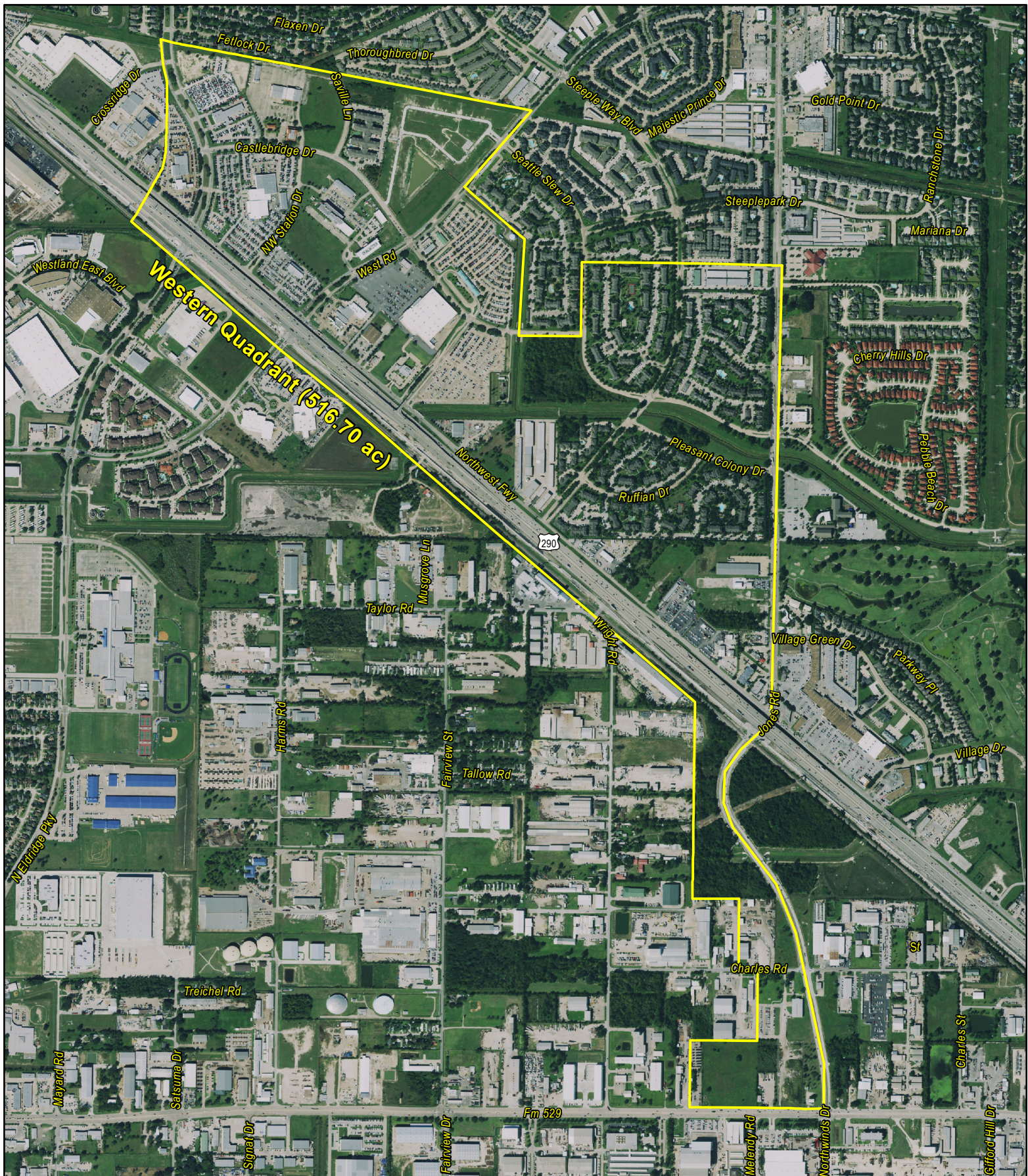
Dannenbaum Engineering Corporation
 City of Jersey Village Long-Term Flood Recovery Plan
 Southern Quadrant

VICINITY MAP

Harris County, Texas

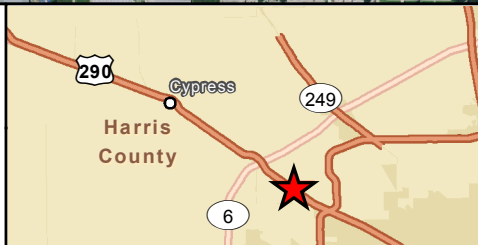






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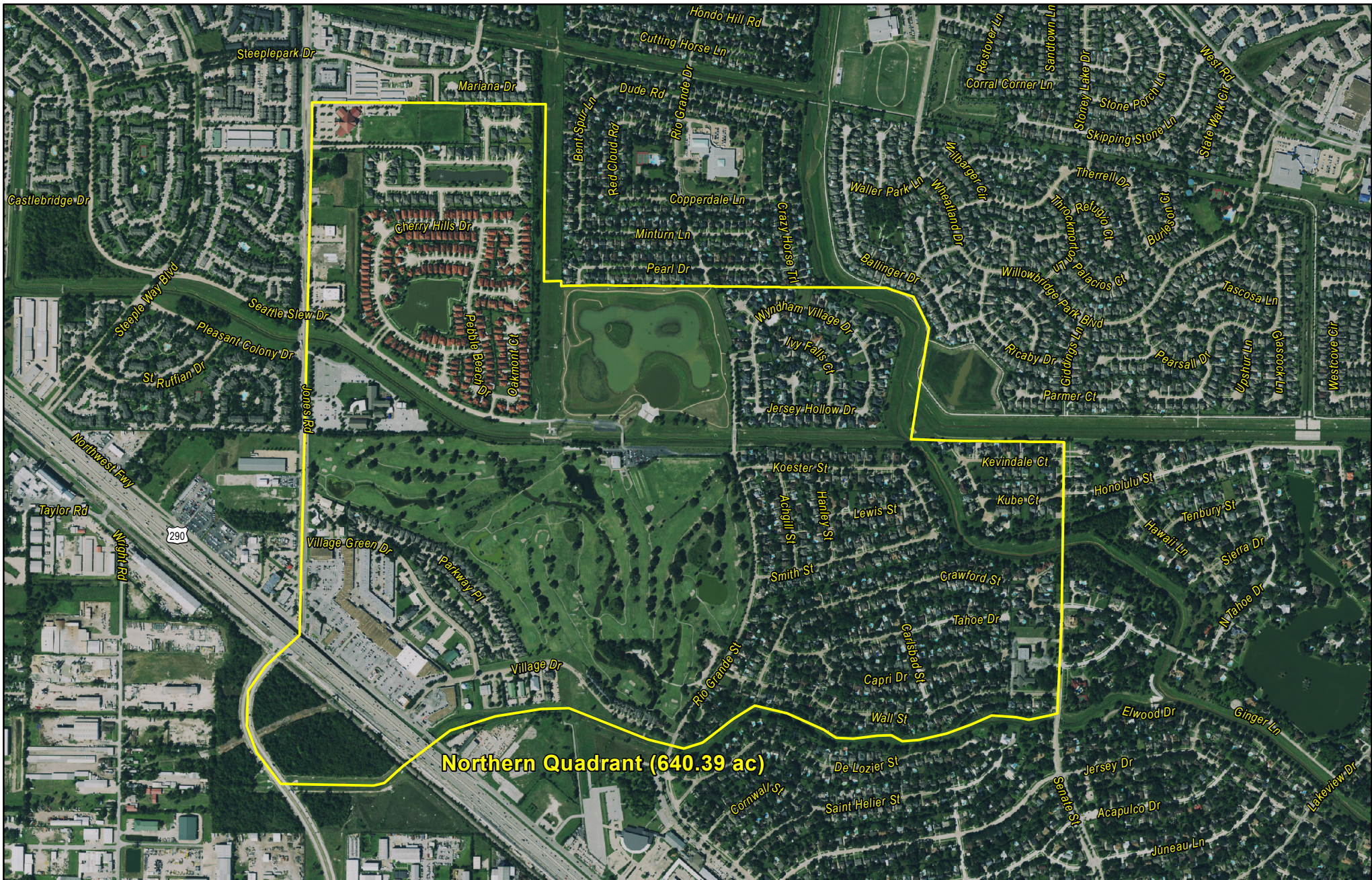
CROUCH ENVIRONMENTAL SERVICES, INC.



Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Western Quadrant

2014 AERIAL PHOTOGRAPH WITH
SUBJECT PROPERTY

Harris County, Texas



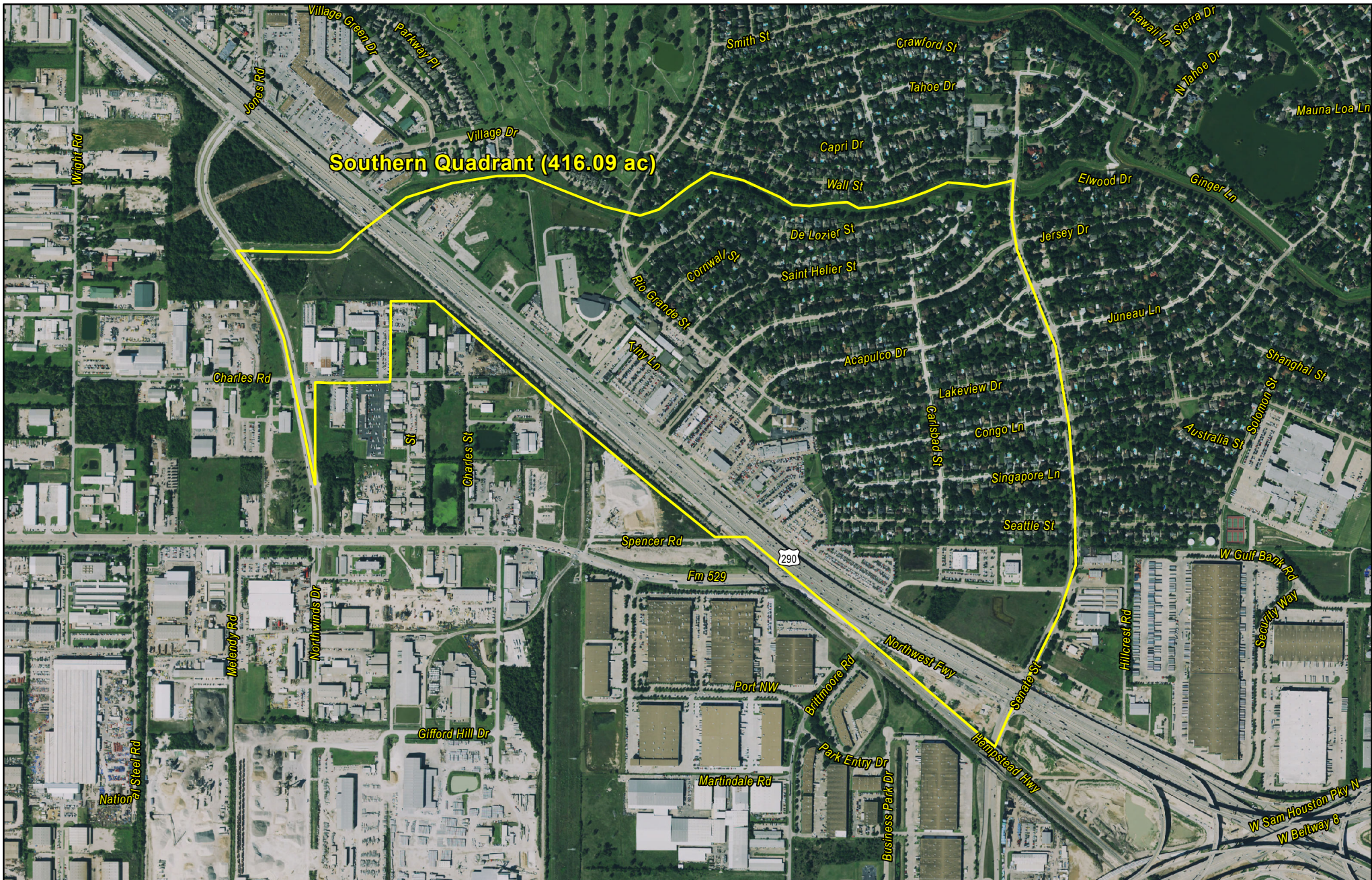
Northern Quadrant (640.39 ac)



Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Northern Quadrant

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Harris County, Texas



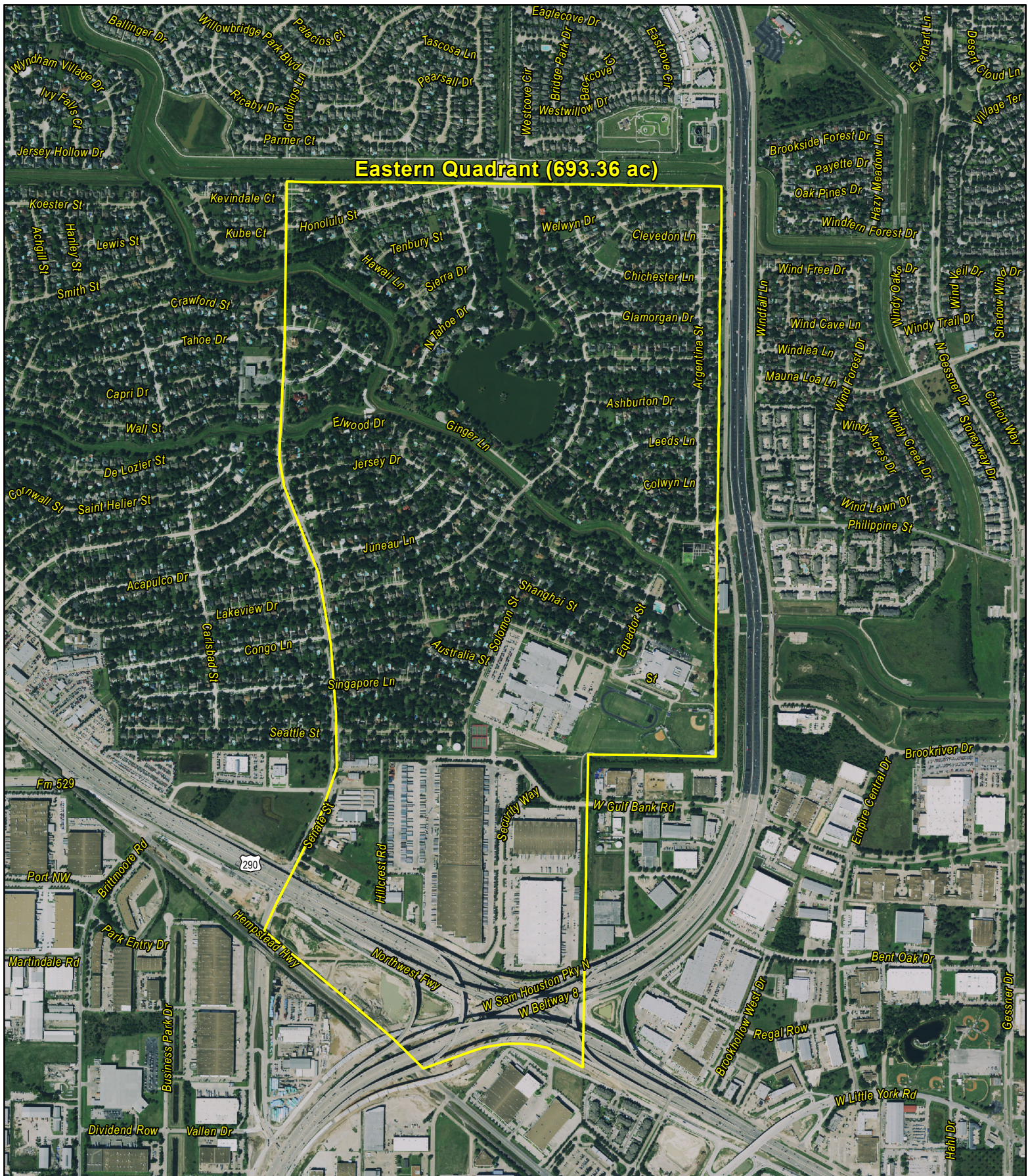
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Southern Quadrant

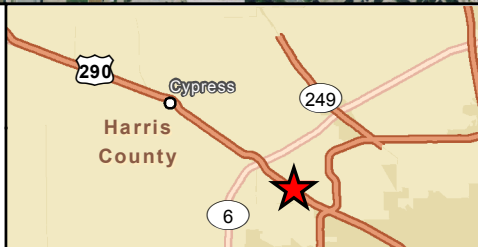
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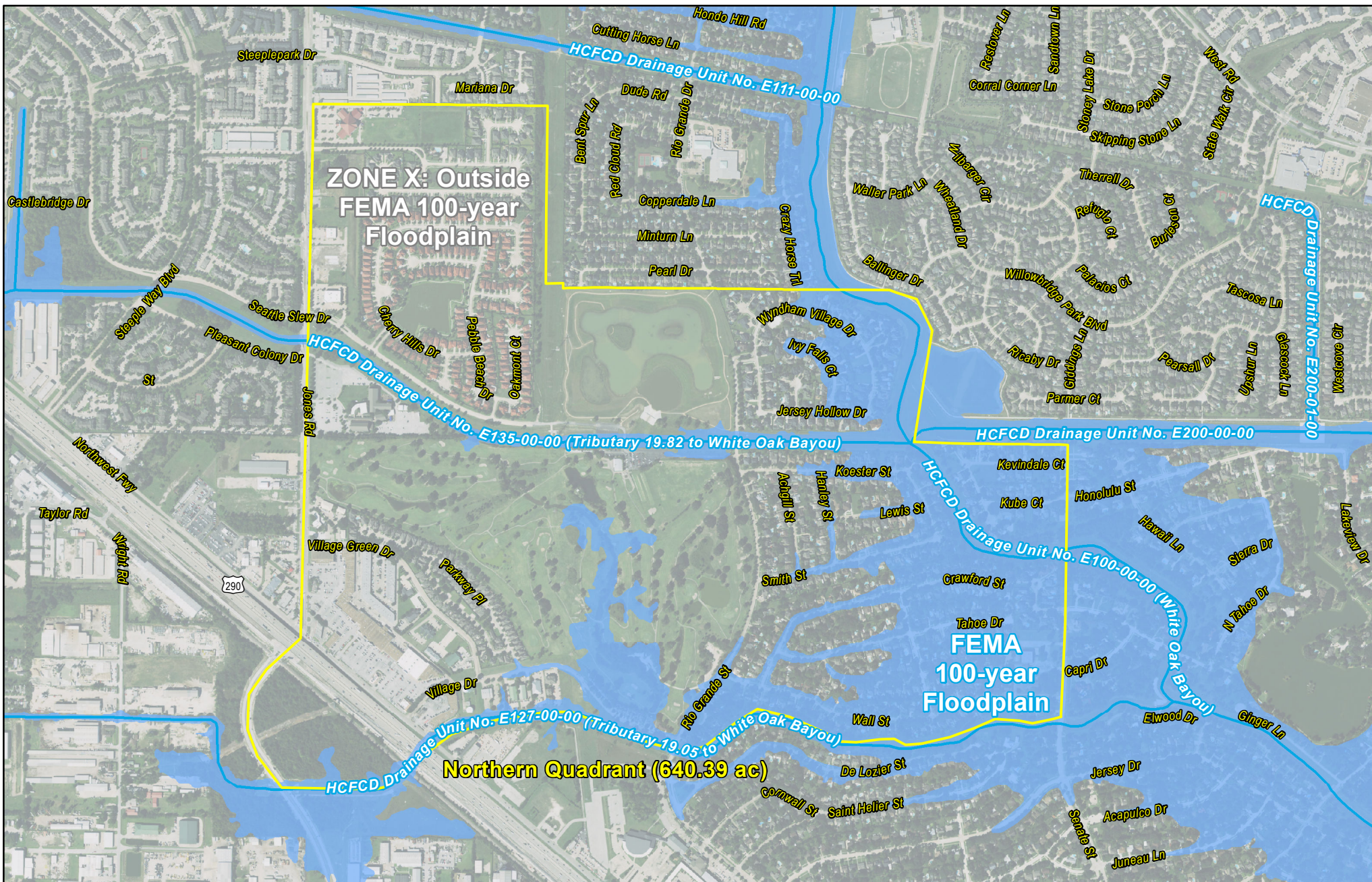
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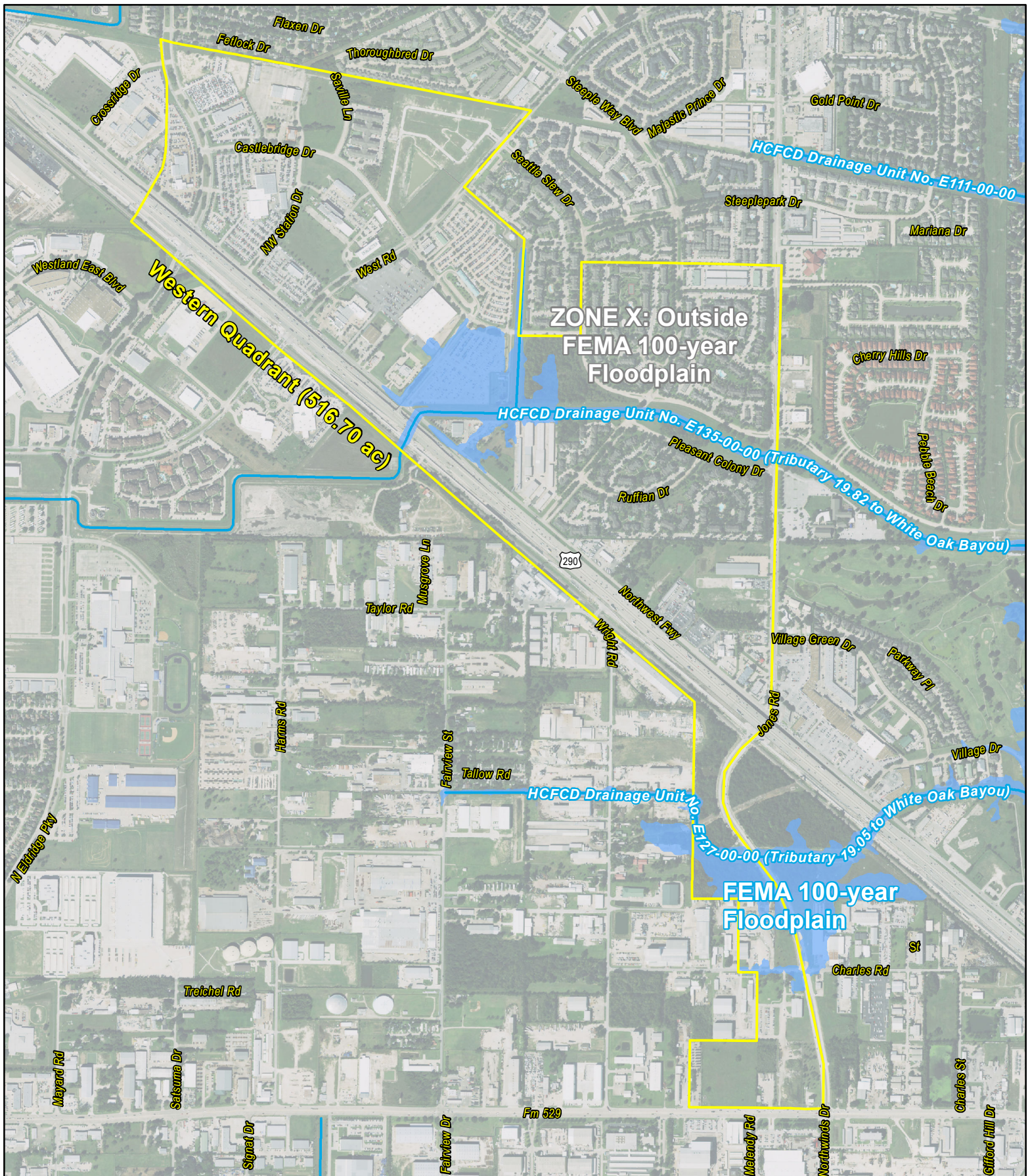


Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Eastern Quadrant

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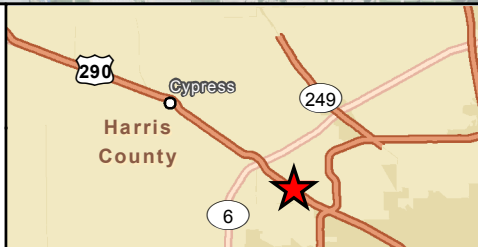
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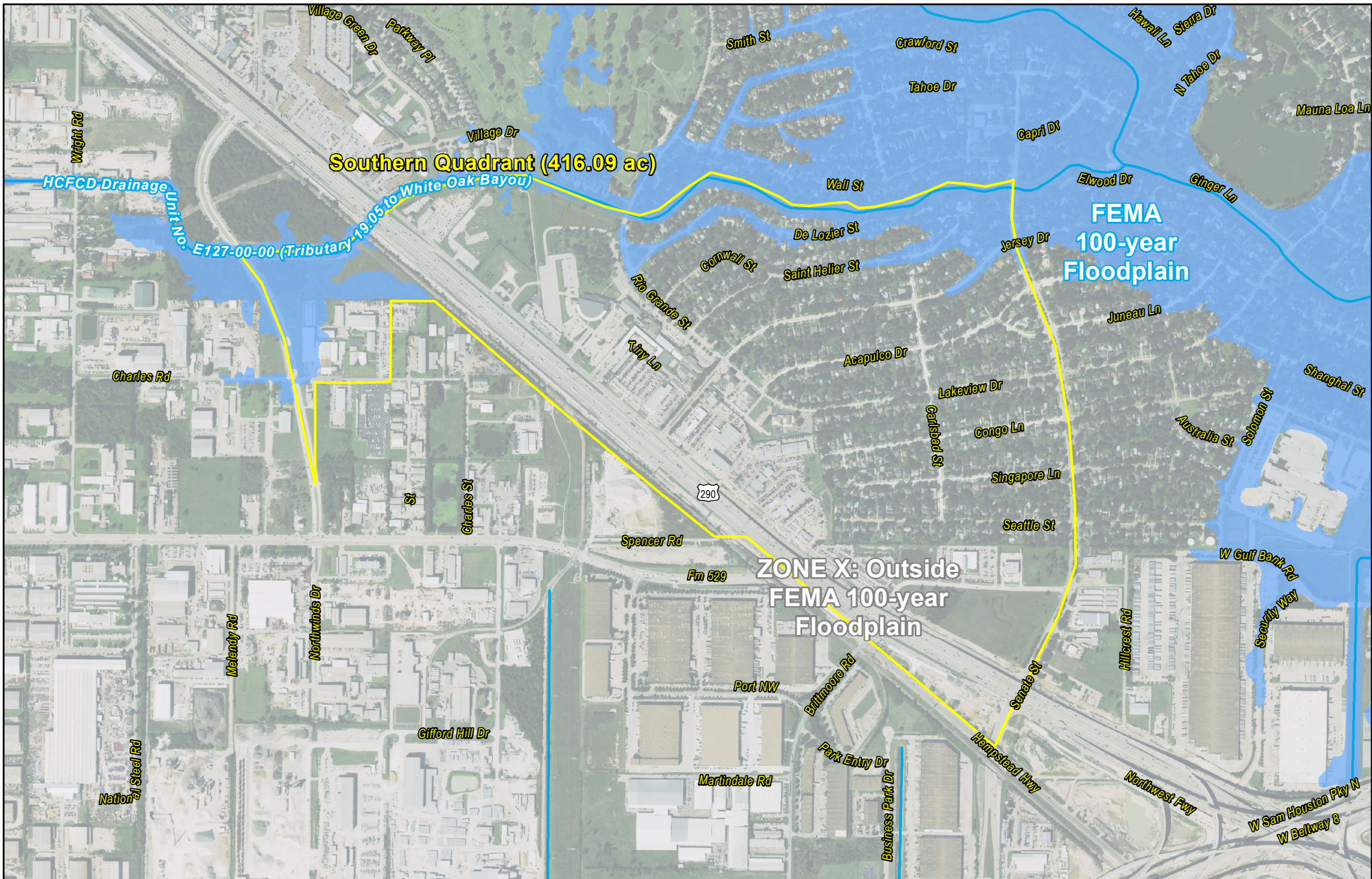
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Western Quadrant

2014 AERIAL PHOTOGRAPH WITH
FEMA FLOODPLAIN DATA

Harris County, Texas



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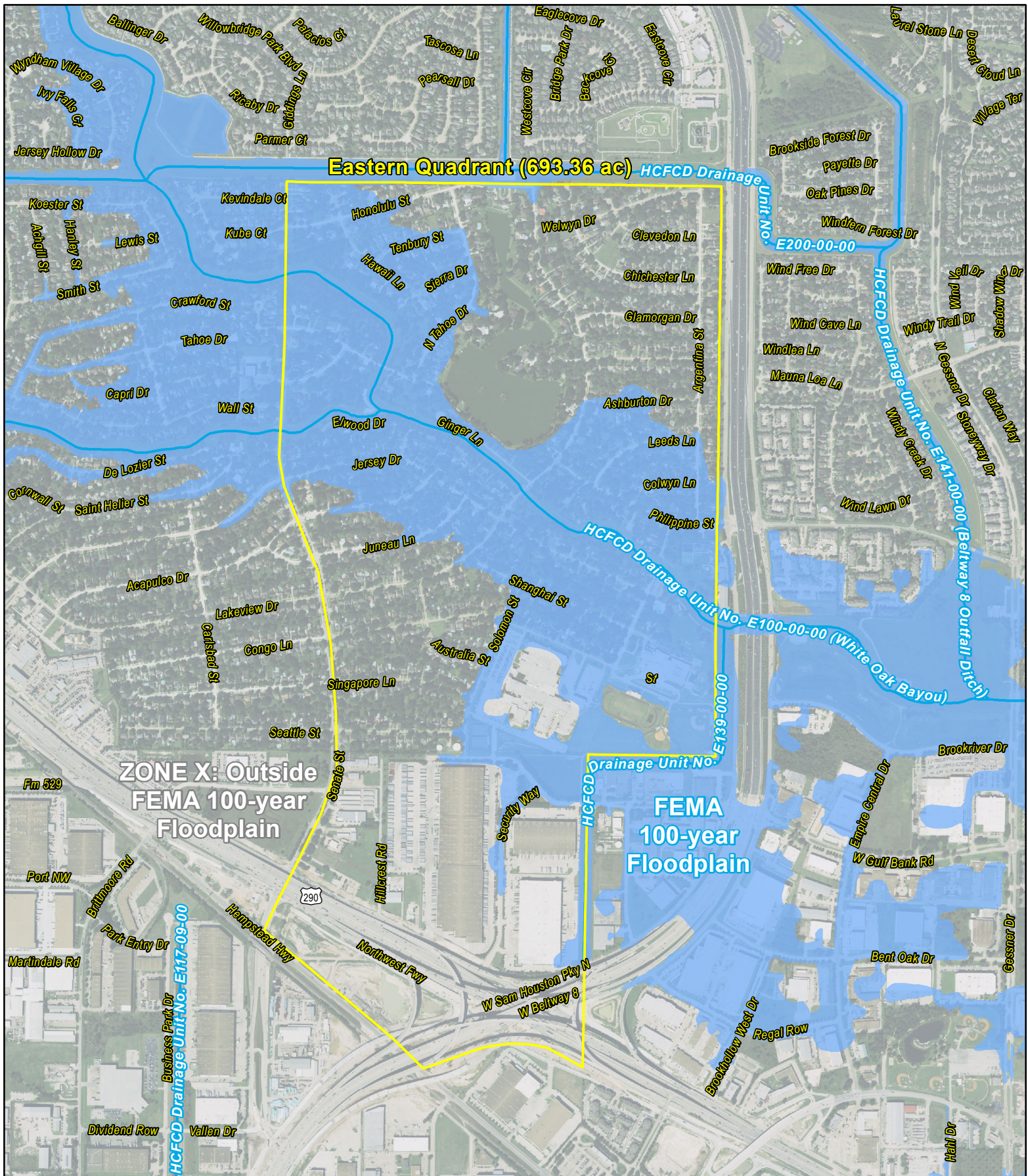
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Southern Quadrant

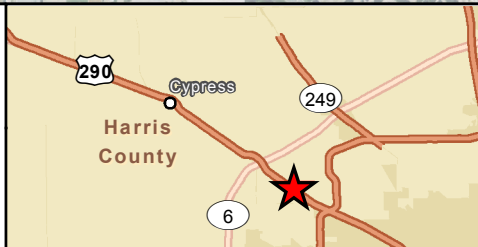
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Harris County, Texas



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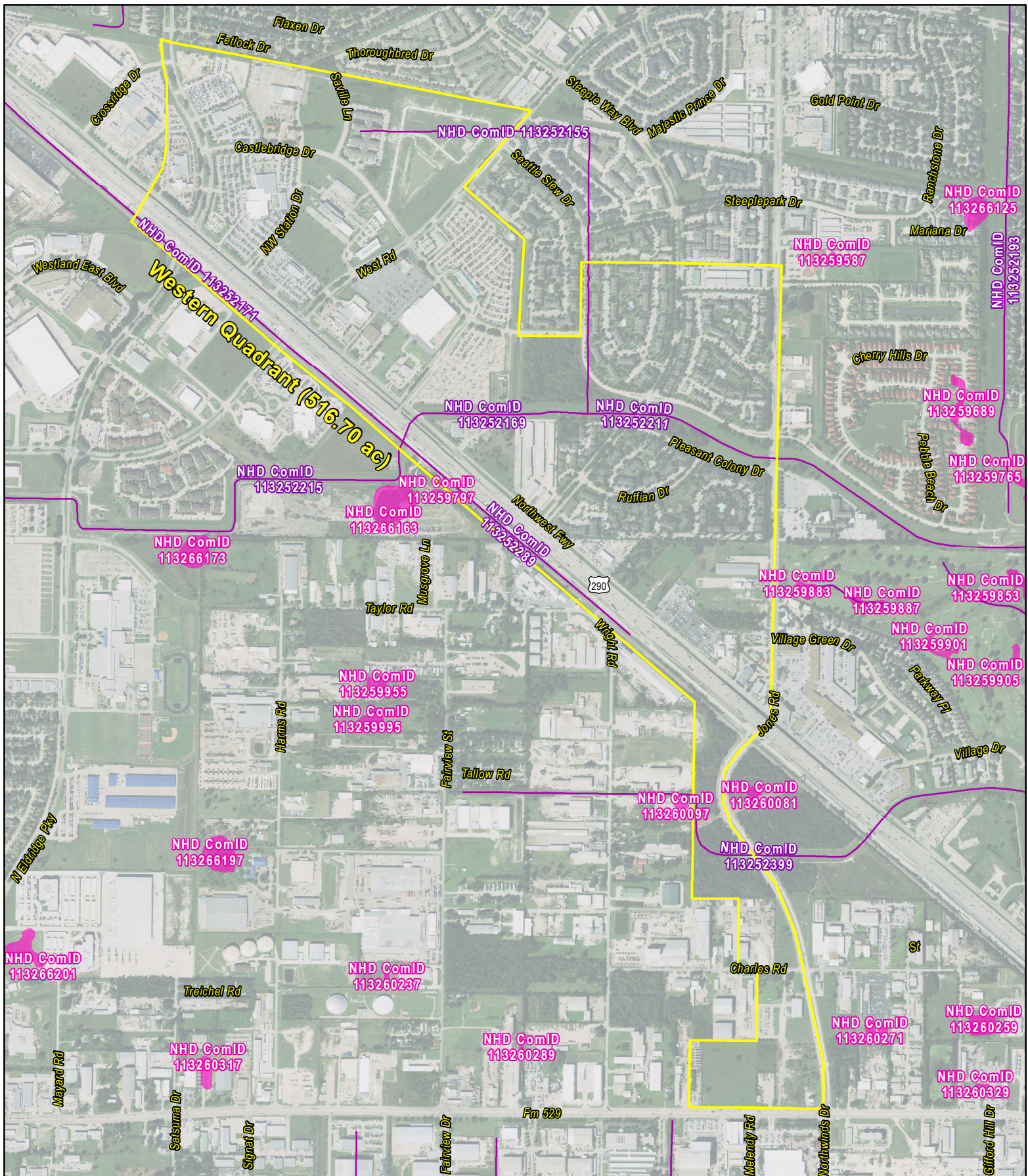
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Eastern Quadrant

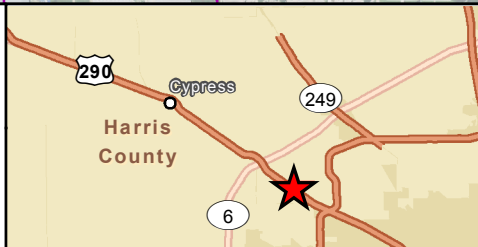
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FEMA FLOODPLAIN DATA

Harris County, Texas



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CROUCH ENVIRONMENTAL
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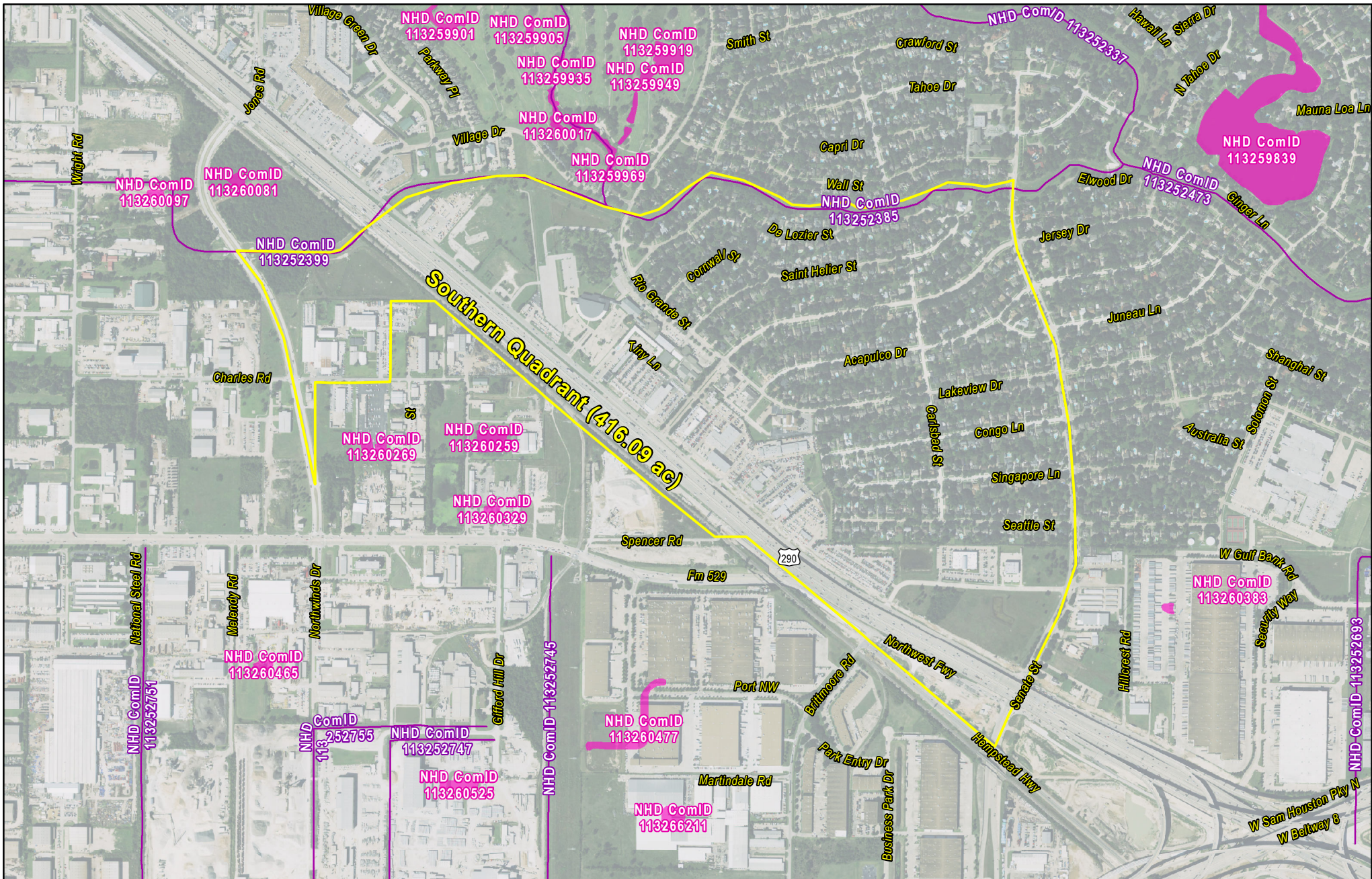


Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Western Quadrant

2014 AERIAL PHOTOGRAPH WITH
FEMA FLOODPLAIN DATA

Harris County, Texas





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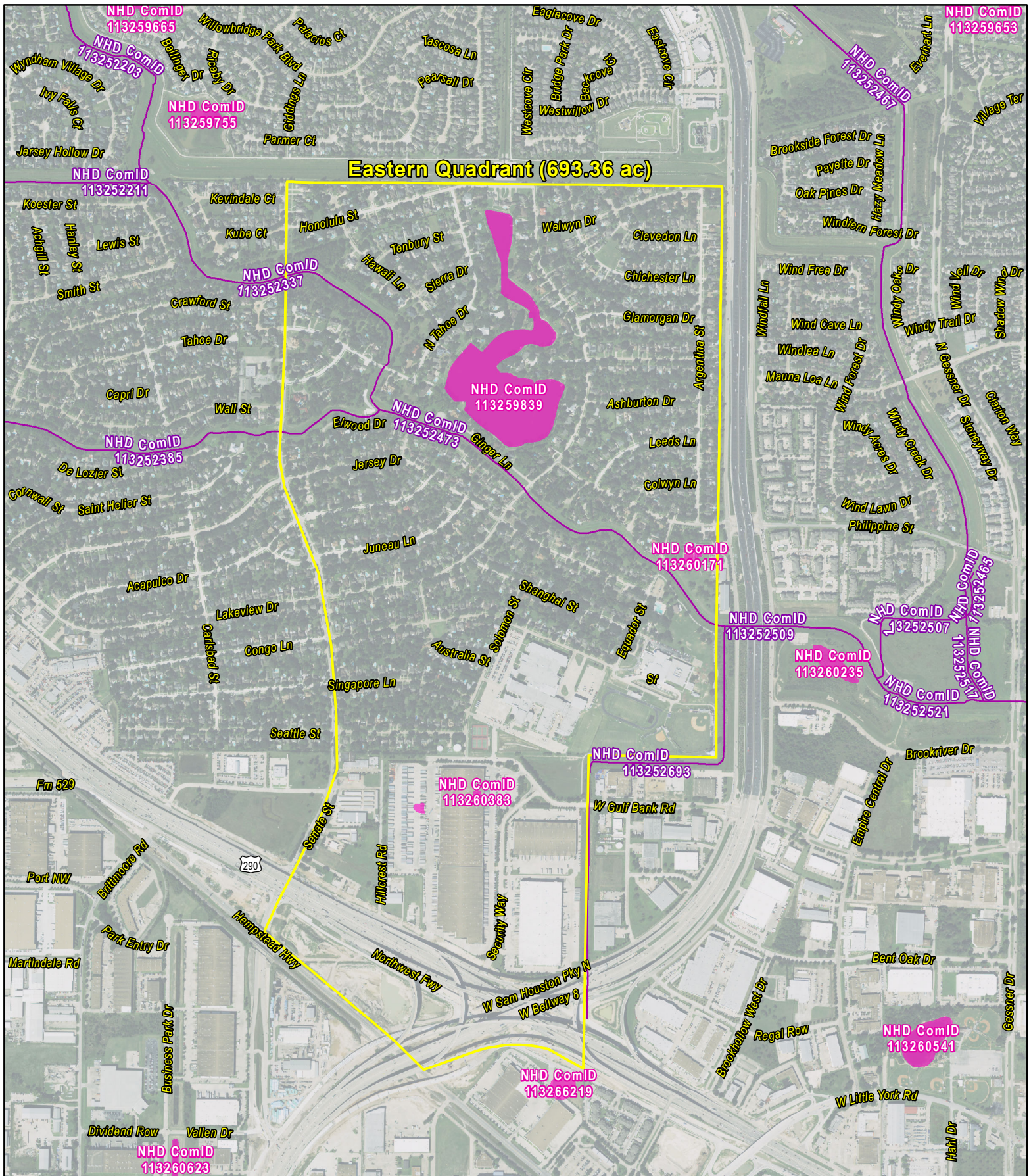
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Southern Quadrant

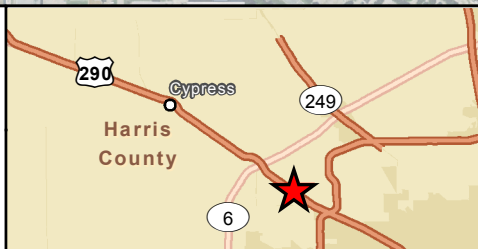
2014 AERIAL PHOTOGRAPH WITH
NATIONAL HYDROGRAPHY DATASET

Harris County, Texas



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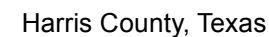
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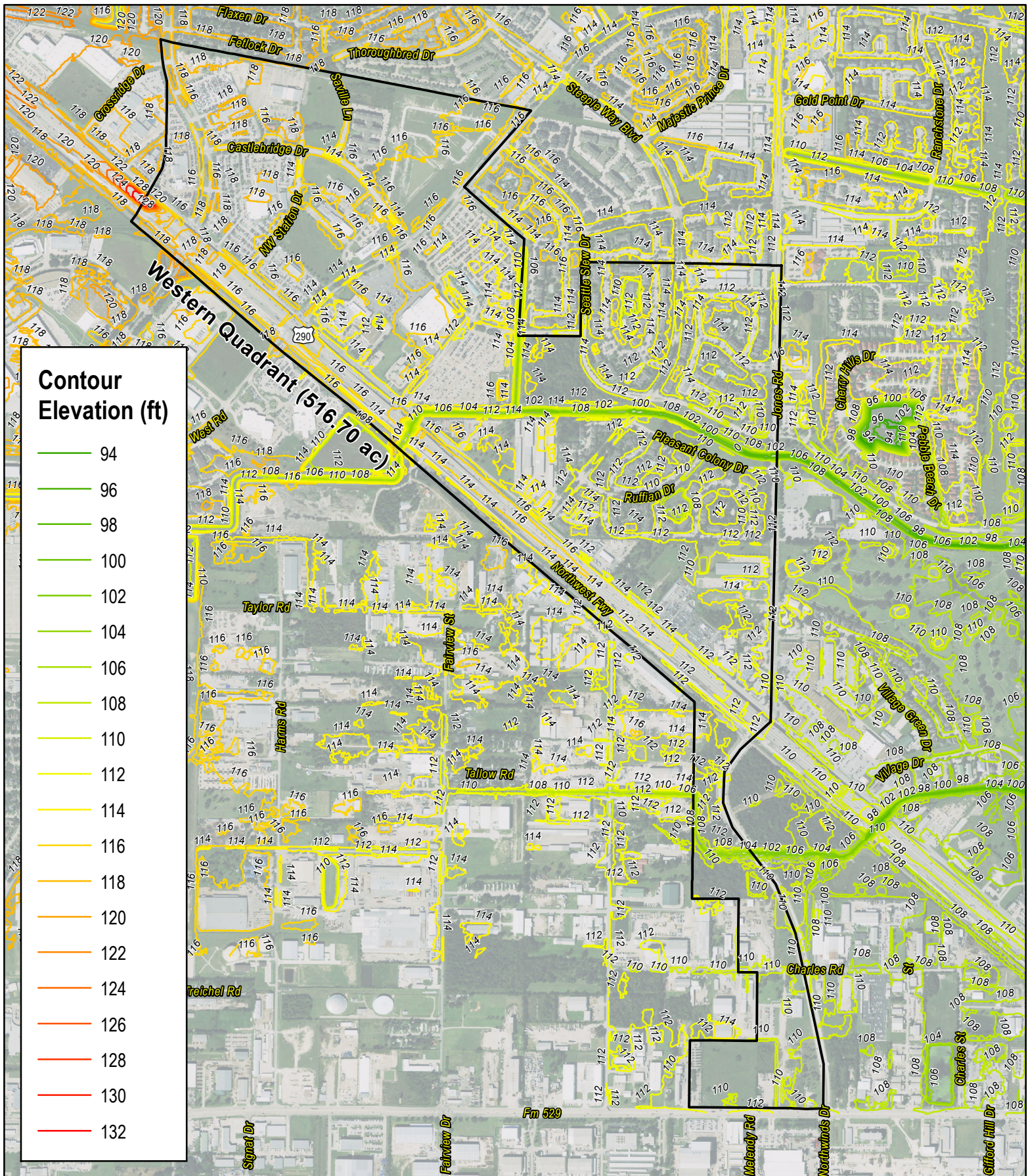
Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Eastern Quadrant

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Harris County, Texas

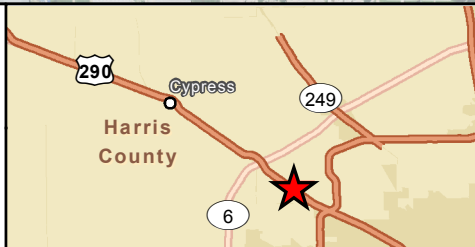


Harris County, Texas



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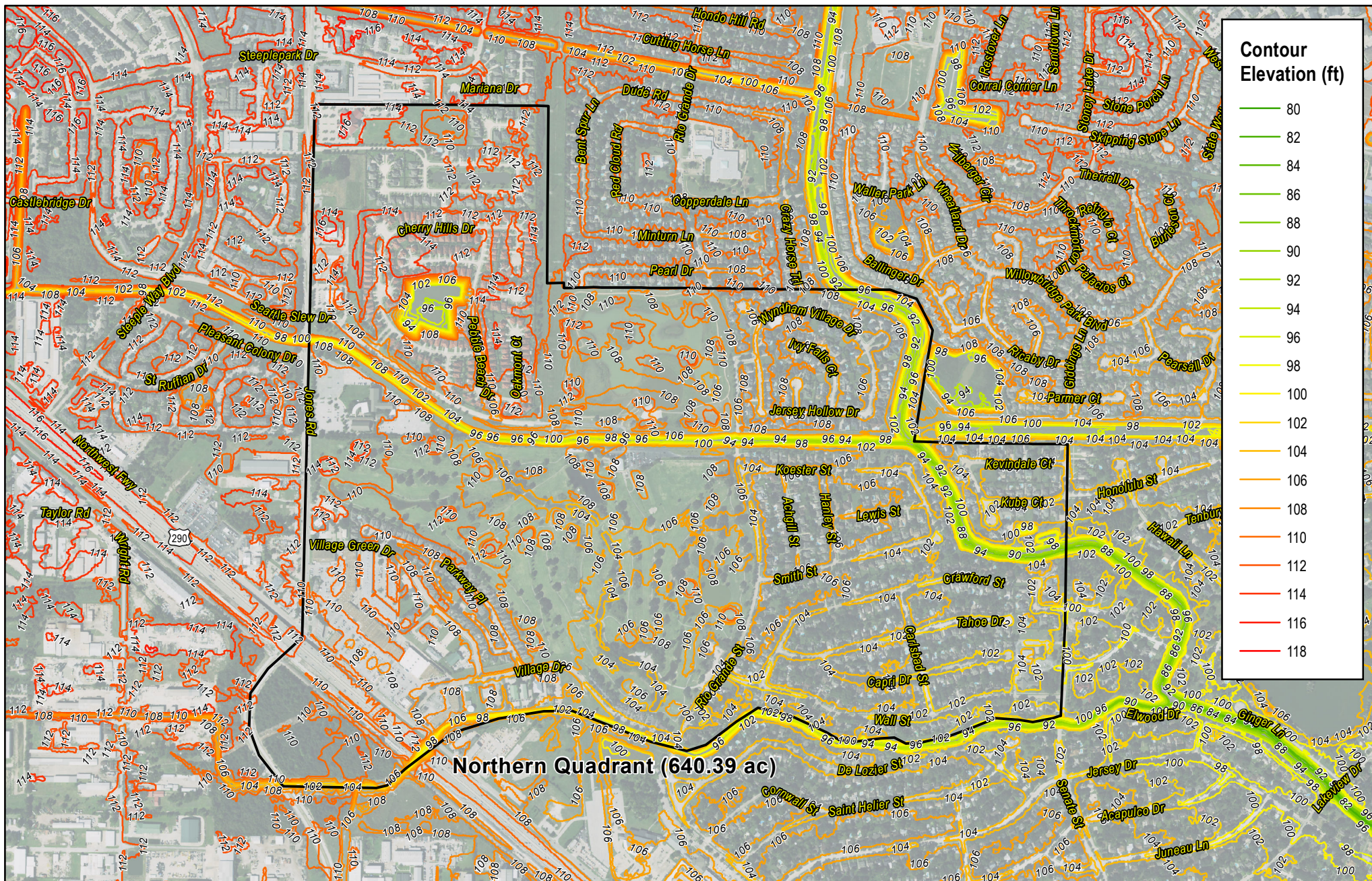
CROUCH ENVIRONMENTAL SERVICES, INC.



Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Western Quadrant

2014 AERIAL PHOTOGRAPH WITH
HCFCF LIDAR ELEVATION DATA

Harris County, Texas



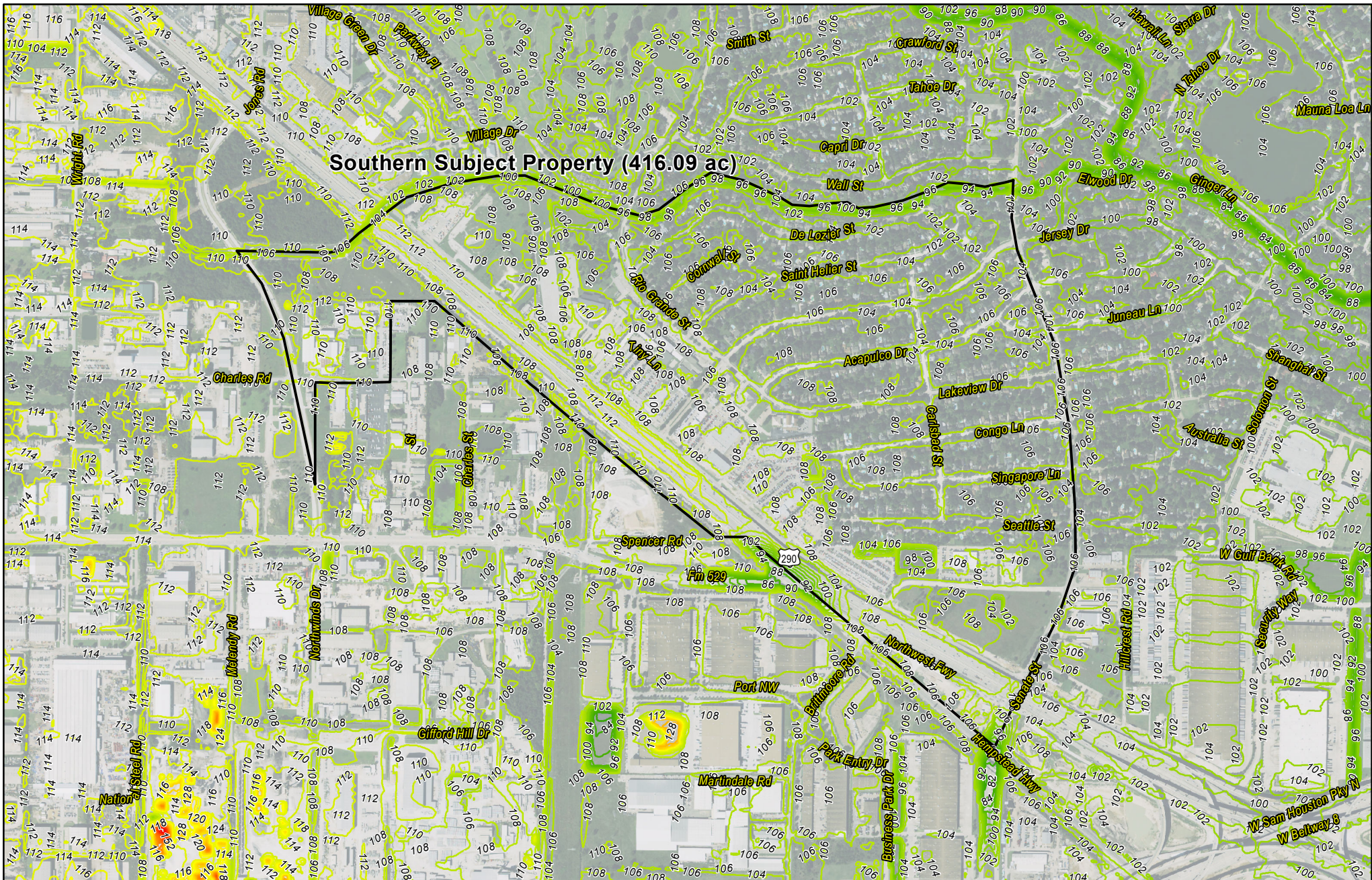
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Northern Quadrant

2014 AERIAL PHOTOGRAPH WITH
HCFCF LIDAR ELEVATION DATA

Harris County, Texas



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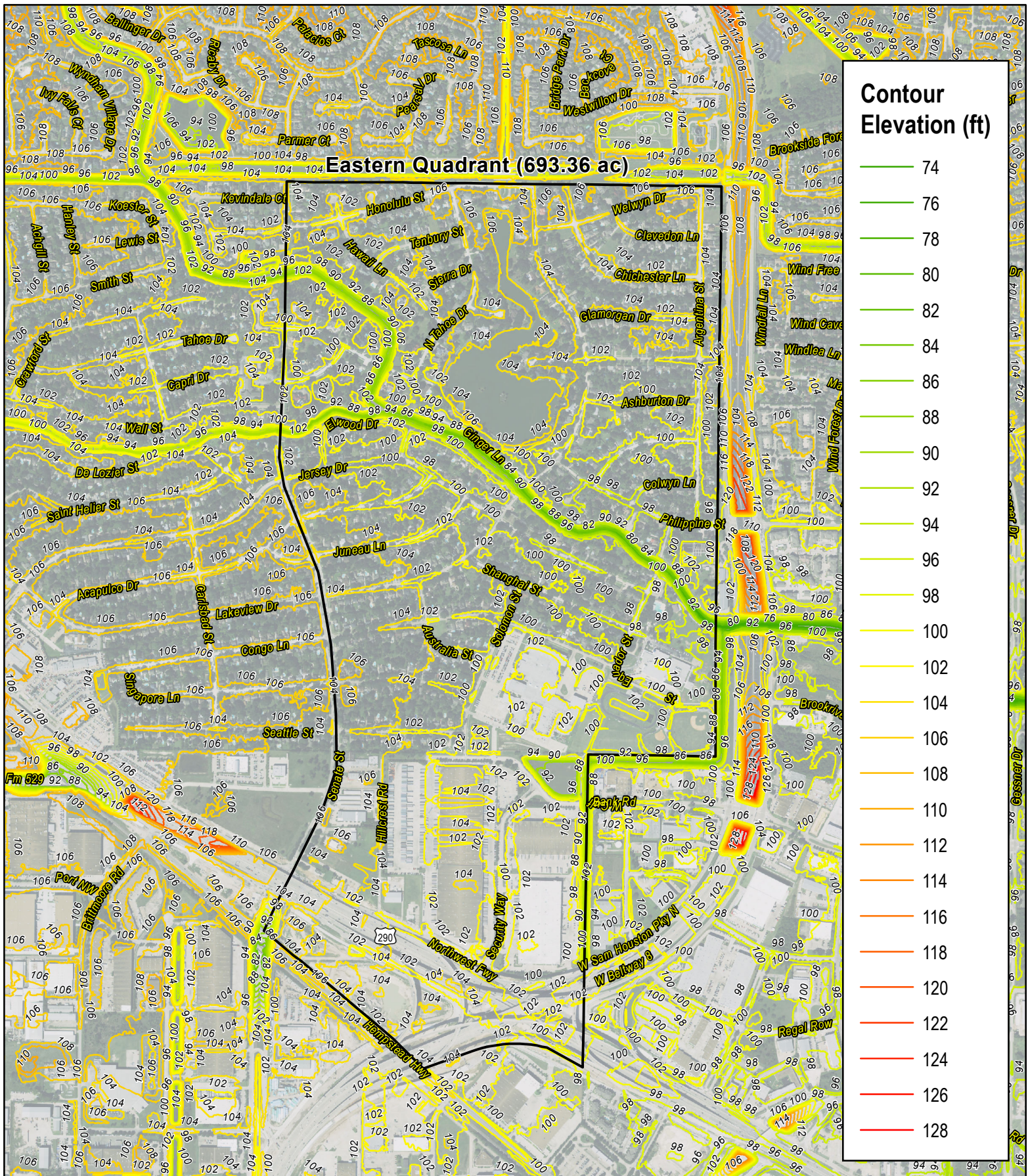
CROUCH  **ENVIRONMENTAL
SERVICES, INC.**



Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Southern Quadrant

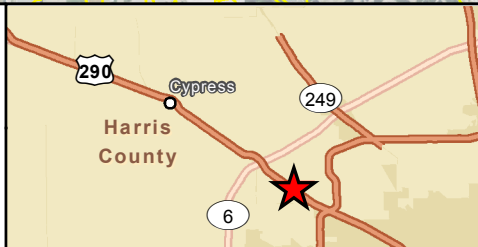
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HGAC LIDAR ELEVATION DATA

Harris County, Texas



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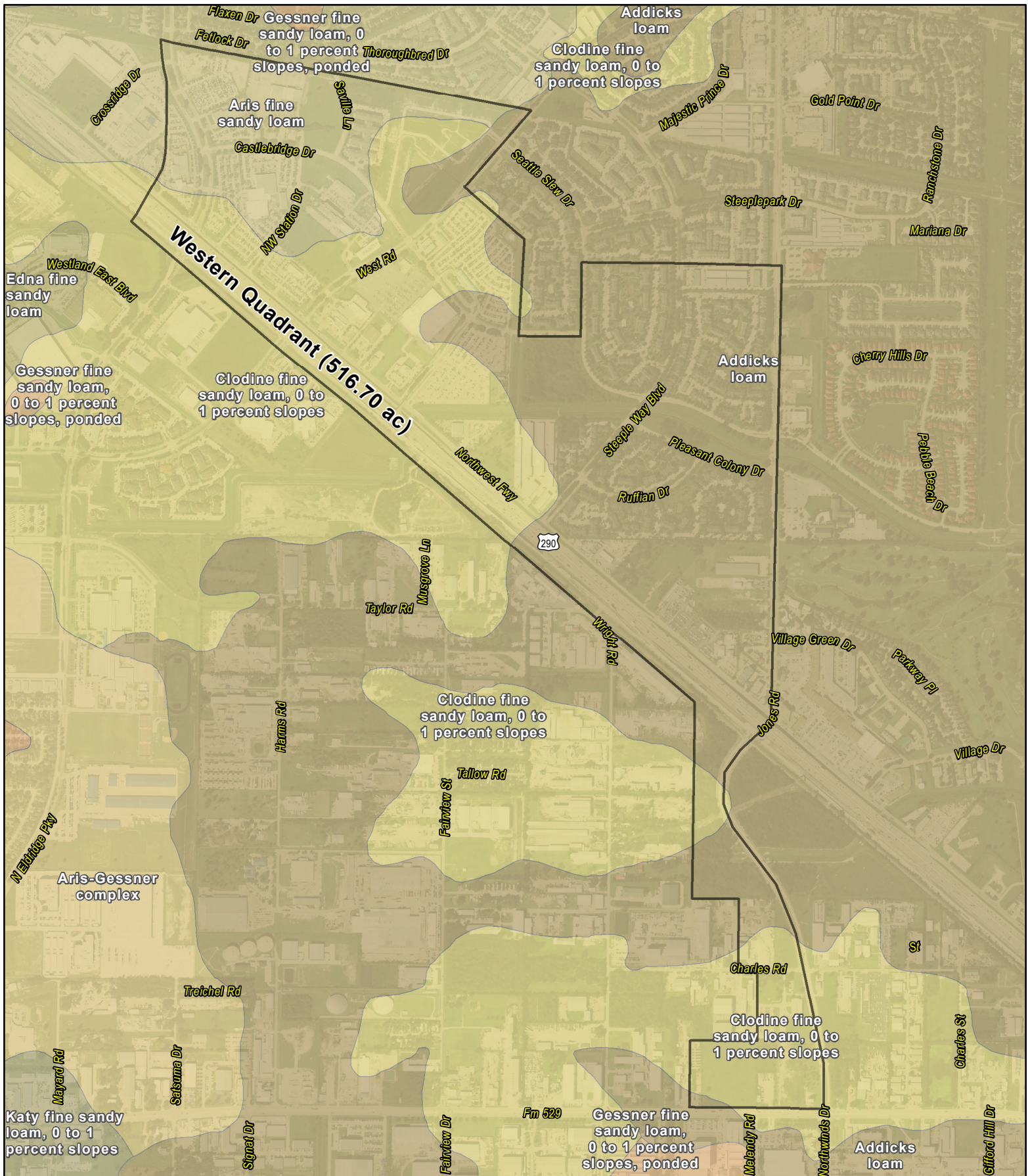
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Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Eastern Quadrant

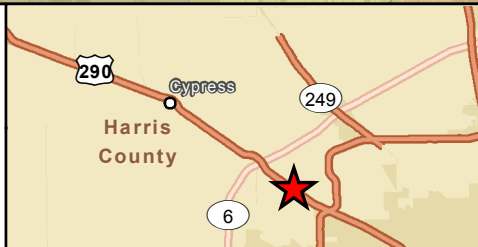
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HCFCF LIDAR ELEVATION DATA

Harris County, Texas



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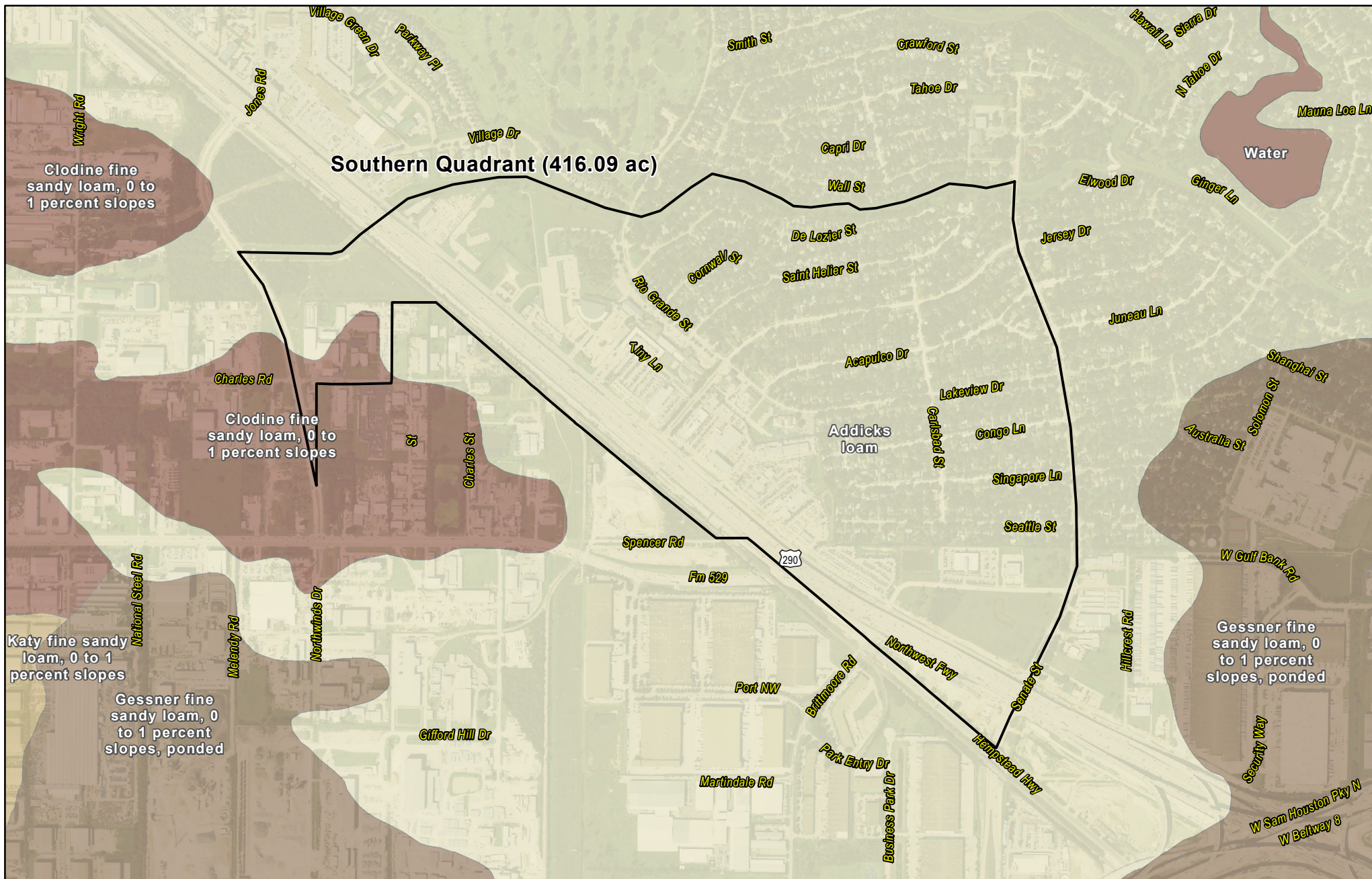
CROUCH ENVIRONMENTAL SERVICES, INC.



Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Western Quadrant

2014 AERIAL PHOTOGRAPH WITH
NRCS SOIL SURVEY DATA

Harris County, Texas



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Feet

CROUCH  **ENVIRONMENTAL SERVICES, INC.**



Dannenbaum Engineering Corporation
City of Jersey Village Long-Term Flood Recovery Plan
Southern Quadrant

2014 AERIAL PHOTOGRAPH WITH
NRCS SOIL SURVEY DATA

Harris County, Texas

Attachment B

***EDR DataMap Area Study**

***EDR DataMap Area Study Map**

***The EDR City Directory Image Report**

***The EDR Aerial Photo Decade Package**

***EDR Historical Topographic Map Report with QuadMatch**

***Mapped Sites Summary by Quadrant**

***See attached EDR Reports in “Attachment B” as a separate report**



Attachment C

USFWS IPaC Trust Resource Report





United States Department of the Interior

FISH AND WILDLIFE SERVICE

Texas Coastal Ecological Services Field Office

17629 El Camino Real, Suite 211

Houston, Texas 77058

281/286-8282 / (FAX) 281/488-5882



In Reply Refer To:
FWS/R2/
TCESFO/

January 20, 2015

Thank you for your request for threatened and endangered species, fish and wildlife, environmental, and/or aquatic resources information, comments, and/or recommendations within the United States Fish and Wildlife Service (Service) Texas Coastal Ecological Service's area (Houston Office) of responsibility.

In order to obtain information regarding fish and wildlife resources concerning a specific project or project area, we recommend that you first utilize the Service developed Information, Planning, and Conservation (IPaC) System. The IPaC system is designed for easy, public access to information about the natural resources for which the Service has trust or regulatory responsibility. Examples include Threatened and Endangered species, migratory birds, National Refuge lands, and NWI Wetlands. One of the primary goals of the IPaC system is to provide this information in a manner that assists people in planning their activities within the context of natural resource conservation. The IPaC system also assists people through the various regulatory consultation, permitting and approval processes administered by the Fish and Wildlife Service, helping achieve more effective and efficient results for both the project proponents and natural resources.

The IPaC system can be found at the following website address: <http://ecos.fws.gov/ipac/>.

If you still have questions concerning your project as it relates to fish and wildlife resources after visiting the IPaC system, please feel free to contact our office at the letterhead address above. We will be happy to assist you.

Sincerely,

David Hoth

Assistant Field Supervisor

46-16 City of Jersey Village Long-term Flood Damage Recovery

IPaC Trust Resources Report

Generated November 01, 2016 04:33 PM MDT, IPaC v3.0.9

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



Table of Contents

IPaC Trust Resources Report	<u>1</u>
Project Description	<u>1</u>
Endangered Species	<u>2</u>
Migratory Birds	<u>4</u>
Refuges & Hatcheries	<u>7</u>
Wetlands	<u>8</u>

U.S. Fish & Wildlife Service

IPaC Trust Resources Report



NAME

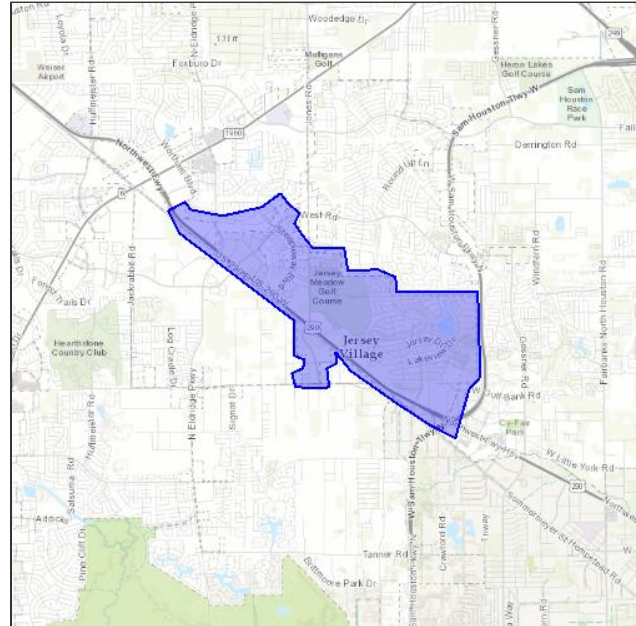
46-16 City of Jersey Village Long-term
Flood Damage Recovery

LOCATION

Harris County, Texas

IPAC LINK

[https://ecos.fws.gov/ipac/project/
VZGGT-XHUWB-AQJNI-WZW4I-JTRTPQ](https://ecos.fws.gov/ipac/project/VZGGT-XHUWB-AQJNI-WZW4I-JTRTPQ)



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Texas Coastal Ecological Services Field Office

17629 El Camino Real, Suite 211

Houston, TX 77058-3051

(281) 286-8282

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Birds

Least Tern *Sterna antillarum*

Endangered

THIS SPECIES ONLY NEEDS TO BE CONSIDERED IF THE FOLLOWING CONDITION APPLIES
Wind related projects within migratory route.

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B07N

Piping Plover *Charadrius melodus*

Threatened

THIS SPECIES ONLY NEEDS TO BE CONSIDERED IF THE FOLLOWING CONDITION APPLIES
Wind related projects within migratory route.

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B079

Red Knot *Calidris canutus rufa*

Threatened

THIS SPECIES ONLY NEEDS TO BE CONSIDERED IF THE FOLLOWING CONDITION APPLIES
Wind related projects within migratory route.

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0DM

Flowering Plants

Texas Prairie Dawn-flower *Hymenoxys texana*

Endangered

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=Q2RK

Mammals

West Indian Manatee *Trichechus manatus*

Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=A007

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.^[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data
<http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The following species of migratory birds could potentially be affected by activities in this location:

Bald Eagle *Haliaeetus leucocephalus*

Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B008

Black Rail *Laterallus jamaicensis*

Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B09A

Burrowing Owl *Athene cunicularia*

Bird of conservation concern

Season: Wintering

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0NC

Dickcissel *Spiza americana*

Bird of conservation concern

Season: Breeding

Fox Sparrow *Passerella iliaca*

Bird of conservation concern

Season: Wintering

Harris's Sparrow <i>Zonotrichia querula</i> Season: Wintering	Bird of conservation concern
Henslow's Sparrow <i>Ammodramus henslowii</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B09D	Bird of conservation concern
Hudsonian Godwit <i>Limosa haemastica</i> Season: Migrating	Bird of conservation concern
Lark Bunting <i>Calamospiza melanocorys</i> Season: Wintering	Bird of conservation concern
Le Conte's Sparrow <i>Ammodramus leconteii</i> Season: Wintering	Bird of conservation concern
Least Bittern <i>Ixobrychus exilis</i> Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B092	
Lesser Yellowlegs <i>Tringa flavipes</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MD	Bird of conservation concern
Loggerhead Shrike <i>Lanius ludovicianus</i> Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY	Bird of conservation concern
Mississippi Kite <i>Ictinia mississippiensis</i> Season: Breeding	Bird of conservation concern
Painted Bunting <i>Passerina ciris</i> Season: Breeding	Bird of conservation concern
Peregrine Falcon <i>Falco peregrinus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU	Bird of conservation concern
Prothonotary Warbler <i>Protonotaria citrea</i> Season: Breeding	Bird of conservation concern
Red Knot <i>Calidris canutus rufa</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0DM	Bird of conservation concern
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> Season: Year-round	Bird of conservation concern
Rusty Blackbird <i>Euphagus carolinus</i> Season: Wintering	Bird of conservation concern
Sedge Wren <i>Cistothorus platensis</i> Season: Wintering	Bird of conservation concern
Short-eared Owl <i>Asio flammeus</i> Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD	Bird of conservation concern

Snowy Plover *Charadrius alexandrinus*

Season: Breeding

Bird of conservation concern

Sprague's Pipit *Anthus spragueii*

Season: Wintering

Bird of conservation concern

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0GD

Swainson's Warbler *Limnothlypis swainsonii*

Season: Breeding

Bird of conservation concern

Worm Eating Warbler *Helmitheros vermivorum*

Season: Migrating

Bird of conservation concern

Yellow Rail *Coturnicops noveboracensis*

Season: Wintering

Bird of conservation concern

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0JG

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

This location overlaps all or part of the following wetlands:

Freshwater Emergent Wetland

[PEM1A](#)

[PEM1Ad](#)

[PEM1C](#)

[PEM1Cx](#)

Freshwater Forested/shrub Wetland

[PFO1A](#)

[PFO1Ad](#)

[PFO1C](#)

[PSS1A](#)

[PSS1Ad](#)

[PSS1C](#)

Freshwater Pond

[PUBFx](#)

[PUBHx](#)

A full description for each wetland code can be found at the National Wetlands Inventory website: <http://107.20.228.18/decoders/wetlands.aspx>

Attachment D

Texas Natural Diversity Database (NDD) Data
TPWD E-mail Correspondence
TPWD Annotated County List for Harris County
Listed Species in Harris County Habitat Descriptions



Texas Natural Diversity Database (NDD) Data

Common Name	Scientific Name	State Status	Federal Status	Last Observed	EOID	Distance [†] (Miles)
Goldenwave tickseed	<i>Coreopsis intermedia</i>	Endangered	Endangered	6/16/1944	1609	2.03
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Rare*	Not Listed	8/17/1988	2880	2.65
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Rare*	Not Listed	6/10/1990	6319	2.95
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1988	1957	3.10
Coastal gay-feather	<i>Liatris bracteata</i>	Rare*	Not Listed	10/8/1978	6508	3.15
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Rare*	Not Listed	2/1/1952	1329	3.24
Awnless bluestem	<i>Bothriochloa exaristata</i>	Rare*	Not Listed	9/16/1986	10481	3.31
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	3/30/1988	7337	3.33
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	1999-11	3071	3.33
Texas windmill grass	<i>Chloris texensis</i>	Rare*	Not Listed	11/6/1999	6663	3.33
Awnless bluestem	<i>Bothriochloa exaristata</i>	Rare*	Not Listed	9/16/1986	10742	3.36
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000	5168	3.41
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2003-02	17	3.57
Houston toad	<i>Anaxyrus houstonensis</i>	Endangered	Endangered	1976	3746	3.71
Coastal gay-feather	<i>Liatris bracteata</i>	Rare*	Not Listed	10/10/1985	4891	3.80
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	4961	3.97
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1988	12480	4.08
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Rare*	Not Listed	3/15/1960	4660	4.08
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	6199	4.16
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	5167	4.19
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	4/29/1998	2082	4.26
Threeflower broomweed	<i>Thurovia triflora</i>	Rare*	Not Listed	9/27/1994	217	4.28
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	281	4.28
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	2001	2226	4.28
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1998	1702	4.31
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1995-SPRG	2420	4.33
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	5563	4.36
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	2001	8222	4.37
Coastal gay-feather	<i>Liatris bracteata</i>	Rare*	Not Listed	9/27/1994	4194	4.38
Threeflower broomweed	<i>Thurovia triflora</i>	Rare*	Not Listed	9/27/1994	6498	4.38
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	6938	4.38
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	3/29/1988	1574	4.39
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1988	4035	4.40
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	7275	4.45
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	3/30/1988	6775	4.72
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	686	4.85
Threeflower broomweed	<i>Thurovia triflora</i>	Rare*	Not Listed	9/26/1994	8309	4.90
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	282	4.90
Coastal gay-feather	<i>Liatris bracteata</i>	Rare*	Not Listed	9/26/1994	1418	4.90
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	6096	5.15
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	1540	5.16
Eastern spotted skunk	<i>Spilogale putorius</i>	Rare*	Not Listed	4/22/1980	12770	5.21
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	10/1/1998	2586	5.26
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	3/30/1988	1954	5.27
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	313	5.42
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	8193	5.47
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	315	6.55
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	6170	6.57
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	538	6.80
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	2969	6.88
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	3676	7.25
Panicled indigobush	<i>Amorpha paniculata</i>	Rare*	Not Listed	4/19/1992	11233	7.36
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	3/10/1986	7480	7.40



Texas Natural Diversity Database (NDD) Data

Common Name	Scientific Name	State Status	Federal Status	Last Observed	EOID	Distance† (Miles)
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	10/16/1964	4408	7.83
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	10/26/1980	3573	7.94
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Rare*	Not Listed	12/15/1989	473	7.99
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	2130	8.01
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1988	1897	8.05
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	7062	8.34
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	5133	8.49
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	3379	8.65
Alligator snapping turtle	<i>Macrochelys temminckii</i>	Threatened	Not Listed	8/28/1968	7552	8.80
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	2909	8.98
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	4045	9.08
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	5283	9.16
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	385	9.22
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	1143	9.33
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	7595	9.42
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	5518	9.43
Coastal gay-feather	<i>Liatris bracteata</i>	Rare*	Not Listed	9/27/1994	7106	10.04
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	3575	10.14
Threeflower broomweed	<i>Thurovia triflora</i>	Rare*	Not Listed	9/27/1994	1814	10.19
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	2000-SPRG	4748	10.33
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	1993	7594	10.44
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	3/11/1986	5015	10.49
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	2002-11	4357	10.54
Texas windmill grass	<i>Chloris texensis</i>	Rare*	Not Listed	2002-11	3580	10.57
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	1998	6001	10.63
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	Rare*	Not Listed	9/22/1991	7469	11.00
Texas windmill grass	<i>Chloris texensis</i>	Rare*	Not Listed	10/28/1984	1736	11.18
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	10/27/1985	3279	11.21
Texas windmill grass	<i>Chloris texensis</i>	Rare*	Not Listed	2002	7198	11.39
Texas prairie dawn	<i>Hymenoxys texana</i>	Endangered	Endangered	4/9/1989	3754	11.49
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	2002	4034	11.49
Texas windmill grass	<i>Chloris texensis</i>	Rare*	Not Listed	2000	4545	11.49
Texas windmill grass	<i>Chloris texensis</i>	Rare*	Not Listed	11/4/1998	431	11.73
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	2002	4139	11.74
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	11/6/1997	5763	11.86
Houston daisy	<i>Rayjacksonia aurea</i>	Rare*	Not Listed	2002	1930	11.99
Southern crawfish frog	<i>Lithobates areolatus areolatus</i>	Rare*	Not Listed	5/10/1968	11464	12.84

† "Distance" represents the distance between the center of the EO and the nearest border of the subject property.

* These species occur on the TPWD State listing of threatened or endangered species for Harris County as rare, but have no regulatory listing status.

**This species is still afforded federal protection under the Bald and Golden Eagle Protection Act.
(TPWD, 2016a), (TPWD, 2016b), (USFWS, 2016a).



Amanda Sankey <amanda@crouchenvironmental.com>

46-16 NDD Request for Jersey Village Desktop

3 messages

Amanda Sankey <amanda@crouchenvironmental.com>

Mon, Oct 31, 2016 at 5:37 PM

To: TexasNatural.DiversityDatabase@tpwd.texas.gov

Cc: Trevor Pattillo <trevor@crouchenvironmental.com>, Claire Garvin <Claire@crouchenvironmental.com>

Texas Natural Diversity Database,

I would like to request an EO report, EO list, and the associated GIS shapefiles for the following USGS quadrangles:

Satsuma

Aldine Cypress Rose Hill

Tomball

Spring

Addicks

Hedwig Village

Houston Heights

I appreciate your help in this matter. Please let me know if there is any additional information or assistance I can provide.

Best,

Amanda Sankey

Environmental Consultant

PLEASE NOTE MY NEW DIRECT PHONE NUMBER : [713-955-6153](tel:713-955-6153)

Crouch Environmental Services, Inc.

402 Teetshorn Street, Houston, TX 77009

P. [713-868-1043](tel:713-868-1043) F. [713-863-7944](tel:713-863-7944)

www.crouchenvironmental.com

amanda@crouchenvironmental.com



Amanda Sankey <amanda@crouchenvironmental.com>

Mon, Nov 7, 2016 at 11:24 AM

To: TexasNatural.DiversityDatabase@tpwd.texas.gov

Cc: Trevor Pattillo <trevor@crouchenvironmental.com>, Claire Garvin <Claire@crouchenvironmental.com>

Greetings,

I am following up on this request for data. If at all possible, we would like to receive the data before close of business today.

Thank you for your time,

Amanda Sankey

Environmental Consultant

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www.crouchenvironmental.com
amanda@crouchenvironmental.com



[Quoted text hidden]

Texas Natural Diversity Database <TexasNatural.DiversityDatabase@tpwd.texas.gov> Tue, Nov 8, 2016 at 11:51 AM
To: Amanda Sankey <amanda@crouchenvironmental.com>
Cc: Trevor Pattillo <trevor@crouchenvironmental.com>, Claire Garvin <Claire@crouchenvironmental.com>

Dear Amanda,

The Texas Natural Diversity Database (TXNDD) staff provides the following information in response to your request for data. Please read this entire message for important information regarding your request, additional data sources, and project review.

Data

The TXNDD includes federal and state listed and tracked Threatened, Endangered, and Rare species. Please note that **areas where Element Occurrence (EO) data are absent should not be interpreted as an absence of Threatened, Endangered, and Rare species.** *Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Data from the TXNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within your project area. These data cannot substitute for an on-site evaluation by qualified biologists.*

Attached documents

The attached .zip file contains several documents that will guide you in appropriate use, restrictions, and interpretation of TXNDD data as well as a reporting form for submitting data to the TXNDD. The .zip file also includes additional supplemental documents. Below is a list of the files in the attached folder:

- **Shapefile** (*eo_[last name of requestor]_yyyymmdd.zip*) of the Threatened, Endangered and Rare species Element Occurrences made from information the TXNDD presently has available for the requested quad(s) (or within the requested county/by requested species when applicable).
- **EO Report** (*eoreport_[last name of requestor]_yyyymmdd.pdf*) of the EOs in the shapefile mentioned above. The **EO Report** includes more detailed information about each EO than what is contained in the attribute table of the shapefile. Link the information in the shapefile to the information in the **EO Report** by **EO ID**. Note that if the number of records in your request area is large, this report may not be included; however, if, in this circumstance, you would like more detailed information about a particular EO, species, or smaller geographic area, you may request those data.

- **EO List** (*eolist_[last name of requestor]_yyyymmdd.pdf*) for those requests made by USGS 7.5 minute quadrangles. The **EO List** is a list of species for which we have records in the database in the USGS 7.5 minute quadrangles *surrounding* your request area. The **EO List** is to inform you of federal and state listed and tracked Threatened, Endangered, and Rare species in the area. Note that the EO list is not included in county requests.
- **County List FAQ** (*County_lists_FAQ_20150415.pdf*) produced by the Wildlife Habitat Assessment Program provides information about the County List Application.
- **TXNDD Information** document (*txndd_information.docx*) that includes a background of the TXNDD, a description of past and current spatial methodology employed, and an explanation of correct interpretation of the data. Global and subnational (state) conservation ranks are also explained in this document as are the shapefile attributes and EO report sections.
- **TXNDD Reporting Form** (*txndd_reporting_form.doc*) for reporting observations of tracked elements to the Texas Natural Diversity Database. To submit data, fill out this form and send it to [TexasNatural.DiversityDatabase@tpwd.texas.gov](mailto:DiversityDatabase@tpwd.texas.gov). Note that you can also submit data in the form of an Excel spreadsheet or written report.

Project Review, Rare Species County Lists, Project Planning, and BMPs

This email cannot substitute for an environmental review of your project by TPWD. For information on project review and to access the county lists of protected species and species of greatest conservation need with potential to occur in the county, please visit the Wildlife Habitat Assessment (WHAB) website at http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/habitat_assessment/. The WHAB website includes several resources to consider while planning your project to minimize impacts to fish and wildlife resources, including information /guidelines on Wind Energy projects, Transmission Line projects, Communication Towers, and Karst Zones (Travis, Williamson, and Bexar Counties).

Ecologically Significant Stream Segments

If your information request area contains known ecologically significant stream segments, the data can be obtained at http://tpwd.texas.gov/landwater/water/conservation/water_resources/water_quantity/sigsegs/index.phtml

Critical Habitat

If your information request area contains federally designated critical habitat, the data can be obtained at <http://ecos.fws.gov/crithab/>.

TPWD Managed Areas

We are no longer providing Managed Area shapefiles and associated Managed Area Reports. To obtain shapefiles for Wildlife Management Areas and State Park Boundaries, please visit the Texas Parks and Wildlife Department GIS Data Download page (<https://tpwd.texas.gov/gis/data/>).

Thank-you,

Laura Dugan, PhD

Texas Parks & Wildlife Department

Texas Natural Diversity Database Manager

4200 Smith School Rd., Austin, TX 78744

O: (512) 389-8731

F: (512) 389-4599

laura.dugan@tpwd.texas.gov

*Support Wildlife Diversity: Order a conservation license plate! *



From: Amanda Sankey [mailto:amanda@crouchenvironmental.com]

Sent: Monday, October 31, 2016 5:38 PM

To: Texas Natural Diversity Database <TexasNatural.DiversityDatabase@tpwd.texas.gov>

Cc: Trevor Pattillo <trevor@crouchenvironmental.com>; Claire Garvin <Claire@crouchenvironmental.com>

Subject: 46-16 NDD Request for Jersey Village Desktop

Texas Natural Diversity Database,

I would like to request an EO report, EO list, and the associated GIS shapefiles for the following USGS quadrangles:

Satsuma
Aldine Cypress Rose Hill
Tomball
Spring
Addicks
Hedwig Village
Houston Heights

I appreciate your help in this matter. Please let me know if there is any additional information or assistance I can provide.

Best,

Amanda Sankey
Environmental Consultant

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sankey_20161031.zip
592K

HARRIS COUNTY

AMPHIBIANS

		Federal Status	State Status
Houston toad	<i>Anaxyrus houstonensis</i>	LE	E

endemic; sandy substrate, water in pools, ephemeral pools, stock tanks; breeds in spring especially after rains; burrows in soil of adjacent uplands when inactive; breeds February-June; associated with soils of the Sparta, Carrizo, Goliad, Queen City, Recklaw, Weches, and Willis geologic formations

Southern Crawfish Frog	<i>Lithobates areolatus areolatus</i>
-------------------------------	---------------------------------------

The Southern Crawfish Frog can be found in abandoned crawfish holes and small mammal burrows. This species inhabits moist meadows, pasturelands, pine scrub, and river flood plains. This species spends nearly all of its time in burrows and only leaves the burrow area to breed. Although this species can be difficult to detect due to its reclusive nature, the call of breeding males can be heard over great distances. Eggs are laid and larvae develop in temporary water such as flooded fields, ditches, farm ponds and small lakes. Habitat: Shallow water, Herbaceous Wetland, Riparian, Temporary Pool, Cropland/hedgerow, Grassland/herbaceous, Suburban/orchard, Woodland – Conifer.

BIRDS

		Federal Status	State Status
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	DL	T

year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	DL
--------------------------------	----------------------------------	----

migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Bald Eagle	<i>Haliaeetus leucocephalus</i>	DL	T
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found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Black Rail	<i>Laterallus jamaicensis</i>
-------------------	-------------------------------

salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous year's dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Brown Pelican	<i>Pelecanus occidentalis</i>	DL
----------------------	-------------------------------	----

largely coastal and near shore areas, where it roosts and nests on islands and spoil banks

Henslow's Sparrow	<i>Ammodramus henslowii</i>
--------------------------	-----------------------------

wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking

HARRIS COUNTY

BIRDS

Federal Status

State Status

Mountain Plover

Charadrius montanus

breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Peregrine Falcon

Falco peregrinus

DL

T

both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

Red Knot

Calidris canutus rufa

T

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (*Donax* spp.) on beaches and dwarf surf clam (*Mulinia lateralis*) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Red-cockaded Woodpecker

Picoides borealis

LE

E

cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly

Snowy Plover

Charadrius alexandrinus

formerly an uncommon breeder in the Panhandle; potential migrant; winter along coast

Sprague's Pipit

Anthus spragueii

only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.

White-faced Ibis

Plegadis chihi

T

prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats

White-tailed Hawk

Buteo albicaudatus

T

near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May

HARRIS COUNTY

BIRDS

		Federal Status	State Status
Whooping Crane	<i>Grus americana</i>	LE	E
potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties			
Wood Stork	<i>Mycteria americana</i>		T
forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960			

FISHES

		Federal Status	State Status
American eel	<i>Anguilla rostrata</i>		
coastal waterways below reservoirs to gulf; spawns January to February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries; diet varies widely, geographically, and seasonally			
Creek chubsucker	<i>Erimyzon oblongus</i>		T
tributaries of the Red, Sabine, Neches, Trinity, and San Jacinto rivers; small rivers and creeks of various types; seldom in impoundments; prefers headwaters, but seldom occurs in springs; young typically in headwater rivulets or marshes; spawns in river mouths or pools, riffles, lake outlets, upstream creeks			
Smalltooth sawfish	<i>Pristis pectinata</i>	LE	E
different life history stages have different patterns of habitat use; young found very close to shore in muddy and sandy bottoms, seldom descending to depths greater than 32 ft (10 m); in sheltered bays, on shallow banks, and in estuaries or river mouths; adult sawfish are encountered in various habitat types (mangrove, reef, seagrass, and coral), in varying salinity regimes and temperatures, and at various water depths, feed on a variety of fish species and crustaceans			

MAMMALS

		Federal Status	State Status
Louisiana black bear	<i>Ursus americanus luteolus</i>	DL	T
possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas			
Plains spotted skunk	<i>Spilogale putorius interrupta</i>		
catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie			
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>		T
roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures			
Red wolf	<i>Canis rufus</i>	LE	E
extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies			

HARRIS COUNTY

MAMMALS

Federal Status

State Status

Southeastern myotis bat

Myotis austroriparius

roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

MOLLUSKS

Federal Status

State Status

Louisiana pigtoe

Pleurobema riddellii

T

streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins

Sandbank pocketbook

Lampsilis satura

T

small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River

Texas pigtoe

Fusconaia askewi

T

rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sabine through Trinity rivers as well as San Jacinto River

REPTILES

Federal Status

State Status

Alligator snapping turtle

Macrochelys temminckii

T

perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

Green sea turtle

Chelonia mydas

LT

T

Gulf and bay system; shallow water seagrass beds, open water between feeding and nesting areas, barrier island beaches; adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds; nesting behavior extends from March to October, with peak activity in May and June

Kemp's Ridley sea turtle

Lepidochelys kempii

LE

E

Gulf and bay system, adults stay within the shallow waters of the Gulf of Mexico; feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August

Leatherback sea turtle

Dermochelys coriacea

LE

E

Gulf and bay systems, and widest ranging open water reptile; omnivorous, shows a preference for jellyfish; in the US portion of their western Atlantic nesting territories, nesting season ranges from March to August

Loggerhead sea turtle

Caretta caretta

LT

T

Gulf and bay system primarily for juveniles, adults are most pelagic of the sea turtles; omnivorous, shows a preference for mollusks, crustaceans, and coral; nests from April through November

HARRIS COUNTY

REPTILES

		Federal Status	State Status
Texas horned lizard	<i>Phrynosoma cornutum</i>		T
open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September			
Timber rattlesnake	<i>Crotalus horridus</i>		T
swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto			

PLANTS

		Federal Status	State Status
Awnless bluestem	<i>Bothriochloa exaristata</i>		
GLOBAL RANK: G4; Coastal prairies on black clay; Perennial; Flowering April-Dec; Fruiting April- Dec			
Coastal gay-feather	<i>Liatris bracteata</i>		
Texas endemic; coastal prairie grasslands of various types, from salty prairie on low- lying somewhat saline clay loams to upland prairie on nonsaline clayey to sandy loams; flowering in fall			
Giant sharpstem umbrella-sedge	<i>Cyperus cephalanthus</i>		
in Texas on saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions; also in depressional area within coastal prairie remnant on heavy black clay; in Louisiana, most sites are coastal prairie on poorly drained sites, some on slightly elevated areas surrounded by standing shallow water, and on moderately drained sites; soils include very strongly acid to moderately alkaline silt loams and silty clay loams; flowering/fruiting May-June, August-September, and possibly other times in response to rainfall			
Goldenwave tickseed	<i>Coreopsis intermedia</i>		
GLOBAL RANK: G3; In deep sandy soils of sandhills in openings in or along margins of post oak woodlands and pine-oak forests of east Texas; Perennial; Flowering/Fruiting May-Aug			
Houston daisy	<i>Rayjacksonia aurea</i>		
Texas endemic; on and around naturally barren or sparsely vegetated saline slick spots or pimple mounds on coastal prairies, usually on sandy to sandy loam soils, occasionally in pastures and on roadsides in similar soil types where mowing may mimic natural prairie disturbance regimes; flowering late September-November (-December)			
Indianola beakrush	<i>Rhynchospora indianolensis</i>		
GLOBAL RANK: G3Q; Locally abundant in cattle pastures in some areas (at least during wet years), possibly becoming a management problem in such sites; Perennial; Flowering/Fruiting April-Nov			
Panicled indigobush	<i>Amorpha paniculata</i>		
A stout shrub, 3 m (9 ft) tall that grows in acid seep forests, peat bogs, wet floodplain forests, and seasonal wetlands on the edge of Saline Prairies in East Texas. It is distinguished from other Amorpha species by its fuzzy leaflets with prominent raised veins underneath, and the flower panicles, which are 8 to 16 inches long and slender, held above the foliage. Perennial; Flowering summer			

HARRIS COUNTY

PLANTS

Federal Status

State Status

Texas ladies'-tresses

Spiranthes brevilabris var. *brevilabris*

Sandy soils in moist prairies, incl. blackland/Fleming prairies, calcareous prairie pockets surrounded by pines, pine-hardwood forest, open pinelands, wetland pine savannahs/flatwoods, and dry to moist fields, meadows, and roadsides. Delicate, nearly ephemeral orchid, producing winter rosettes, flowers Feb-Apr. Historically endemic to SE coastal plain.

Texas meadow-rue

Thalictrum texanum

Texas endemic; mostly found in woodlands and woodland margins on soils with a surface layer of sandy loam, but it also occurs on prairie pimple mounds; both on uplands and creek terraces, but perhaps most common on claypan savannas; soils are very moist during its active growing season; flowering/fruiting (January-)February-May, withering by midsummer, foliage reappears in late fall(November) and may persist through the winter

Texas prairie dawn

Hymenoxys texana

LE

E

Texas endemic; in 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; flowering late February-early April

Texas tauschia

Tauschia texana

GLOBAL RANK: G3; Occurs in loamy soils in deciduous forests or woodlands on river and stream terraces; Perennial; Flowering/Fruiting Feb-April

Texas windmill-grass

Chloris texensis

Texas endemic; sandy to sandy loam soils in relatively bare areas in coastal prairie grassland remnants, often on roadsides where regular mowing may mimic natural prairie fire regimes; flowering in fall

Threeflower broomweed

Thurovia triflora

Texas endemic; near coast in sparse, low vegetation on a veneer of light colored silt or fine sand over saline clay along drier upper margins of ecotone between between salty prairies and tidal flats; further inland associated with vegetated slick spots on prairie mima mounds; flowering September-November