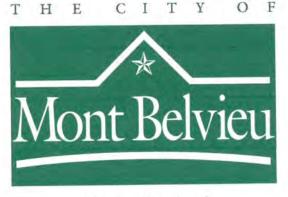
## **FM 565 REALIGNMENT STUDY**

#### **Prepared for**

### **The City of Mont Belvieu**

July 2016



TEXAS



### **Table of Contents**

Cov	er Page	2	1		
Tab	le of Co	ontents	2		
List	of Exhi	bits	4		
Арр	endice	S	4		
Exe	cutive S	Summary	5		
1	Opti	Option 1			
	1.1	Alignment Overview	8		
	1.2	Construction Costs	8		
	1.3	Direct Property Constraints			
	1.4	Adjacent Property Constraints	9		
	1.5	Accommodation of Future Traffic Demands	9		
	1.6	Industrial Impacts	9		
	1.7	Human Impacts	9		
	1.8	Utility Relocations	10		
	1.9	Constructability	10		
2	Opti	on 2	11		
	2.1	Alignment Overview	11		
	2.2	Construction Costs	11		
	2.3	Direct Property Constraints	11		
	2.4	Adjacent Property Constraints	11		
	2.5	Accommodation of Future Traffic Demands	12		
	2.6	Industrial Impacts	12		
	2.7	Human Impacts	12		
	2.8	Utility Relocations	12		
	2.9	Constructability	13		

3	Option 3					
	3.1	Alignment Overview	14			
	3.2	Construction Costs	. 14			
	3.3	Direct Property Constraints	. 14			
	3.4	Adjacent Property Constraints	. 15			
	3.5	Accommodation of Future Traffic Demands	. 15			
	3.6	Industrial Impacts	. 15			
	3.7	Human Impacts	. 15			
	3.8	Utility Relocations	. 15			
	3.9	Constructability	. 16			
4	Option 4 1					
	4.1	Alignment Overview	. 17			
	4.2	Construction Costs	. 17			
	4.3	Direct Property Constraints	. 17			
	4.4	Adjacent Property Constraints	. 18			
	4.5	Accommodation of Future Traffic Demands	. 18			
	4.6	Industrial Impacts	18			
	4.7	Human Impacts	. 18			
	4.8	Utility Relocations	. 19			
	4.9	Constructability	. 19			

### List of Exhibits

Exhibit 1:	Vicinity Map
Exhibit 2:	Existing Right-of-Way Map
Exhibit 3:	Proposed Right-of-Way Map
Exhibit 4:	Existing Public Utilities Map
Exhibit 5:	Option 1
Exhibit 6:	Option 2
Exhibit 7:	Option 3
Exhibit 8:	Option 4
Exhibit 9:	Preferred Option Plan and Profile

### Appendices

- Appendix A: Environmental Wetlands Map
- Appendix B: FIRM Maps

#### **EXECUTIVE SUMMARY**

#### INTRODUCTION

#### Authorization and Study Purpose

City Staff was tasked with the development of an alignment study on the existing FM 565 Farm-to-Market road that runs from west to east thru the middle of Mont Belvieu city limits. With the impending Grand Parkway north to south transversing of FM565, as well as the on-going HGAC livable center study, FM 565 will need to be widened and improved. Also, with the projected future growth of Mont Belvieu, a boulevard style west to east major roadway will be needed. The goal was to provide multiple options highlighting the various constraints and advantages of each possible route.

#### **Project Limits**

The current roadway begins at Loop 207 to the west and continues eastbound past the city limits. Currently a project is underway to continue FM 565 to the west to connect to SH 146. The focus of this study is the portion from Loop 207 to the eastern city limits which terminate at the CWA canal past Canal St.

#### **Evaluation of Alternatives**

City Staff developed four options which were evaluated based on the following criteria:

- Construction Cost
- Direct and Adjacent Property Constraints
- Accommodation of Current and Future Traffic
- Industrial and Human Impacts
- Public Utility Relocations
- Constructability
- Environmental Constraints

Of these four alternatives, Option 2 was selected as the recommended alignment, and Option 1 was chosen as the alternate, should the City want to go with a more costly but more expanded route.

#### **Recommended Alignment Descriptions**

The two options chosen as the preferred and the alternate, were identical in nature, east of the Grand Parkway. Each is a 4 lane boulevard section from the Grand Parkway crossing to the eastern limits of the project. Both require the same amount of ROW acquisition, utility relocations, and property constraints in this portion of the project as well. Where they differ is in the roadway corridor between Loop 207 and the Grand Parkway. Option 2 does no improvements to this portion of the roadway, while Option 1 improves this portion from an existing 2 lane asphalt roadway with side ditches into a 2 lane concrete with curb and gutter roadway.

#### **Opinion of Probable Cost**

Option 2 was the cheapest alignment due to the lack of improvements west of the new Grand Parkway. The construction estimate for this option, not including ROW acquisition, is \$14.4 million. Option 1, which is the alternate choice, and includes improvement to the west of Grand Parkway, is \$21.6 million, an increase of 50%.

#### **ROW Acquisition**

Option 2 requires the least amount of ROW to be obtained. The majority of the land is undeveloped currently and doesn't impact any industrial entities. Option 1, has more developed impacts, affecting residual, commercial, and minor industrial developments. Based on a general estimate of \$3 a square foot, the estimated cost to acquire the ROW needed for Option 2 is \$1,358,700, while Option 1 will cost \$2,143,809.

#### **Constructability**

Option 2 has the fewest constructability constraints of the four alignment options, and Option 1 has the second fewest.

#### **Executive Conclusion**

It is city staff's recommendation that Option2 is the preferred improvements alignment. The widening of the roadway from two existing lanes, to a four lane boulevard will greatly help improve the look of the FM565 corridor, as well as accommodate for the increased traffic with the development of the Grand Parkway, and also the potential downtown corridor. City staff recommends that City Council move forward with a Preliminary Engineering Report for Option 2, once the decision is made to improve this corridor. In the report, Option 1 should also be considered, if funds are available to do more major improvements west of the Grand Parkway. The total cost of construction and ROW acquisition for the preferred route is \$15,758,700.

#### 1.1 Alignment Overview

Option 1 follows the general route of the current FM565 alignment. The ROW for the majority of the alignment will be increased to 120 feet, except near the junction with Eagle Drive, where the ROW will only increase to 100 feet. This alignment option, beginning at Loop 207, is a two 12 foot wide lane pavement section heading east until the Grand Parkway intersection. At this juncture, the roadway widens into a four 12 foot wide lane boulevard section with a 30 foot median until just before the eastern CWA canal, where it transitions back to match the existing roadway. To limit the amount of impacts, the two curves are retained, but the curvature is increased to match the road's design speed. This option consists of 9000 linear feet of 4-lane concrete roadway, and 6000 linear feet of 2-lane roadway.

#### 1.2 Construction Costs

Option 1 is the second least expensive of the four options. The majority of the costs will be from utility relocation, and pavement. Based on a price of \$1600 a linear foot for 4-lane pavement section, and \$1200 a linear foot for 2-lane roadway, the estimate for Option 1 is \$21,600,000 for roadway improvements, plus an additional expense of \$2,143,809 for ROW acquisitions.

#### 1.3 Direct Property Constraints

Option 1 alignment has minimal constraints due to ROW acquisition. Starting at Loop 207 and heading East, the northern ROW will need to increase by approximately 40', which will impact the parking lot for the gas station and the diner. This same 40' widening to the north will shorten the driveway of the residents currently residing directly off FM565. The easement road near Winfree Road intersection will be removed, and the residences will not be impacted, but their driveways will now connect directly to FM565. To the south, the oil field in encroached upon slightly, but no existing pump jacks are in conflict. During the second curve in the alignment, to the north the existing Verizon building's front parking lot is impeded. Approaching Eagle Drive intersection, the northern ROW will encroach the existing parking lot at the city hall complex and it will need to be reconfigured. The ROW is reduced to 100' in this segment to avoid interference with the memorial. The CWA canal just west of Fisher's Landing subdivision will need to have its siphon widened to accommodate the new 120' ROW section. The residence just pass this crossing to the south will be possibly encroached upon also. The box culverts at Hackberry Gully will also need to be replaced.

#### 1.4 Adjacent Property Constraints

Expanding the ROW to 120' will have adverse impacts on both private and commercial residents along this alignment. Traffic volume and traffic noise will increase in the boulevard section east of the Grand Parkway.

#### 1.5 Accommodation of Future Traffic Demands

In the segment of Option 1 that is West of the Grand Parkway, and where lane configuration is matching the current lane structure, there will be no benefit to future traffic demands. The bends in the road will be less dramatic though, so traffic flow should be better. However, by doubling the number of travel lanes in the boulevard section of this option, East of the Grand Parkway, FM565 will be better suited to handle future traffic growth. With the increase in ROW width, pedestrian and bicycle lanes could be considered on the entire length.

#### 1.6 Industrial Impacts

There are multiple pipeline corridors that traverse FM565 that will need to be identified for in this realignment. At this time it is unknown if there will need to be any adjustments made. Portions of the oil field will be in the new ROW as proposed, which may cause legal or environmental issues to arise during design and construction.

#### 1.7 Human Impacts

There are approximately 10 single family residencies, and 5 commercial tracts that will be impacted slightly with encroachment in the form of reduced parking or driveway. No properties should have to be condemned.

#### 1.8 Utility relocations

East of Loop 207, there is currently a water main that runs along the south side of FM565 and crosses to the north side of FM565 near the CWA canal. Once the roadway widens to the east of the Grand Parkway, the water main will possibly need to be relocated further north, closer to the new northern ROW line. This is approximately 3500'. East of Eagle Drive, there is a water main on the north side of FM565. Approximately 1000' of this line will need to be relocated to the north. The sanitary sewer system along FM565 is located on the south side of the existing roadway. In the boulevard section portion of the realignment, the sanitary sewer main can remain, but will me underneath the proposed pavement.

#### 1.9 Constructability

There are no major constructability issues known at this time with this alignment besides the widening of the CWA canal siphon at FM565 and Mystery Lane.

#### 2.1 Alignment Overview

Option 2 follows the general route of the current FM565 alignment. The ROW for the alignment east of the Grand Parkway will be increased to 120 feet, except near the junction with Eagle Drive, where the ROW will only increase to 100 feet. The ROW west of the Grand Parkway to Loop 207 will not be increased. This alignment option, beginning at Loop 207, keeps the existing pavement unchanged heading east until the Grand Parkway intersection. At this juncture, the roadway widens into a four 12 foot wide lane boulevard section with a variable median until just before the eastern CWA canal, where it transitions back to match the existing roadway. This option consists of 9000 linear feet of 4-lane concrete roadway.

#### 2.2 Construction Costs

Option 2 is the least expensive of the four options. The majority of the costs will be from utility relocation and pavement. Based on a price of \$1600 a linear foot for 4-lane pavement section, the approximate estimate for Option 2 is approximately \$14,400,000, with an additional \$1,358,700 in ROW expansion costs.

#### 2.3 Direct Property Constraints

Option 2 alignment has minimal constraints due to ROW acquisition. Approaching Eagle Drive intersection, the northern ROW will encroach the existing parking lot at the city hall complex and it will need to be reconfigured. The ROW is reduced to 100' in this segment to avoid interference with the memorial. The CWA canal just west of Fisher's Landing subdivision will need to have its siphon widened to accommodate the new 120' ROW section. The residence just pass this crossing to the south will be possibly encroached upon also. The box culverts at Hackberry Gully will also need to be replaced.

#### 2.4 Adjacent Property Constraints

Expanding the ROW to 120' will have adverse impacts on both private and commercial residents along this alignment. Traffic volume and traffic noise will increase.

#### 2.5 Accommodation of Future Traffic Demands

In the section of alignment Option 2 where the roadway is widening to 4 travel lanes, FM565 will be better suited to handle future traffic growth. With the increase in ROW width, pedestrian and bicycle lanes could be considered on the portion east of the Grand Parkway.

#### 2.6 Industrial Impacts

There are multiple pipeline corridors that traverse FM565 that will need to be identified for in this realignment. At this time it is unknown if there will need to be any adjustments made.

#### 2.7 Human Impacts

There are approximately 5 single family residencies, and 3 commercial tracts that will be impacted slightly with encroachment in the form of reduced parking or driveway. No residential or commercial properties will be heavily impacted, and will need to be bought out.

#### 2.8 Utility relocations

East of Loop 207, there is currently a water main that runs along the south side of FM565 and crosses to the north side of FM565 near the CWA canal. Once the roadway widens to the east of the Grand Parkway, the water main will need to be relocated further north, closer to the new northern ROW line. This is approximately 3500'. East of Eagle Drive, there is a water main on the north side of FM565. Approximately 1000' of this line will need to be relocated to the north.

The sanitary sewer system along FM565 is located on the south side of the existing roadway. In the boulevard section portion of the realignment, the sanitary sewer main can remain, but will me underneath the proposed pavement.

#### 2.9 Constructability

There are no major constructability issues known at this time with this alignment besides the widening of the CWA canal siphon at FM565 and Mystery Lane.

#### 3.1 Alignment Overview

Option 3, shown in Exhibit 3, deviates from the general route of the current FM565 alignment. The ROW for the entire alignment will be increased to 120 feet. This alignment option, beginning at Loop 207, is a two 12 foot wide lane pavement section heading east until the Grand Parkway intersection. At this juncture, the roadway widens into a four 12 foot wide lane boulevard section with a 30 foot median until just before the eastern CWA canal, where it transitions back to match the existing roadway. The existing two curves are eliminated, and replaced with one curve. This option consists of 9000 linear feet of 4-lane concrete roadway, and 6000 linear feet of 2-lane roadway.

#### 3.2 Construction Costs

Option 3 is the most expensive of the four options. The majority of the costs will be from conflict with the existing oil field and pump jacks. Based on a price of \$1600 a linear foot for 4-lane pavement section, and \$1200 a linear foot for 2lane roadway, the estimate for Option 3 roadway construction is approximately \$21,600,000. The cost for ROW purchase through the oil field and the closure of multiple pump jacks is unknown at this time, but presumed extremely costly.

#### 3.3 Direct Property Constraints

Option 3 alignment has multiple constraints due to ROW acquisition. Starting at Loop 207 and heading East, the northern ROW will need to increase by approximately 40', which will impact the parking lot for the gas station and the diner. This same 40' widening to the north will impact the one residence up to the curve in the alignment. The oil field and three pump jacks are impacted. Approaching Eagle Drive intersection, the northern ROW will be close to the existing veteran memorial at city hall, and the parking lot at the city hall complex will need to be reconfigured. The ROW could potentially be reduced to 100' in this segment to avoid interference with the memorial. The CWA canal just west of Fisher's Landing subdivision will need to have its siphon widened to accommodate the new 120' ROW section. The residence just pass this crossing to the south will be possibly encroached upon also. The box culverts at Hackberry Gully will also need to be replaced.

#### 3.4 Adjacent Property Constraints

Expanding the ROW to 120' will have adverse impacts on both private and commercial residents along this alignment. Traffic volume and traffic noise will increase in the boulevard section east of the Grand Parkway.

#### 3.5 Accommodation of Future Traffic Demands

In the segment of Option 3 that is West of the Grand Parkway, and where lane configuration is matching the current lane structure, there will be no benefit to future traffic demands. The elimination of one of the bends in the current alignment should aid in traffic flow. Doubling the number of travel lanes in the boulevard section of this option, East of the Grand Parkway, FM565 will be better suited to handle future traffic growth. With the increase in ROW width, pedestrian and bicycle lanes could be considered on the entire length.

#### 3.6 Industrial Impacts

There are multiple pipeline corridors that traverse FM565 that will need to be identified for in this realignment. At this time it is unknown if there will need to be any adjustments made. Portions of the oil field will be in the new ROW as proposed, which may cause legal or environmental issues to arise during design and construction.

#### 3.7 Human Impacts

There are approximately 5 single family residencies, and 3 commercial tracts that will be impacted slightly with encroachment in the form of reduced parking or driveway. One residential property will be heavily impacted, and will need to be bought out.

#### 3.8 Utility relocations

East of Loop 207, there is currently a water main that runs along the south side of FM565 and crosses to the north side of FM565 near the CWA canal. In the realigned portion, the water line will need to be removed and replaced to follow the new ROW alignment of FM565. Once the roadway widens to the east of the Grand Parkway, the water main will need to be relocated further north, closer to the new northern ROW line. This is approximately 3500'. East of Eagle Drive, there is a water main on the north side of FM565. Approximately 1000' of this line will need to be relocated to the north. The sanitary sewer system along FM565 is located on the south side of the existing roadway. In the boulevard section portion of the realignment, the sanitary sewer main can remain, but will me underneath the proposed pavement.

#### 3.9 Constructability

There are major constructability issues known at this time with this alignment. Besides the widening of the CWA canal siphon at FM565 and Mystery Lane, the encroachment of the oil field and the closure and removal of existing pump jacks will take considerable money and coordination.

#### 4.1 Alignment Overview

Option 4 follows the general route of the current FM565 alignment. The ROW for the entire alignment will be increased to 120 feet. This alignment option, beginning at Loop 207, is a two 12 foot wide lane pavement section heading east until the Grand Parkway intersection. At this juncture, the roadway widens into a four 12 foot wide lane boulevard section with a 30 foot median until just before the eastern CWA canal, where it transitions back to match the existing roadway. To limit the amount of impacts, the two curves are retained, but the curvature is increased to match the road's design speed. This option consists of 9000 linear feet of 4-lane concrete roadway, and 6000 linear feet of 2-lane roadway.

#### 4.2 Construction Costs

Option 4 is the second most expensive of the four options. The majority of the costs will be from ROW acquisition, utility relocation, and pavement. Based on a price of \$1600 a linear foot for 4-lane pavement section, and \$1200 a linear foot for 2-lane roadway, the estimate for Option 4 is approximately \$21,600,000, with an additional moderate ROW acquisition cost.

#### 4.3 Direct Property Constraints

Option 4 alignment has multiple constraints due to ROW acquisition. Starting at Loop 207 and heading East, the northern ROW will need to increase by approximately 40', which will impact the parking lot for the gas station and the diner. This same 40' widening to the north will impact every residence up to the first curve. Past the first curve, the ROW widens on either side of the existing ROW and will cause for the removal of the northern easement road in this area. The residences will not be impacted, but their driveways will now connect directly to FM565. To the south, the oil field in encroached upon slightly, but no existing pump jacks are in conflict. During the second curve in the alignment, to the north the existing Verizon building parking lot is impeded. Approaching Eagle Drive intersection, the northern ROW will be close to the existing veteran memorial at city hall, and the parking lot at the city hall complex will need to be reconfigured. The ROW could potentially be reduced to 100' in this segment to avoid interference with the memorial. The CWA canal just west of Fisher's Landing subdivision will need to have its siphon widened to accommodate the new 120' ROW section. The residence just pass this crossing to the south will be possibly encroached upon also. The box culverts at Hackberry Gully will also need to be replaced.

#### 4.4 Adjacent Property Constraints

Expanding the ROW to 120' will have adverse impacts on both private and commercial residents along this alignment. Traffic volume and traffic noise will increase in the boulevard section east of the Grand Parkway.

#### 4.5 Accommodation of Future Traffic Demands

In the segment of Option 4 that is West of the Grand Parkway, and where lane configuration is matching the current lane structure, there will be no benefit to future traffic demands. However, by doubling the number of travel lanes in the boulevard section of this option, East of the Grand Parkway, FM565 will be better suited to handle future traffic growth. With the increase in ROW width, pedestrian and bicycle lanes could be considered on the entire length.

#### 4.6 Industrial Impacts

There are multiple pipeline corridors that traverse FM565 that will need to be identified for in this realignment. At this time it is unknown if there will need to be any adjustments made. Portions of the oil field will be in the new ROW as proposed, which may cause legal or environmental issues to arise during design and construction.

#### 4.7 Human Impacts

There are approximately 5 single family residencies, and 1 commercial tracts that will be impacted slightly with encroachment in the form of reduced parking or driveway. One residential property will be heavily impacted, and will need to be bought out.

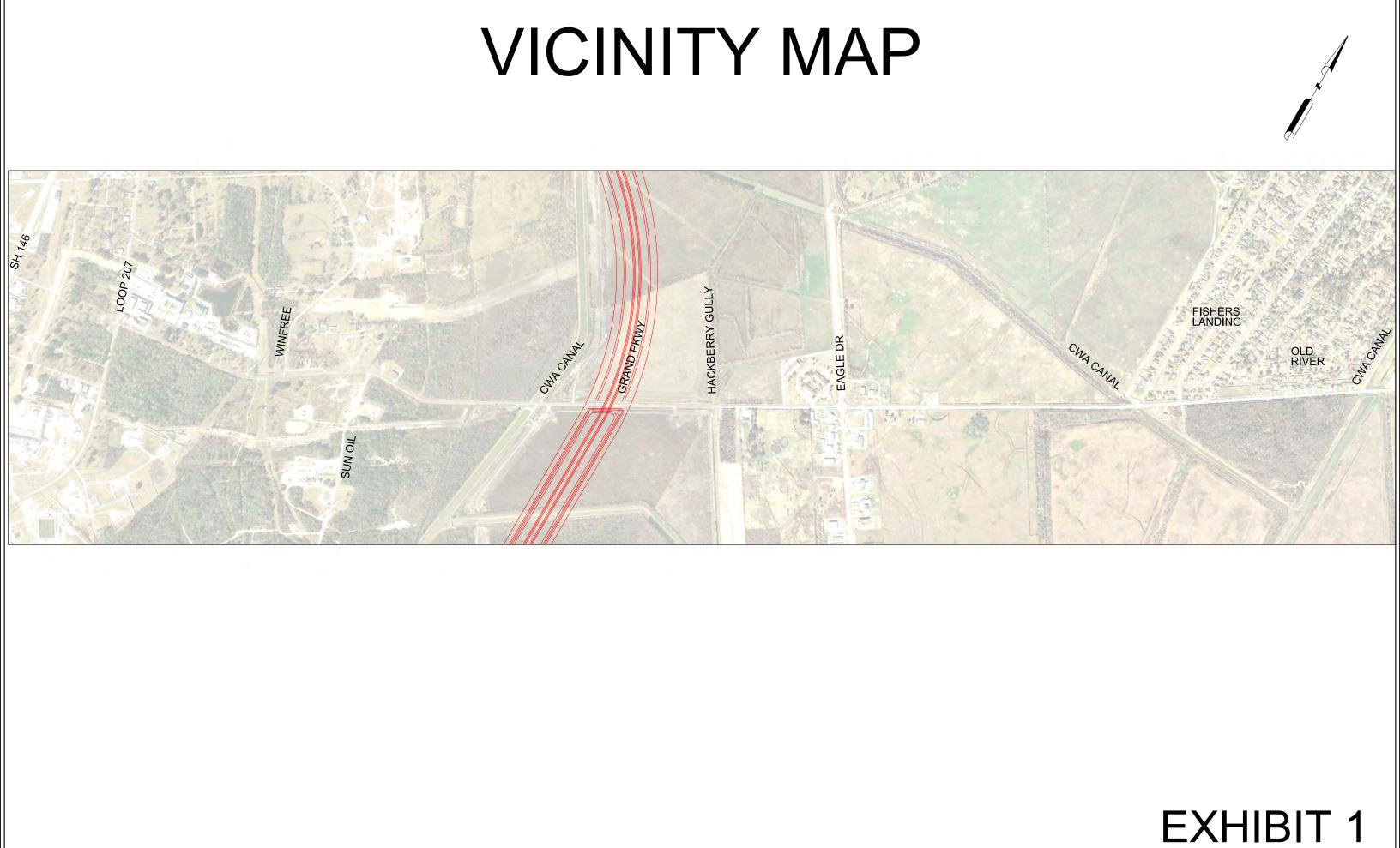
#### 4.8 Utility relocations

East of Loop 207, there is currently a water main that runs along the south side of FM565 and crosses to the north side of FM565 near the CWA canal. Once the roadway widens to the east of the Grand Parkway, the water main will need to be relocated further north, closer to the new northern ROW line. This is approximately 3500'. East of Eagle Drive, there is a water main on the north side of FM565. Approximately 1000' of this line will need to be relocated to the north. The sanitary sewer system along FM565 is located on the south side of the existing roadway. In the boulevard section portion of the realignment, the sanitary sewer main can remain, but will me underneath the proposed pavement.

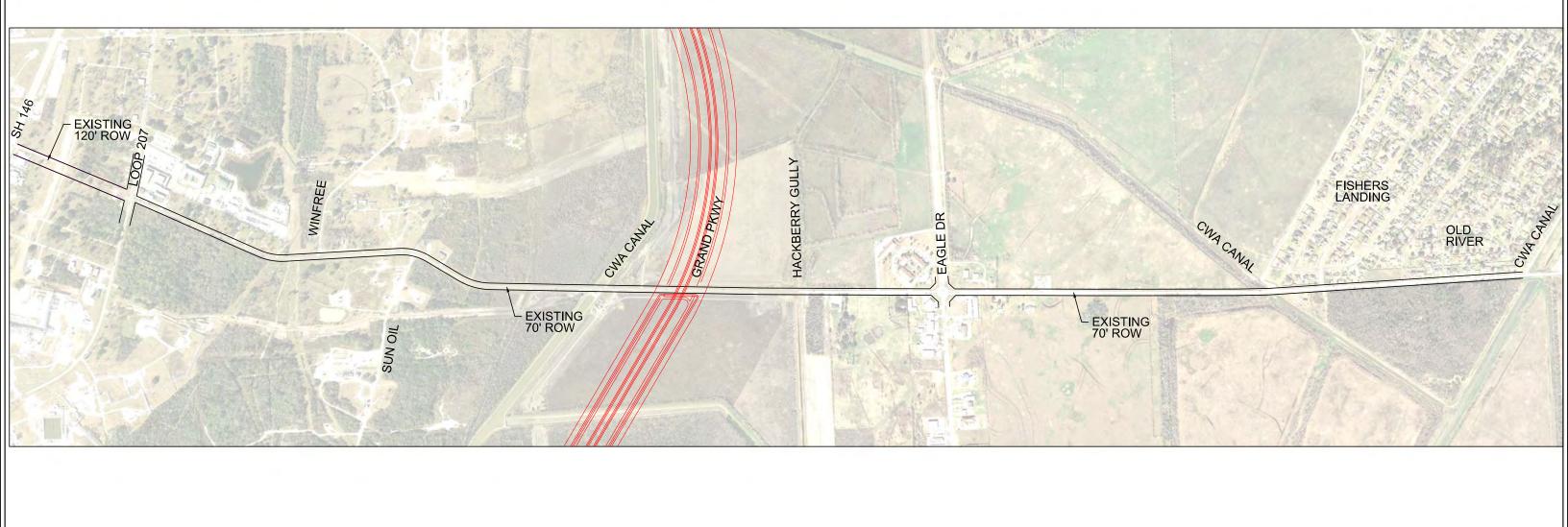
#### 4.9 Constructability

There are no major constructability issues known at this time with this alignment besides the widening of the CWA canal siphon at FM565 and Mystery Lane.

## **Exhibits**



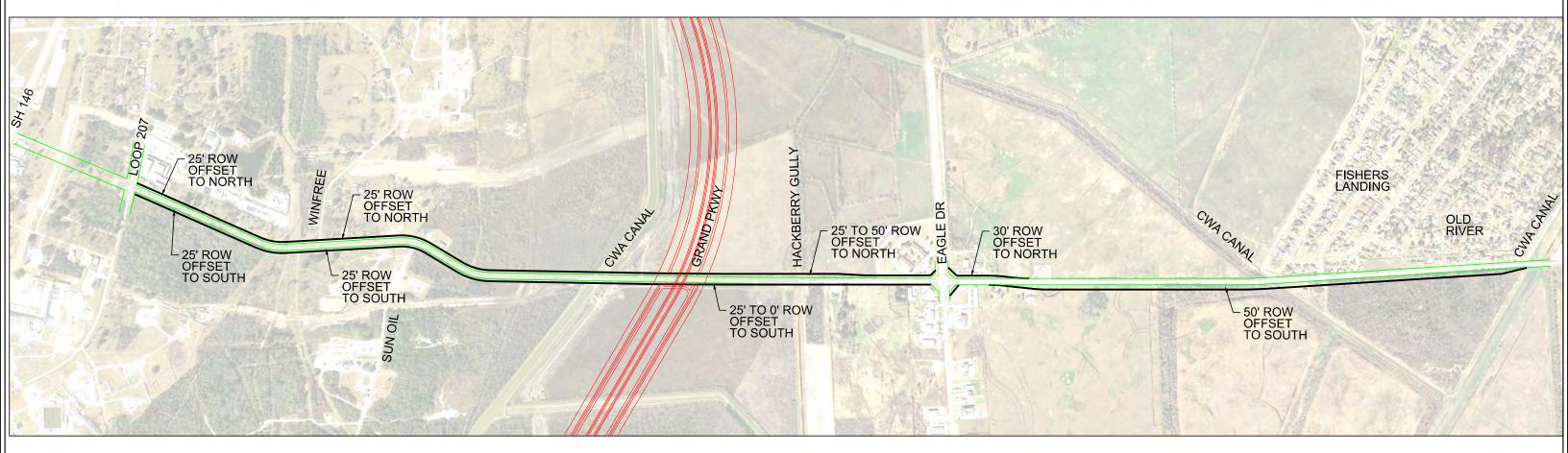
# EXISTING RIGHT-OF-WAY MAP





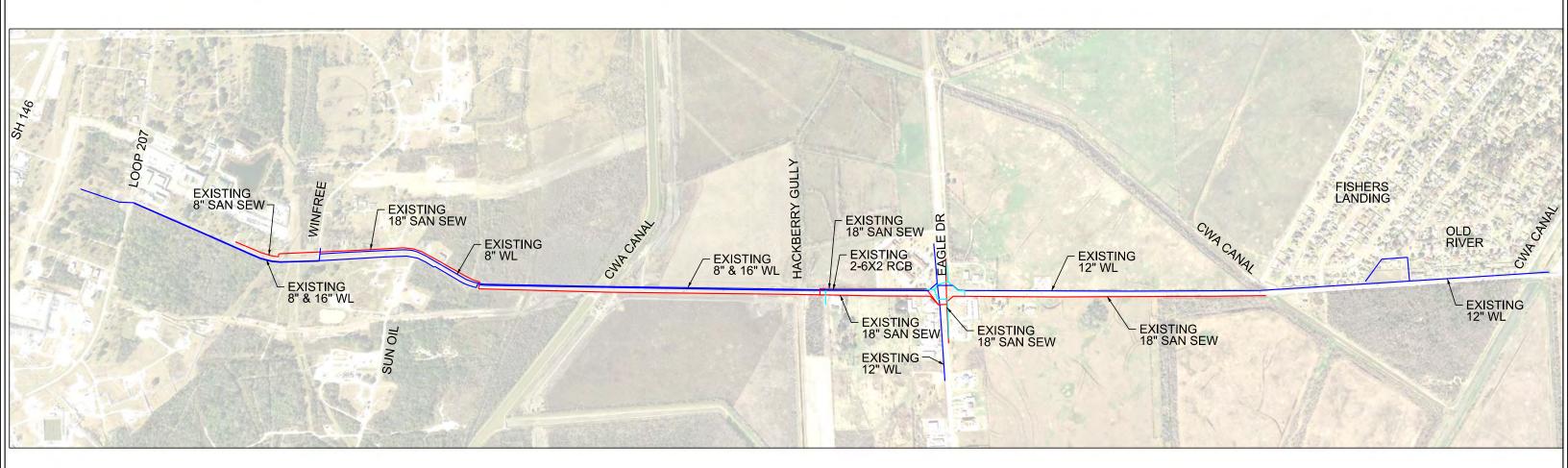


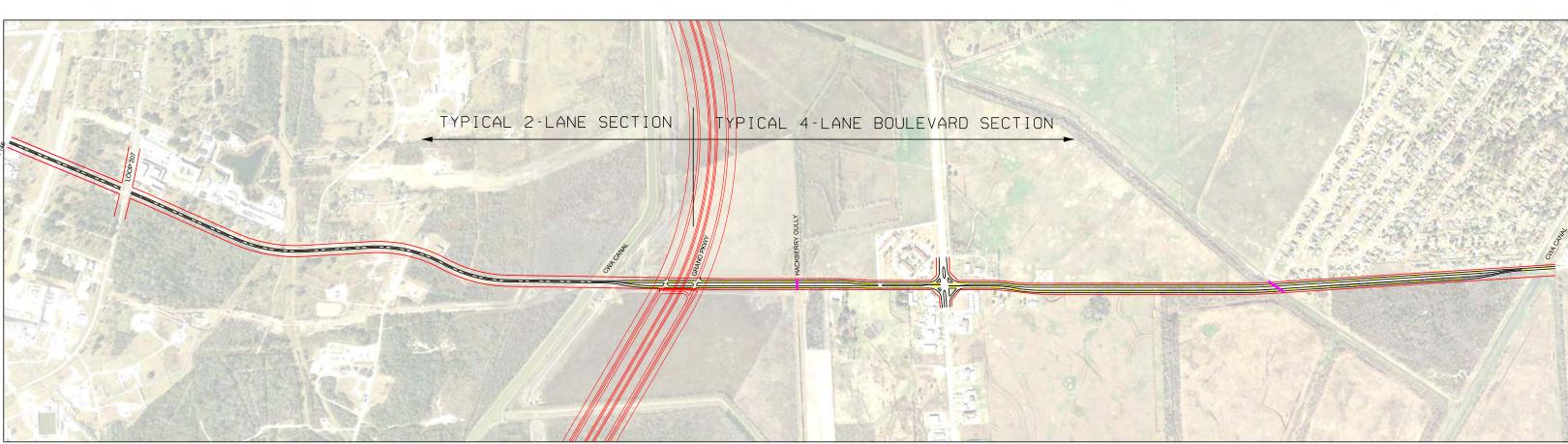
# RIGHT-OF-WAY WIDENING LOCATIONS FOR PREFERRED AND ALTERNATE ALIGNMENTS

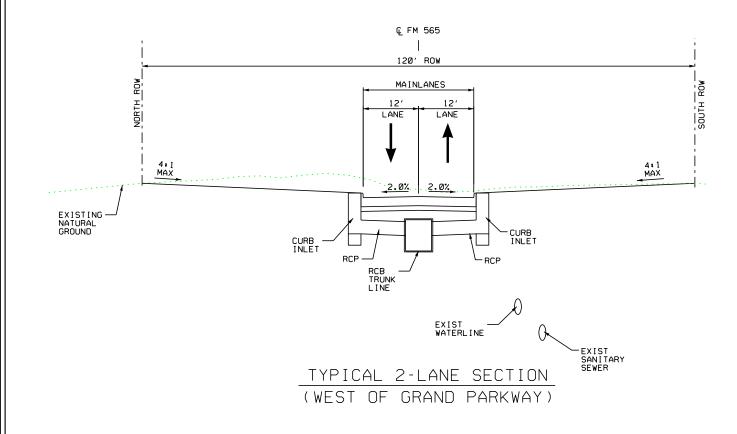


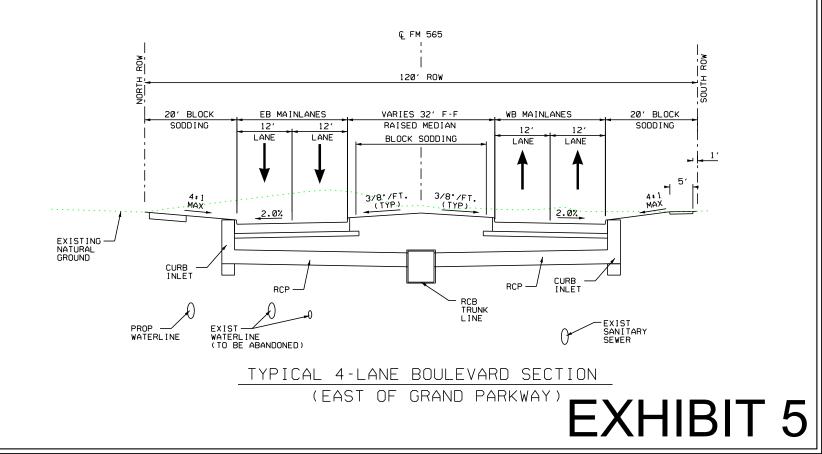


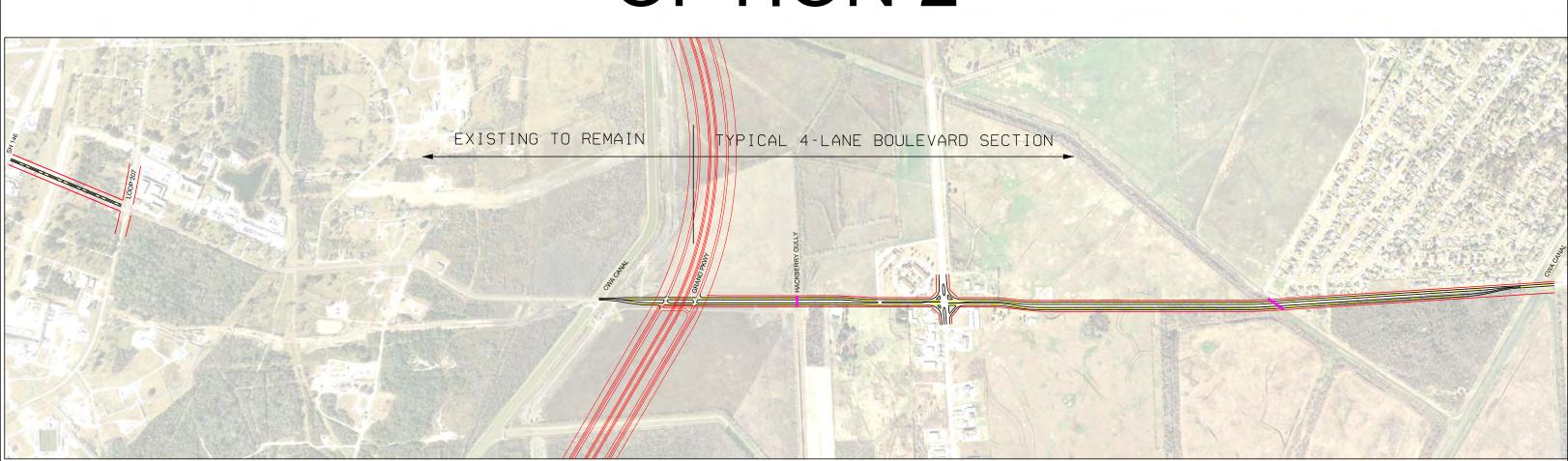
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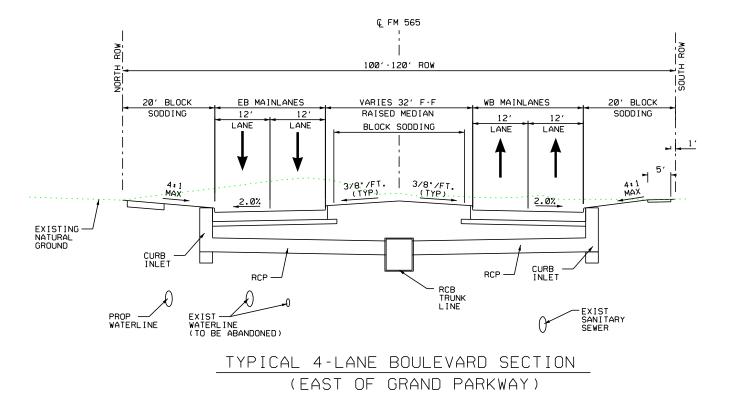




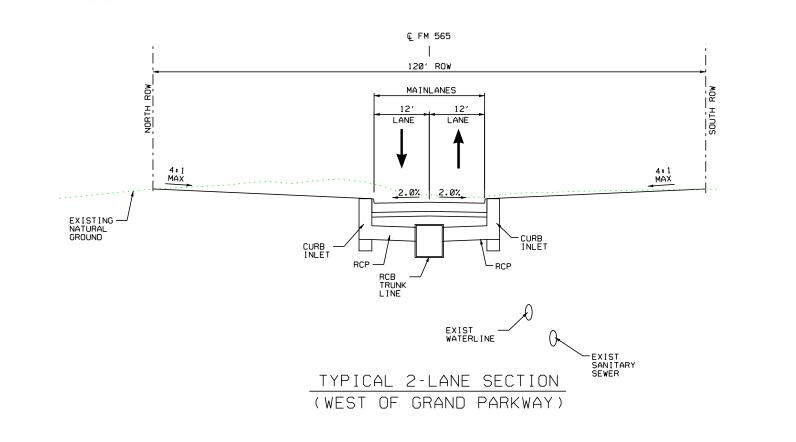


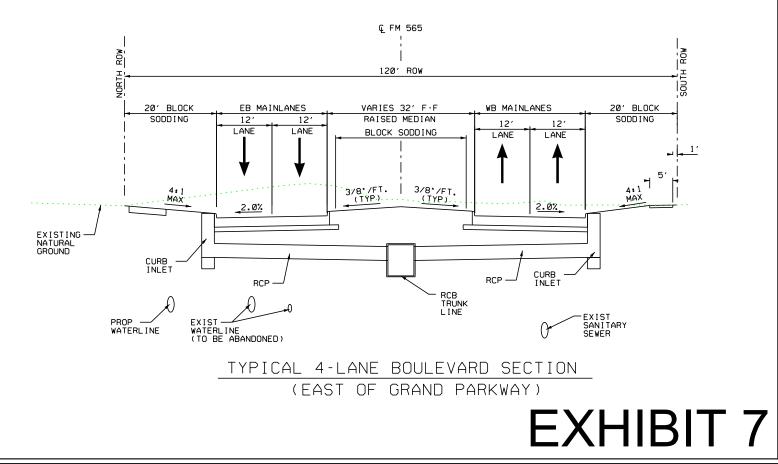


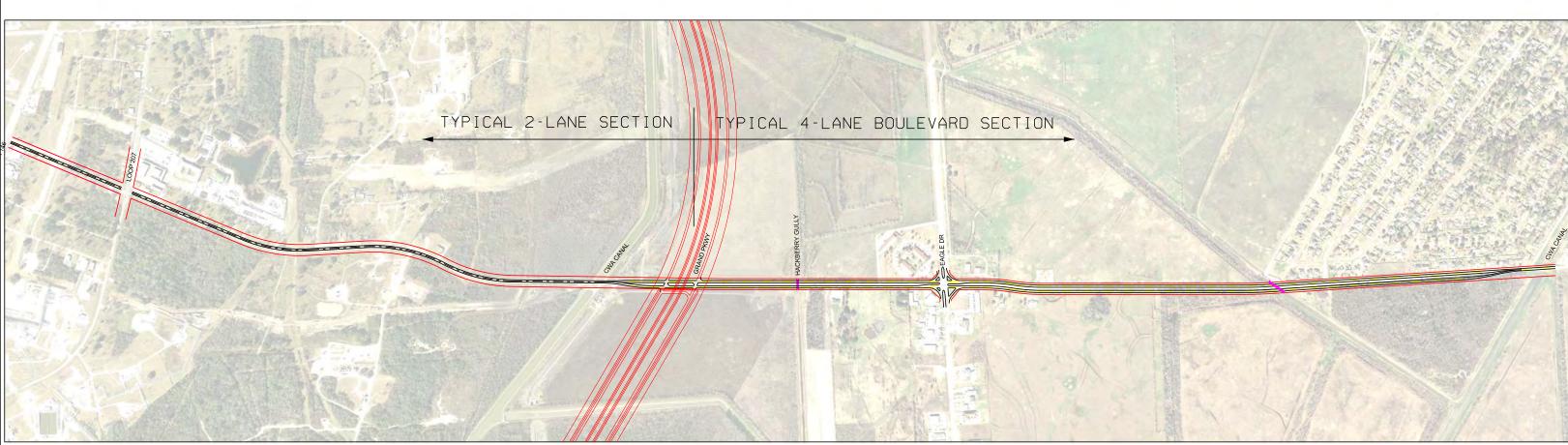


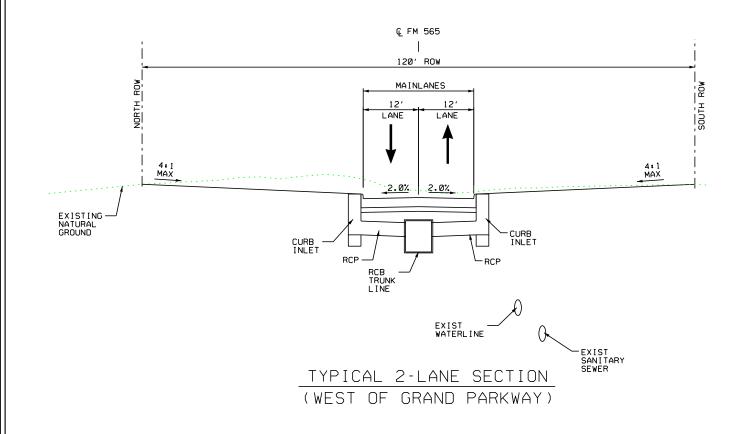


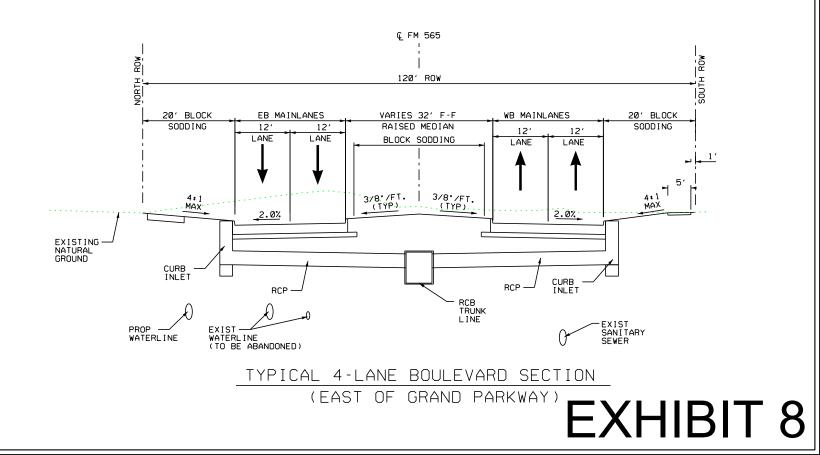


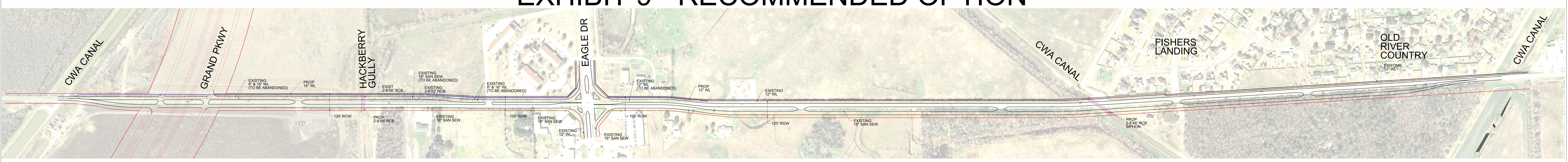


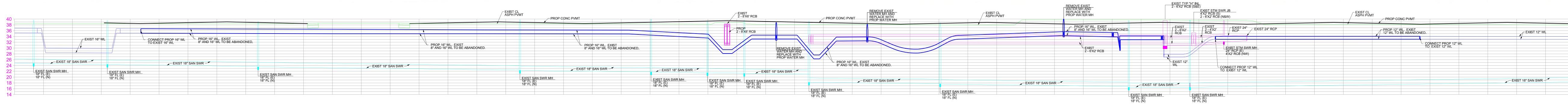






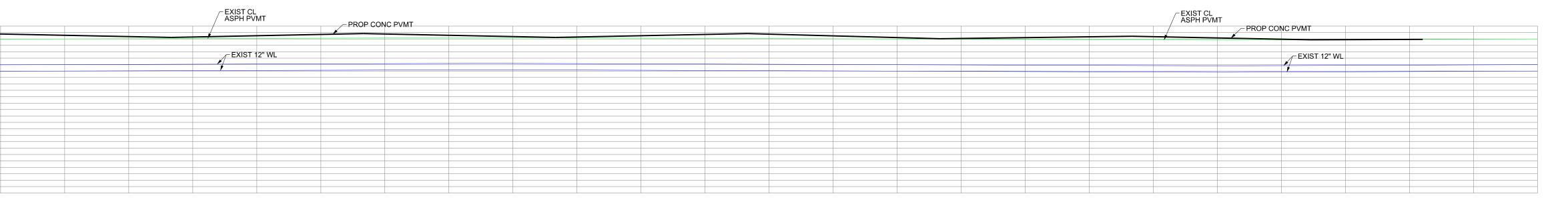




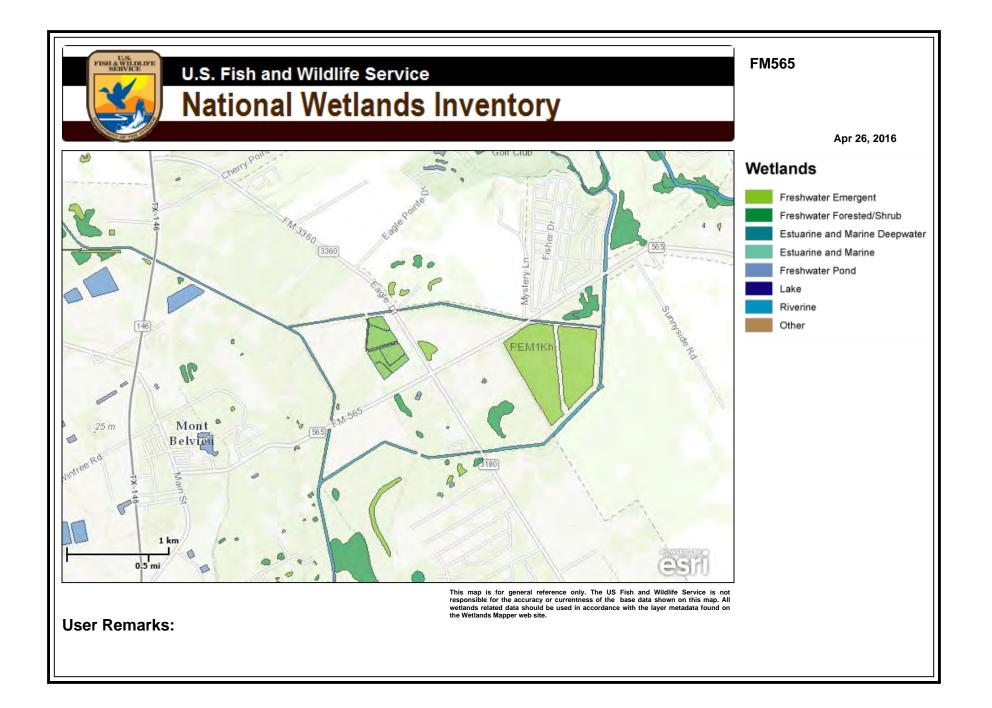


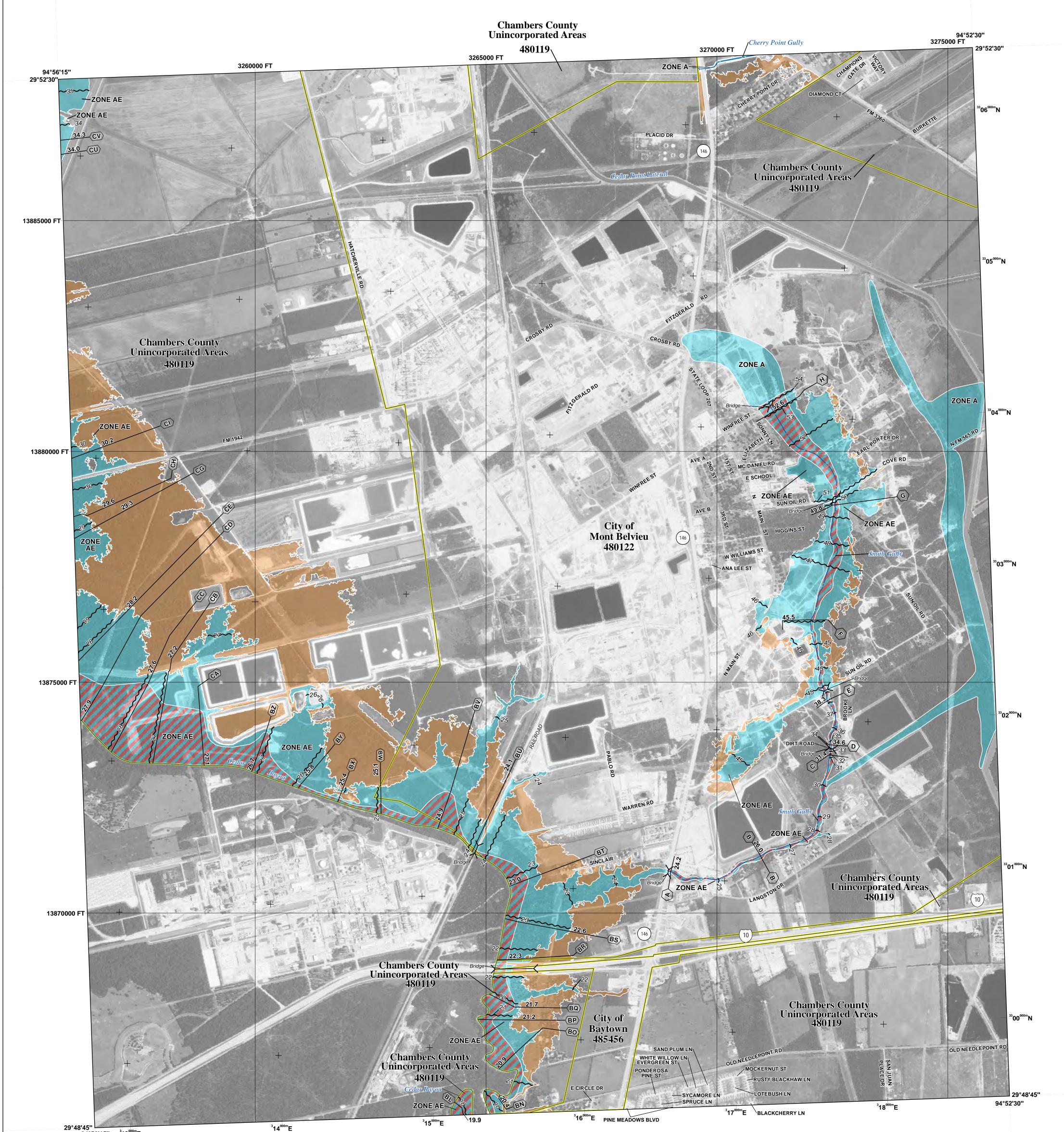
# EXHIBIT 9 - RECOMMENDED OPTION

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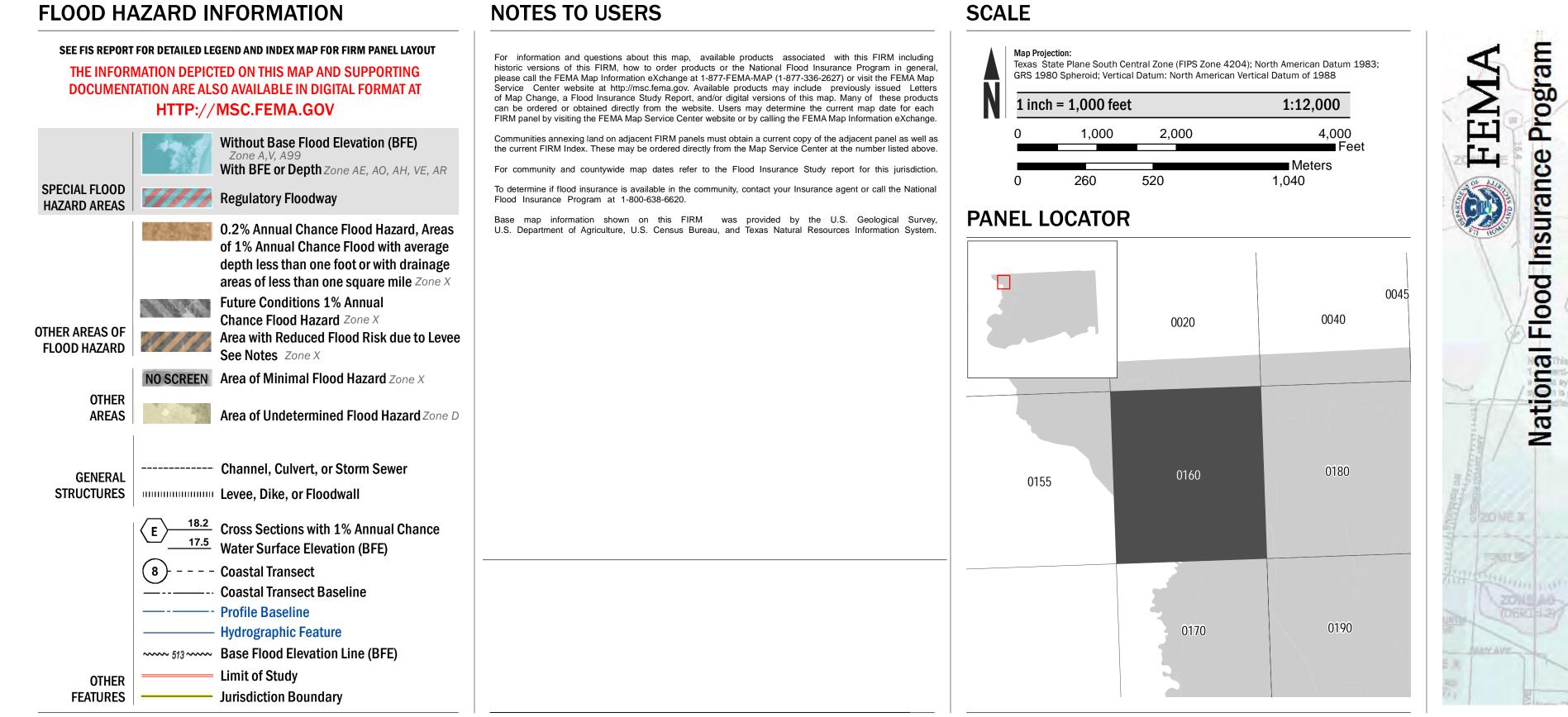
# Appendices













VERSION NUMBER 2.3.3.2 MAP NUMBER

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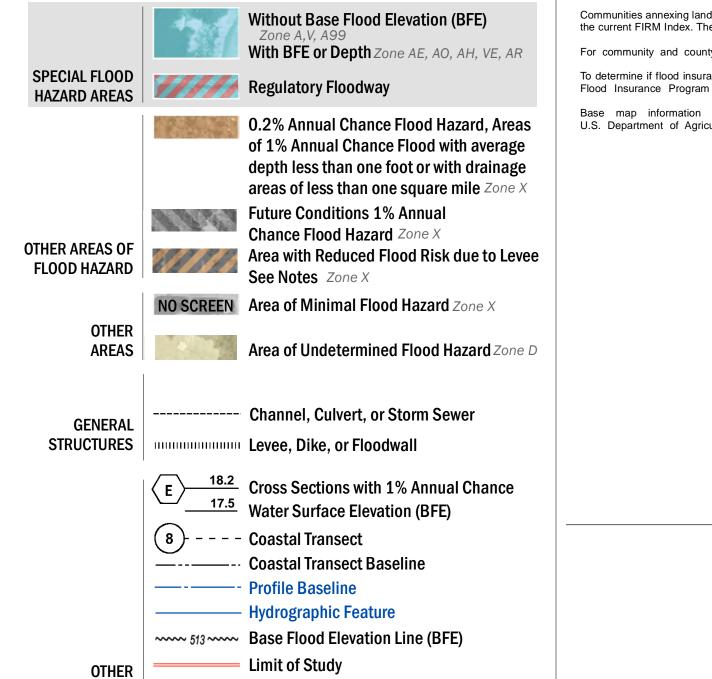




#### FLOOD HAZARD INFORMATION

FEATURES





Jurisdiction Boundary

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

NOTES TO USERS

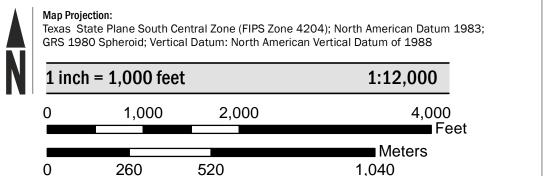
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

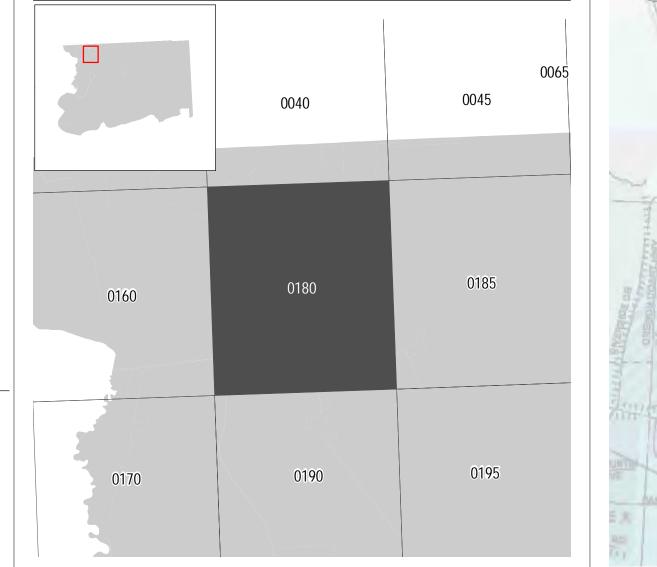
To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

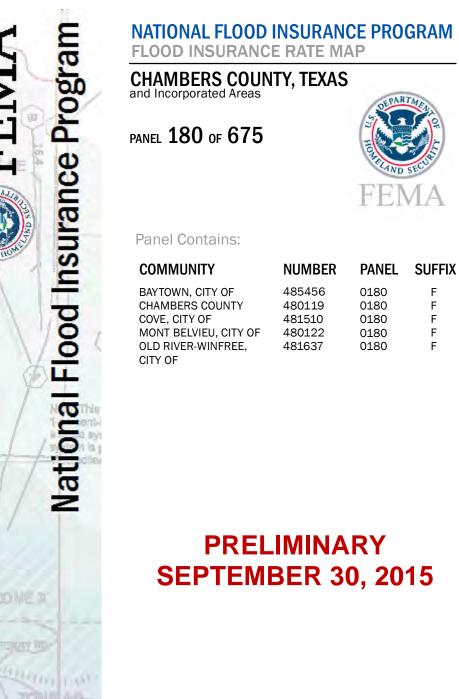
Base map information shown on this FIRM was provided by the U.S. Geological Survey, U.S. Department of Agriculture, U.S. Census Bureau, and Texas Natural Resources Information System.

### SCALE









FEMA

**B** 

VERSION NUMBER 2.3.3.2

MAP NUMBER 48071C0180F

MAP REVISED