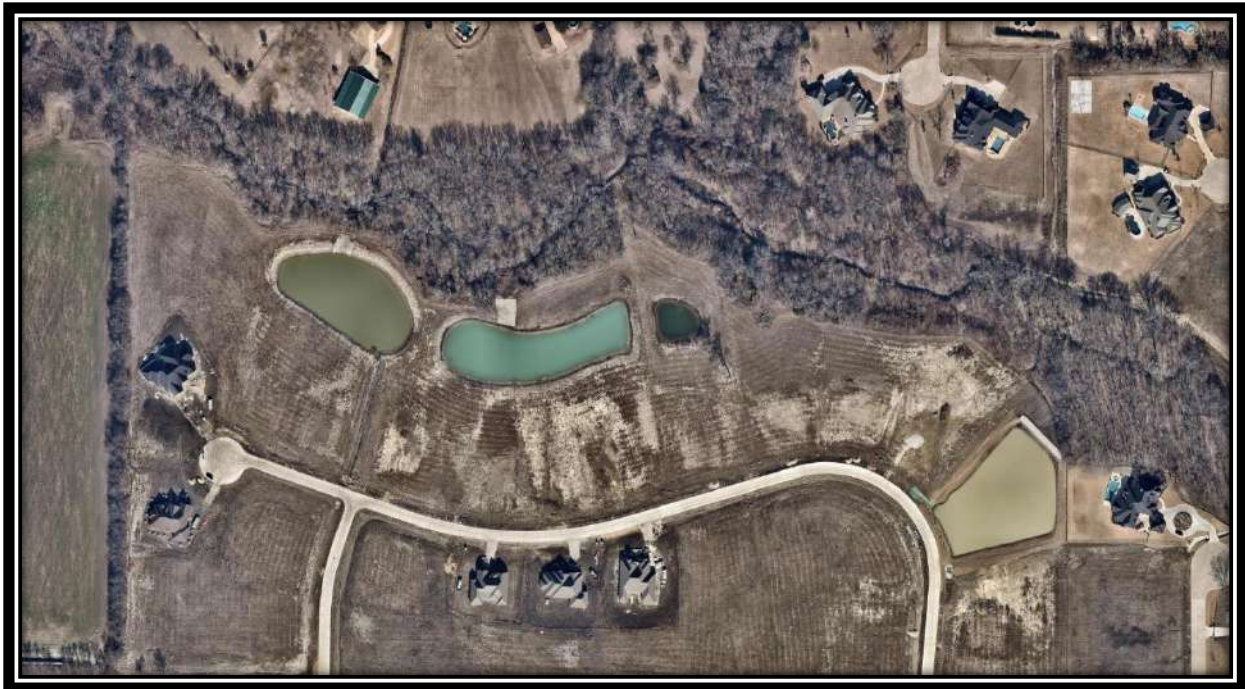


# Letter of Map Revision (LOMR) Submittal

FOR MUDDY CREEK UPPER REACH  
STINSON HIGHLANDS (FOLLOWS CLOMR CASE NO. 12-06-0979R)



JUNE 2018

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PRELIMINARY

FOR REVIEW ONLY

Not for construction or permit purposes.

**Kimley»Horn**

Engineer MATT P. BROSMAN

P.E. No. 130228 Date 06/08/2018

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## EXECUTIVE SUMMARY

Reata Brokerage Services, LLC has constructed Stinson Highlands, a single-family development located near the northwest corner of Stinson Road and Parker Road in the City of Lucas, Texas. The subject tract is bound on the east, south, and west by undeveloped tracts of land and other single family residential developments. Muddy Creek (Upper Reach) forms the subject tract's northern boundary. Portions of the subject tract are located within the effective 100-year Federal Emergency Management Agency (FEMA) floodplain associated with Muddy Creek.

The purpose of this study is to report the 100-year FEMA regulatory floodplain associated with Muddy Creek in its pre- and post-project condition adjacent to the subject tract. Constructed improvements consist of grading in the right overbank to remove portions of the subject tract from the 100-year regulatory floodplain boundary. Results of the study show that the Stinson Highlands development will increase the regulatory floodplain elevation by a maximum of 0.28 feet. This report follows an approved Conditional Letter of Map Revision (CLOMR Case No. 12-06-0979R), and is being submitted as a Letter of Map Revision (LOMR) request to reflect improvements associated with the Stinson Highlands development.

## 1.0 INTRODUCTION

### 1.1 AUTHORITY

Reata Brokerage Services, LLC (Client) has retained the services of Kimley-Horn and Associates, Inc. (KH) to evaluate the 100-year regulatory floodplain impacts of Muddy Creek on the Stinson Highlands development. This report describes the hydrologic and hydraulic analysis performed by KH to determine the impacts of the stream and floodplain areas. Acting on behalf of the Client, the contact for the study are as follows:

Matt P. Brosman, P.E., CFM  
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### 1.2 PURPOSE OF STUDY

The Client has completed construction of Stinson Highlands, a single-family development located in the City of Lucas, Texas. Portions of the development are impacted by the regulatory floodplain boundary associated with Muddy Creek. The floodplain associated with the subject reach of Muddy Creek is currently designated as Zone A on Flood Insurance Rate Map (FIRM) Panel 48085C0405J, effective June 2, 2009. Zone A represents unstudied areas of 100-year floodplain where regulatory flows and Base Flood Elevations have not been established.

The purpose of this submittal is to establish regulatory Base Flood Elevations for the subject reach of Muddy Creek and to report that the improvements remove portions of the subject tract from the effective floodplain associated with Muddy Creek. This report is being submitted as a Letter of Map Revision request to reflect the improvements associated with the Stinson Highlands development.

A Conditional Letter of Map Revision (CLOMR) (Case No. 12-06-0979R) for this project was submitted to FEMA and approved on June 23, 2012. The following list details the changes between the submitted CLOMR and the post-project conditions described in this LOMR.

- FEMA regulatory peak flow updated to reflect Flood Insurance Study for Collin County, dated June 2017.
- Two additional amenity ponds within the floodplain were added to the development following CLOMR approval.
- Post-project condition grading modifications within the subject tract have been updated in the LOMR to reflect as-built survey.
- Hydraulic cross section alignments and locations modified to better reflect pre- and post-project conditions through the subject reach.

- Additional improvements and structures not associated with the subject tract were constructed within the left overbank of the subject reach. Modeling and floodplain mapping at these locations have been performed using sealed record drawings.
- The CLOMR was submitted to the City of Lucas and Collin County per jurisdictions shown on effective FIRM panel 48085C0405J. Portions of the study area have since been annexed into the Cities of Lucas and Parker. Annexation maps for each city are attached in **Appendix E**.

### 1.3 GENERAL SITE CHARACTERISTICS

The subject tract is located near the northwest corner of Stinson Road and Parker Road in the City of Lucas, Collin County, Texas. The subject tract is bound on the east, south, and west by undeveloped tracts of land and other single family residential developments. The subject tract consists of approximately 225 acres of undeveloped land in the pre-project condition. Muddy Creek flows from west to east and forms the northern boundary of the subject tract. A vicinity map is provided below as **Figure 1**.

Figure 1. Vicinity Map



The subject reach of Muddy Creek meanders along the northern boundary of the subject tract, and extends from downstream extent of the subject tract to approximately 500 linear feet upstream of the subject tract. The channel overbanks consist of areas of dense trees and grass near the channel and open areas outside of the tree line. The channel bed consists of light vegetation. The streambed has an average bottom width of approximately 10 – 20 feet throughout the subject reach.

## 1.4 METHODOLOGY

This study was completed using standard hydrologic and hydraulic methods. Flows for Muddy Creek were acquired from the effective FEMA model of Muddy Creek downstream of the subject reach. Hydraulic conditions of the creek were modeled using the standard methods required by the U.S. Army Corps of Engineers HEC-RAS computer model. More details of the flow sources and methodologies are provided in the following sections.

## 1.5 RESULTS

The limits of flooding for FEMA regulatory flows for pre-project and post-project conditions are shown on the workmaps in **Appendix D** of this report.

## 2.0 SURVEY AND MAPPING INFORMATION

### 2.1 FIELD SURVEY INFORMATION

Aerial topographic information flown in 2001 was obtained from the North Central Texas Council of Governments (NCTCOG) for floodplain mapping areas outside the immediate project vicinity. Prior to development, an on-ground field survey of the subject tract was conducted by Cotton Surveying Company in November 2007. Following construction, an on-ground field survey of the constructed improvements was conducted by Kimley-Horn and Associates, Inc. in March 2018.

In addition to topographic survey, record drawings were used to model and delineate offsite improvements. Plans for Belmont Park (Corwin Engineering, dated 2013) were completed following CLOMR approval. Kimley-Horn utilized record drawings, the filed plat for the property, and two approved LOMR-F determinations, case numbers 13-06-1843A and 14-06-2150A, to model and map the post-project condition floodplain.

Topographic information obtained from these sources are consistent with City of Lucas vertical datum and was used as a basis for the hydraulic models. City of Lucas vertical datum is consistent with FEMA vertical datum (NAVD 88).

### 2.2 MAPPING

The topographic information detailed above was used as a basis to delineate the pre-project and post-project condition 100-year floodplain for FEMA regulatory flows. The floodplain delineations can be found on the workmaps in **Appendix D**.

### 3.0 HYDROLOGY

The regulatory discharges for Muddy Creek downstream of the subject reach are detailed in the Flood Insurance Study (FIS) for Collin County, dated June 2017. These discharges were used as the regulatory discharges for this study. An excerpt from the Collin County FIS is included in **Appendix A**. The following table shows the regulatory flow through the subject reach.

*Table 1. FEMA Regulatory Flows for Muddy Creek*

Location	100-Year Peak Flow (cfs)
At Stinson Road	2,925



## 4.0 HYDRAULICS

### 4.1 HISTORY AND METHODOLOGY

The hydraulic analysis of Muddy Creek was conducted using the standard methods required by the U.S. Army Corps of Engineers HEC-RAS modeling program. The floodplain associated with the subject reach of Muddy Creek is currently designated as Zone A on Flood Insurance Rate Map (FIRM) Panel 48085C0405J, effective June 2, 2009. Zone A represents unstudied areas of 100-year floodplain where regulatory flows and BFEs have not been established. As such, no FEMA effective model for the subject reach was available.

### 4.2 WORKMAPS

Cross section locations and the boundary of the pre-project and post-project condition FEMA regulatory floodplains associated with Muddy Creek in the vicinity of the subject tract are shown on the workmaps in **Appendix D**.

### 4.3 PARAMETER ESTIMATION

Roughness coefficients (Manning's "n" Values) used in the hydraulic computations were based on "Open Channel Hydraulics" [Chow, 1959], engineering judgment, aerial photographs, and field observation of the channel and overbank areas.

### 4.4 DOWNSTREAM BOUNDARY CONDITION

The slope-area method was used to calculate the water surface profile elevation at the downstream-most cross section for the subject reach of Muddy Creek. This method uses the geometry of the cross section, the slope of the channel, and the discharge through the section to determine the water surface profile elevation at that location.

### 4.5 CROSS SECTION DESCRIPTION

The pre-project and post-project condition hydraulic models of the subject reach start at cross section 1024+69 and end at cross section 1055+72. Cross section stationing through the subject reach is measured in linear feet upstream of Lake Ray Hubbard. Ground geometry in the pre-project condition hydraulic model reflects the 2001 aerial and 2007 on-ground survey information described in **Section 2.0** of this report.

The post-project condition hydraulic model reflects the constructed improvements associated with the Stinson Highlands development. The improvements consist of a series of amenity ponds and the placement of fill to remove a portion of the site from the regulatory floodplain. The improvements occur between cross sections 1025+15 and 1048+51.

Additionally, offsite improvements in the left overbank associated with the Belmont Park development are included in the post-project condition hydraulic model. These improvements, including two homes in the FEMA effective floodplain, had not been constructed at the time of CLOMR approval. Two LOMR-F requests were approved in 2013 and 2014. Kimley-Horn incorporated Belmont Park record drawings, filed plat, and the effective LOMR-F determinations into the floodplain mapping of Muddy Creek between cross

sections 1024+69 and 1029+53. These sources show the two structures are constructed above the FEMA and fully-developed flood elevations in the post-project condition.

## 4.6 RESULTS

Tables 2 and 3 show the results of the hydraulic modeling efforts through the subject reach. The results show that the improvements result in increases in the 100-year water surface elevation from cross sections 1028+49 and 1033+49. The maximum increase of 0.28 feet occurs at cross sections 1028+49 and 1029+53.

The model outputs associated with the pre-project and post-project condition of the floodplain corresponding to Muddy Creek can be found in **Appendices B and C** of this report.

*Table 2. 100-Year Regulatory Water Surface Elevations for Muddy Creek*

Cross Section	Pre-Project Condition (ft)	Post-Project Condition (ft)	Difference (ft)
<b>1024+69</b>	582.18	581.87	-0.31
<b>1025+15</b>	582.28	581.76	-0.52
<b>1028+49</b>	583.28	583.56	0.28
<b>1029+53</b>	583.60	583.88	0.28
<b>1031+61</b>	584.72	584.75	0.03
<b>1033+49</b>	585.30	585.32	0.02
<b>1034+65</b>	585.55	585.54	-0.01
<b>1035+98</b>	586.23	585.93	-0.30
<b>1038+33</b>	586.83	586.32	-0.51
<b>1039+98</b>	587.18	586.40	-0.78
<b>1042+91</b>	587.79	587.04	-0.75
<b>1044+43</b>	588.35	588.26	-0.09
<b>1045+54</b>	588.67	588.52	-0.15
<b>1046+87</b>	589.00	588.90	-0.10
<b>1048+51</b>	589.37	589.30	-0.07
<b>1049+68</b>	589.65	589.60	-0.05
<b>1050+97</b>	590.38	590.38	0.00
<b>1052+55</b>	591.20	591.20	0.00
<b>1055+72</b>	592.14	592.14	0.00

**Table 3. 100-Year Regulatory Velocities for Muddy Creek**

Cross Section	Pre-Project Condition (ft/s)	Post-Project Condition (ft/s)	Difference (ft/s)
1024+69	4.39	4.19	-0.20
1025+15	6.51	9.72	3.21
1028+49	3.27	3.55	0.28
1029+53	6.14	5.23	-0.91
1031+61	5.04	5.21	0.17
1033+49	4.07	3.90	-0.17
1034+65	6.40	4.33	-2.07
1035+98	4.59	5.37	0.78
1038+33	4.99	2.38	-2.61
1039+98	4.48	2.43	-2.05
1042+91	6.26	9.88	3.62
1044+43	4.60	4.09	-0.51
1045+54	4.04	4.23	0.19
1046+87	4.47	4.61	0.14
1048+51	4.66	4.76	0.10
1049+68	6.43	6.59	0.16
1050+97	6.27	6.28	0.01
1052+55	5.10	5.10	0.00
1055+72	4.39	4.39	0.00

## 5.0 ULTIMATE CONDITION

### 5.1 CITY CRITERIA

The City of Lucas requires floodplain improvements to be designed to convey the ultimate condition 100-year flow. This section summarizes the analysis performed to meet the City Criteria.

### 5.2 HYDROLOGY

#### 5.2.1 METHODOLOGY

The 100-year ultimate condition flows for the subject reach of Muddy Creek were developed using the Soil Conservation Service (SCS) Unit Hydrograph Method. The Floodplain Study for Muddy Creek (Upper Reach) prepared by Hydrology Associates (January 2000) and approved by the City of Lucas was used as a basis for this analysis.

The 100-year ultimate condition flows for the subject reach of Muddy Creek were developed using the U.S. Army Corps of Engineers HEC-1 computer modeling software. Discharges from the contributing drainage basins were calculated using the SCS Unit Hydrograph Method. Discharges were routed through two junction points along the subject reach of the stream.

#### 5.2.2 WATERSHED BOUNDARIES

The City effective hydrologic model was extended approximately 1,100 feet downstream along the subject reach of Muddy Creek to determine the ultimate peak flow at the downstream extent of the subject tract. Sub-basin DA-D was added to the watershed to account for the additional area draining to the subject reach. The boundary for area DA-D was established using USGS topographic information and the drainage area map for the development. The Drainage Area Map for the watershed contributing flow to the subject reach can be found in **Appendix F** of this report.

#### 5.2.3 SCS UNIT HYDROGRAPH METHOD

Hydrologic losses and infiltration were calculated using the SCS Curve Number (CN) Method. CN values associated with the ultimate land uses were obtained from SCS Technical Release Number 55 and are based on the ultimate land use map for the City of Lucas as of the date of this study. Soil types for sub-basin DA-D were determined using the NRCS Web Soil Survey 2.0 for Collin County. The survey indicates predominately Type C and D soils in sub-basin DA-D. Supporting calculations for weighted CN values for sub-basin DA-D can be found in **Appendix F**. The time of concentration for DA-D was taken from the engineering plans for the development. Drainage area information and HEC-1 modeling input for areas upstream of sub-basin DA-D were included in the City Effective January 2000 Study and were not revised as part of this study.

#### 5.2.4 RESULTS

Table 4 summarizes the results of the hydrologic analysis performed for this study. The 100-year ultimate condition peak flows through the subject reach are shown.

*Table 4. 100-Year Ultimate Flows for Muddy Creek*

Portion of Creek	Hydrologic Junction Point	100-Year (cfs)
<b>XS 1024+69 to XS 1033+49</b>	SH	7,730
<b>XS 1034+65 to XS 1055+72</b>	DS	7,280

### 5.3 HYDRAULICS

KH utilized the hydraulic modeling prepared as part of this analysis to analyze the subject reach in the fully-developed condition. KH added a flow profile to the model to reflect the fully-developed condition as described in **Section 5.2.4** of this report.

The results of the analysis are summarized in Tables 5 and 6. The results show that the Stinson Highlands development results in increases in the water surface elevation at cross sections 1031+61 to 1033+49. The maximum increase is 0.10 feet.

The model outputs associated with the pre-project and post-project condition of the floodplain corresponding to Muddy Creek can be found in **Appendices G and H** of this report.

*Table 5. 100-Year Ultimate Water Surface Elevations for Muddy Creek*

Cross Section	Pre-Project Condition (ft)	Post-Project Condition (ft)	Difference (ft)
<b>1024+69</b>	583.83	583.19	-0.64
<b>1025+15</b>	583.89	583.26	-0.63
<b>1028+49</b>	585.04	584.42	-0.62
<b>1029+53</b>	585.42	585.19	-0.23
<b>1031+61</b>	586.19	586.28	0.09
<b>1033+49</b>	586.99	587.09	0.10
<b>1034+65</b>	587.31	587.31	0.00
<b>1035+98</b>	587.84	587.62	-0.22
<b>1038+33</b>	588.44	588.02	-0.42
<b>1039+98</b>	588.79	588.12	-0.67
<b>1042+91</b>	589.36	588.48	-0.88
<b>1044+43</b>	589.92	589.37	-0.55
<b>1045+54</b>	590.31	589.76	-0.55
<b>1046+87</b>	590.70	590.38	-0.32
<b>1048+51</b>	591.11	590.90	-0.21
<b>1049+68</b>	591.44	591.27	-0.17
<b>1050+97</b>	592.04	591.99	-0.05
<b>1052+55</b>	592.68	592.66	-0.02
<b>1055+72</b>	593.48	593.47	-0.01

**Table 6. 100-Year Ultimate Velocities for Muddy Creek**

Cross Section	Pre-Project Condition (ft/s)	Post-Project Condition (ft/s)	Difference (ft/s)
<b>1024+69</b>	5.35	4.99	-0.36
<b>1025+15</b>	7.63	6.20	-1.43
<b>1028+49</b>	4.87	6.45	1.58
<b>1029+53</b>	5.58	6.82	1.24
<b>1031+61</b>	7.10	7.42	0.32
<b>1033+49</b>	5.65	5.27	-0.38
<b>1034+65</b>	6.73	4.82	-1.91
<b>1035+98</b>	5.67	5.98	0.31
<b>1038+33</b>	5.86	3.31	-2.55
<b>1039+98</b>	5.36	3.37	-1.99
<b>1042+91</b>	7.37	9.09	1.72
<b>1044+43</b>	6.15	5.82	-0.33
<b>1045+54</b>	5.21	6.20	0.99
<b>1046+87</b>	5.66	6.22	0.56
<b>1048+51</b>	5.89	6.15	0.26
<b>1049+68</b>	7.07	7.62	0.55
<b>1050+97</b>	6.92	7.09	0.17
<b>1052+55</b>	5.69	5.73	0.04
<b>1055+72</b>	4.89	4.90	0.01

## 6.0 REFERENCES

Chow, Ven Te. *Open Channel Hydraulics*. McGraw-Hill, 1959.

Federal Emergency Management Agency. *Flood Insurance Study, Collin County, Texas and Incorporated Areas*. Federal Emergency Management Agency, 2017.

Hydrology Associates. *Floodplain Study for Muddy Creek (Upper Reach)*. January 2000.

U.S. Army Corps of Engineers. *HEC-1 Flood Hydrograph Package, v. 4.1 (software package)*. Dodson and Associates., 1998.

U.S. Army Corps of Engineers. *HEC-RAS v. 4.1.0 (software package)*. Hydrologic Engineering Center, 2010.

U.S. Department of Agriculture Soil Conservation Service. *Soil Survey, Collin and Denton County, Texas*. U.S. Department of Agriculture, 1969.

U.S. Department of Agriculture Soil Conservation Service. *Technical Release Number 55*. U.S. Department of Agriculture, 1986.





**TABLE 3A – SUMMARY OF DISCHARGES (Cont'd)**

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
<b>MAXWELL CREEK</b>					
(Cont'd)					
At a point approximately 400 feet upstream of Elisa Lane	0.84	1,075	1,481	1,668	2,150
At Chaparral Drive	0.66	914	1,253	1,399	1,873
<b>MCKAMY BRANCH</b>					
Downstream of confluence with Stream 5B13	3.16	6,000	8,000	8,700	10,500
Downstream of Frankford Road	1.25	2,400	3,300	3,500	4,400
Upstream of Atchison, Topeka, and Santa Fe Railway	0.63	1,550	2,200	2,300	2,900
<b>MCMILLAN TRIBUTARY</b>					
At confluence with Maxwell Creek	0.33	840	1,100	1,220	1,500
At a point 260 feet east of FM 2551	0.28	870	1,120	1,240	1,520
<b>MUDDY CREEK (UPPER REACH)</b>					
At Hensley Lane	15.45	1,880	2,795	3,340	6,365
At FM 544	14.68	1,310	1,980	2,380	6,250
At County Club Road	11.74	400	610	1,740	5,270
Below Muddy Creek Dam (SCS No. 4)	11.29	100	570	1,700	5,190
At McMillen Road	9.37	4,380	6,640	7,990	11,700
Below confluence of Turner Branch	6.94	3,845	5,720	6,760	9,830
At Parker Road	4.81	2,510	3,670	4,340	6,460
Below confluence of Muddy Creek Tributary 2	4.17	2,200	3,230	3,910	5,950
At Stinson Road	2.64	1,510	2,380	2,925	4,380
At Lewis Lane	1.54	1,080	1,660	2,015	2,945

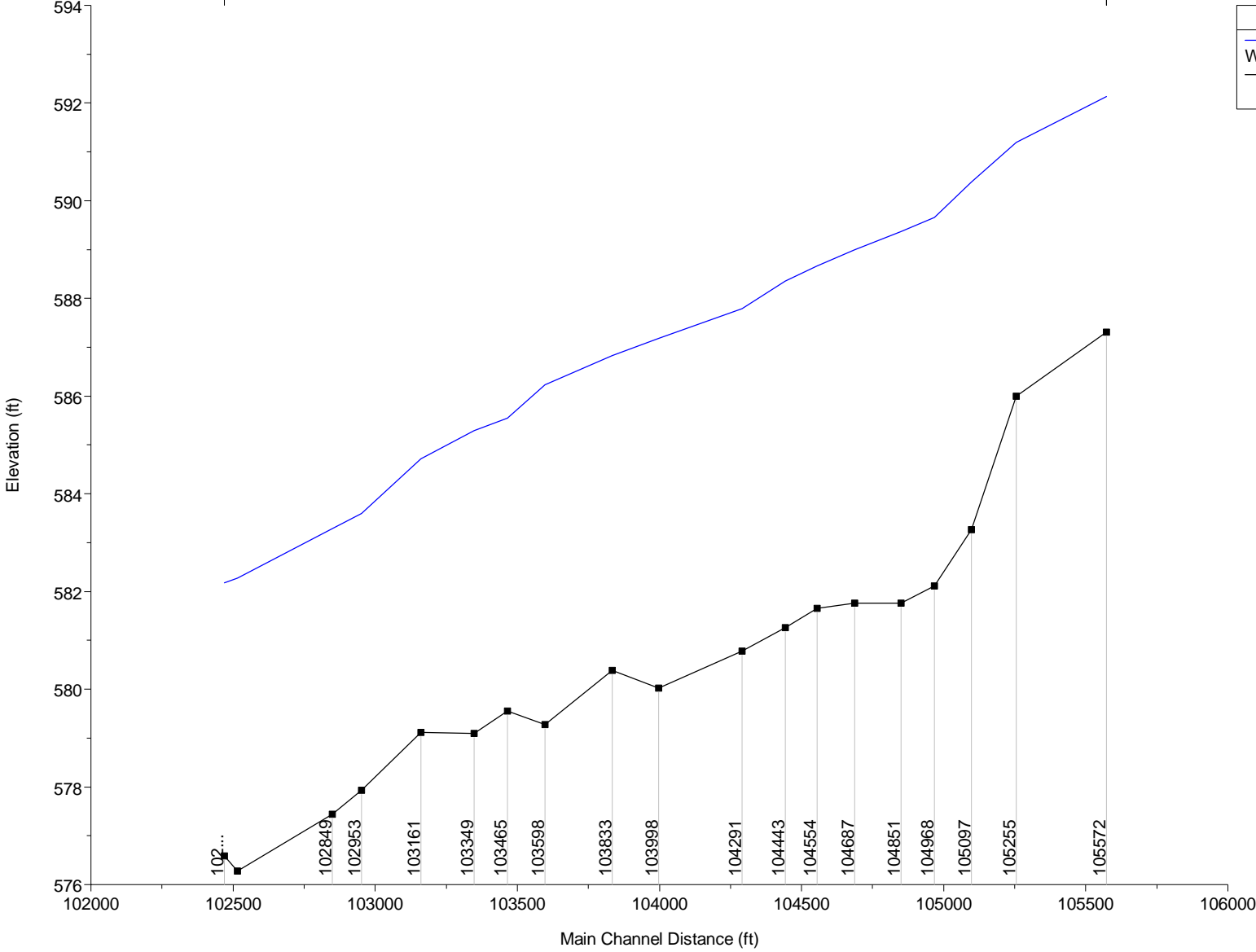


HEC-RAS Plan: Pre River: RIVER-1 Reach: Reach-1 Profile: FEMA 100-yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	102469	FEMA 100-yr	2925.00	576.59	582.18	581.15	582.28	0.003002	4.39	1289.24	928.79	0.35
Reach-1	102515	FEMA 100-yr	2925.00	576.28	582.28		582.53	0.007255	6.51	824.64	460.21	0.54
Reach-1	102849	FEMA 100-yr	2925.00	577.44	583.28		583.39	0.002028	3.27	1191.17	611.49	0.29
Reach-1	102953	FEMA 100-yr	2925.00	577.93	583.60		583.86	0.007249	6.14	910.70	664.35	0.55
Reach-1	103161	FEMA 100-yr	2925.00	579.12	584.72		584.89	0.003824	5.04	1043.49	469.71	0.41
Reach-1	103349	FEMA 100-yr	2925.00	579.09	585.30		585.41	0.002373	4.07	1398.92	613.40	0.33
Reach-1	103465	FEMA 100-yr	2925.00	579.55	585.55		585.85	0.006135	6.40	886.41	471.84	0.52
Reach-1	103598	FEMA 100-yr	2925.00	579.28	586.23		586.37	0.003048	4.59	1163.97	566.18	0.37
Reach-1	103833	FEMA 100-yr	2925.00	580.39	586.83		586.95	0.003090	4.99	1208.67	596.83	0.37
Reach-1	103998	FEMA 100-yr	2925.00	580.02	587.18		587.30	0.002321	4.48	1326.48	653.08	0.33
Reach-1	104291	FEMA 100-yr	2925.00	580.78	587.79		588.02	0.004724	6.26	947.67	480.35	0.45
Reach-1	104443	FEMA 100-yr	2925.00	581.26	588.35		588.54	0.003001	4.60	1007.85	463.74	0.37
Reach-1	104554	FEMA 100-yr	2925.00	581.66	588.67		588.84	0.002708	4.04	1034.12	495.78	0.34
Reach-1	104687	FEMA 100-yr	2925.00	581.76	589.00		589.16	0.002225	4.47	1138.85	515.97	0.33
Reach-1	104851	FEMA 100-yr	2925.00	581.76	589.37		589.52	0.002460	4.66	1107.18	485.47	0.34
Reach-1	104968	FEMA 100-yr	2925.00	582.11	589.65		589.99	0.005541	6.43	810.38	423.49	0.49
Reach-1	105097	FEMA 100-yr	2925.00	583.27	590.38		590.70	0.006273	6.27	788.07	464.65	0.52
Reach-1	105255	FEMA 100-yr	2925.00	586.00	591.20		591.36	0.004870	5.10	1025.17	614.85	0.45
Reach-1	105572	FEMA 100-yr	2925.00	587.31	592.14		592.24	0.003603	4.39	1280.07	865.21	0.38

Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

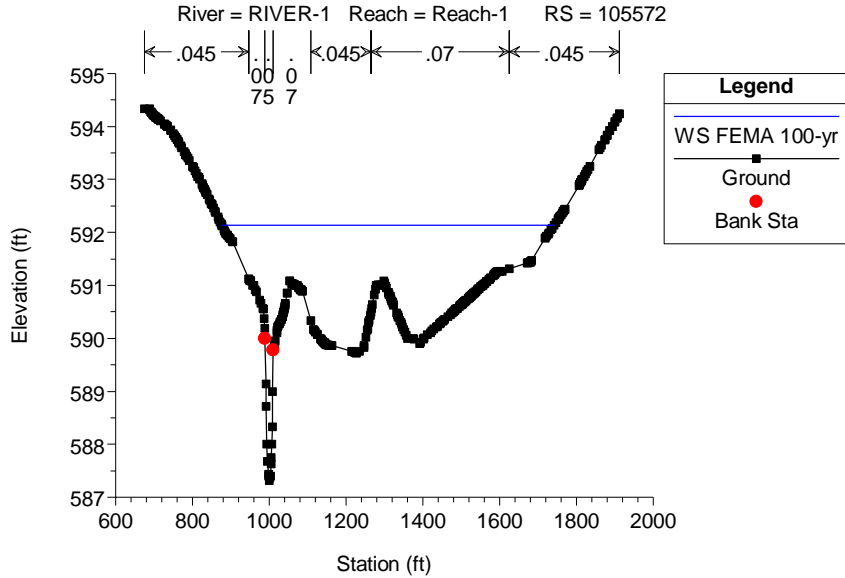
RIVER-1 Reach-1



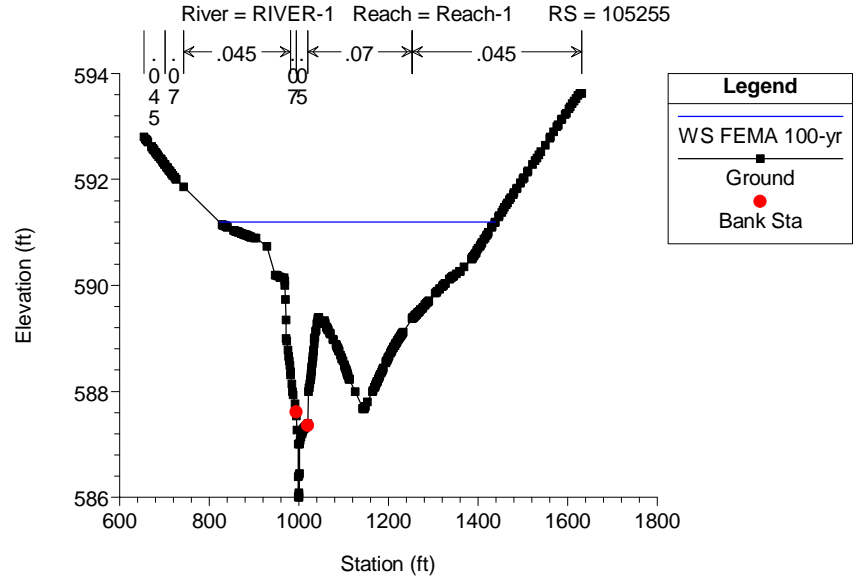
**Legend**

- WS FEMA 100-yr
- Ground

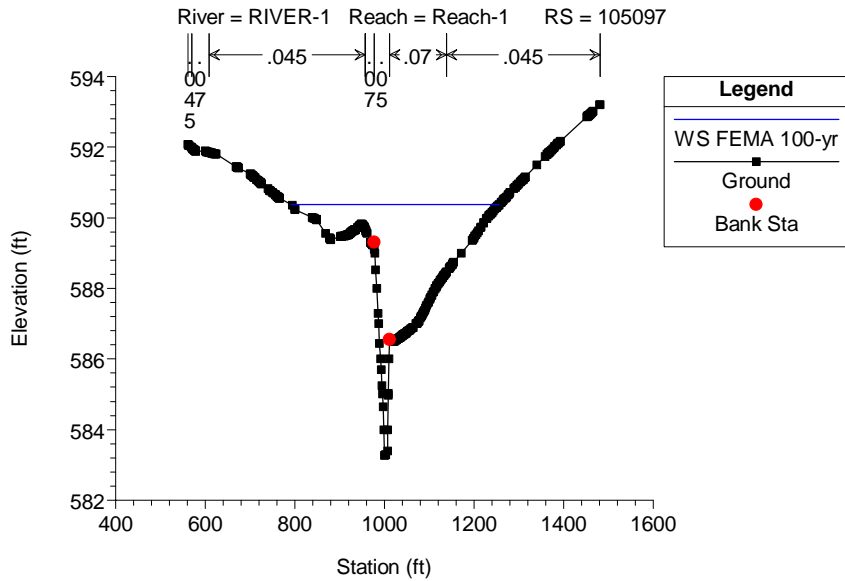
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



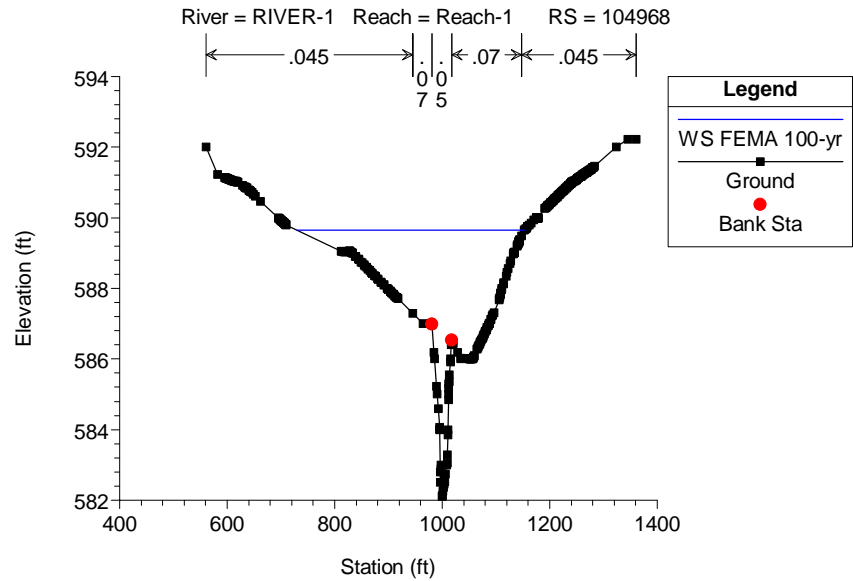
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

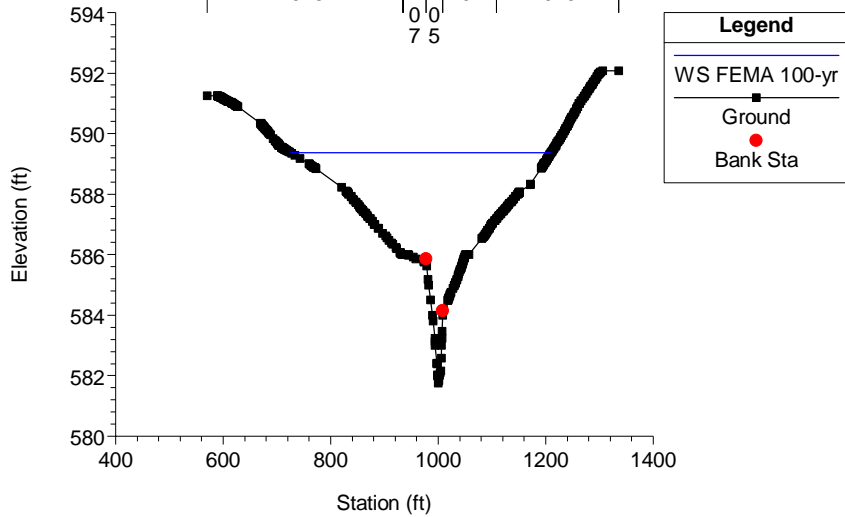
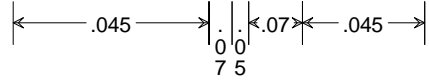


Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



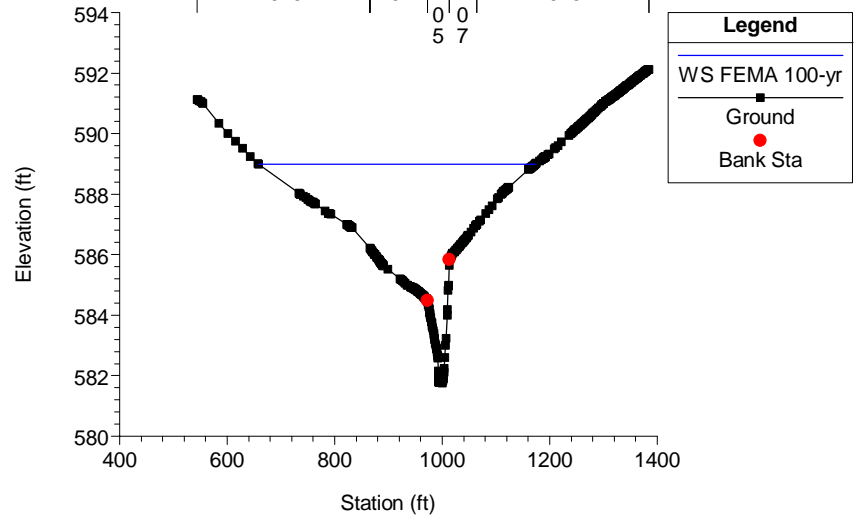
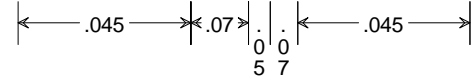
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104851



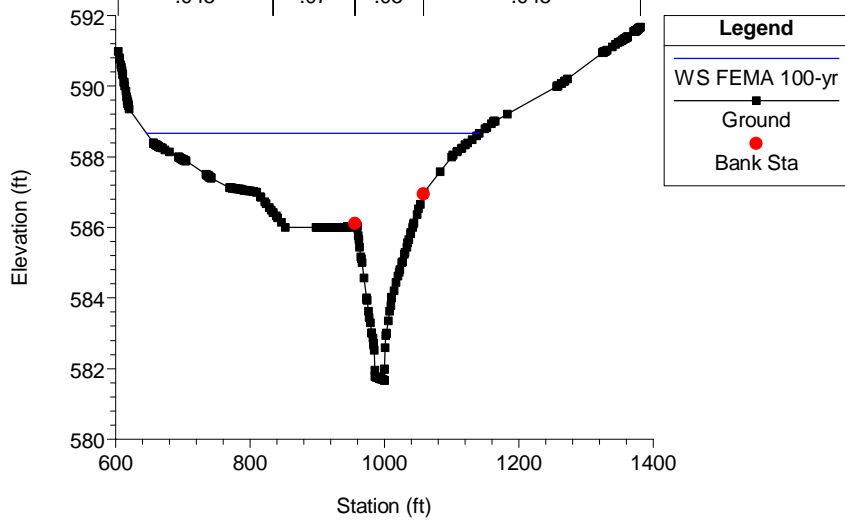
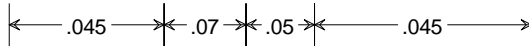
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104687



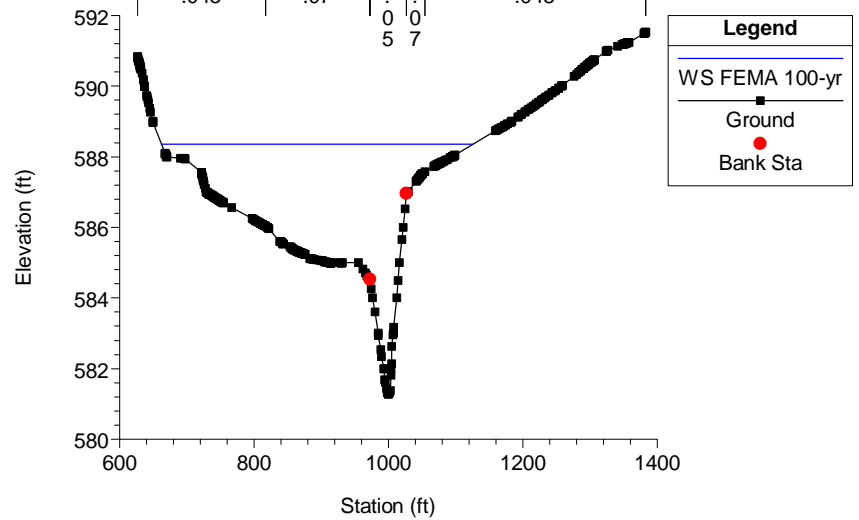
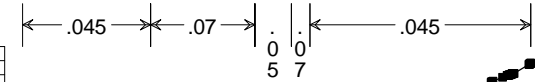
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104554



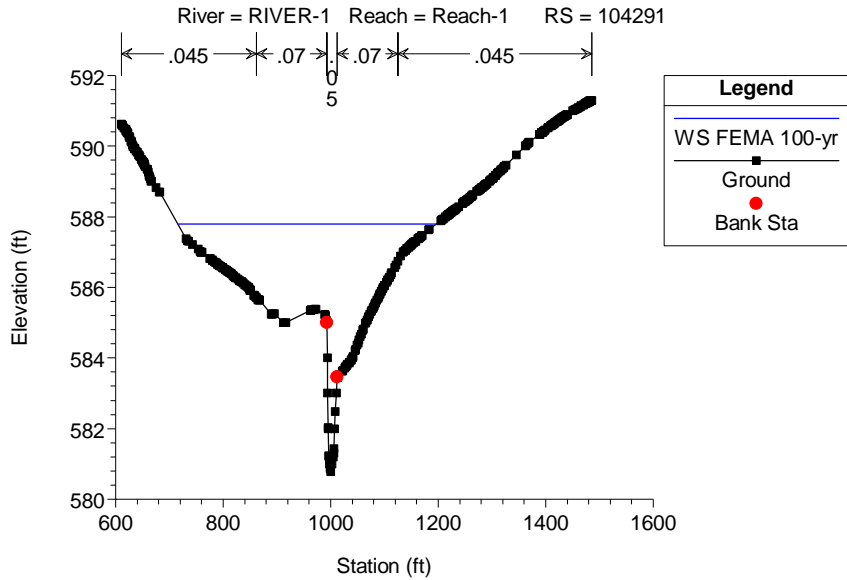
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104443

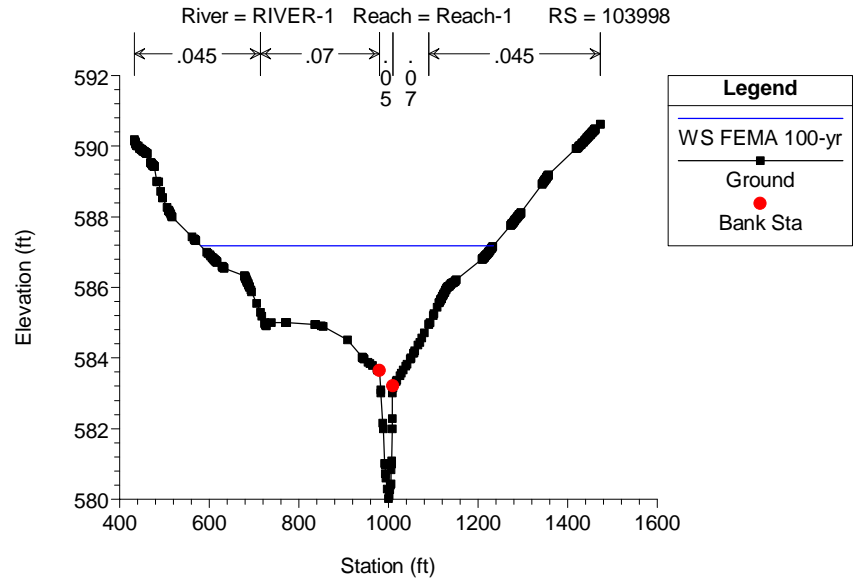




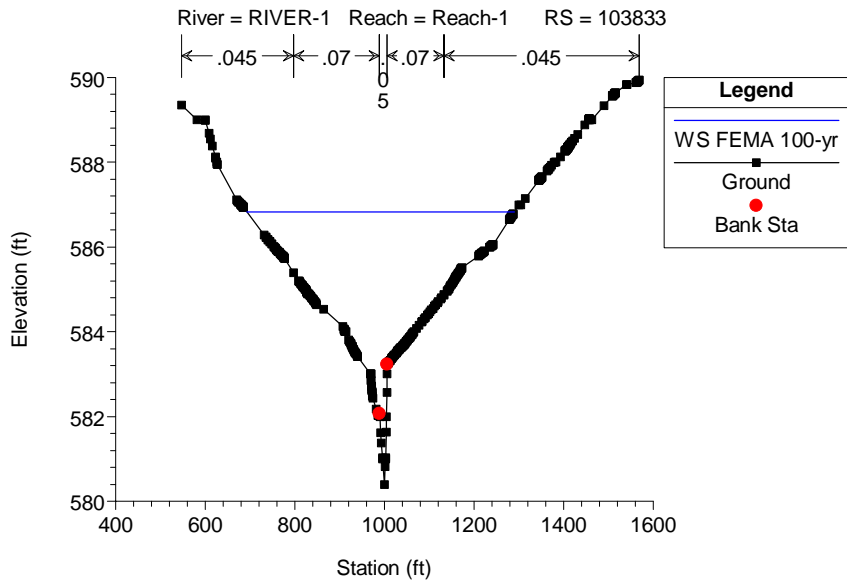
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



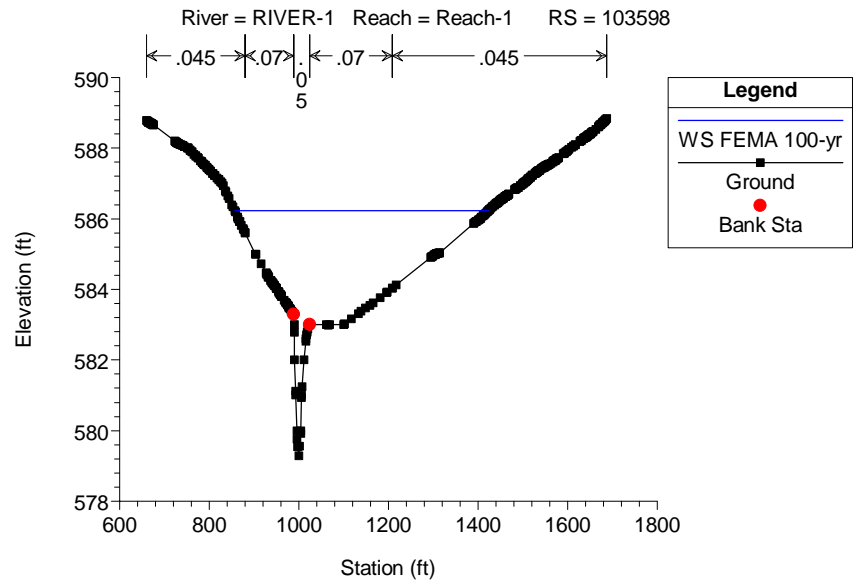
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



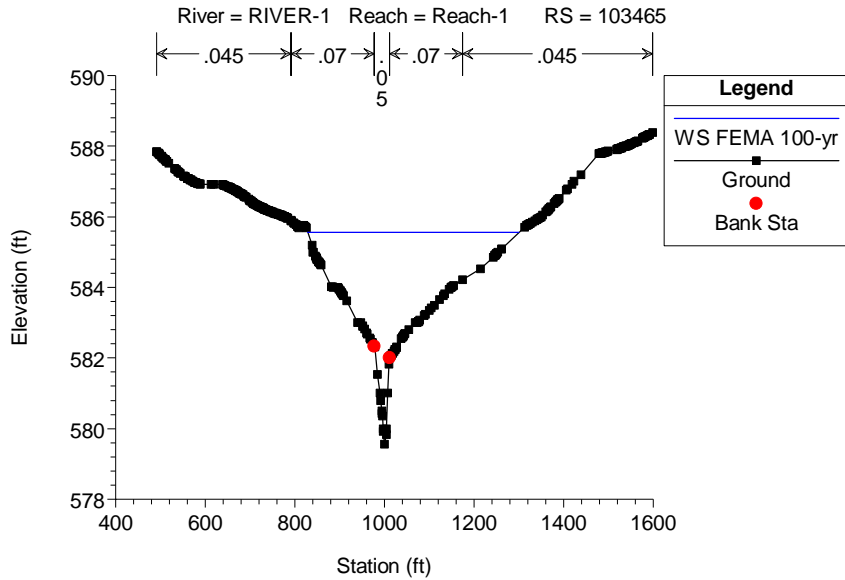
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



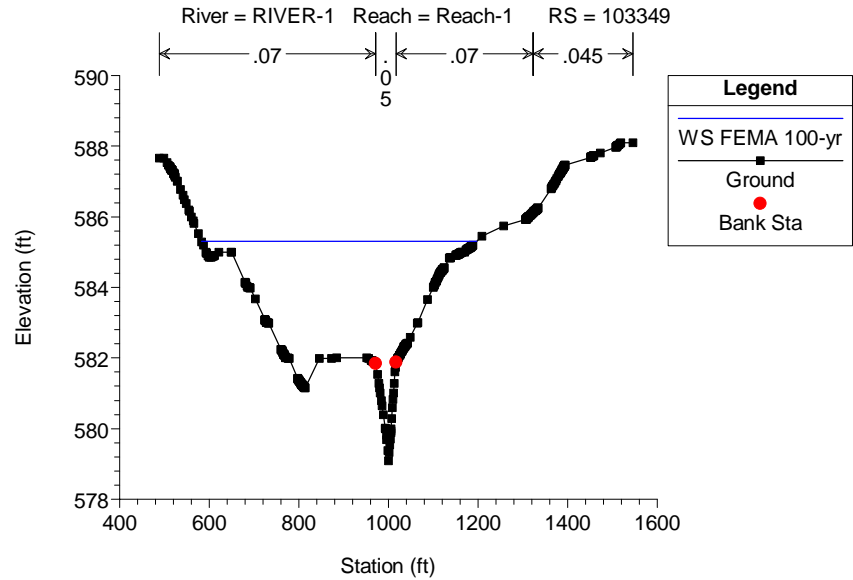
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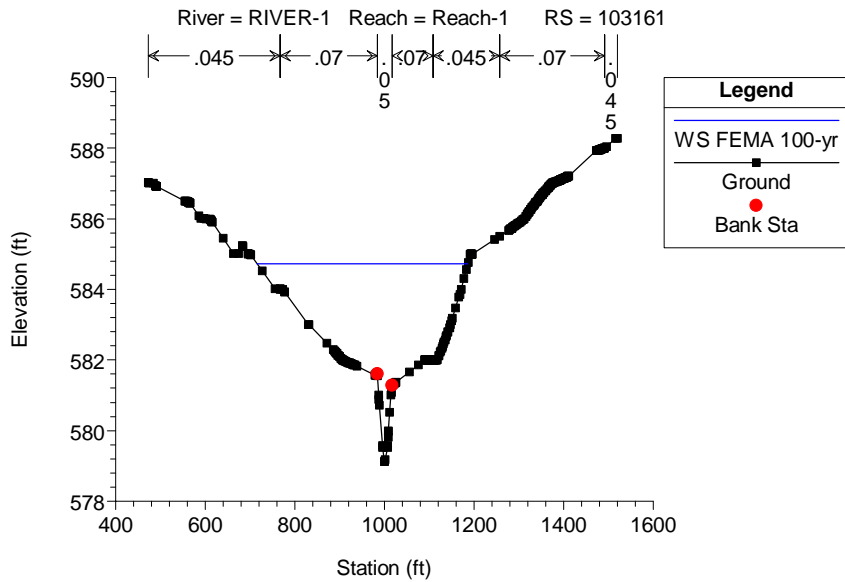
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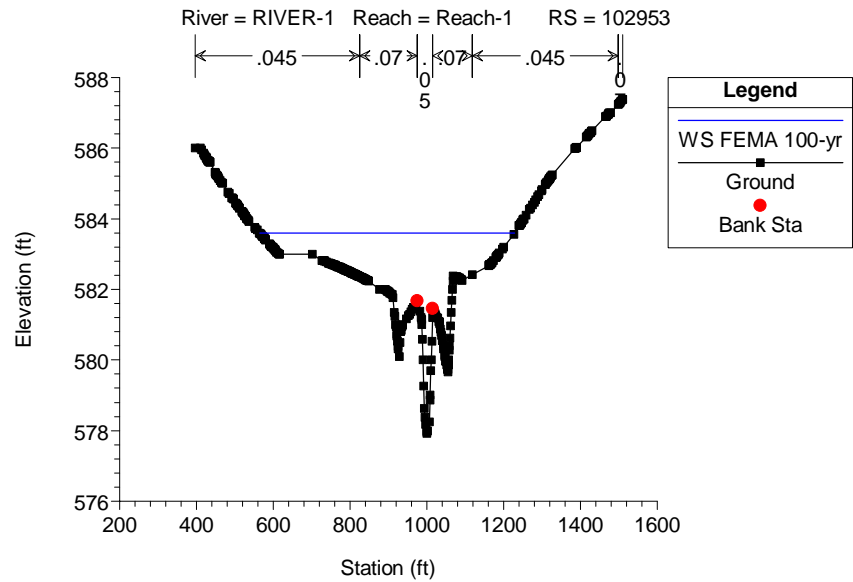
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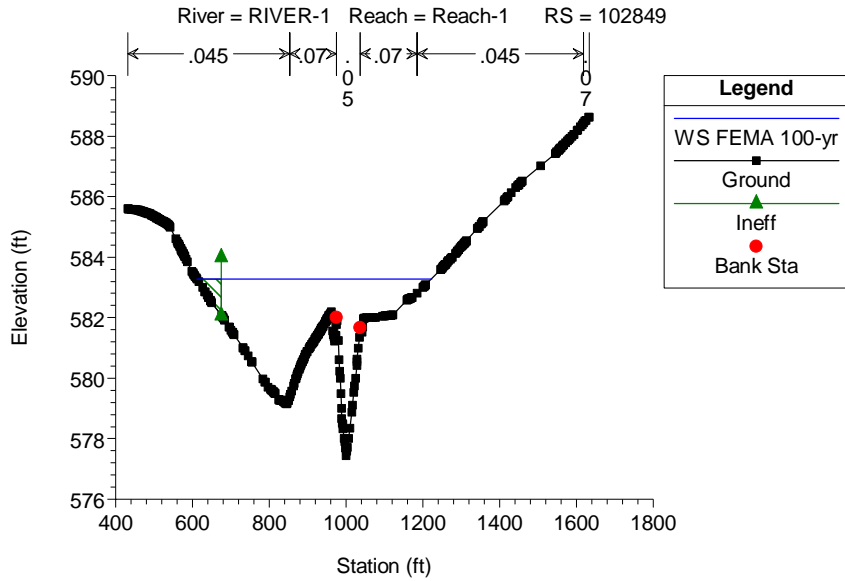
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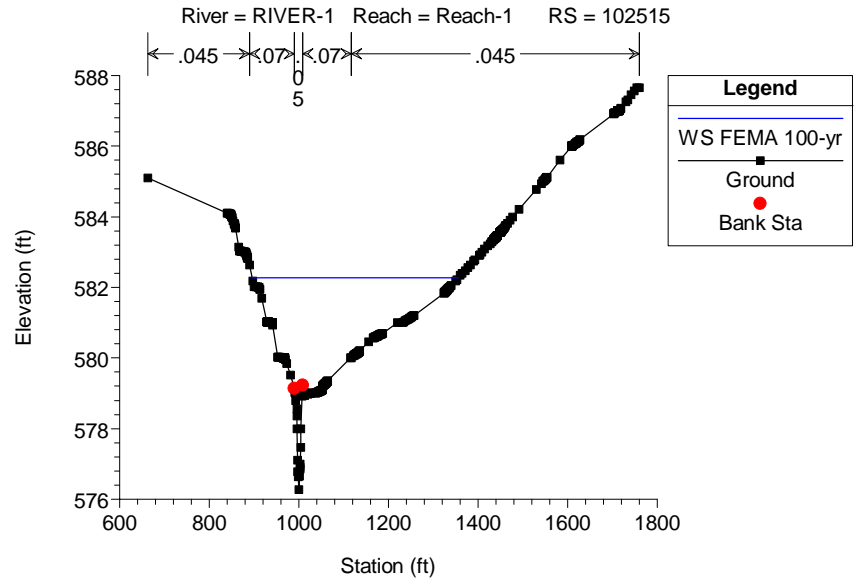
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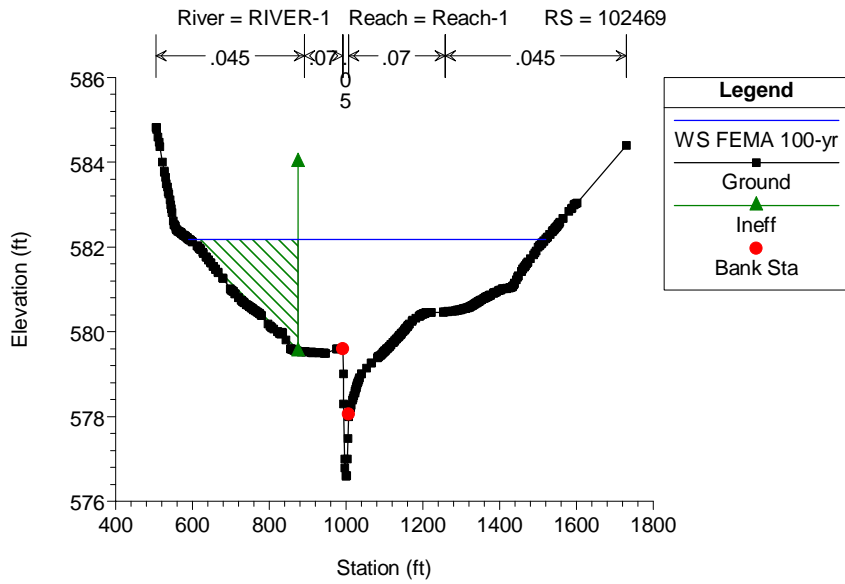
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Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



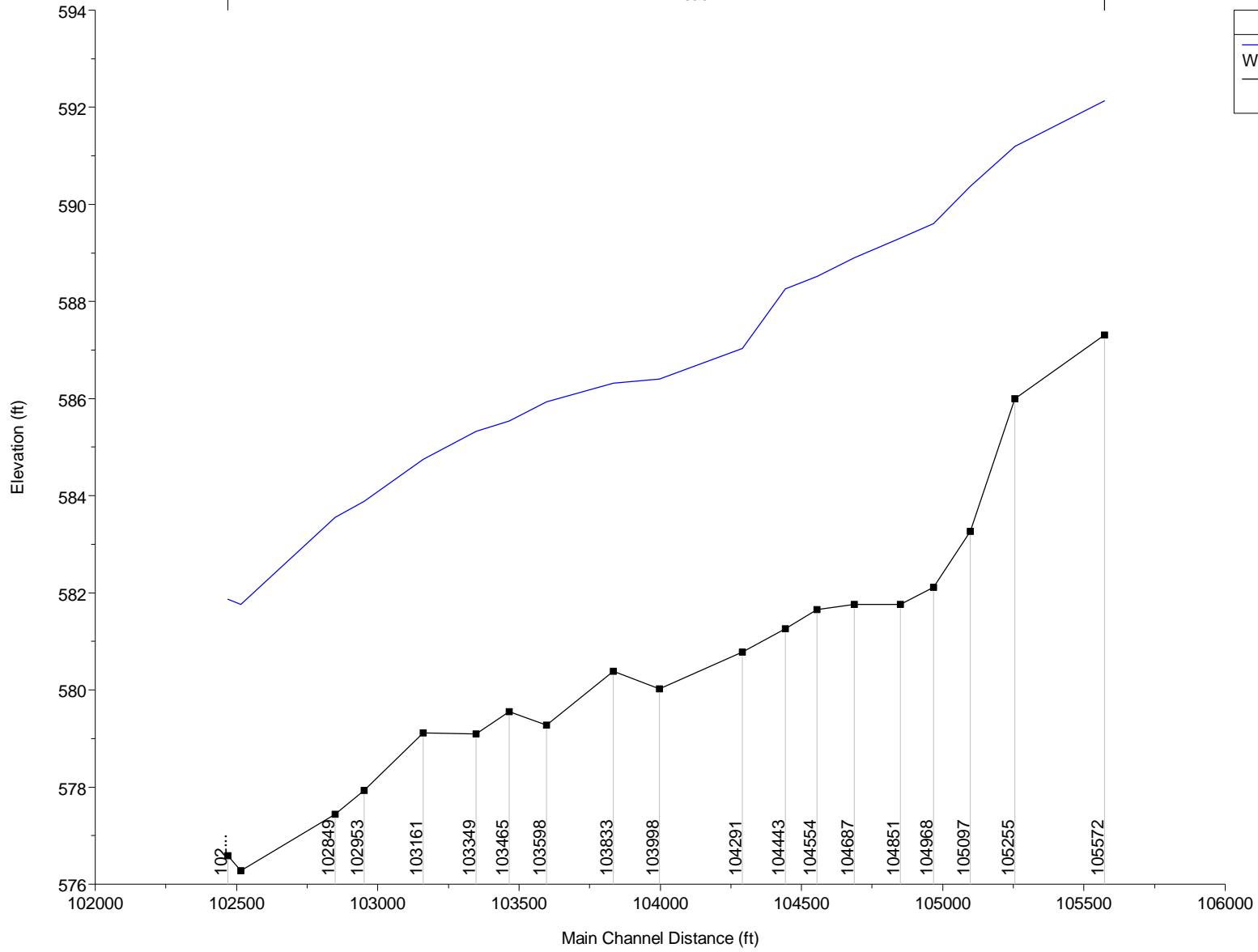


HEC-RAS Plan: Post River: RIVER-1 Reach: Reach-1 Profile: FEMA 100-yr

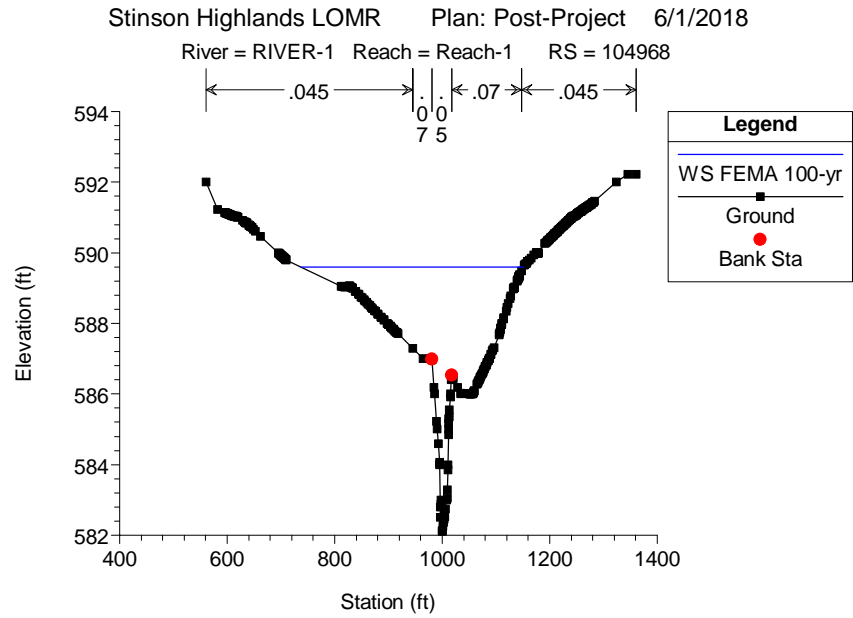
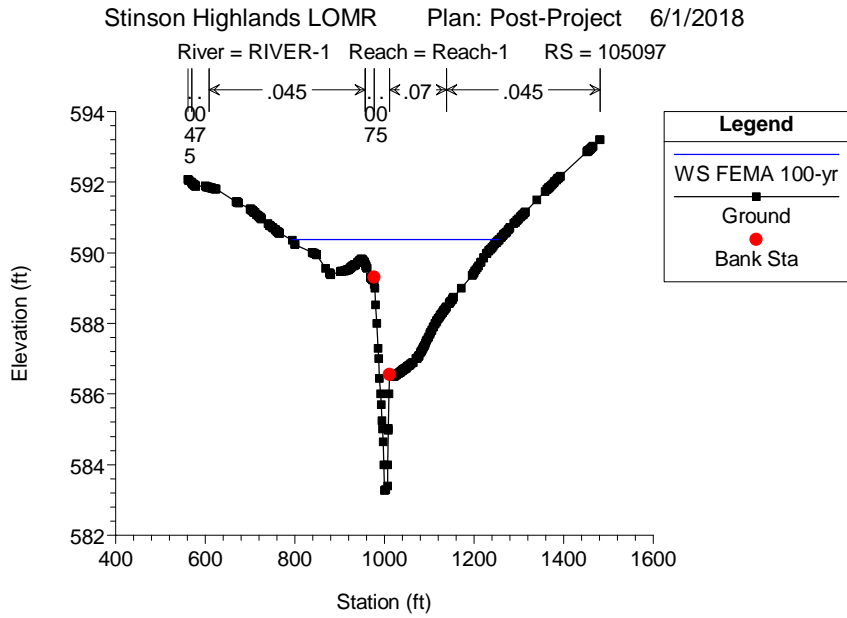
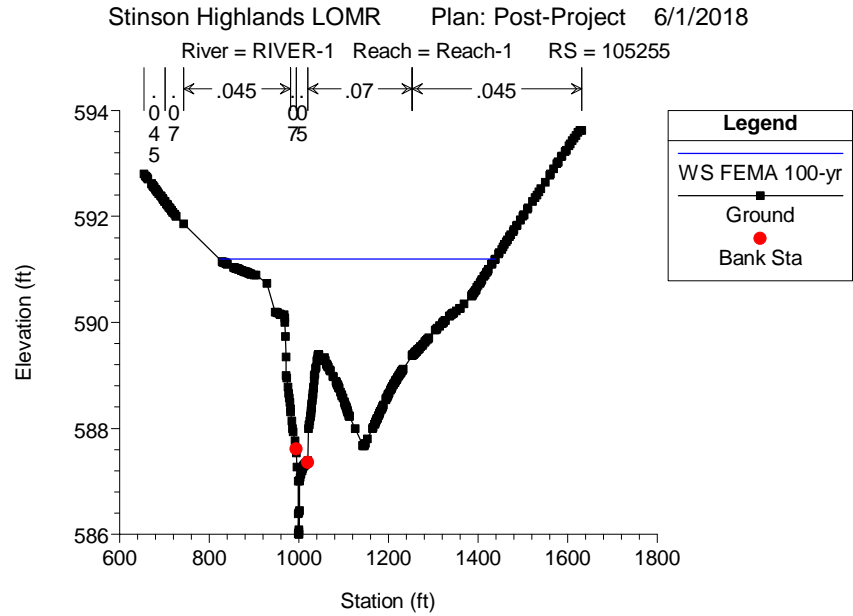
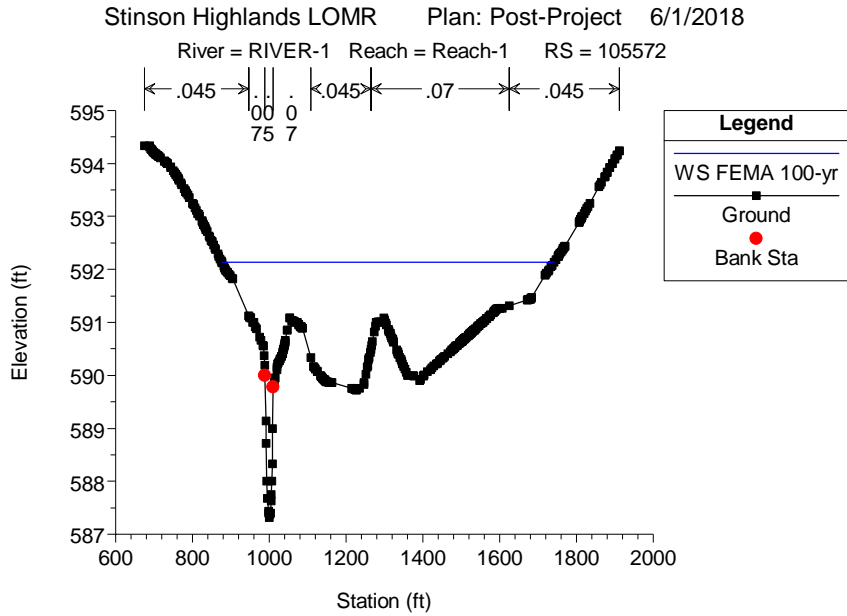
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	102469	FEMA 100-yr	2925.00	576.59	581.87	581.00	581.95	0.003000	4.19	1403.70	864.43	0.35
Reach-1	102515	FEMA 100-yr	2925.00	576.28	581.76	581.59	582.40	0.019044	9.72	538.77	429.27	0.86
Reach-1	102849	FEMA 100-yr	2925.00	577.44	583.56		583.67	0.002182	3.55	1210.36	548.76	0.31
Reach-1	102953	FEMA 100-yr	2925.00	577.93	583.88		584.07	0.004786	5.23	1026.80	611.31	0.45
Reach-1	103161	FEMA 100-yr	2925.00	579.12	584.75		584.93	0.003909	5.21	1022.08	444.63	0.42
Reach-1	103349	FEMA 100-yr	2925.00	579.09	585.32	583.49	585.42	0.002157	3.90	1426.78	623.08	0.31
Reach-1	103465	FEMA 100-yr	2925.00	579.55	585.54		585.69	0.002814	4.33	1066.23	521.51	0.35
Reach-1	103598	FEMA 100-yr	2925.00	579.28	585.93		586.13	0.004542	5.37	1014.86	554.93	0.44
Reach-1	103833	FEMA 100-yr	2925.00	580.39	586.32		586.41	0.000795	2.38	1445.76	624.10	0.19
Reach-1	103998	FEMA 100-yr	2925.00	580.02	586.40		586.51	0.000825	2.43	1351.56	608.86	0.19
Reach-1	104291	FEMA 100-yr	2925.00	580.78	587.04	587.04	587.69	0.014110	9.88	623.31	380.85	0.77
Reach-1	104443	FEMA 100-yr	2925.00	581.26	588.26		588.41	0.002425	4.09	1106.87	560.10	0.33
Reach-1	104554	FEMA 100-yr	2925.00	581.66	588.52		588.71	0.003116	4.23	972.86	489.15	0.37
Reach-1	104687	FEMA 100-yr	2925.00	581.76	588.90		589.07	0.002424	4.61	1107.80	514.84	0.34
Reach-1	104851	FEMA 100-yr	2925.00	581.76	589.30		589.46	0.002616	4.76	1091.45	499.72	0.35
Reach-1	104968	FEMA 100-yr	2925.00	582.11	589.60		589.96	0.005905	6.59	789.30	414.85	0.51
Reach-1	105097	FEMA 100-yr	2925.00	583.27	590.38		590.69	0.006309	6.28	786.11	463.75	0.52
Reach-1	105255	FEMA 100-yr	2925.00	586.00	591.20		591.36	0.004874	5.10	1024.83	614.75	0.45
Reach-1	105572	FEMA 100-yr	2925.00	587.31	592.14		592.24	0.003603	4.39	1280.01	865.20	0.38

Stinson Highlands LOMR Plan: Post-Project 6/1/2018

RIVER-1 Reach-1



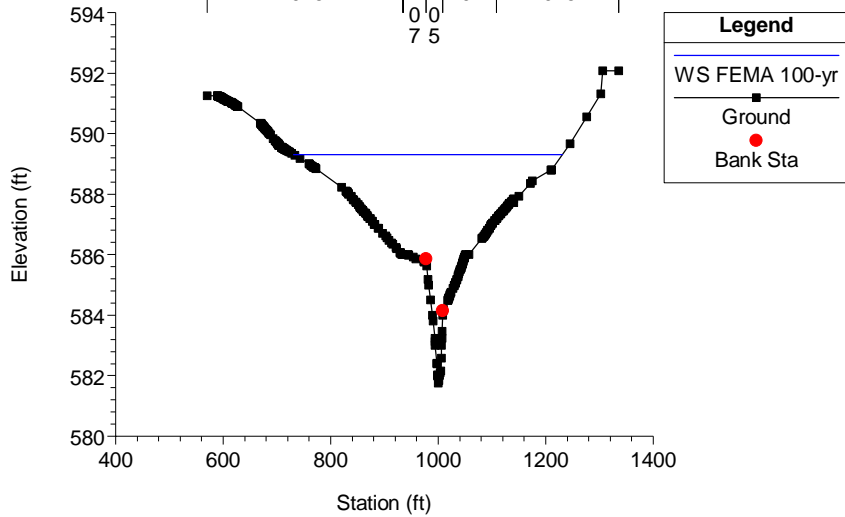
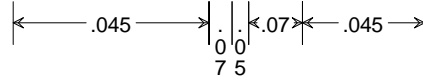
Legend	
WS FEMA 100-yr	(Blue line)
Ground	(Black line with square marker)





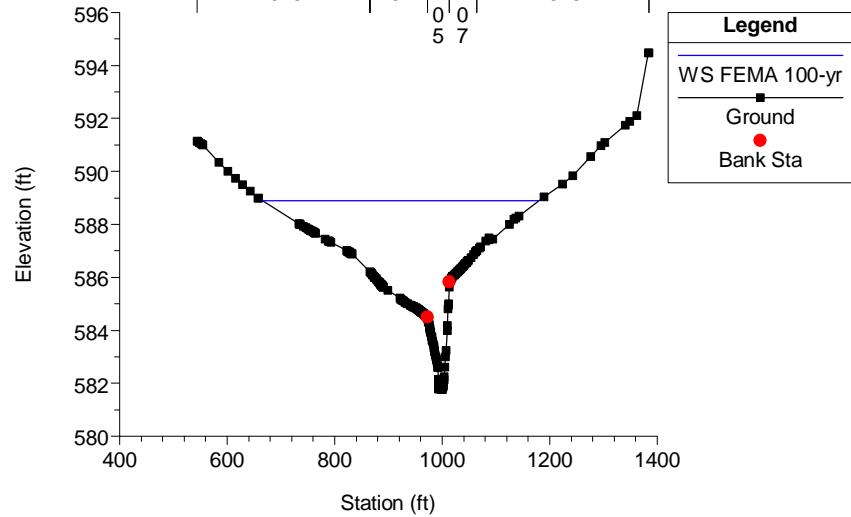
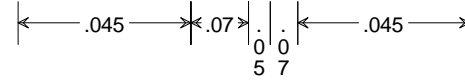
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104851



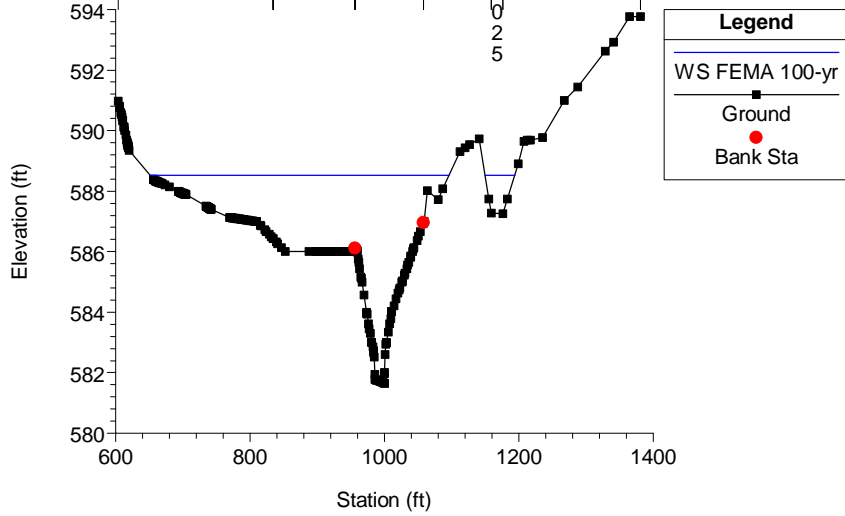
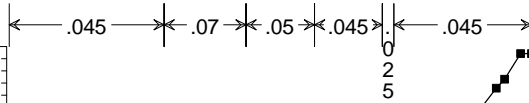
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104687



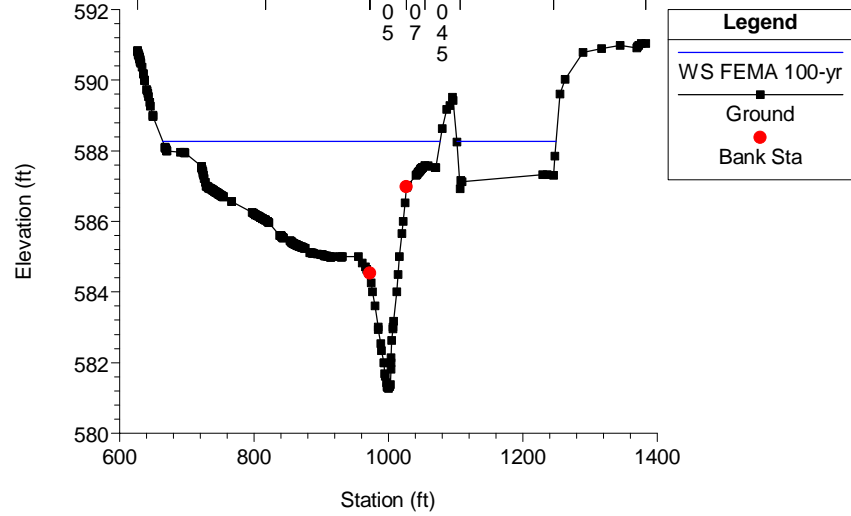
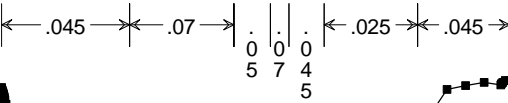
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104554

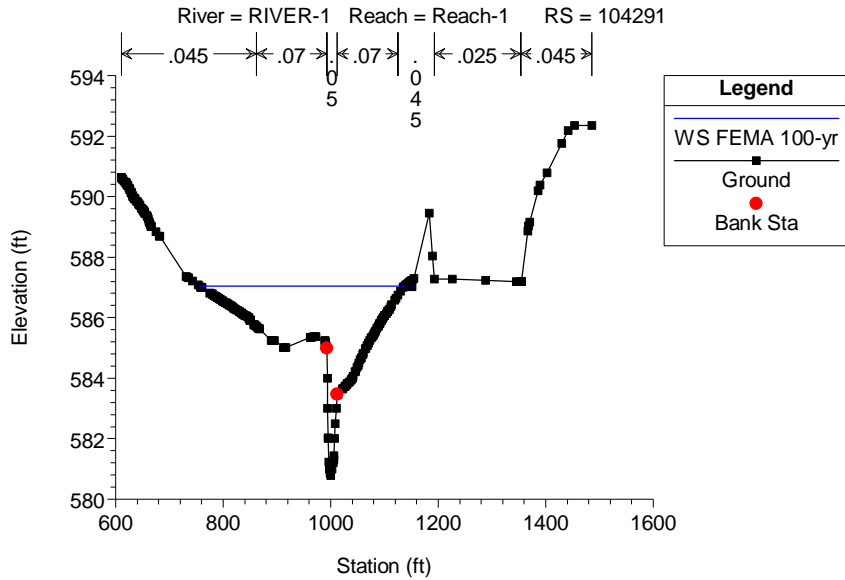


Stinson Highlands LOMR Plan: Post-Project 6/1/2018

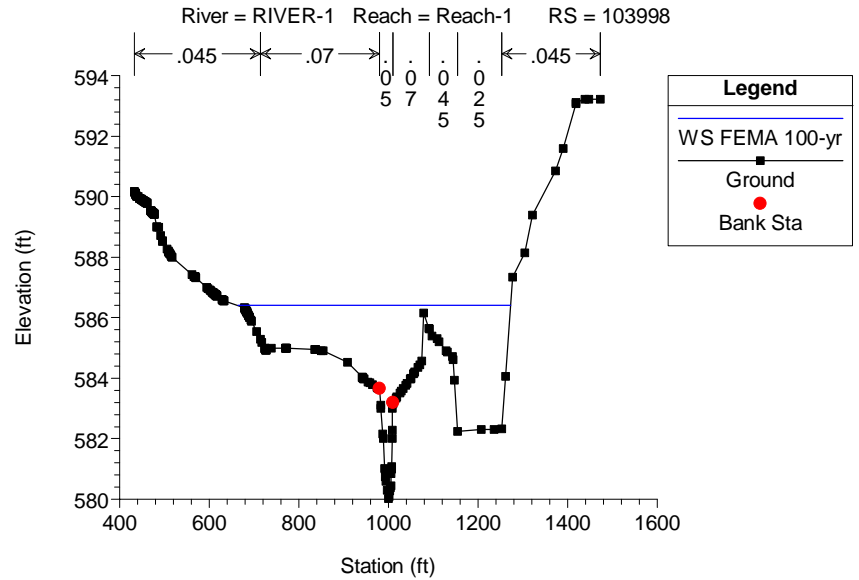
River = RIVER-1 Reach = Reach-1 RS = 104443



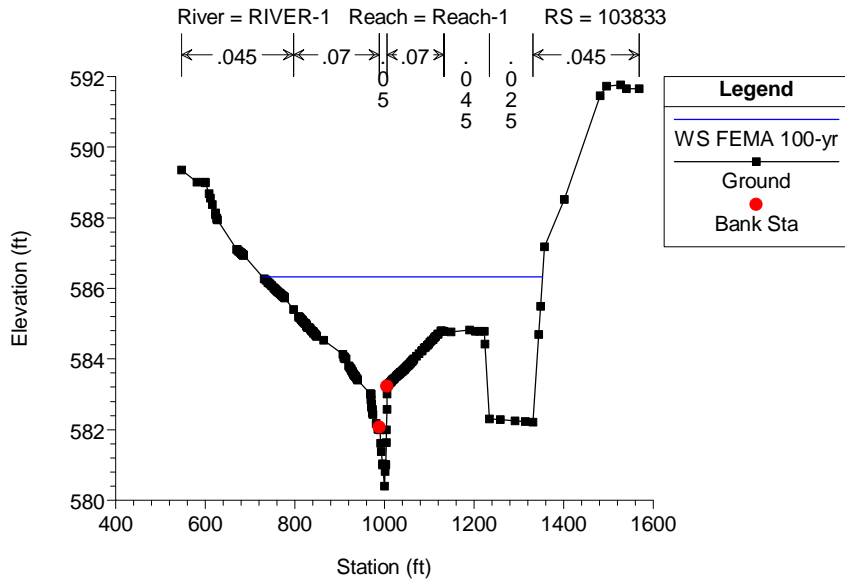
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



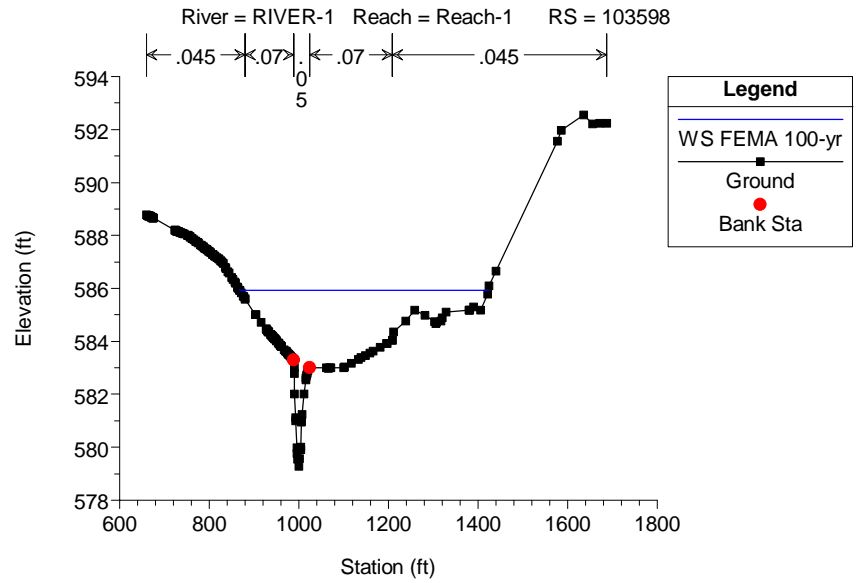
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



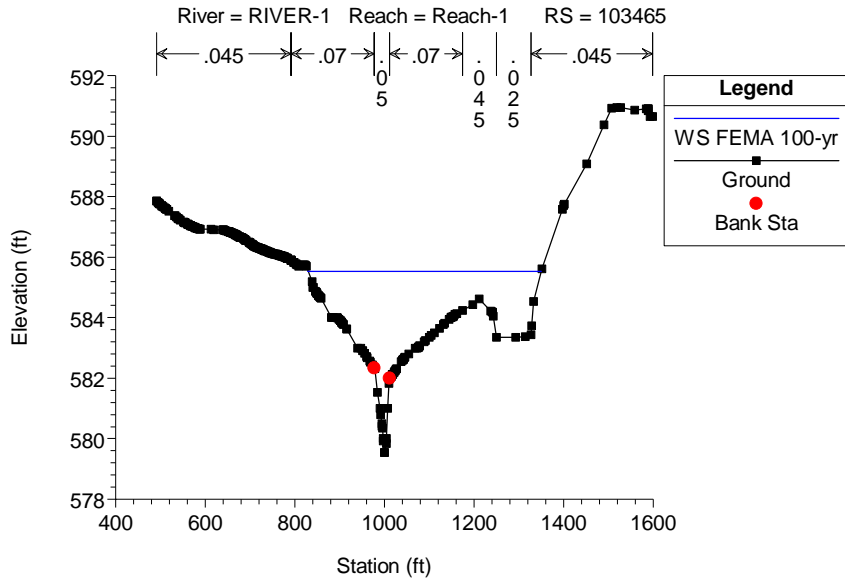
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



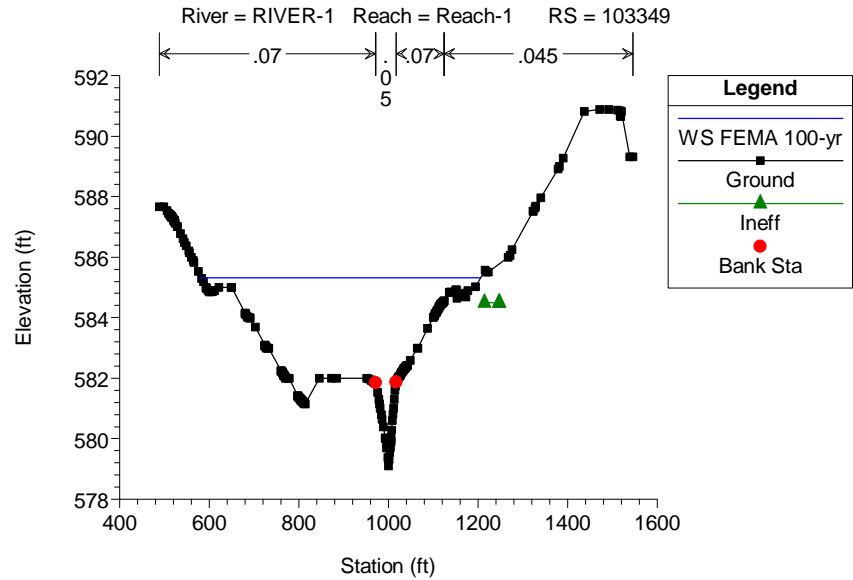
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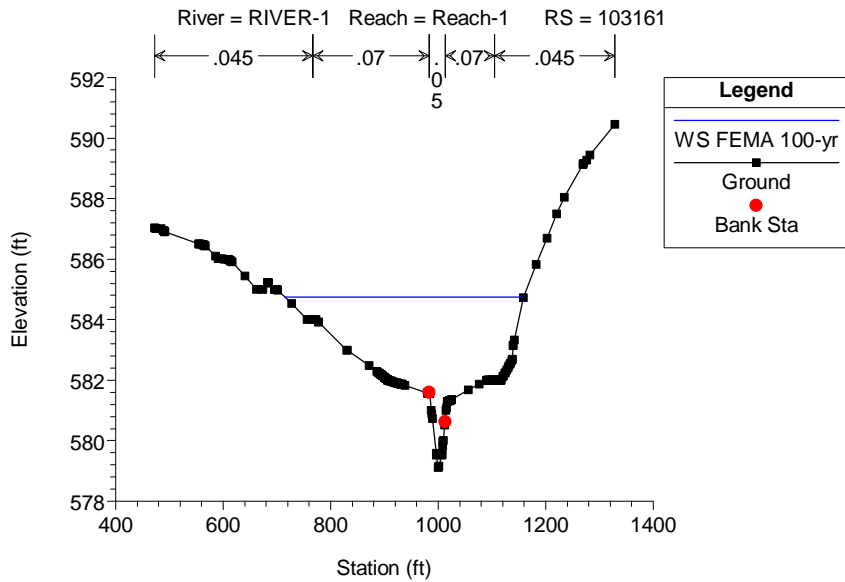
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



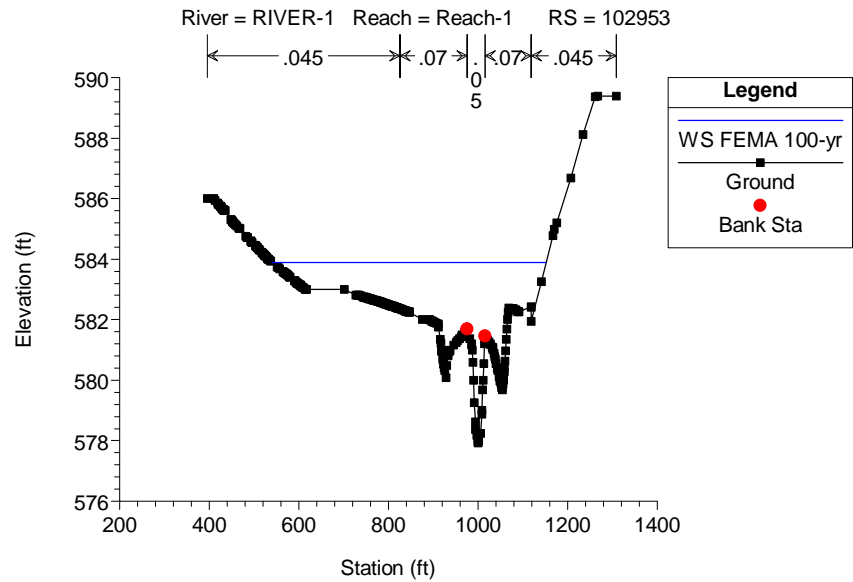
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



Stinson Highlands LOMR Plan: Post-Project 6/1/2018

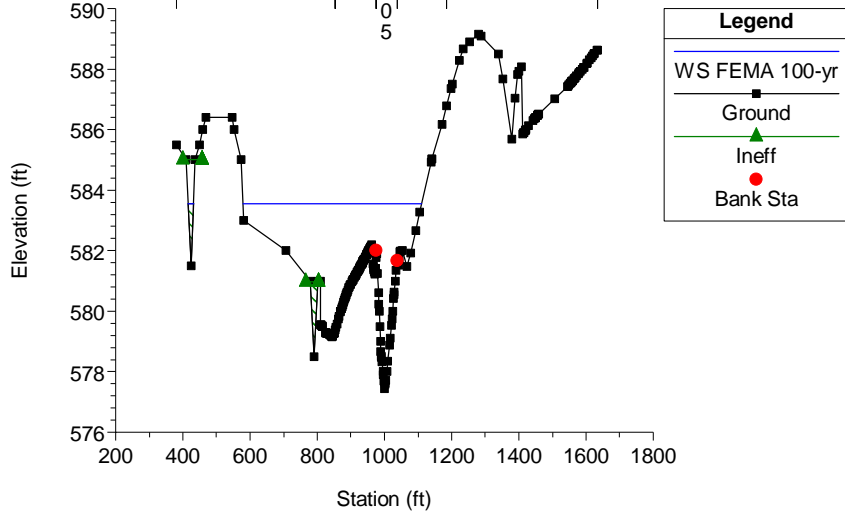
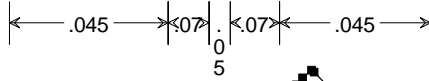


Stinson Highlands LOMR Plan: Post-Project 6/1/2018



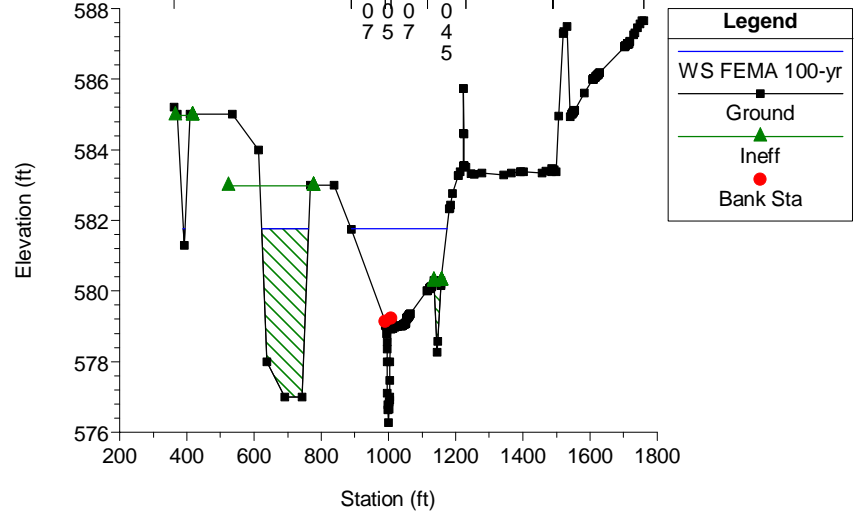
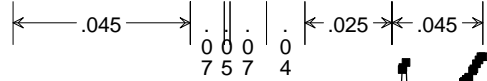
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River = RIVER-1 Reach = Reach-1 RS = 102849



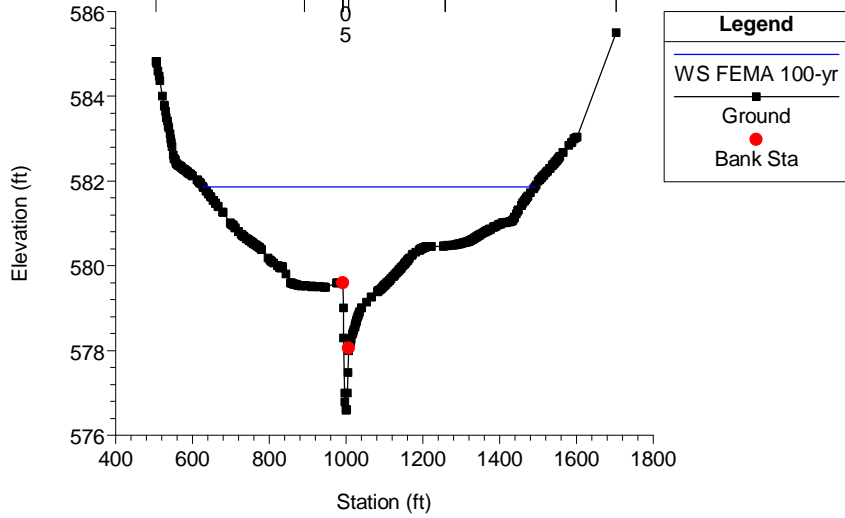
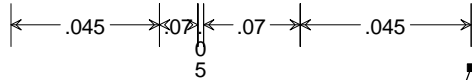
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 102515



Stinson Highlands LOMR Plan: Post-Project 6/1/2018

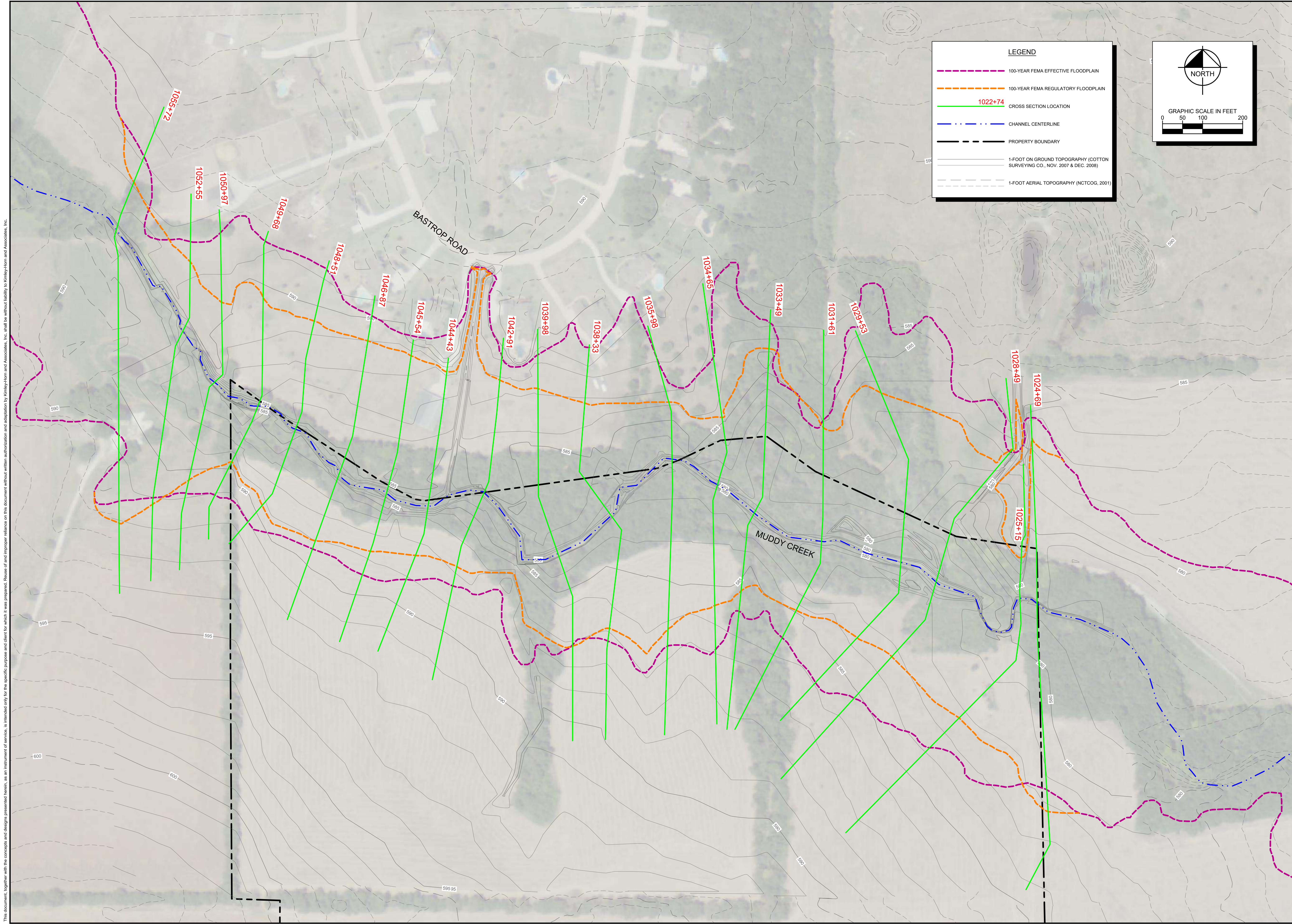
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**LEGEND**

- - - 100-YEAR FEMA EFFECTIVE FLOODPLAIN
- - - 100-YEAR FEMA REGULATORY FLOODPLAIN
- | 1022+74 CROSS SECTION LOCATION
- - - CHANNEL CENTERLINE
- - - PROPERTY BOUNDARY
- 1-FOOT ON GROUND TOPOGRAPHY (COTTON SURVEYING CO., NOV. 2007 & DEC. 2008)
- ... 1-FOOT AERIAL TOPOGRAPHY (NCTCOG, 2001)

**NORTH**

GRAPHIC SCALE IN FEET

0 50 100 200

No.	REVISIONS	DATE	BY

**Kimley»Horn**

13445 NOEL ROAD, TWO GALLERIA OFFICE TOWER, SUITE 700  
 DALLAS, TX 75240 PHONE: 972-770-1300 FAX: 972-239-3820  
 TEXAS REGISTERED ENGINEERING FIRM F-928  
 WWW.KIMLEY-HORN.COM

FOR REVIEW ONLY  
 Not for construction or permit purposes.

**Kimley»Horn**

Engineer: MATT P. BROSMAN  
 P.E. No. 130228 Date: 06/08/2018

KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
064347001	JUNE 2018	AS SHOWN	MPB	MPB	KEP

**STINSON HIGHLANDS  
 LOMR  
 PRE-PROJECT CONDITION  
 HYDRAULIC WORKMAP**

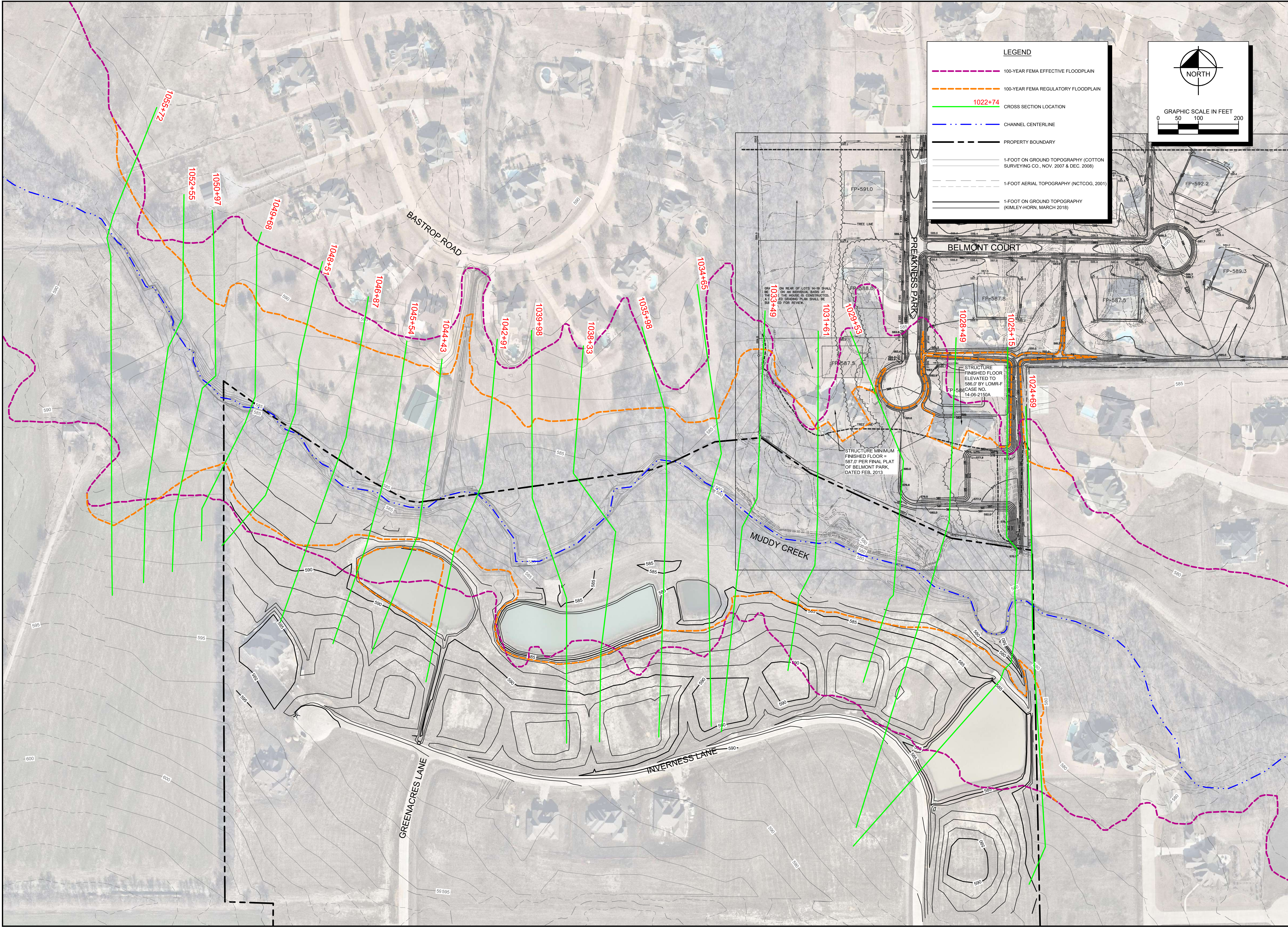
LUCAS TEXAS

SHEET NUMBER  
**1**



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**LEGEND**

- 100-YEAR FEMA EFFECTIVE FLOODPLAIN
- 100-YEAR FEMA REGULATORY FLOODPLAIN
- 1022+74 CROSS SECTION LOCATION
- CHANNEL CENTERLINE
- PROPERTY BOUNDARY
- 1-FOOT ON GROUND TOPOGRAPHY (COTTON SURVEYING CO., NOV. 2007 & DEC. 2008)
- 1-FOOT AERIAL TOPOGRAPHY (NCTCOG, 2001)
- 1-FOOT ON GROUND TOPOGRAPHY (KIMLEY-HORN, MARCH 2018)

**NORTH**

GRAPHIC SCALE IN FEET

0 50 100 200

NO.	REVISIONS	DATE	BY

**Kimley & Horn**

13445 NOEL ROAD, TWO GALLERIA OFFICE TOWER, SUITE 700  
 DALLAS, TX 75240 PHONE: 972-770-1300 FAX: 972-239-3820  
 TEXAS REGISTERED ENGINEERING FIRM F-928  
 WWW.KIMLEY-HORN.COM

FOR REVIEW ONLY  
 Not for construction or permit purposes.

**Kimley & Horn**

Engineer: MATT P. BROSMAN  
 P.E. No. 130228 Date: 06/08/2018

KHA PROJECT	064347001
DATE	JUNE 2018
SCALE	AS SHOWN
DESIGNED BY	MPB
DRAWN BY	MPB
CHECKED BY	KEP

**POST-PROJECT  
 CONDITION HYDRAULIC  
 WORKMAP**

**STINSON HIGHLANDS  
 LOMR**

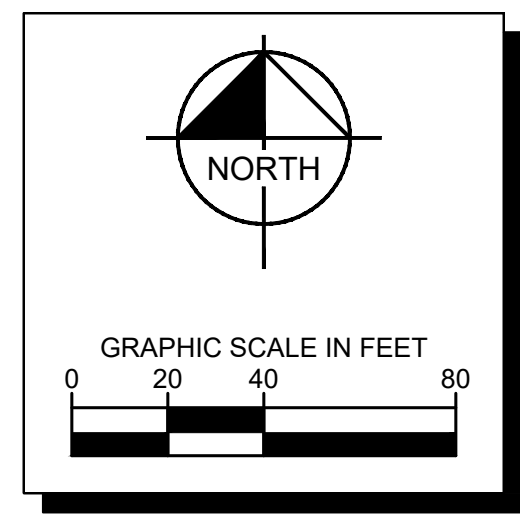
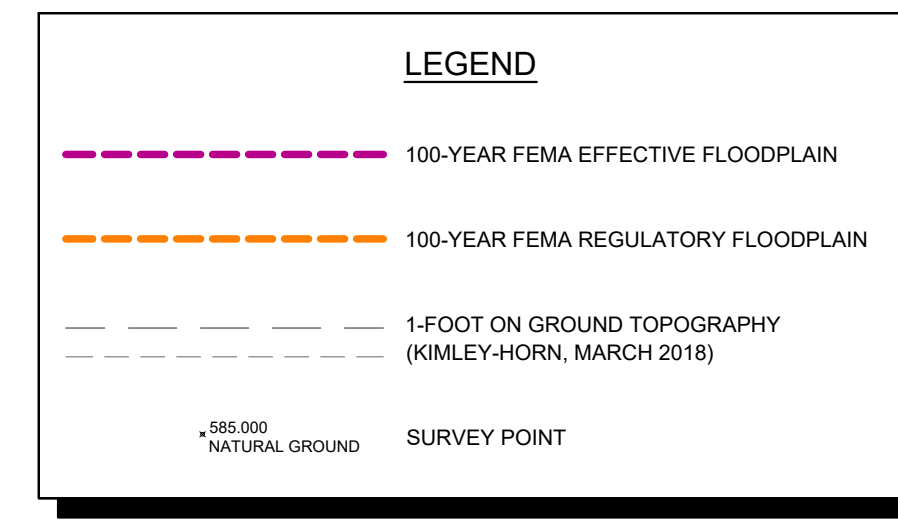
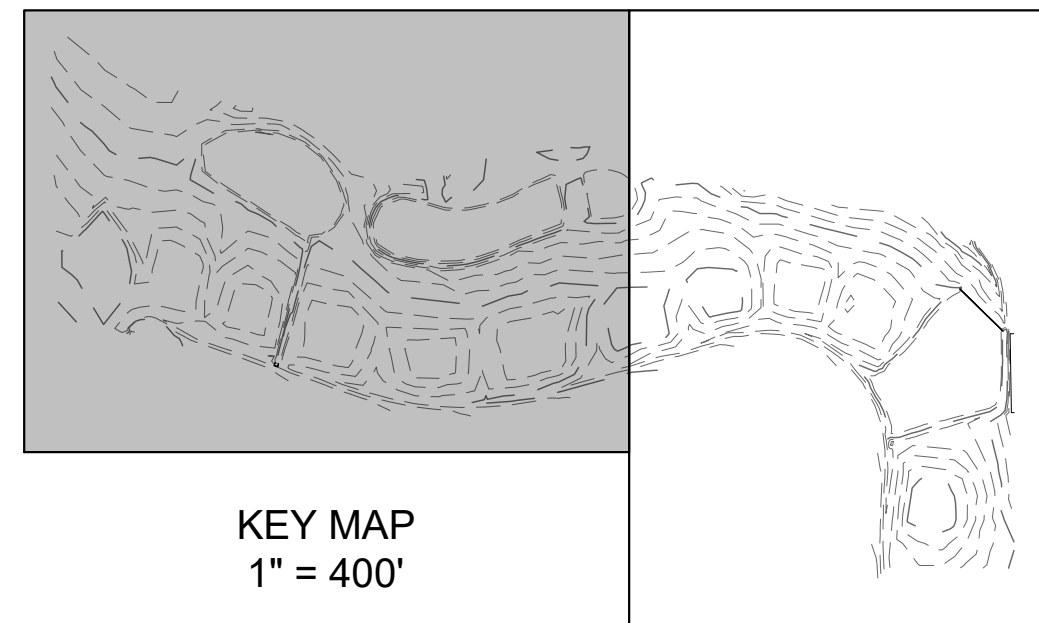
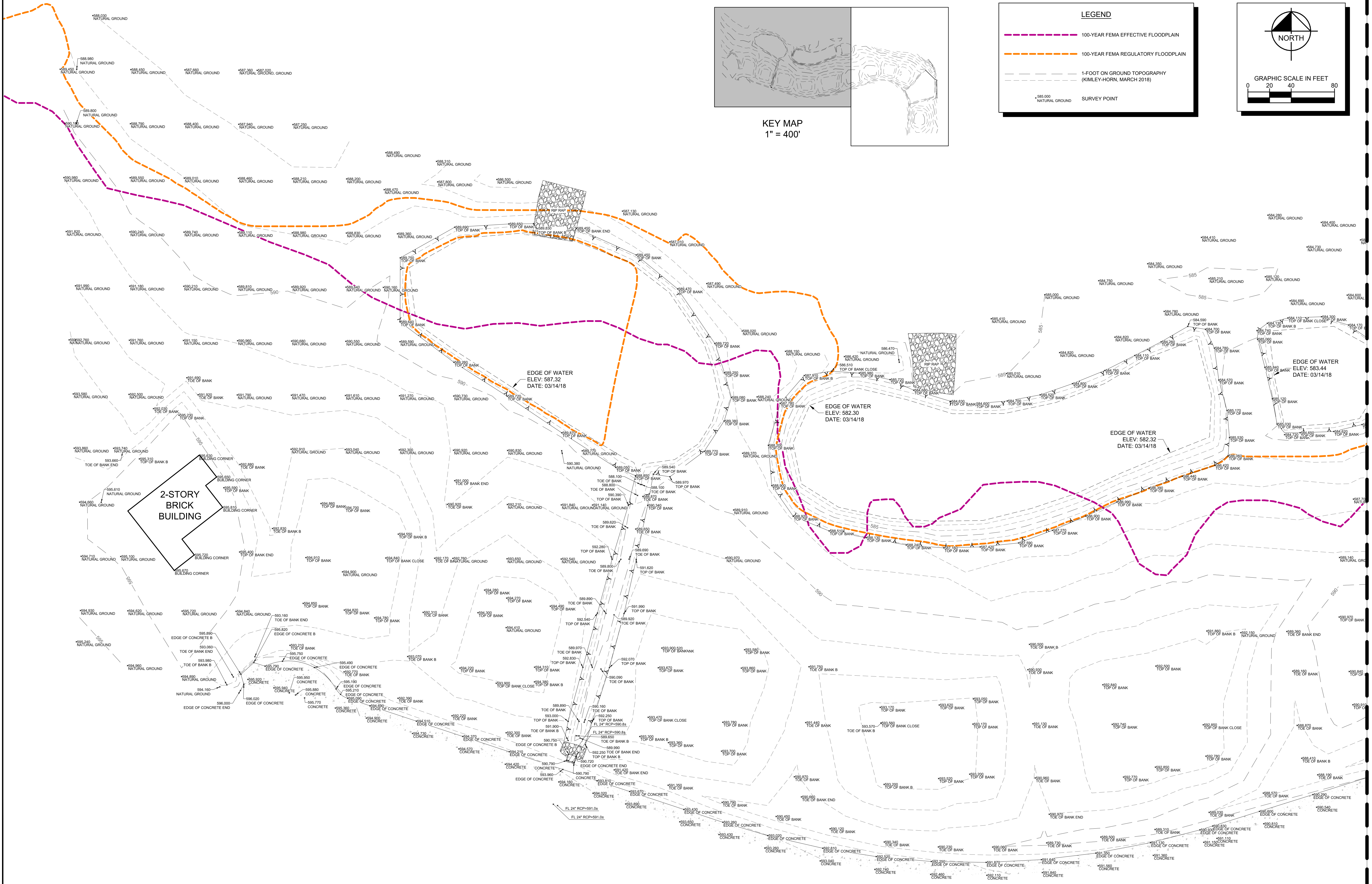
TEXAS  
 LUCAS

SHEET NUMBER  
**2**



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MATCH SHEET 4

NO.	REVISIONS	DATE	BY

**Kimley-Horn**

13445 NOEL ROAD, TWO GALLERIA OFFICE TOWER, SUITE 700  
 DALLAS, TX 75240 PHONE: 972-770-1300 FAX: 972-239-3820  
 TEXAS REGISTERED ENGINEERING FIRM F-928  
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**Kimley-Horn**

Engineer: MATT P. BROSMAN  
 P.E. No. 130228 Date: 06/08/2018

PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
KHA PROJECT 064347001	JUNE 2018	AS SHOWN	MPB	MPB	KEP

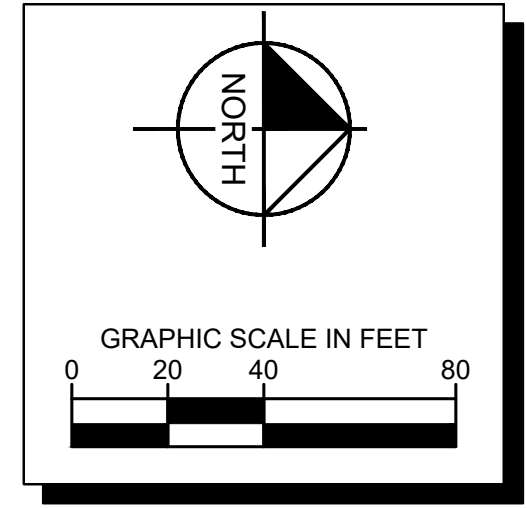
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 LOMR  
 EXHIBIT  
 (1 OF 2)

SHEET NUMBER  
 3

LUCAS TEXAS

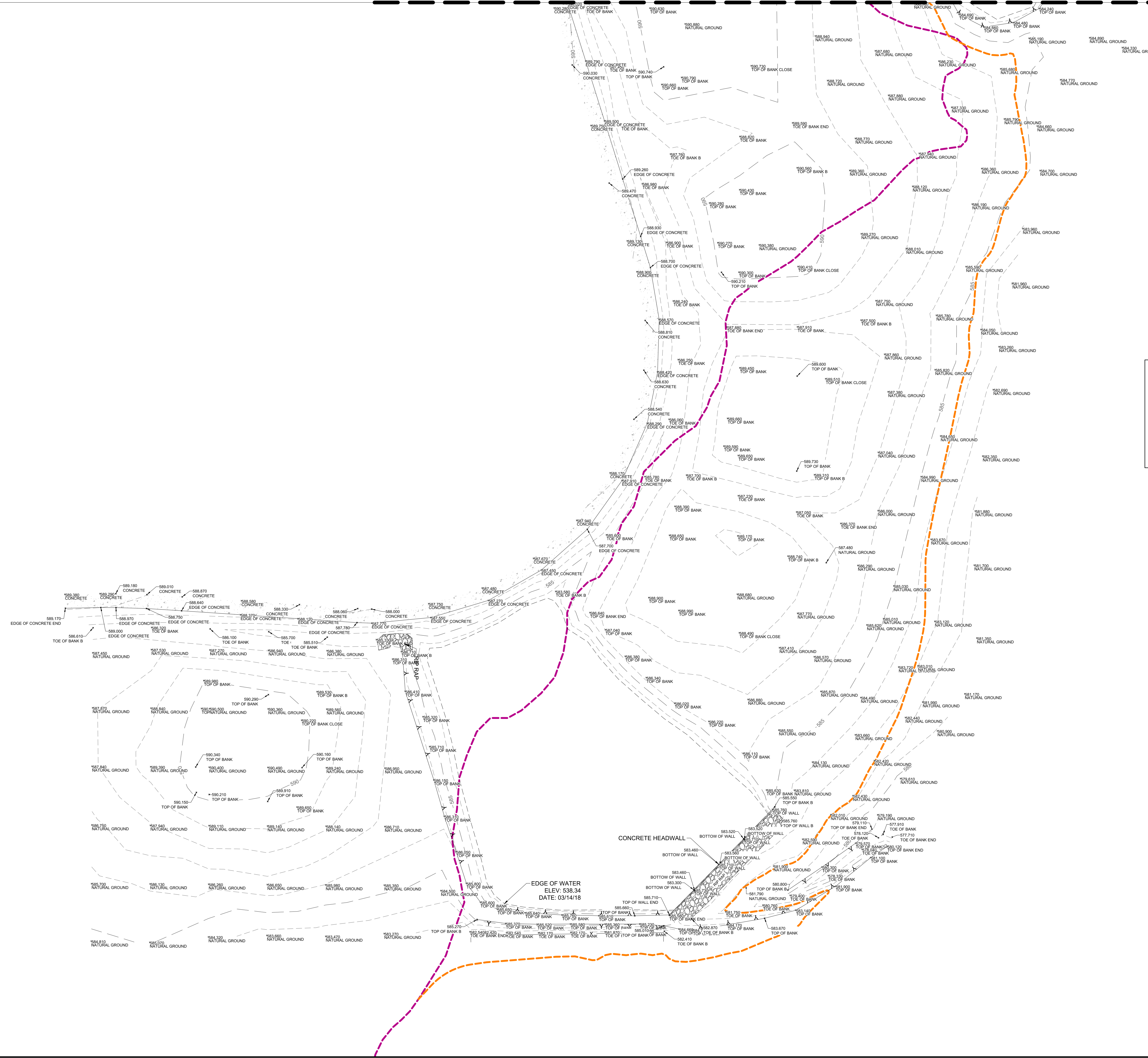
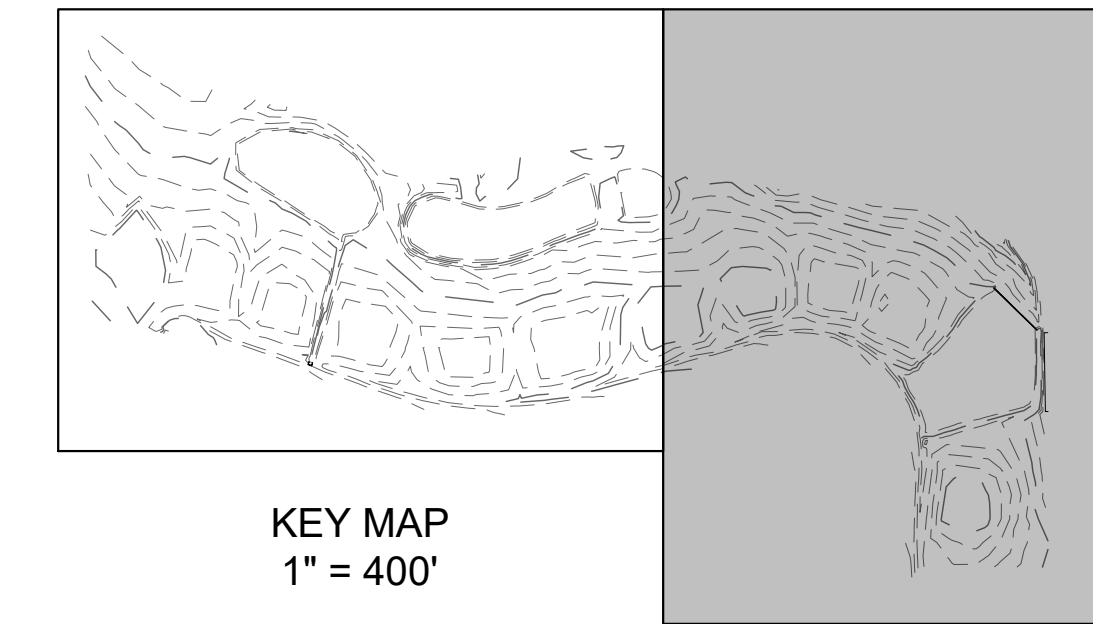


MATCH SHEET 3



**LEGEND**

- 100-YEAR FEMA EFFECTIVE FLOODPLAIN
- 100-YEAR FEMA REGULATORY FLOODPLAIN
- - - 1-FOOT ON GROUND TOPOGRAPHY (KIMLEY-HORN, MARCH 2018)
- SURVEY POINT



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 This document, together with the concepts and designs presented herein, is an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

NO.	REVISIONS	DATE	BY

**Kimley >>> Horn**

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FOR REVIEW ONLY  
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**Kimley >>> Horn**

Engineer: MATT P. BROSMAN  
 P.E. No. 130228 Date: 06/08/2018

KHA PROJECT	064347001
DATE	JUNE 2018
SCALE	AS SHOWN
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CHECKED BY	KEP

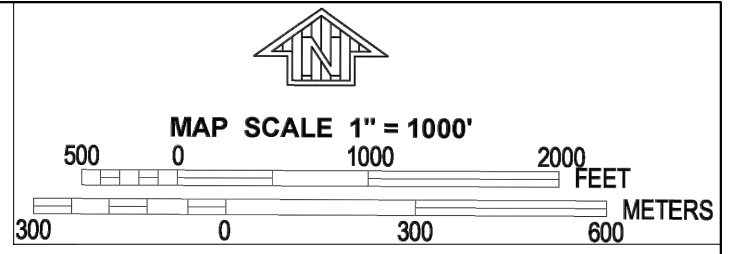
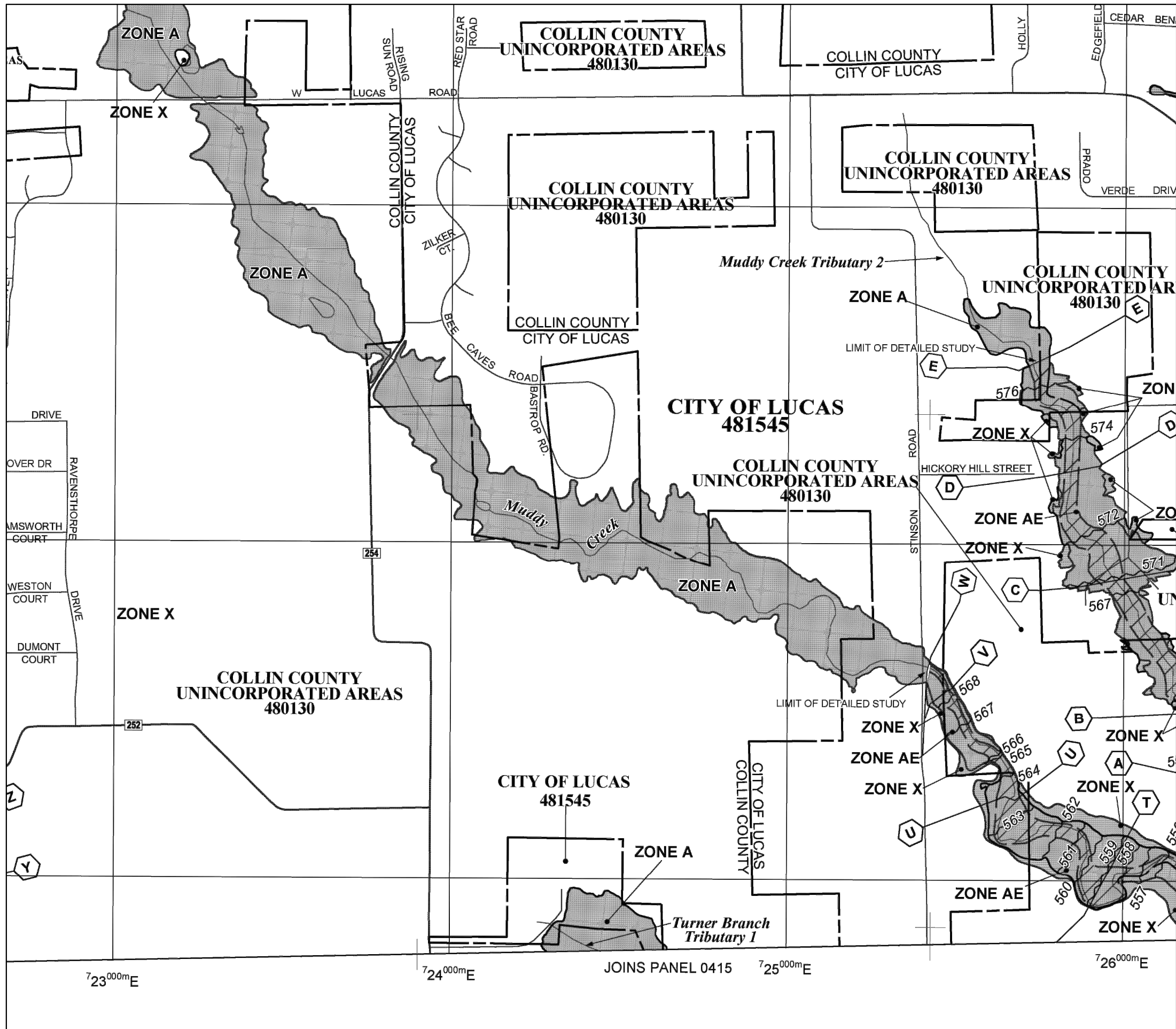
**LOMR EXHIBIT  
(2 OF 2)**

**STINSON HIGHLANDS  
LOMR**

TEXAS  
LUCAS

SHEET NUMBER  
**4**





NFIP  
 NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0405J

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**COLLIN COUNTY,**  
**TEXAS**  
**AND INCORPORATED AREAS**

**PANEL 405 OF 600**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLLIN COUNTY	480130	0405	J
ALLEN, CITY OF	480131	0405	J
FAIRVIEW, TOWN OF	481069	0405	J
LUCAS, CITY OF	481545	0405	J
PARKER, CITY OF	480139	0405	J

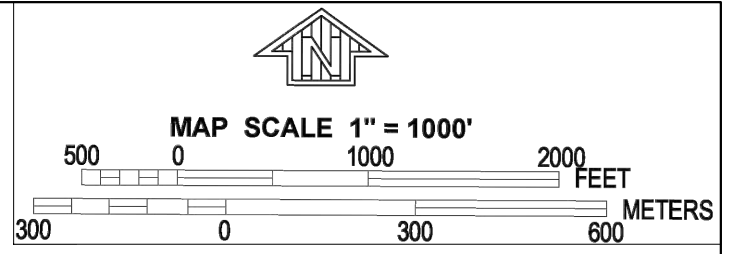
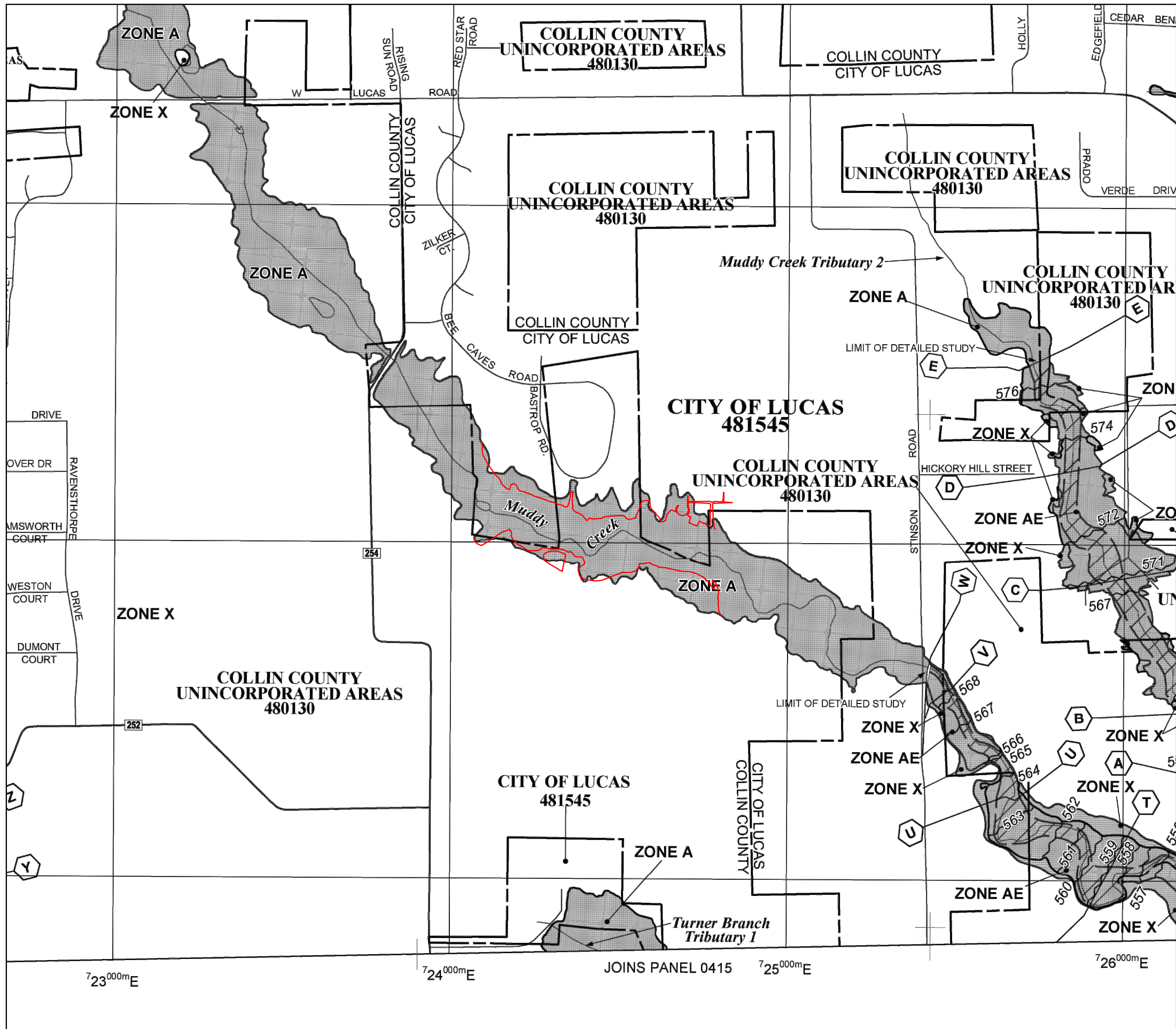
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
**48085C0405J**  
**MAP REVISED**  
**JUNE 2, 2009**

Federal Emergency Management Agency





NFIP  
 NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0405J

**ANNOTATED FIRM**  
**FLOOD INSURANCE RATE MAP**  
**COLLIN COUNTY,**  
**TEXAS**  
**AND INCORPORATED AREAS**

**PANEL 405 OF 600**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

<u>COMMUNITY</u>	<u>NUMBER</u>	<u>PANEL</u>	<u>SUFFIX</u>
COLLIN COUNTY	480130	0405	J
ALLEN, CITY OF	480131	0405	J
FAIRVIEW, TOWN OF	481069	0405	J
LUCAS, CITY OF	481545	0405	J
PARKER, CITY OF	480139	0405	J

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
**48085C0405J**  
**MAP REVISED**  
**JUNE 2, 2009**

Federal Emergency Management Agency

U.S. DEPARTMENT OF HOMELAND SECURITY  
 FEDERAL EMERGENCY MANAGEMENT AGENCY  
**OVERVIEW & CONCURRENCE FORM**

*O.M.B No. 1660-0016  
 Expires February 28, 2014*

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

**PRIVACY ACT STATEMENT**

**AUTHORITY:** The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

**PRINCIPAL PURPOSE(S):** This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

**ROUTINE USE(S):** The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

**DISCLOSURE:** The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

**A. REQUESTED RESPONSE FROM DHS-FEMA**

This request is for a (check one):

- CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).
- LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

**B. OVERVIEW**

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301	City of Katy	TX	48473C	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
481545	City of Lucas	TX	48085C	0405J	06/02/09
480139	City of Parker	TX	48085C	0405J	06/02/09

2. a. Flooding Source: Muddy Creek (Upper Reach)

- b. Types of Flooding:  Riverine     Coastal     Shallow Flooding (e.g., Zones AO and AH)  
 Alluvial fan     Lakes     Other (Attach Description)

3. Project Name/Identifier: Stinson Highlands Development - Muddy Creek (Upper Reach)

4. FEMA zone designations affected: A, X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

- Physical Change     Improved Methodology/Data     Regulatory Floodway Revision     Base Map Changes  
 Coastal Analysis     Hydraulic Analysis     Hydrologic Analysis     Corrections  
 Weir-Dam Changes     Levee Certification     Alluvial Fan Analysis     Natural Changes  
 New Topographic Data     Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures:  Channelization  Levee/Floodwall  Bridge/Culvert  
 Dam  Fill  Other (Attach Description)

6.  Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

**C. REVIEW FEE**

Has the review fee for the appropriate request category been included?  Yes Fee amount: \$8,000  
 No, Attach Explanation

Please see the DHS-FEMA Web site at [http://www.fema.gov/plan/prevent/fhm/frm\\_fees.shtm](http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm) for Fee Amounts and Exemptions.

**D. SIGNATURE**

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Matt P. Brosman, P.E., CFM		Company: Kimley-Horn and Associates, Inc.	
Mailing Address: 13455 Noel Road, Suite 700 Dallas, Texas 75240		Daytime Telephone No.: 972-776-1770	Fax No.: 972-239-3820
		E-Mail Address: matt.brosman@kimley-horn.com	
Signature of Requester (required):		Date:	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title:		Community Name: City of Lucas	
Mailing Address: 165 Country Club Road Lucas, Texas 75002		Daytime Telephone No.: 972-727-1242	Fax No.: 972-727-8317
		E-Mail Address:	
Community Official's Signature (required):		Date:	

**CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR**

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Matt P. Brosman, P.E., CFM		License No.: 130228	Expiration Date: 03/31/2019
Company Name: Kimley-Horn and Associates, Inc.		Telephone No.: 972-776-1770	Fax No.: 972-239-3820
Signature:		Date:	E-Mail Address: matt.brosman@kimley-horn.com

b. The area of revision encompasses the following structures (check all that apply)

Structures:  Channelization  Levee/Floodwall  Bridge/Culvert  
 Dam  Fill  Other (Attach Description)

6.  Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

### C. REVIEW FEE

Has the review fee for the appropriate request category been included?  Yes Fee amount: \$8,000  
 No, Attach Explanation

Please see the DHS-FEMA Web site at [http://www.fema.gov/plan/prevent/fhm/frm\\_fees.shtm](http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm) for Fee Amounts and Exemptions.

### D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Matt P. Brosman, P.E., CFM	Company: Kimley-Horn and Associates, Inc.	
Mailing Address: 13455 Noel Road, Suite 700 Dallas, Texas 75240	Daytime Telephone No.: 972-776-1770	Fax No.: 972-239-3820
	E-Mail Address: matt.brosman@kimley-horn.com	
Signature of Requester (required):	Date:	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title:	Community Name: City of Parker	
Mailing Address: 7500 E. Parker Road Parker, Texas 75002	Daytime Telephone No.: 972-442-6811	Fax No.: 972-442-2894
	E-Mail Address:	
Community Official's Signature (required):	Date:	

### **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR**

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Matt P. Brosman, P.E., CFM	License No.: 130228	Expiration Date: 03/31/2019
Company Name: Kimley-Horn and Associates, Inc.	Telephone No.: 972-776-1770	Fax No.: 972-239-3820
Signature:	Date:	E-Mail Address: matt.brosman@kimley-horn.com

Ensure the forms that are appropriate to your revision request are included in your submittal.

**Form Name and (Number)**

**Required if ...**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations   |
| <input checked="" type="checkbox"/> Riverine Structures Form (Form 3)               | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input type="checkbox"/> Coastal Analysis Form (Form 4)                             | New or revised coastal elevations   |
| <input type="checkbox"/> Coastal Structures Form (Form 5)                           | Addition/revision of coastal structure  |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6)                        | Flood control measures on alluvial fans   |

Seal (Optional)



U.S. DEPARTMENT OF HOMELAND SECURITY  
 FEDERAL EMERGENCY MANAGEMENT AGENCY  
**RIVERINE HYDROLOGY & HYDRAULICS FORM**

*O.M.B No. 1660-0016  
 Expires February 28, 2014*

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

**PRIVACY ACT STATEMENT**

**AUTHORITY:** The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

**PRINCIPAL PURPOSE(S):** This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

**ROUTINE USE(S):** The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

**DISCLOSURE:** The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Muddy Creek (Upper Reach)

**Note:** Fill out one form for each flooding source studied

**A. HYDROLOGY**

1. Reason for New Hydrologic Analysis (check all that apply)

- Not revised (skip to section B)                     
  No existing analysis                                     
  Improved data  
 Alternative methodology                                     
  Proposed Conditions (CLOMR)                                     
  Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	Effective/FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

- Statistical Analysis of Gage Records                     
  Precipitation/Runoff Model → Specify Model: \_\_\_\_\_  
 Regional Regression Equations                                     
  Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport?     Yes     No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

**B. HYDRAULICS**

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit*	<u>1657 LF U/S of Stinson Rd</u>	<u>1024+69</u>	<u>                    </u>	<u>581.87</u>
Upstream Limit*	<u>4956 LF U/S of Stinson Rd</u>	<u>1055+72</u>	<u>                    </u>	<u>592.14</u>

\*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC-RAS v.4.1.0

3. Pre-Submittal Review of Hydraulic Models\*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

<u>Models Submitted</u>	<u>Natural Run</u>		<u>Floodway Run</u>		<u>Datum</u>
Duplicate Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
Existing or Pre-Project Conditions Model	File Name: Stinson.prj	Plan Name: Pre-Project	File Name:	Plan Name:	NAVD 88
Revised or Post-Project Conditions Model	File Name: Stinson.prj	Plan Name: Post-Project	File Name:	Plan Name:	NAVD 88
Other - (attach description)	File Name:	Plan Name:	File Name:	Plan Name:	

\* For details, refer to the corresponding section of the instructions.

Digital Models Submitted? (Required)

**C. MAPPING REQUIREMENTS**

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information: On-Ground Field Survey, Aerial Contours

Source: NCTCOG, Cotton Surveying Co., Kimley-Horn Date: 2001, 2007, 2018

Accuracy: 1-foot contours

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach a **copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

Annotated FIRM and/or FBFM (Required)

#### D. COMMON REGULATORY REQUIREMENTS\*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase?  Yes  No
- a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
  - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.
- b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA?  Yes  No  
If Yes, please attach **proof of property owner notification and acceptance (if available)**. Elements of and examples of property owner notifications can be found in the MT-2 Form 2 Instructions.
2. Does the request involve the placement or proposed placement of fill?  Yes  No
- If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.
3. For LOMR requests, is the regulatory floodway being revised?  Yes  No
- If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)
4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

\* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

DEPARTMENT OF HOMELAND SECURITY  
FEDERAL EMERGENCY MANAGEMENT AGENCY  
**RIVERINE STRUCTURES FORM**

**O.M.B. NO. 1660-0016**  
**Expires February 28, 2014**

**PAPERWORK BURDEN DISCLOSURE NOTICE**

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

**PRIVACY ACT STATEMENT**

**AUTHORITY:** The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

**PRINCIPAL PURPOSE(S):** This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

**ROUTINE USE(S):** The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program; Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

**DISCLOSURE:** The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Muddy Creek (Upper Reach)

Note: Fill out one form for each flooding source studied.

**A. GENERAL**

Complete the appropriate section(s) for each Structure listed below:

- Channelization.....complete Section B
- Bridge/Culvert.....complete Section C
- Dam.....complete Section D
- Levee/Floodwall.....complete Section E
- Sediment Transport.....complete Section F (if required)

Description Of Modeled Structure

1. Name of Structure: Muddy Creek (Upper Reach)

Type (check one):     Channelization                       Bridge/Culvert                       Levee/Floodwall                       Dam

Location of Structure: 1657 LF upstream of Stinson Rd. to 4956 LF upstream of Stinson Rd.

Downstream Limit/Cross Section: 1024+74

Upstream Limit/Cross Section: 1055+72

2. Name of Structure: \_\_\_\_\_

Type (check one):     Channelization                       Bridge/Culvert                       Levee/Floodwall                       Dam

Location of Structure: \_\_\_\_\_

Downstream Limit/Cross Section: \_\_\_\_\_

Upstream Limit/Cross Section: \_\_\_\_\_

3. Name of Structure: \_\_\_\_\_

Type (check one)     Channelization                       Bridge/Culvert                       Levee/Floodwall                       Dam

Location of Structure: \_\_\_\_\_

Downstream Limit/Cross Section: \_\_\_\_\_

Upstream Limit/Cross Section: \_\_\_\_\_

**NOTE: FOR MORE STRUCTURES, ATTACH ADDITIONAL PAGES AS NEEDED.**

B. CHANNELIZATION

Flooding Source: Muddy Creek (Upper Reach)

Name of Structure: Muddy Creek (Upper Reach)

1. Hydraulic Considerations

The channel was designed to carry 2925 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

- Subcritical flow       Critical flow       Supercritical flow       Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

- Inlet to channel     Outlet of channel     At Drop Structures     At Transitions

Other locations (specify): \_\_\_\_\_

2. Channel Design Plans

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Accessory Structures

The channelization includes (check one):

- Levees [Attach Section E (Levee/Floodwall)]     Drop structures     Superelevated sections  
 Transitions in cross sectional geometry     Debris basin/detention basin [Attach Section D (Dam/Basin)]     Energy dissipator  
 Weir                                     Other (Describe): Valley storage ponds in right overbank

4. Sediment Transport Considerations

Are the hydraulics of the channel affected by sediment transport?     Yes     No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source: \_\_\_\_\_

Name of Structure: \_\_\_\_\_

1. This revision reflects (check one):

- Bridge/culvert not modeled in the FIS  
 Modified bridge/culvert previously modeled in the FIS  
 Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): \_\_\_\_\_

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- |   |  |
|---|--|
| <input type="checkbox"/> Dimensions (height, width, span, radius, length) | <input type="checkbox"/> Distances Between Cross Sections                      |
| <input type="checkbox"/> Shape (culverts only)                            | <input type="checkbox"/> Erosion Protection                                    |
| <input type="checkbox"/> Material   | <input type="checkbox"/> Low Chord Elevations – Upstream and Downstream        |
| <input type="checkbox"/> Beveling or Rounding                             | <input type="checkbox"/> Top of Road Elevations – Upstream and Downstream      |
| <input type="checkbox"/> Wing Wall Angle                                  | <input type="checkbox"/> Structure Invert Elevations – Upstream and Downstream |
| <input type="checkbox"/> Skew Angle                                       | <input type="checkbox"/> Stream Invert Elevations – Upstream and Downstream    |
|   | <input type="checkbox"/> Cross-Section Locations                               |

4. Sediment Transport Considerations

Are the hydraulics of the structure affected by sediment transport?     Yes     No

If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.



**ORDINANCE 2017-06-00854**  
**[ANNEXATION – STINSON HIGHLANDS III]**

**AN ORDINANCE OF THE CITY OF LUCAS, TEXAS, ANNEXING THE HEREINAFTER DESCRIBED TERRITORY INTO THE CITY OF LUCAS, TEXAS, EXTENDING THE BOUNDARY LIMITS OF THE CITY SO AS TO INCLUDE SAID HEREINAFTER DESCRIBED TERRITORY WITHIN THE CITY’S LIMITS, GRANTING TO ALL INHABITANTS AND OWNERS OF TERRITORY ALL OF THE RIGHTS AND PRIVILEGES OF OTHER CITIZENS, AND BINDING THE INHABITANTS BY ALL THE ACTS, ORDINANCES AND REGULATIONS OF THE CITY; ADOPTING A SERVICE PLAN FOR THE DESCRIBED TERRITORY; PROVIDING A REPEALING CLAUSE; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE.**

**WHEREAS**, this ordinance pertains to the hereinafter described territory consisting of a 78.944-acre tract of land, more or less, and being a part of the John Gray Survey, Abstract Number 349, being a part of the George Gunnell Survey, Abstract No. 352, being a part of the Ann S. Hurt Survey, Abstract No. 428, being a part of the James Lovelady Survey , Abstract No. 538, being a part of the Lewis P. Turner Survey, Abstract No. 901, and being all of a called 78.944 acre tract of land described in a Special Warranty Deed to Mentone Partners, LLC, as recorded in Document Number 20151028001365820, of the Deed Records of Collin County, Texas, (D.R.C.C.T.), and which is more particularly described in Exhibit “A, attached hereto and made a part hereof for all purposes; and

**WHEREAS**, the City Council of the City of Lucas has been presented with a petition requesting annexation; and

**WHEREAS**, the City Council of the City of Lucas has given the requisite notices and conducted the public hearings required by Chapter 43 of the Texas Local Government Code; and

**WHEREAS**, the City Council has adopted a service plan as required by Section 43.056 of the Texas Local Government Code for the territory, which is attached hereto as Exhibit “B”; and

**WHEREAS**, the territory to be annexed lies within the exclusive extra territorial jurisdiction of Lucas, Texas; and

**WHEREAS**, the requirements for annexation of this area are as stated in Chapter 43 of the Texas Local Government Code; and

**WHEREAS**, the City Council of the City of Lucas has concluded that said territory should be annexed to and made a part of the City of Lucas, Texas;

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LUCAS, TEXAS:**

**SECTION 1.** That the territory consisting of a 78.944-acre tract of land, more or less, and more particularly described in Exhibit "A", is situated within the exclusive extraterritorial jurisdiction of the City and adjacent and contiguous thereto, be and the same is hereby annexed to the City of Lucas, Texas.

**SECTION 2.** The boundary limits of the City of Lucas, Texas, shall be and are hereby extended to include said territory within the City limits and the territory described herein shall be and is hereby included within the territorial limits of the City, subject to all the acts, ordinances, resolutions and regulations of said City. The inhabitants of the property described herein and annexed hereby shall hereafter be entitled to all rights and privileges of other citizens of the City of Lucas, and shall be bound by the acts, ordinances, resolutions, and regulations of the City.

**SECTION 3.** That the service plan for the territory is approved by the City Council of the City of Lucas, which is attached hereto as Exhibit "B" and made a part hereof for all purposes, the same as if fully copied herein, be and the same is hereby adopted by the City of Lucas.

**SECTION 4.** That all provisions of the ordinances of the City of Lucas, Texas, in conflict with the provisions of this ordinance be, and the same are hereby, repealed, and all other provisions of the ordinances of the City not in conflict with the provisions of this ordinance shall remain in full force and effect.

**SECTION 5.** That should any sentence, paragraph, subdivision, clause, phrase or section of this ordinance be adjudged or held to be unconstitutional, illegal or invalid, the same shall not affect the validity of this ordinance as a whole, or any part or provision thereof other than the part so decided to be invalid, illegal or unconstitutional, and shall not affect the validity of the Code of Ordinances as a whole.

**SECTION 6.** This ordinance shall take effect immediately from and after its passage and the publication of the caption, as the law in such cases provides.

**DULY PASSED AND APPROVED BY THE CITY COUNSEL OF THE CITY OF LUCAS, COLLIN COUNTY, TEXAS, ON THIS 1<sup>ST</sup> DAY OF JUNE, 2017.**

APPROVED:



Jim Oik, Mayor

APPROVED AS TO FORM:



Joseph J. Gorfida, Jr., City Attorney  
(04-10-2017/85457)

ATTEST:



Stacy Henderson, City Secretary





**EXHIBIT A  
METES AND BOUNDS**

OWNER'S CERTIFICATION

STATE OF TEXAS

COUNTY OF COLLIN

WHEREAS, MENTONE PARTNERS, L.L.C. is the owner of that parcel of land located in the City of Lucas, Collin County, Texas, being a part of the John Gray Survey, Abstract Number 349, being a part of the George Gunnell Survey, Abstract No. 352, being a part of the Ann S. Hunt Survey, Abstract No. 428, being a part of the James Lovelady Survey, Abstract No. 538, being a part of the Lewis P. Turner Survey, Abstract No. 901, and being all of a called 78.944 acre tract of land described in a Special Warranty Deed to Mentone Partners, L.L.C. as recorded in Document Number 20151028001365820, of the Deed Records of Collin County, Texas, (D.R.C.C.T.), and being further described as follows:

BEGINNING at a one-half inch iron rod found at the southeast corner of said 78.944 acre tract of land, said point being the northeast corner of Stinson Highlands, Phase 2, an addition to the City of Lucas as recorded in Volume 2013, Page 308, Plat Records of Collin County, Texas (P.R.C.C.T.), and said point also being in the west line of Bristol Park, Phase 2, an addition to the City of Lucas as recorded in Volume 2014, Page 701, (P.R.C.C.T).

THENCE along the north line of said Stinson Highlands, Phase 2 as follows:

South 80 degrees 09 minutes 07 seconds West, 375.35 feet to a one-half inch iron rod found for corner;

Southeasterly, 38.17 feet along a curve to the left which has a central angle of 03 degrees 56 minutes 27 seconds, a radius of 555.00 feet, a tangent of 19.09 feet, and whose chord bears South 12 degrees 13 minutes 00 seconds East, 38.17 feet to a one-half inch iron rod found for corner;

South 75 degrees 55 minutes 58 seconds West, 275.42 feet to a one-half inch iron rod found for corner;

North 07 degrees 44 minutes 21 seconds West, 231.44 feet to a one-half inch iron rod found for corner;

North 87 degrees 08 minutes 23 seconds West, 541.00 feet to a one-half inch iron rod found for corner;

North 84 degrees 57 minutes 32 seconds West, 476.34 feet to a one-half inch iron rod found for corner;

Southwesterly, 58.93 feet along a curve to the left which has a central angle of 69 degrees 00 minutes 15 seconds, a radius of 375.00 feet, a tangent of 29.54 feet, and whose chord bears South 04 degrees 46 minutes 54 seconds West, 58.87 feet to a one-half inch iron rod found for corner;

South 00 degrees 16 minutes 47 seconds West, 47.70 feet to a one-half inch iron rod found for corner;

North 86 degrees 05 minutes 41 seconds West, 245.45 feet to a one-half inch iron rod found at the southwest corner of said 78.944 acre tract of land, said point being the northwest

**EXHIBIT A  
METES AND BOUNDS**

corner of said Stinson Highlands, Phase 2, said point also being in the east line of that called Tract 2 as described in deed to The Umphry Corporation as recorded in Document No. 26071231001715950, (D.R.C.C.T.).

THENCE along the west line of said 78,944 acre tract of land as follows:

North 00 degrees 17 minutes 01 seconds East, 674.26 feet to a 60d nail found at the northeast corner of said Tract 2.

North 88 degrees 01 minutes 54 seconds West, 112.82 feet along the north line of said Tract 2 to a five-eighths inch iron rod found at the southeast corner of that called 48,622.3 acre tract of land described in deed to Lewis Bend Partners, Ltd. as recorded in Document No. 26061120001651500, (D.R.C.C.T.).

North 00 degrees 20 minutes 28 seconds West, 631.69 feet to a five-eighths inch iron rod found for corner.

North 00 degrees 26 minutes 51 seconds West, 505.00 feet to a five-eighths inch iron rod found for corner.

North 00 degrees 22 minutes 30 seconds West, 159.07 feet to a 60d nail found at the northwest corner of said 78,944 acre tract of land, said point being in the south line of the Estates at Austin Trail, an addition to the City of Lucas as recorded in Cabinet N, Page 709, (P.R.C.C.T.).

THENCE along the north line of said 78,944 acre tract of land along the south line of said Estates at Austin Trail as follows:

South 54 degrees 00 minutes 40 seconds East, 142.11 feet to a one-half inch iron rod found for corner.

South 56 degrees 50 minutes 31 seconds East, 311.77 feet to a one-half inch iron rod found for corner.

South 62 degrees 02 minutes 10 seconds East, 94.76 feet to a one-half inch iron rod found for corner.

South 81 degrees 15 minutes 00 seconds East, 24.08 feet to a one-half inch iron rod found for corner.

North 82 degrees 08 minutes 37 seconds East, 555.00 feet to a one-half inch iron rod found for corner.

North 69 degrees 40 minutes 01 seconds East, 58.79 feet to a one-half inch iron rod found for corner.

North 64 degrees 37 minutes 43 seconds East, 115.25 feet to a one-half inch iron rod found for corner.

North 84 degrees 56 minutes 00 seconds East, 115.25 feet to a one-half inch iron rod found at the southeast corner of said Estates at Austin Trail, said point being in the west line of Belmont Park, an addition to the City of Lucas as recorded in Volume 2013, Page 55, (P.R.C.C.T.).

South 03 degrees 40 minutes 21 seconds East, 6.06 feet to a five-eighths inch iron rod found at the southwest corner of said Belmont Park.

THENCE along the north line of said 78,944 acre tract of land along the south line of said Belmont Park as follows:

South 55 degrees 14 minutes 42 seconds East, 147.31 feet to a one-half inch iron rod found for corner.

**EXHIBIT A  
METES AND BOUNDS**

South 69 degrees 55 minutes 04 seconds East, 399.42 feet to a five-eighths inch iron rod found for corner;

South 81 degrees 02 minutes 21 seconds East, 194.66 feet to a five-eighths inch iron rod found at the northeast corner of said 78,944 acre tract of land, said point being in the west line of Bristol Park, Phase 1, an addition to the City of Lucas as recorded in Volume 2014, Page 699, (P.R.C. 01)

THENCE South 01 degrees 06 minutes 48 seconds East along the east line of said 78,944 acre tract of land, at 270.52 feet passing a five-eighths inch iron rod found at the southwest corner of said Bristol Park, Phase 1 and at the northwest corner of said Bristol Park, Phase 2, in all a total distance of 889.74 feet to a five-eighths inch iron rod found for corner in the west line of said Bristol Park, Phase 2;

THENCE along the east line of said 78,944 acre tract of land and along the west line of said Bristol Park, Phase 2 as follows:

North 87 degrees 47 minutes 13 seconds East, 4.45 feet to a five-eighths inch iron rod found for corner;

South 01 degrees 12 minutes 25 seconds East, 709.26 feet to the POINT OF BEGINNING and containing 3,438,793 square feet or 78,944 acres of land.

**EXHIBIT "B"**

**CITY OF LUCAS, TEXAS  
SERVICE PLAN FOR ANNEXED AREA**

**ANNEXATION SERVICE PLAN FOR THE CITY OF LUCAS, TEXAS**

For the territory consisting of a 78.944-acre tract of land, more or less, and which is more particularly described and identified in Exhibit "A" attached hereto.

**FOR SERVICES EFFECTIVE IMMEDIATELY AFTER DATE OF ANNEXATION**

**1. POLICE PROTECTION**

The City of Lucas, Texas will provide police protection to the newly annexed tract at the same or similar level now being provided to other areas of the City of Lucas, Texas with similar topography, land use and population within the newly annexed area.

**2. FIRE PROTECTION AND AMBULANCE SERVICE**

The City of Lucas, Texas will provide fire protection to the newly annexed tract at the same or similar level of service now being provided to other areas of the City of Lucas, Texas, with similar topography, land use and population with the City. Ambulance service will be provided to the newly annexed tract at the same or similar level of service now being provided to other areas of the City of Lucas, Texas, with similar topography, land use and population with the City.

**3. SOLID WASTE COLLECTION**

The City of Lucas, Texas will provide residential solid waste collection to the newly annexed tract at the same or similar level now being provided to other areas of the City of Lucas, Texas with similar topography, land use and population within the newly annexed area.

**4. WATER FACILITIES**

Maintenance of any public water facilities in the area to be annexed that are not in the service area of another water utility will begin upon the effective date of the annexation using existing personnel and equipment.

**5. MAINTENANCE OF ROADS AND STREETS**

Any and all roads, streets or alleyways which have been dedicated to the City of Lucas, Texas, shall be maintained to the same degree and extent that other roads, streets and alleyways are maintained in areas with similar topography, land use and population density. Any and all lighting of roads, streets and alleyways which may be positioned in a right-of-way, roadway or utility

company easement shall be maintained by the applicable utility company servicing the City of Lucas, Texas, pursuant to the rules, regulations and fees of such utility.

**6. MAINTENANCE OF PARKS, PLAYGROUNDS AND SWIMMING POOLS**

The City Council of the City of Lucas, Texas, is not aware of the existence of any parks, playgrounds or swimming pools now located in the area proposed for annexation. Any existing private parks, playgrounds, swimming pools and other recreational and community facilities within the annexation area will be unaffected by the annexation.

**7. MAINTENANCE OF PUBLICLY OWNED FACILITY, BUILDING OR MUNICIPAL SERVICE**

The City Council of the City of Lucas, Texas, is not aware of the existence of any publicly owned facility, building or other municipal service now located in the area proposed for annexation. In the event any such publicly owned facility, building or municipal service does exist and are public facilities, the City of Lucas, Texas, will maintain such areas to the same extent and degree that it maintains publicly owned facilities, buildings or municipal services of the City now incorporated in the City of Lucas, Texas.

**CONSTRUCTION OF ANY CAPITAL IMPROVEMENTS**

**1. POLICE PROTECTION, FIRE PROTECTION AND SOLID WASTE COLLECTION**

The Council of the City of Lucas, Texas finds and determines it to be unnecessary to acquire or construct any capital improvement for the purposes of providing police protection, fire protection or solid waste collection. The City Council finds and determines that it has at the present time adequate facilities to provide the same type, kind and level of protection and service which is presently being administered to other areas already incorporated in the City of Lucas, Texas, with the same or similar topography, land use and population density.

**2. WATER AND WASTE WATER FACILITIES**

The City Council of the City of Lucas, Texas, finds and determines it to be unnecessary to construct any additional capital improvements for the purpose of providing water and waste water services. The City Council finds and determines that it has, at the present time, adequate facilities to provide the same type, kind and level of service which is presently being administered to other parts of Lucas, Texas, with the same topography, land use and population density.

**3. ROADS AND STREETS**

Maintenance of properly dedicated roads and streets will be consistent with the maintenance provided by the City to other roads and streets will be consistent with the maintenance provided by the City to other roads and streets in areas of similar topography, land use and sub-development

of the annexed property, the developers will be required pursuant to the ordinances of the City of Lucas, Texas, to provide internal and peripheral streets and to construct those streets in accordance with the specifications required by the City of Lucas, Texas, for the properly dedicated street.

#### 4. CAPITAL IMPROVEMENTS

Notwithstanding any other provision of this service plan, a landowner within the newly annexed area will not be required to fund capital improvements necessary to provide municipal services in a manner inconsistent with Chapter 395 of the Local Government Code, unless otherwise agreed to by the landowner.

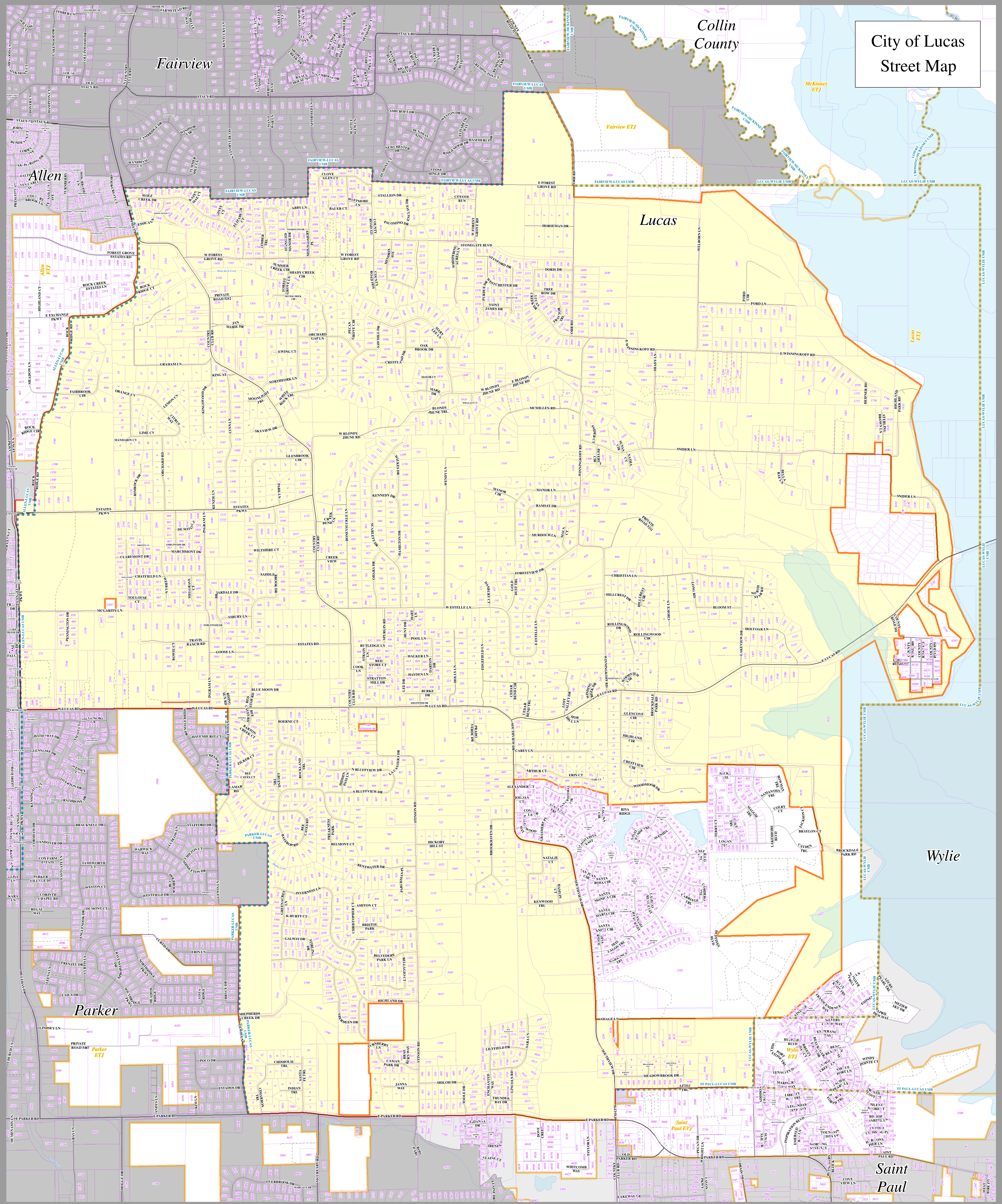
#### **SPECIFIC FINDINGS**

The City Council of the City of Lucas, Texas finds and determines that this proposed Service Plan will not provide any fewer services, and it will not provide a lower level of service in the area proposed to be annexed than were in existence in the proposed area at the time immediately preceding the annexation process.

Because of the differing characteristics of topography, land utilization and population density, the service levels which may ultimately be provided in the newly annexed area may differ somewhat from services provided in other areas of the City of Lucas, Texas. These differences are specifically dictated because of differing characteristics of the property and the City of Lucas, Texas will undertake to perform consistent with this contract so as to provide the newly annexed area with the same type, kind and quality of service presently enjoyed by the citizens of the City of Lucas, Texas who reside in areas of similar topography, land utilization and population.



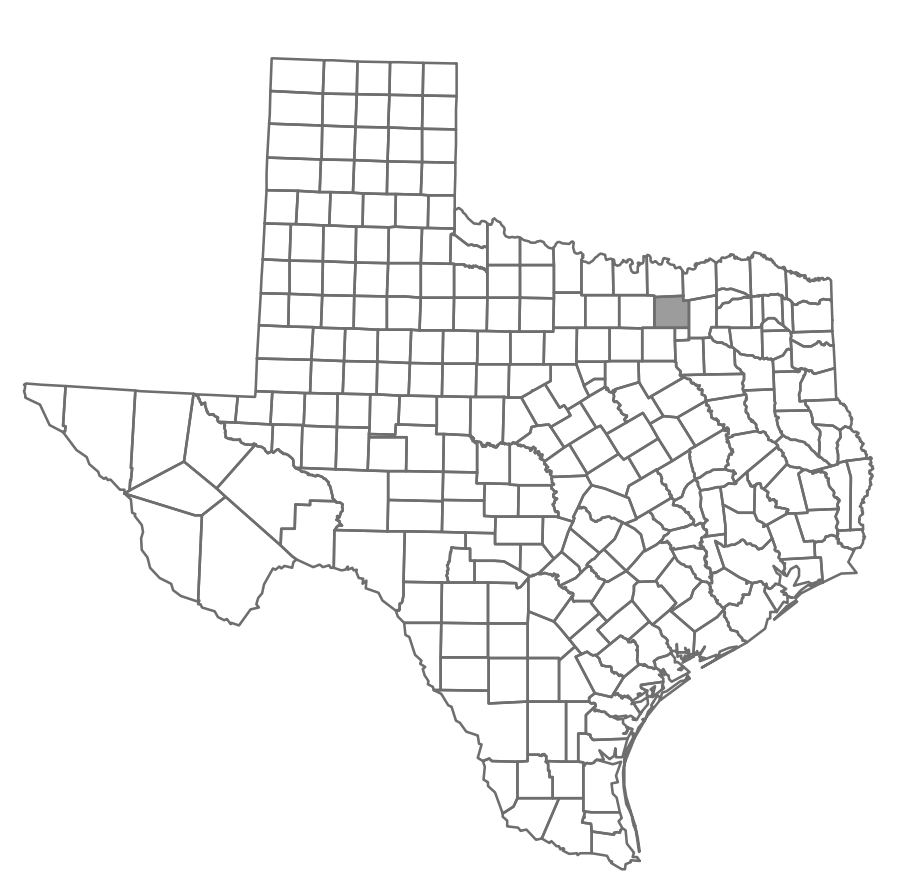
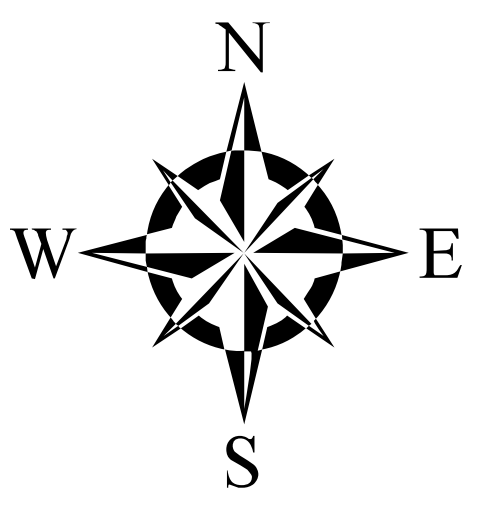
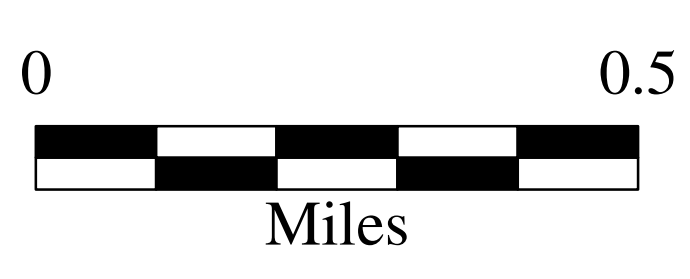
# City of Lucas Street Map



## LEGEND

- CITY OF LUCAS
- Unincorporated
- Agreed Ultimate Mutual Boundaries

- ### Roads
- Paved
  - Rock
  - Dirt
  - Urban
  - Private

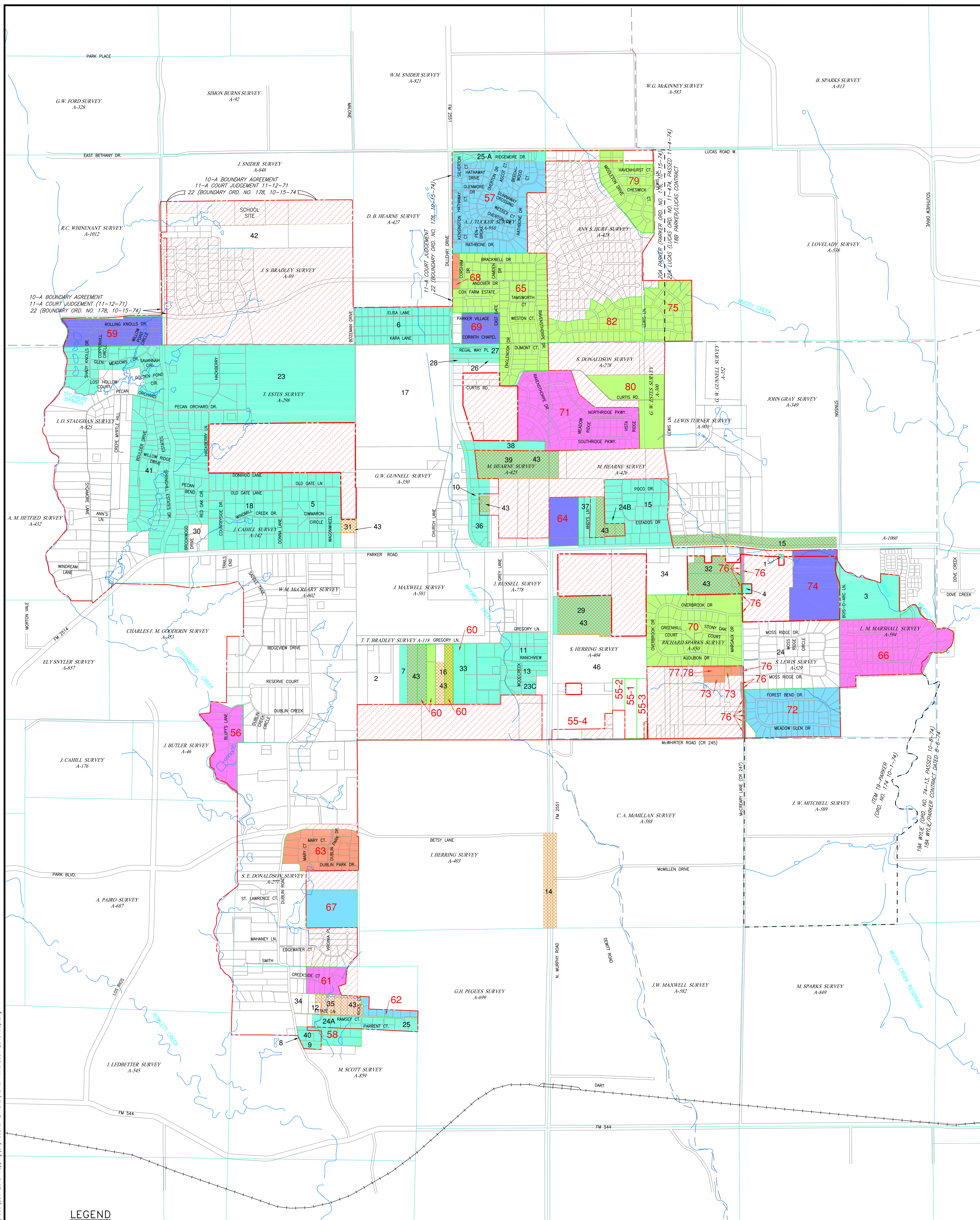


Source data compiled from Collin County GIS databases, aerial photography (2009), digital data from cities, and various maps throughout Collin County.

This map is a graphic representation of Collin County and should only be used for illustrative purposes. In no way should this map be used to settle any boundary dispute or locational conflict.

February 27, 2018





MAP NO.	ORDINANCE NUMBER	DATE	BRIEF DESCRIPTION	ORIG.	AC.	INCR.	DECR.	TOTAL
1	1021966		Original Area of Incorporation					186,879
2	118	11/4/1989	Palmer Annexation					184,969
3	118	11/4/1989	Palmer Annexation					184,969
4	111	10/19/83	Palmer Annexation					182,173
5	112	10/19/83	Palmer Annexation					182,173
6	113	10/19/83	Palmer Annexation					182,173
7	103	03/11/81	Palmer Annexation					181,181
8	104	03/11/81	Palmer Annexation					181,181
9	105	03/11/81	Palmer Annexation					181,181
10	107	03/11/81	Palmer Annexation					181,181
10A	1011181		Palmer Water Utility Agreement					
11	109	11/5/81	Palmer Annexation					181,181
11A	1112181		Court Judgement, Palmer/Water					
12	109	11/05/81	Palmer Annexation					181,181
13	103	02/11/82	Palmer Annexation					181,181
14	106	11/05/83	Palmer Annexation					181,181
15	101	01/05/83	Palmer Annexation					181,181
16	103	02/11/82	Palmer Annexation					181,181
17	101	02/03/83	Palmer Annexation					181,181
18	104	03/11/83	Palmer Annexation					181,181
18A	081184		Palmer/Water Boundary Contract					
18B	081184		Palmer/Water Boundary Contract					
18C	081184		Palmer/Water Boundary Contract					
18D	081184		Palmer/Water Boundary Contract					
18E	081184		Palmer/Water Boundary Contract					
18F	081184		Palmer/Water Boundary Contract					
18G	081184		Palmer/Water Boundary Contract					
18H	081184		Palmer/Water Boundary Contract					
18I	081184		Palmer/Water Boundary Contract					
18J	081184		Palmer/Water Boundary Contract					
18K	081184		Palmer/Water Boundary Contract					
18L	081184		Palmer/Water Boundary Contract					
18M	081184		Palmer/Water Boundary Contract					
18N	081184		Palmer/Water Boundary Contract					
18O	081184		Palmer/Water Boundary Contract					
18P	081184		Palmer/Water Boundary Contract					
18Q	081184		Palmer/Water Boundary Contract					
18R	081184		Palmer/Water Boundary Contract					
18S	081184		Palmer/Water Boundary Contract					
18T	081184		Palmer/Water Boundary Contract					
18U	081184		Palmer/Water Boundary Contract					
18V	081184		Palmer/Water Boundary Contract					
18W	081184		Palmer/Water Boundary Contract					
18X	081184		Palmer/Water Boundary Contract					
18Y	081184		Palmer/Water Boundary Contract					
18Z	081184		Palmer/Water Boundary Contract					
19	107	10/5/84	Palmer Annexation					181,181
20	108	10/5/84	Palmer Annexation					181,181
21	109	10/5/84	Palmer Annexation					181,181
22	110	11/4/84	Palmer Annexation					181,181
23	111	11/4/84	Palmer Annexation					181,181
24	112	11/4/84	Palmer Annexation					181,181
25	113	11/4/84	Palmer Annexation					181,181
26	114	11/4/84	Palmer Annexation					181,181
27	115	11/4/84	Palmer Annexation					181,181
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29	117	11/4/84	Palmer Annexation					181,181
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36	124	11/4/84	Palmer Annexation					181,181
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53	141	11/4/84	Palmer Annexation					181,181
54	142	11/4/84	Palmer Annexation					181,181
55	143	11/4/84	Palmer Annexation					181,181
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59	147	11/4/84	Palmer Annexation					181,181
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95	183	11/4/84	Palmer Annexation					181,181
96	184	11/4/84	Palmer Annexation					181,181
97	185	11/4/84	Palmer Annexation					181,181
98	186	11/4/84	Palmer Annexation					181,181
99	187	11/4/84	Palmer Annexation					181,181
100	188	11/4/84	Palmer Annexation					181,181

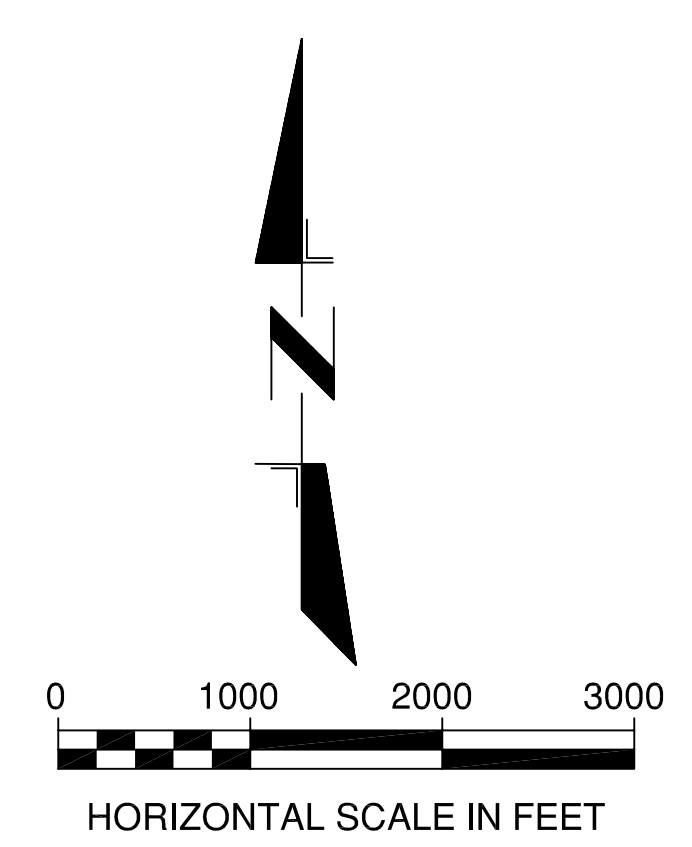
LEGEND

- ORIGINAL CITY LIMITS
- ABSTRACT LINES
- COURT JUDGEMENT AND AGREEMENT LINES
- CITY LIMITS
- ANNEXATIONS
- PREVIOUS ANNEXATIONS
- PARKER EXTRATERRITORIAL AREA
- DISANNEXATION AREA

PRIVATE DRIVES:  
SMITH, MAHANEY, TRAILS END, WINDREAM LANE, ANNS LANE, CREPE MYRTLE, REGAL WAY, ANDYS LANE

PASSED BY PARKER CITY COUNCIL  
MARCH 3, 2015, ORD. # 721

# ANNEXATION MAP / BOUNDARY MAP CITY OF PARKER, TEXAS ORDINANCES \*



This document was prepared under 22 TAC 663.21, and does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those right and interests simplified or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared.

































Hydrologic Soil Group—Collin County, Texas



## MAP LEGEND

 Area of Interest (AOI)	 Local Roads
 Soils	 Other Roads
 Soil Map Units	
 Soil Ratings	
 A	
 A/D	
 B	
 B/D	
 C	
 C/D	
 D	
 Not rated or not available	
<b>Political Features</b>	
<b>Municipalities</b>	
 Cities	
 Urban Areas	
<b>Water Features</b>	
 Oceans	
 Streams and Canals	
<b>Transportation</b>	
 RAILS	
<b>Roads</b>	
 Interstate Highways	
 US Routes	
 State Highways	

## MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 14N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Collin County, Texas  
 Survey Area Data: Version 5, Jan 2, 2007

Date(s) aerial images were photographed: 1995

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Collin County, Texas				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AuB	Austin silty clay, 1 to 3 percent slopes	C	85.3	4.7%
BcB	Burleson clay, 1 to 3 percent slopes	D	142.3	7.9%
HcC2	Heiden clay, 3 to 5 percent slopes eroded	D	19.3	1.1%
HoA	Houston Black clay, 0 to 1 percent slopes	D	333.2	18.4%
HoB	Houston Black clay, 1 to 3 percent slopes	D	1,067.0	58.9%
HoB2	Houston Black clay, 2 to 4 percent slopes, eroded	D	24.9	1.4%
HuB	Houston Black clay, 1 to 3 percent slopes	D	86.0	4.7%
ScB	Stephen silty clay, 1 to 3 percent slopes	C	32.5	1.8%
WcB	Wilson clay loam, 1 to 3 percent slopes	D	21.6	1.2%
Totals for Area of Interest (AOI)			1,812.1	100.0%



## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower

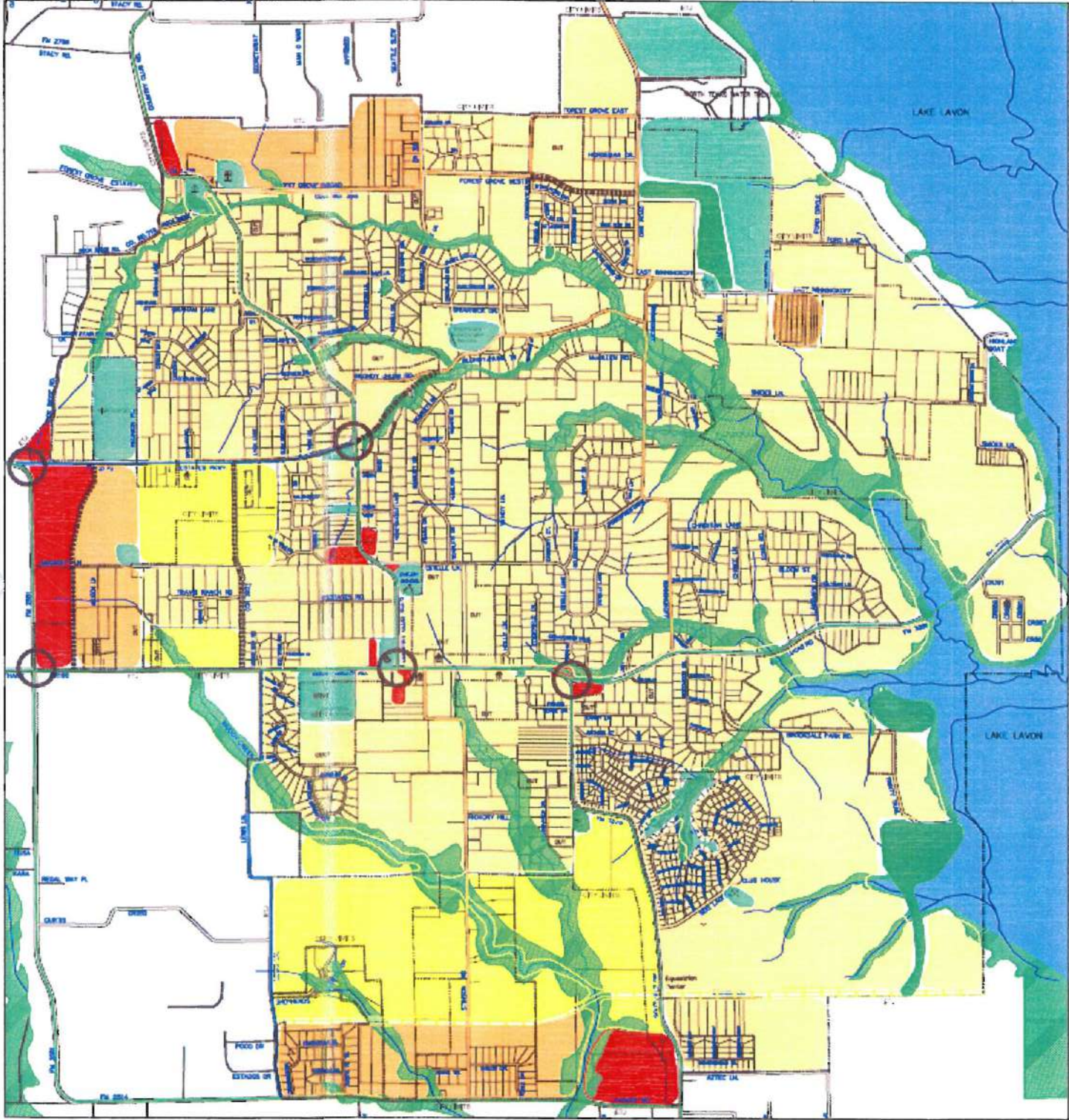


CITY OF LUCAS  
COLLIN COUNTY, TEXAS  
FIGURE 4.2  
FUTURE LAND USE  
OCTOBER 2004

- LEGEND**
- CITY PARK
  - WATER TOWER
  - CITY HALL; POLICE DEPARTMENT
  - SCHOOL
  - CEMETARY
  - CHURCH

- THOROUGHFARES**
- MAJOR ARTERIAL
  - MAJOR FEEDERAL
  - COLLECTOR STREET
  - FUTURE THROUGHWAY
  - INTERSECTION ENHANCEMENT

- SINGLE-FAMILY - RURAL (2+ ACRES)
  - SINGLE-FAMILY - ESTATE (1.5+ ACRES)
  - SINGLE-FAMILY - LOW DENSITY (1 ACRE)
  - MANUFACTURED HOUSING
  - COMMERCIAL
  - PUBLIC/SEMI-PUBLIC
  - PARKS AND OPEN SPACE
- ALL FUTURE LAND USES WITHIN THE FLOOD ZONE ARE SUBJECT TO FLOOD HAZARD ANALYSIS SET FORTH BY THE REGIONAL EMERGENCY MANAGEMENT AGENCY ANNUAL ZONING ORDINANCE.





**Table 2-2a** Runoff curve numbers for urban areas <sup>1/</sup>

Cover description	Average percent impervious area <sup>2/</sup>	Curve numbers for hydrologic soil group			
		A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) <sup>3/</sup> :					
Poor condition (grass cover < 50%) .....		68	79	86	89
Fair condition (grass cover 50% to 75%) .....		49	69	79	84
Good condition (grass cover > 75%) .....		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way) .....		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way) .....		98	98	98	98
Paved; open ditches (including right-of-way) .....		83	89	92	93
Gravel (including right-of-way) .....		76	85	89	91
Dirt (including right-of-way) .....		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) <sup>4/</sup> .....		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) .....		96	96	96	96
Urban districts:					
Commercial and business .....	85	89	92	94	95
Industrial .....	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses) .....	65	77	85	90	92
1/4 acre .....	38	61	75	83	87
1/3 acre .....	30	57	72	81	86
1/2 acre .....	25	54	70	80	85
1 acre .....	20	51	68	79	84
2 acres .....	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious areas only, no vegetation) <sup>5/</sup> .....					
		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

<sup>1/</sup> Average runoff condition, and  $I_a = 0.2S$ .<sup>2/</sup> The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.<sup>3/</sup> CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.<sup>4/</sup> Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.<sup>5/</sup> Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.



**Ultimate Condition Time of Concentration**

<b>Basin</b>	<b>Tc</b>	<b>Tlag</b>
	<b>min</b>	<b>min</b>
DA-D	24.2	14.5

### Ultimate Condition Curve Number

Basin	Land Use	Area acres	Area mi <sup>2</sup>	CN*
DA-D	Single Family (2-acre lots)	59.9	0.1373	80.9
	Single Family (1.5-acre lots)	10.1		81.9
	Single Family (1-acre lots)	17.9		82.9
	<b>Total</b>	<b>87.9</b>		<b>81.4</b>

\* Soils are 22% Type C and 78% Type D

```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
*   JUN 1998
*   VERSION 4.1
* RUN DATE 10OCT07 TIME 15:36:51
*
*****
    
```

```

*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****
    
```

```

X   X  XXXXXXX  XXXXX      X
X   X  X      X   X      XX
X   X  X      X   X      X
XXXXXXX XXXX  X      XXXXX  X
X   X  X      X   X      X
X   X  X      X   X      X
X   X  XXXXXXX  XXXXX      XXX
    
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.  
 THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.  
 THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION  
 NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, OSS:WRITE STAGE FREQUENCY,  
 OSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION  
 KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1         ID      FULLY DEVELOPED WATERSHED CONDITIONS
2         ID      100-YR, 24 HR DURATION STORM EVENT
3         ID      MUDDY CREEK (UPPER REACH)
4         ID      STINSON HIGHLANDS
5         ID      CITY EFFECTIVE MODEL
6         ID      BASIN DA-D ADDED BY KHA OCTOBER 2007
7         *DIAGRAM
8         IT      5
            IO      5
            IO      300
9         KK      SUBA
            *
            * AREA UPSTRM OF LUCAS RD WEST
            *
            * PRECIP DEPTHS DREIVED FROM HYDRO 35 & TP-40
10        PH      1
11        BA      .895      .87      1.88      3.90      5.20      5.75      6.95      8.40      9.60
12        LS
13        UD      .26      84.5
14        KK      SUBB
            *
            * AREA BETWEEN LUCAS RD WEST & COUNTY RD 254
15        BA      .822
16        LS      81.3
17        UD      .31
18        KK      US
            *
            * DISCHARGE AT WEST PROPERTY LINE OF PROJECT SITE
19        HC      2
20        KK      SUBC
            *
            * AREA BETWEEN COUNTY RD 254 & EAST PROPERTY LINE OF PROJECT SITE
21        BA      .699
22        LS      81.7
23        UD      .38
24        KK      DS
            *
            * DISCHARGE AT EAST PROPERTY LINE OF PROJECT SITE
25        HC      2
26        KK      DA-D
            *
            * AREA DOWNSTREAM OF EFFECTIVE MODEL TO EXTENT OF STINSON HIGHLANDS SITE
27        BA      .1373
28        LS      81.4
29        UD      .241
30        KK      SH
            *
            * DISCHARGE AT DOWNSTREAM EXTENT OF STINSON HIGHLANDS SITE
31        HC      2
32        ZZ
    
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```

INPUT LINE (V) ROUTING      (--->) DIVERSION OR PUMP FLOW
NO.        (.) CONNECTOR    (<---) RETURN OF DIVERTED OR PUMPED FLOW
9          SUBA
.
.
14         .
.
.          SUBB
.
.
18         US.....
.
.
20         .
.
.          SUBC
.
.
    
```

24 DS.....  
 26 DA-D  
 30 SH.....

SHFULLYD.OH1

(\*\*\*) RUNOFF ALSO COMPUTED AT THIS LOCATION

1\*\*\*\*\*  
 \* FLOOD HYDROGRAPH PACKAGE (HEC-1) \*  
 \* JUN 1998 \*  
 \* VERSION 4.1 \*  
 \* RUN DATE 10OCT07 TIME 15:36:51 \*  
 \*\*\*\*\*

\*\*\*\*\*  
 \* U.S. ARMY CORPS OF ENGINEERS \*  
 \* HYDROLOGIC ENGINEERING CENTER \*  
 \* 609 SECOND STREET \*  
 \* DAVIS, CALIFORNIA 95616 \*  
 \* (916) 756-1104 \*  
 \*\*\*\*\*

FULLY DEVELOPED WATERSHED CONDITIONS  
 100-YR, 24 HR DURATION STORM EVENT  
 MUDDY CREEK (UPPER REACH)  
 STINSON HIGHLANDS  
 CITY EFFECTIVE MODEL  
 BASIN DA-D ADDED BY KHA OCTOBER 2007

8 IO OUTPUT CONTROL VARIABLES  
 IPRINT 5 PRINT CONTROL  
 IPLOT 0 PLOT CONTROL  
 QSCAL 0. HYDROGRAPH PLOT SCALE  
 IT HYDROGRAPH TIME DATA  
 NMIN 5 MINUTES IN COMPUTATION INTERVAL  
 IDATE 1 0 STARTING DATE  
 ITIME 0000 STARTING TIME  
 NQ 300 NUMBER OF HYDROGRAPH ORDINATES  
 NODATE 2 0 ENDING DATE  
 NOTIME 0055 ENDING TIME  
 ICENT 19 CENTURY MARK  
 COMPUTATION INTERVAL .08 HOURS  
 TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS  
 DRAINAGE AREA SQUARE MILES  
 PRECIPITATION DEPTH INCHES  
 LENGTH, ELEVATION FEET  
 FLOW CUBIC FEET PER SECOND  
 STORAGE VOLUME ACRE-Feet  
 SURFACE AREA ACRES  
 TEMPERATURE DEGREES FAHRENHEIT

1

RUNOFF SUMMARY  
 FLOW IN CUBIC FEET PER SECOND  
 TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
+	HYDROGRAPH AT								
+		SUBA	2993.	12.33	590.	185.	178.	.89	
+	HYDROGRAPH AT								
+		SUBB	2458.	12.33	518.	161.	155.	.82	
+	2 COMBINED AT								
+		US	5450.	12.33	1108.	346.	334.	1.72	
+	HYDROGRAPH AT								
+		SUBC	1931.	12.42	443.	138.	133.	.70	
+	2 COMBINED AT								
+		DS	7280.	12.33	1551.	484.	466.	2.42	
+	HYDROGRAPH AT								
+		DA-D	453.	12.25	87.	27.	26.	.14	
+	2 COMBINED AT								
+		SH	7730.	12.33	1638.	511.	492.	2.55	

\*\*\* NORMAL END OF HEC-1 \*\*\*

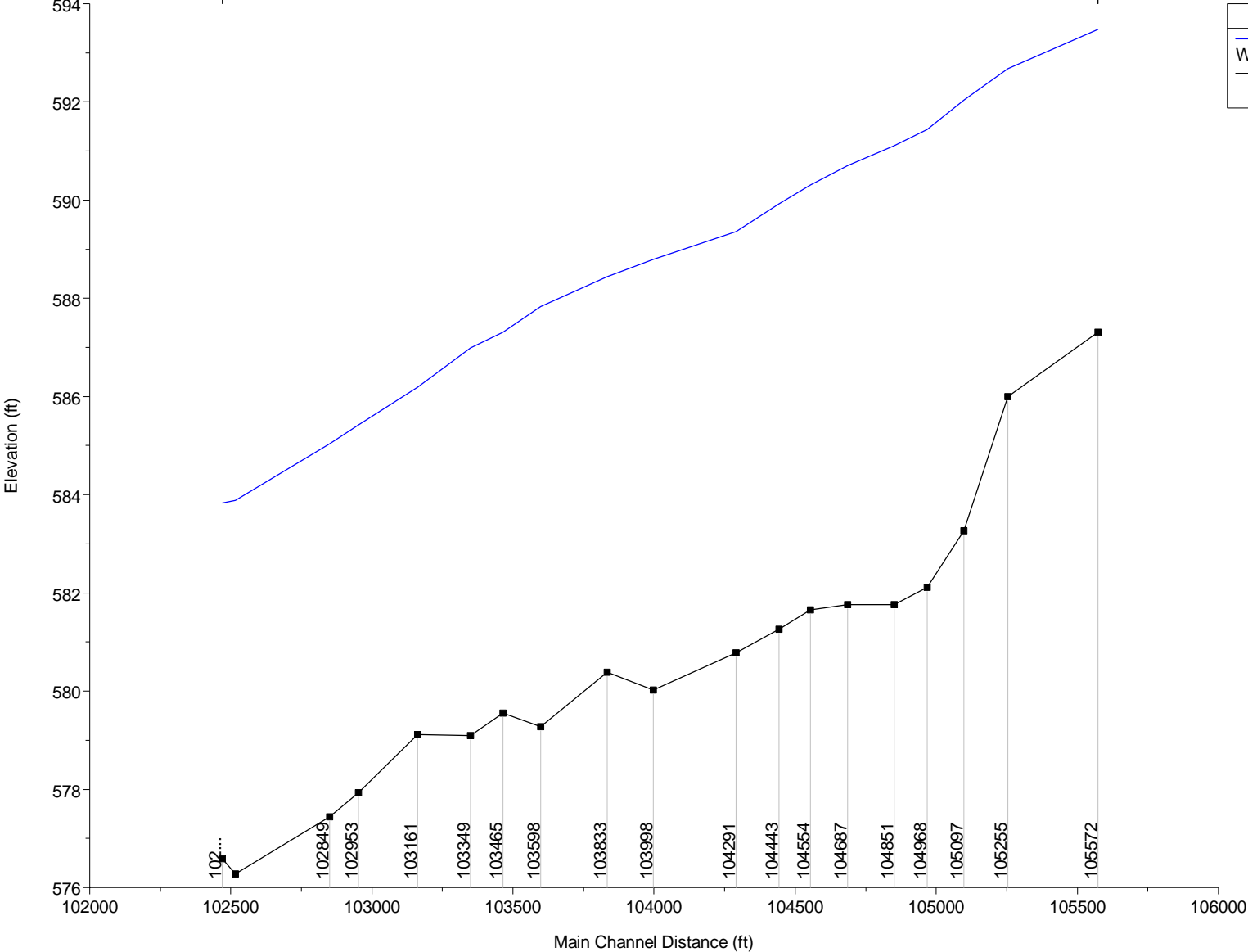


HEC-RAS Plan: Post River: RIVER-1 Reach: Reach-1 Profile: Ultimate 100-yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	102469	Ultimate 100-yr	7730.00	576.59	583.19	581.74	583.33	0.003002	4.99	2708.54	1068.76	0.37
Reach-1	102515	Ultimate 100-yr	7730.00	576.28	583.26	582.97	583.56	0.005045	6.20	1808.15	610.31	0.47
Reach-1	102849	Ultimate 100-yr	7730.00	577.44	584.42		584.80	0.005597	6.45	1676.49	576.53	0.51
Reach-1	102953	Ultimate 100-yr	7730.00	577.93	585.19		585.50	0.005654	6.82	1900.20	721.06	0.51
Reach-1	103161	Ultimate 100-yr	7730.00	579.12	586.28		586.63	0.005465	7.42	1841.19	617.59	0.52
Reach-1	103349	Ultimate 100-yr	7730.00	579.09	587.09	584.84	587.26	0.002589	5.27	2687.23	781.74	0.36
Reach-1	103465	Ultimate 100-yr	7280.00	579.55	587.31		587.51	0.002271	4.82	2253.34	853.06	0.34
Reach-1	103598	Ultimate 100-yr	7280.00	579.28	587.62		587.86	0.003706	5.98	2047.84	684.07	0.42
Reach-1	103833	Ultimate 100-yr	7280.00	580.39	588.02		588.17	0.001048	3.31	2617.06	759.69	0.22
Reach-1	103998	Ultimate 100-yr	7280.00	580.02	588.12		588.31	0.001075	3.37	2565.16	791.52	0.23
Reach-1	104291	Ultimate 100-yr	7280.00	580.78	588.48		588.96	0.008589	9.09	1469.59	657.01	0.62
Reach-1	104443	Ultimate 100-yr	7280.00	581.26	589.37		589.68	0.003723	5.82	1748.12	605.81	0.42
Reach-1	104554	Ultimate 100-yr	7280.00	581.66	589.76		590.14	0.004710	6.20	1645.46	619.46	0.47
Reach-1	104687	Ultimate 100-yr	7280.00	581.76	590.38		590.65	0.003247	6.22	2004.42	684.43	0.41
Reach-1	104851	Ultimate 100-yr	7280.00	581.76	590.90		591.15	0.003134	6.15	2021.04	662.45	0.40
Reach-1	104968	Ultimate 100-yr	7280.00	582.11	591.27		591.67	0.005439	7.62	1693.48	685.83	0.51
Reach-1	105097	Ultimate 100-yr	7280.00	583.27	591.99		592.32	0.005379	7.09	1784.24	809.15	0.50
Reach-1	105255	Ultimate 100-yr	7280.00	586.00	592.66		592.87	0.004089	5.73	2130.81	883.84	0.43
Reach-1	105572	Ultimate 100-yr	7280.00	587.31	593.47		593.61	0.003061	4.90	2572.47	1069.80	0.37

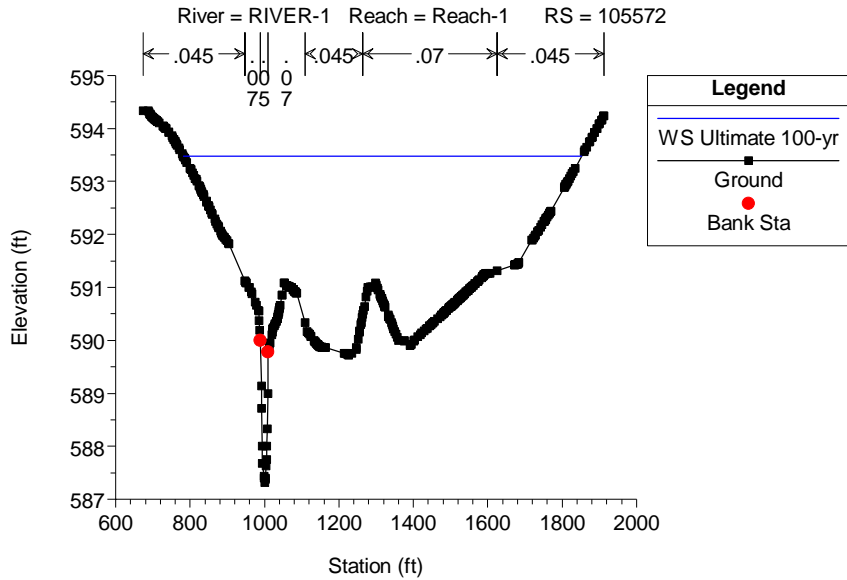
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

RIVER-1 Reach-1

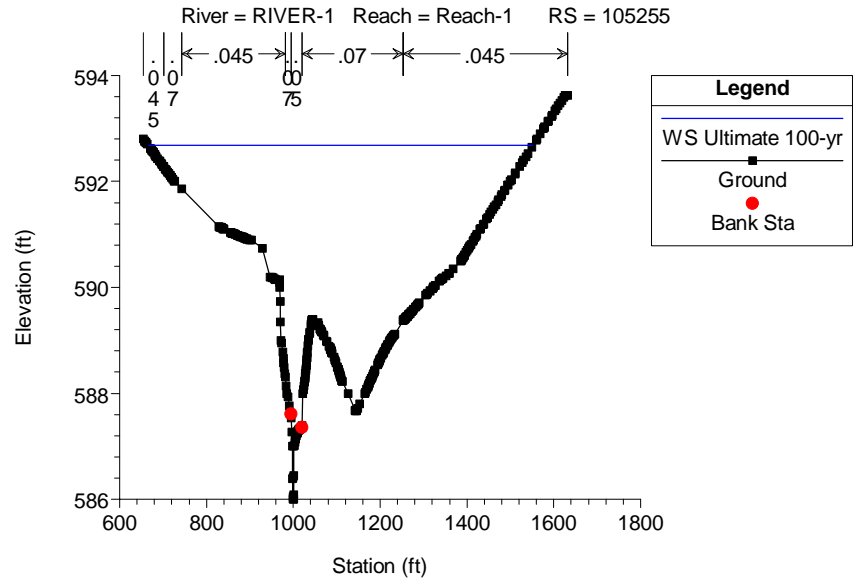


Legend	
WS Ultimate 100-yr	(Blue line)
Ground	(Black line with square marker)

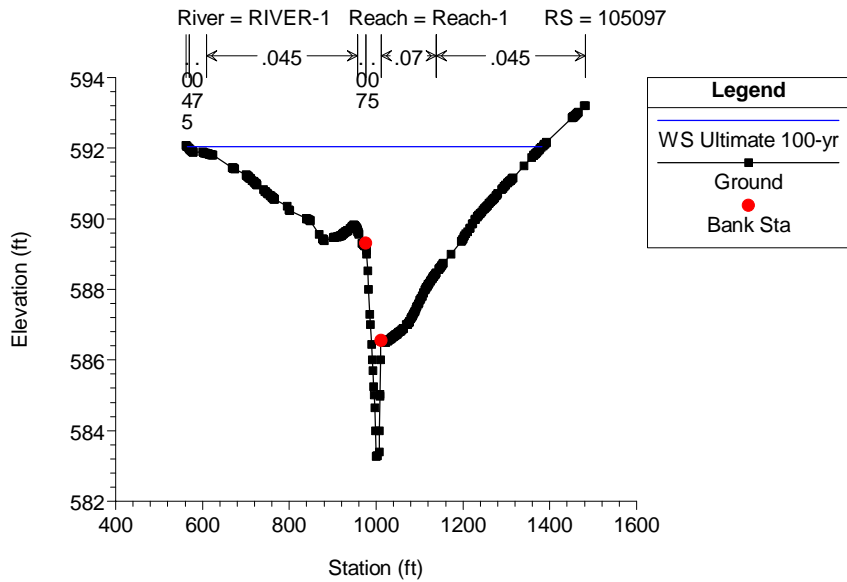
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



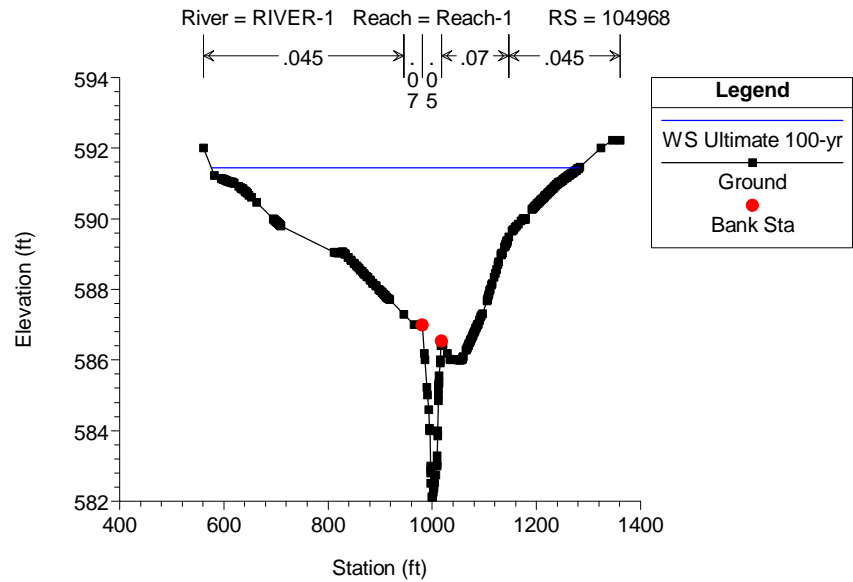
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



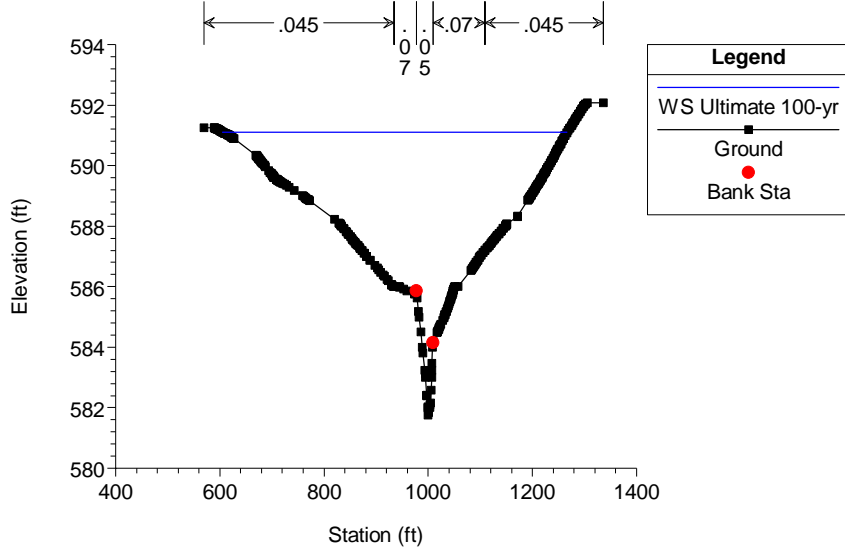
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018





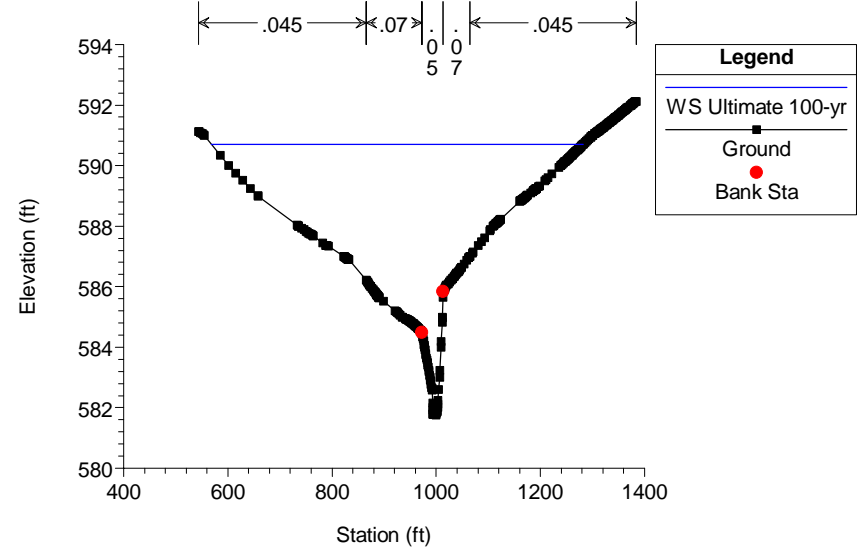
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104851



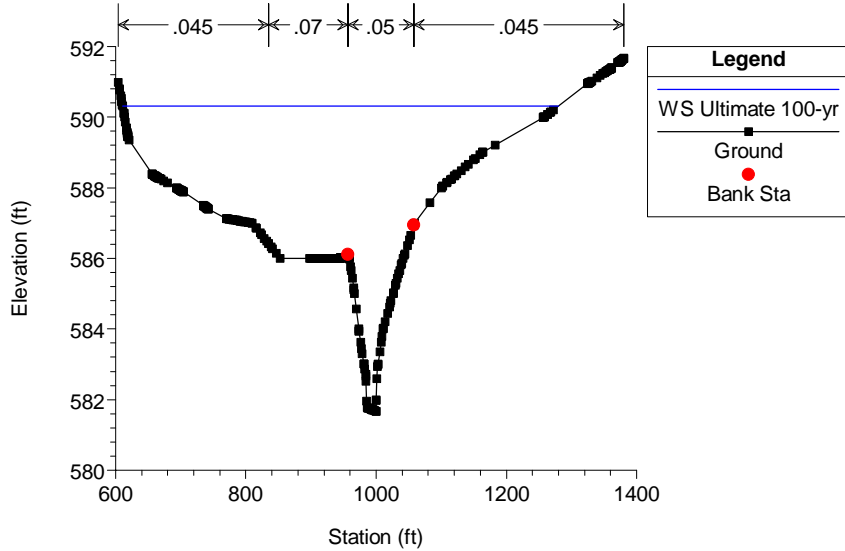
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104687



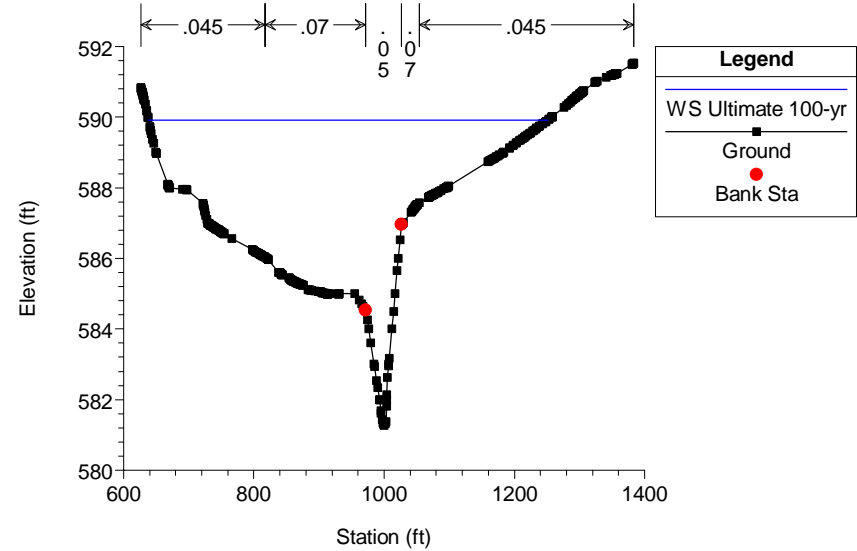
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104554

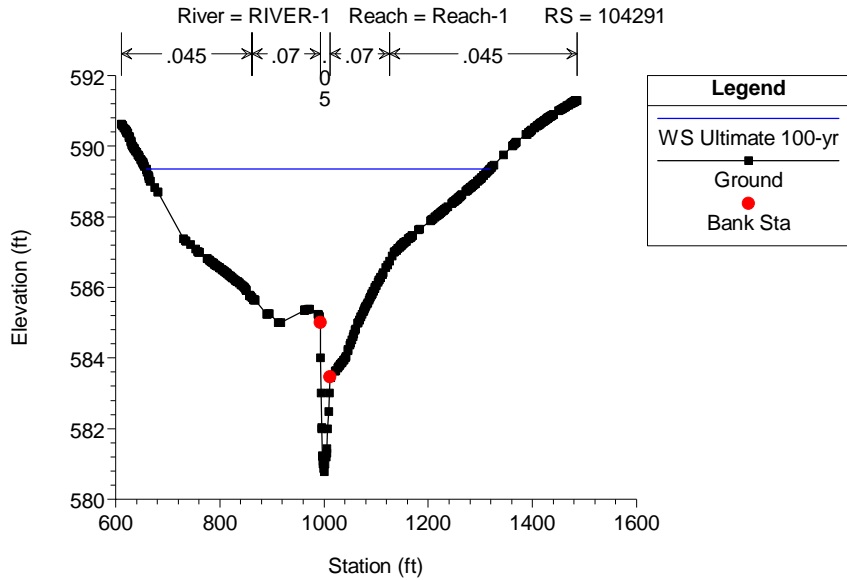


Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

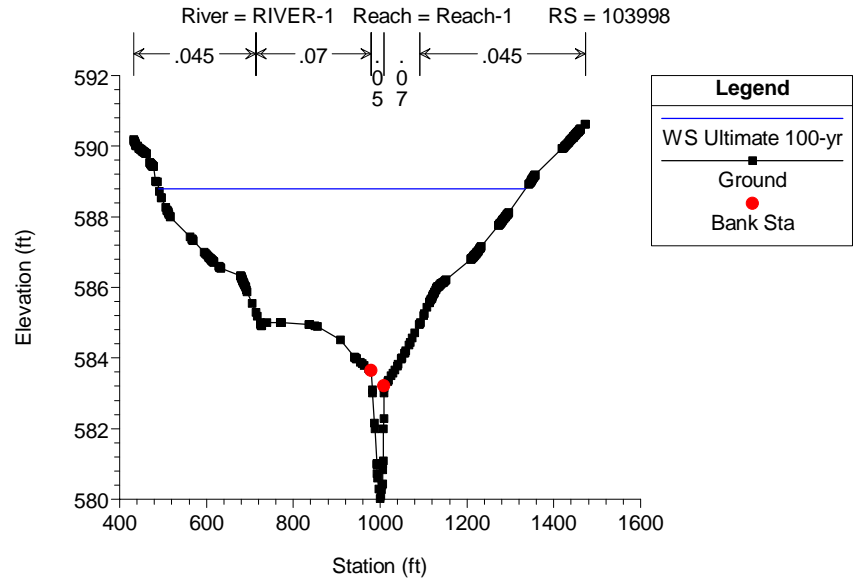
River = RIVER-1 Reach = Reach-1 RS = 104443



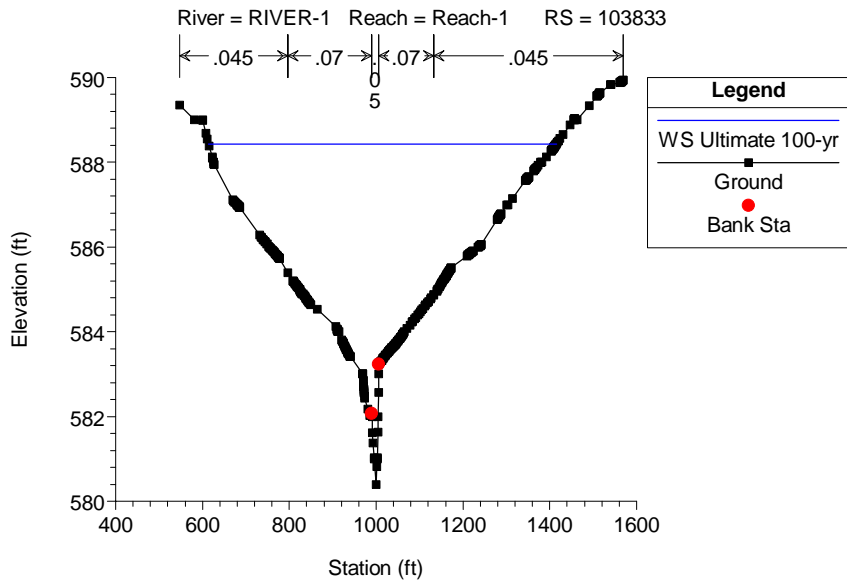
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



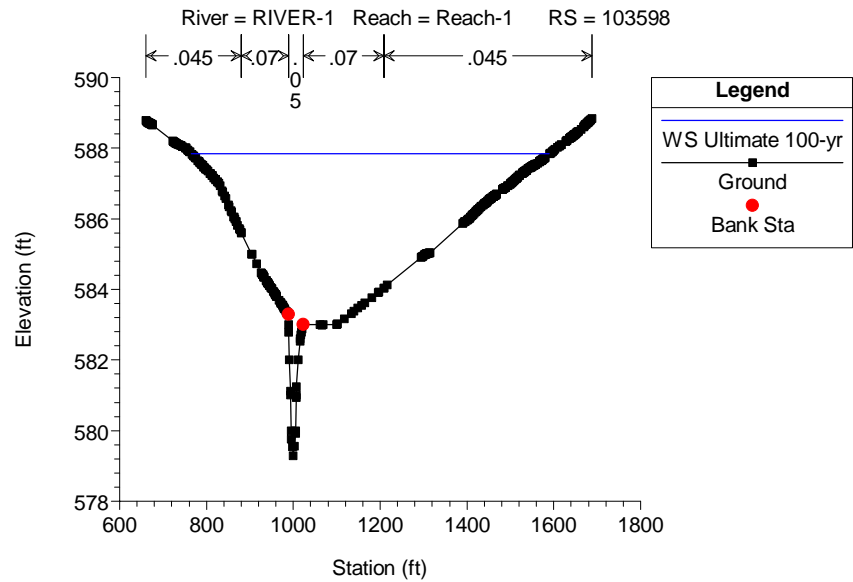
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

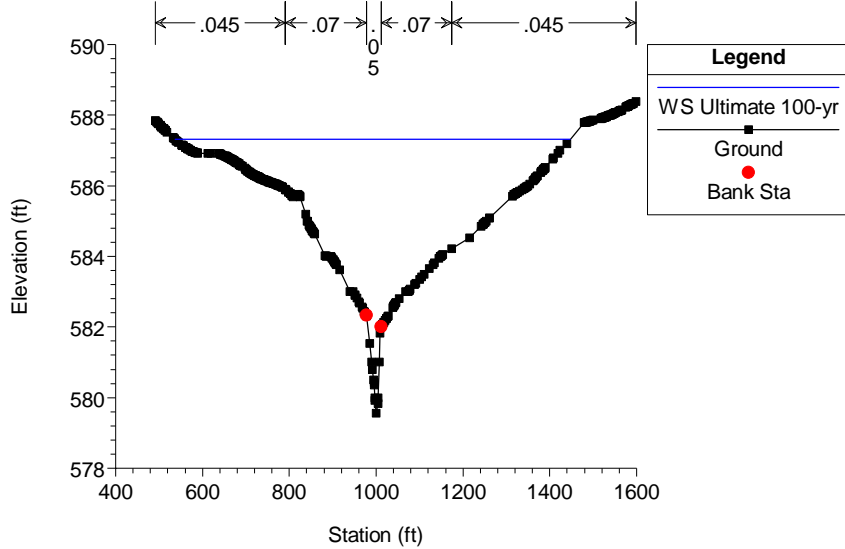


Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



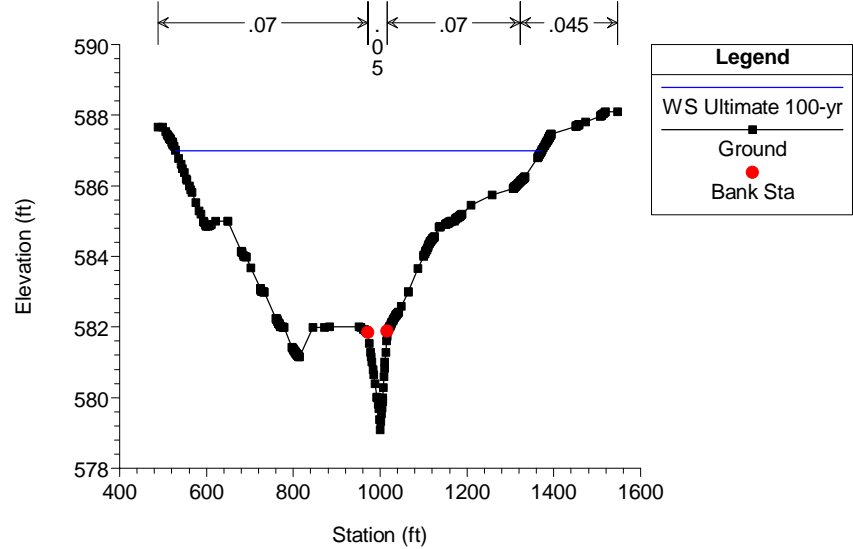
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 103465



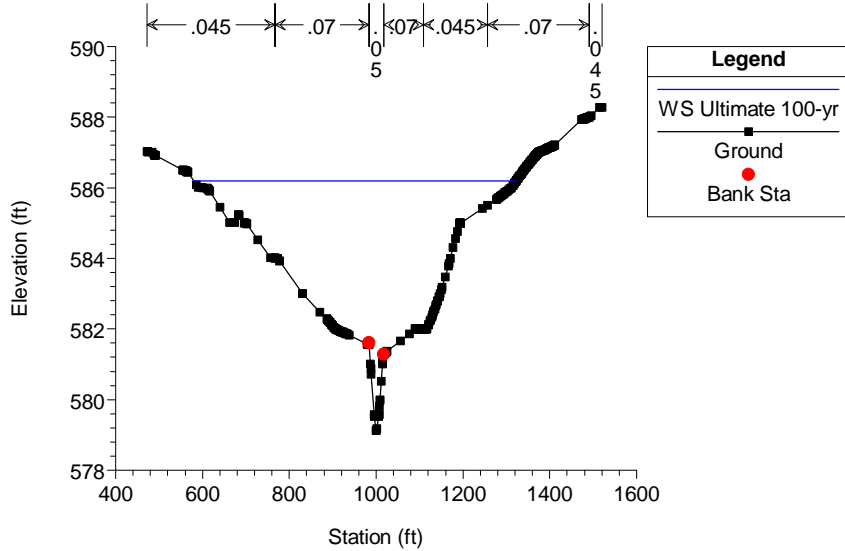
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 103349



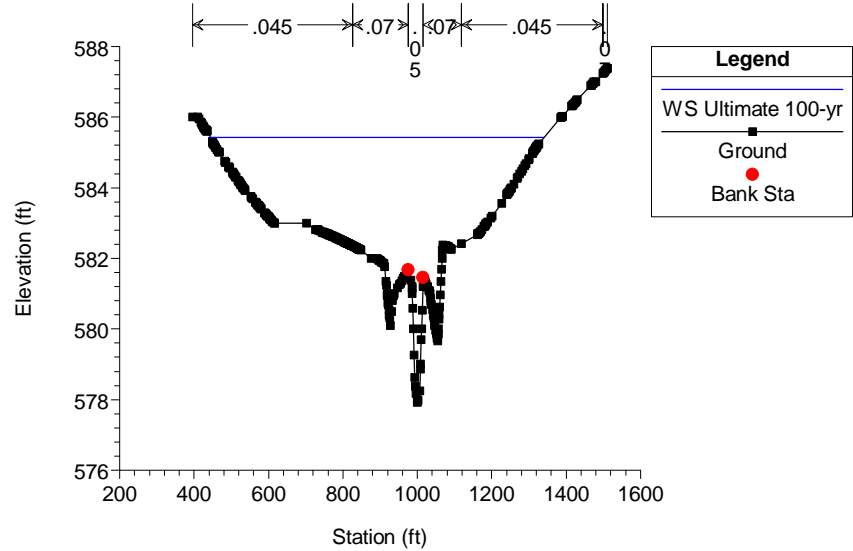
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 103161

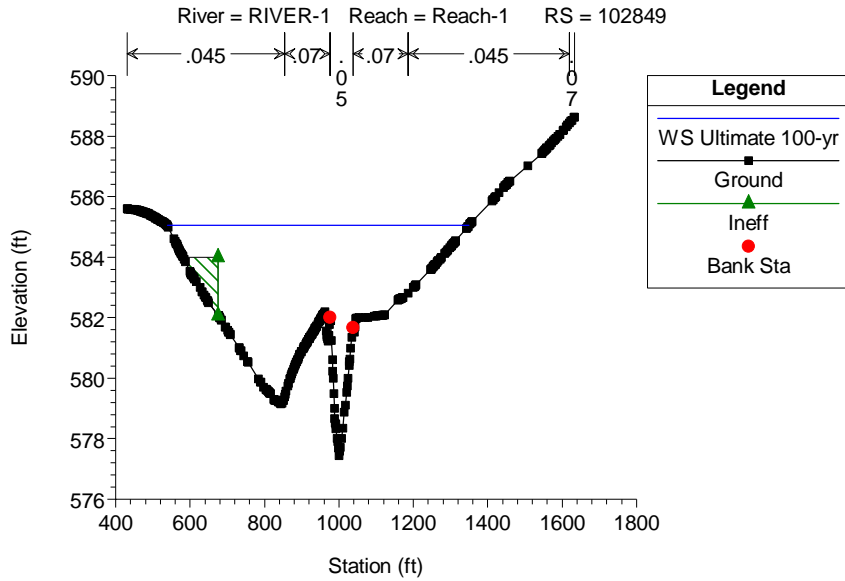


Stinson Highlands LOMR Plan: Pre-Project 6/1/2018

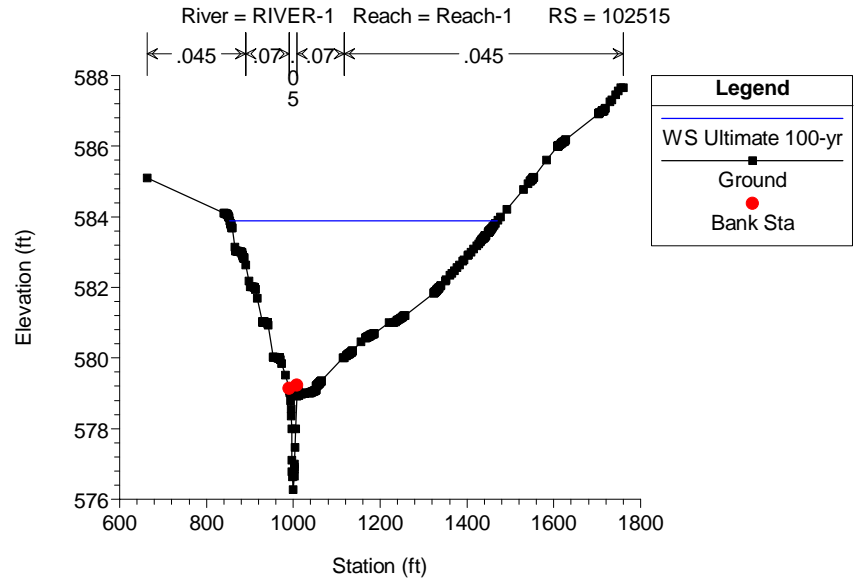
River = RIVER-1 Reach = Reach-1 RS = 102953



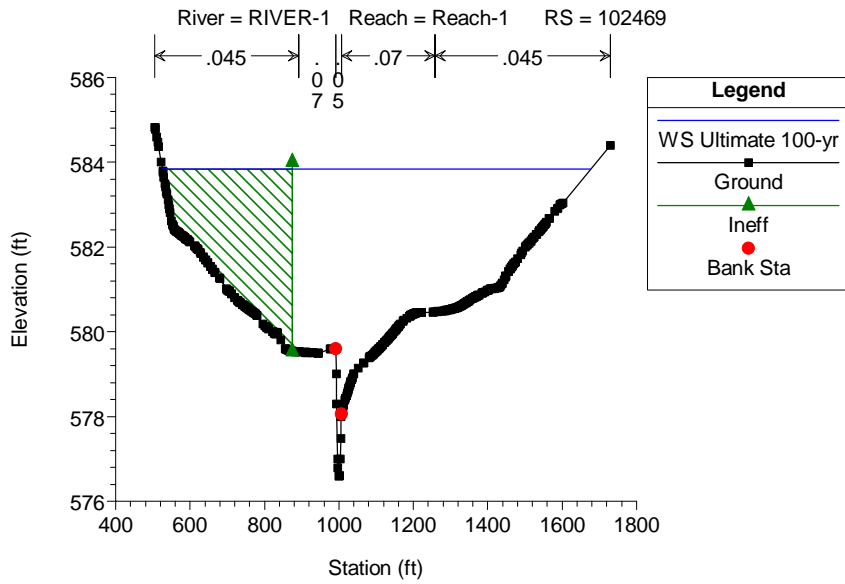
Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



Stinson Highlands LOMR Plan: Pre-Project 6/1/2018



Stinson Highlands LOMR Plan: Pre-Project 6/1/2018





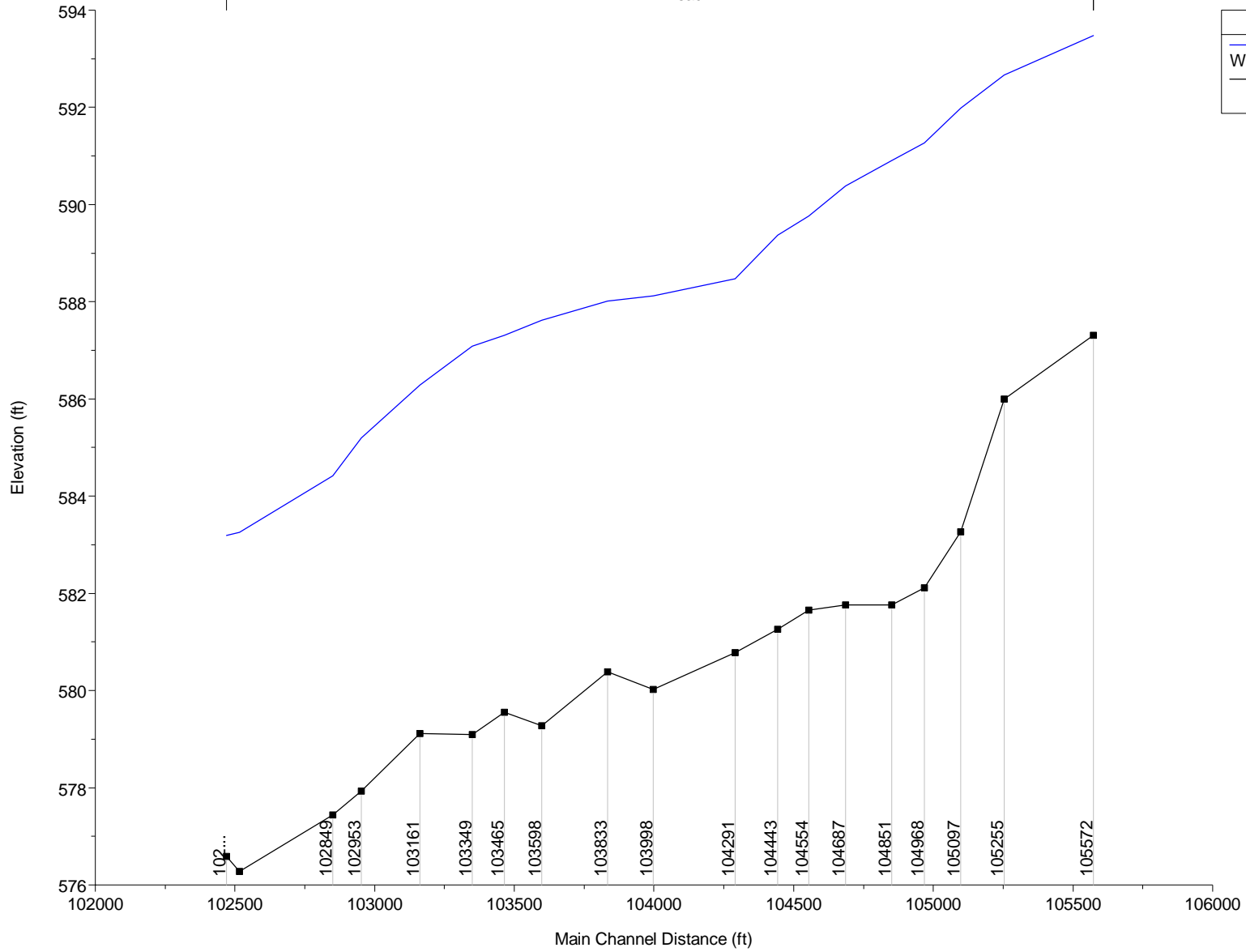
HEC-RAS Plan: Post River: RIVER-1 Reach: Reach-1 Profile: Ultimate 100-yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	102469	Ultimate 100-yr	7730.00	576.59	583.19	581.74	583.33	0.003002	4.99	2708.54	1068.76	0.37
Reach-1	102515	Ultimate 100-yr	7730.00	576.28	583.26	582.97	583.56	0.005045	6.20	1808.15	610.31	0.47
Reach-1	102849	Ultimate 100-yr	7730.00	577.44	584.42		584.80	0.005597	6.45	1676.49	576.53	0.51
Reach-1	102953	Ultimate 100-yr	7730.00	577.93	585.19		585.50	0.005654	6.82	1900.20	721.06	0.51
Reach-1	103161	Ultimate 100-yr	7730.00	579.12	586.28		586.63	0.005465	7.42	1841.19	617.59	0.52
Reach-1	103349	Ultimate 100-yr	7730.00	579.09	587.09	584.84	587.26	0.002589	5.27	2687.23	781.74	0.36
Reach-1	103465	Ultimate 100-yr	7280.00	579.55	587.31		587.51	0.002271	4.82	2253.34	853.06	0.34
Reach-1	103598	Ultimate 100-yr	7280.00	579.28	587.62		587.86	0.003706	5.98	2047.84	684.07	0.42
Reach-1	103833	Ultimate 100-yr	7280.00	580.39	588.02		588.17	0.001048	3.31	2617.06	759.69	0.22
Reach-1	103998	Ultimate 100-yr	7280.00	580.02	588.12		588.31	0.001075	3.37	2565.16	791.52	0.23
Reach-1	104291	Ultimate 100-yr	7280.00	580.78	588.48		588.96	0.008589	9.09	1469.59	657.01	0.62
Reach-1	104443	Ultimate 100-yr	7280.00	581.26	589.37		589.68	0.003723	5.82	1748.12	605.81	0.42
Reach-1	104554	Ultimate 100-yr	7280.00	581.66	589.76		590.14	0.004710	6.20	1645.46	619.46	0.47
Reach-1	104687	Ultimate 100-yr	7280.00	581.76	590.38		590.65	0.003247	6.22	2004.42	684.43	0.41
Reach-1	104851	Ultimate 100-yr	7280.00	581.76	590.90		591.15	0.003134	6.15	2021.04	662.45	0.40
Reach-1	104968	Ultimate 100-yr	7280.00	582.11	591.27		591.67	0.005439	7.62	1693.48	685.83	0.51
Reach-1	105097	Ultimate 100-yr	7280.00	583.27	591.99		592.32	0.005379	7.09	1784.24	809.15	0.50
Reach-1	105255	Ultimate 100-yr	7280.00	586.00	592.66		592.87	0.004089	5.73	2130.81	883.84	0.43
Reach-1	105572	Ultimate 100-yr	7280.00	587.31	593.47		593.61	0.003061	4.90	2572.47	1069.80	0.37



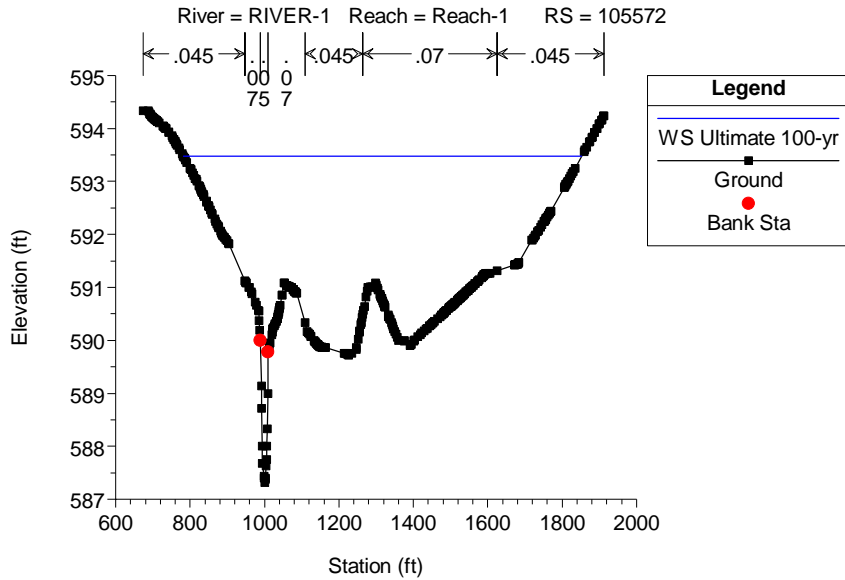
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

RIVER-1 Reach-1

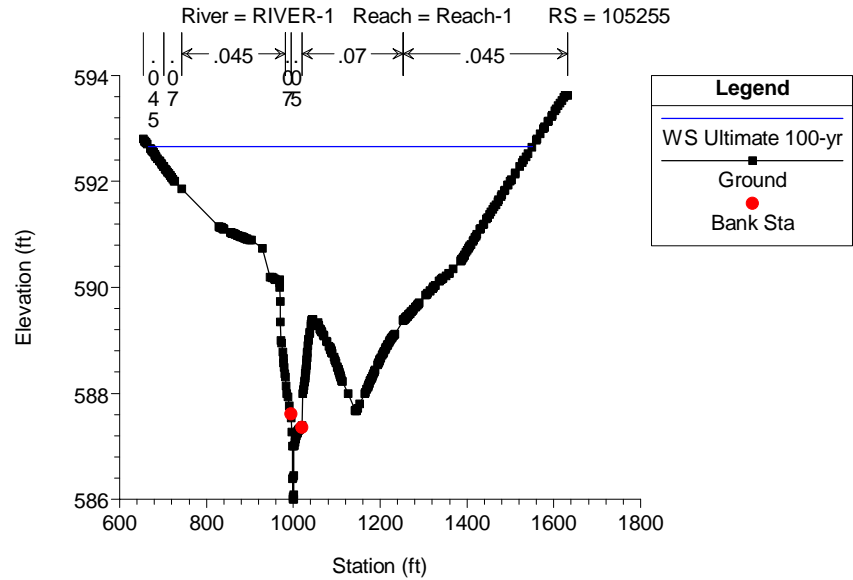


Legend	
WS Ultimate 100-yr	(Blue line)
Ground	(Black line with square marker)

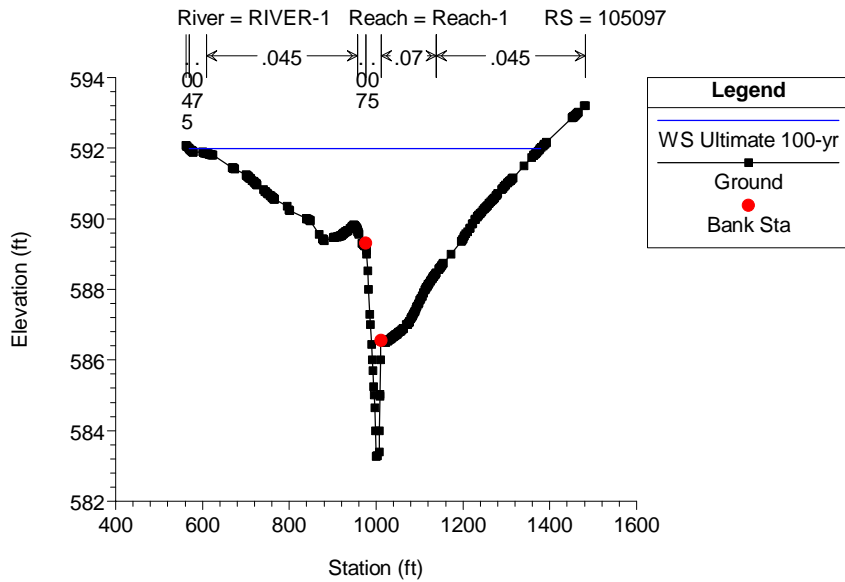
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



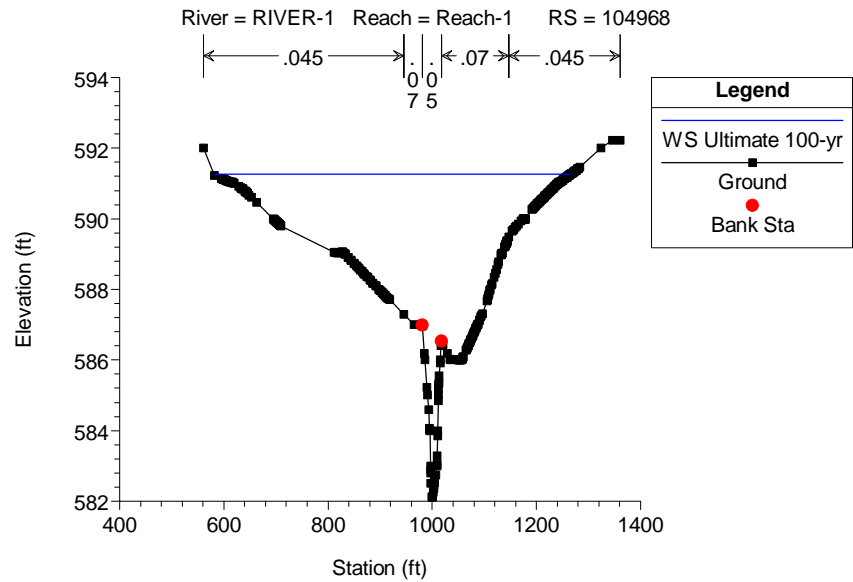
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



Stinson Highlands LOMR Plan: Post-Project 6/1/2018

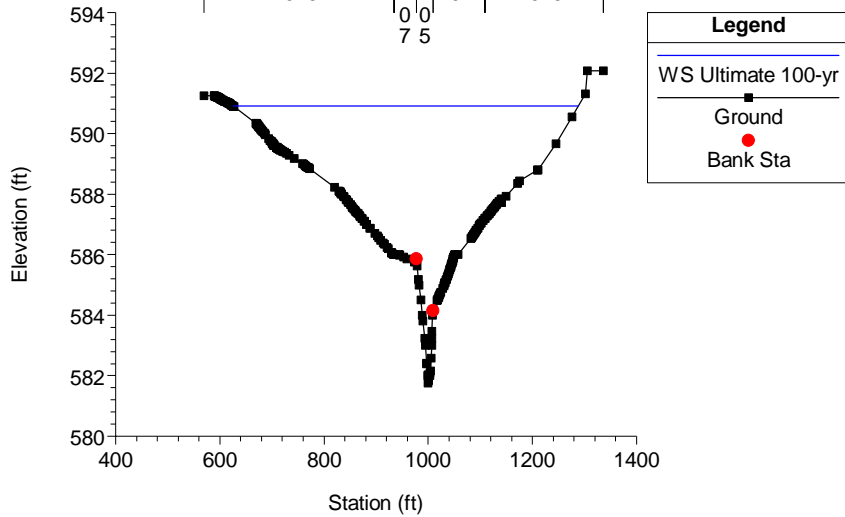
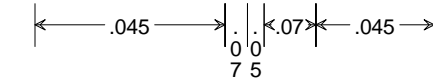


Stinson Highlands LOMR Plan: Post-Project 6/1/2018



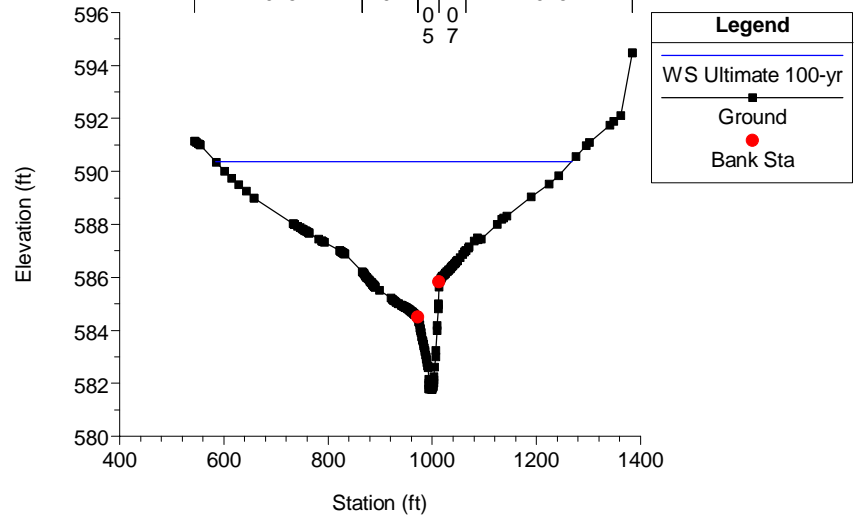
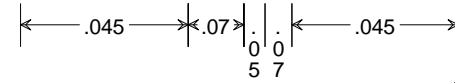
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104851



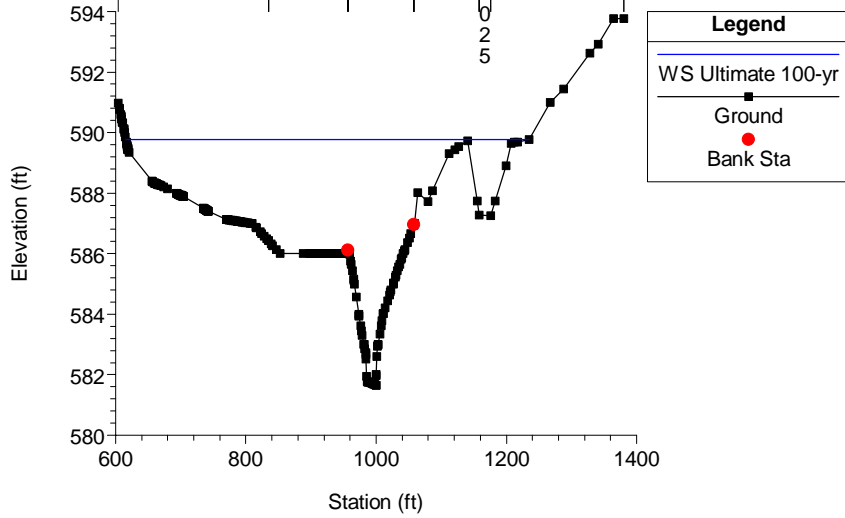
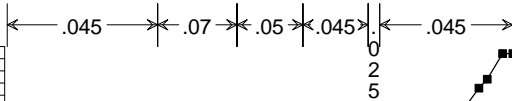
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104687



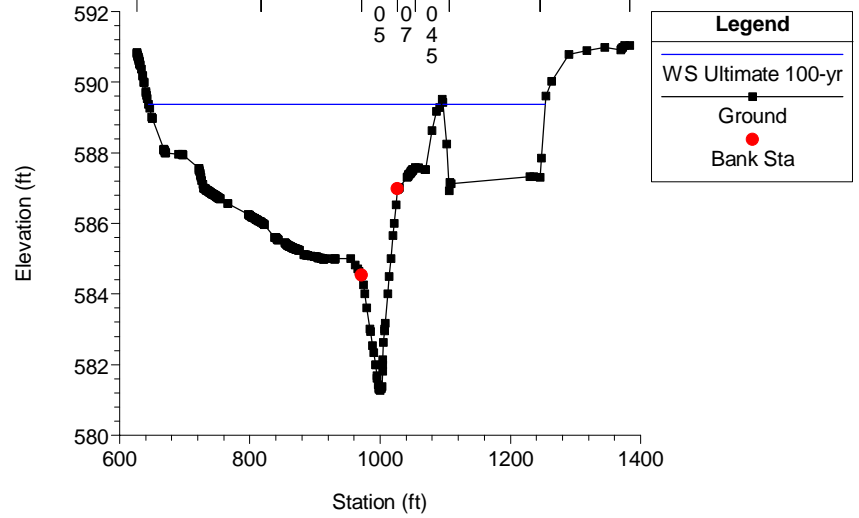
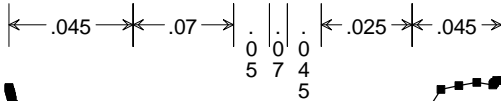
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 104554

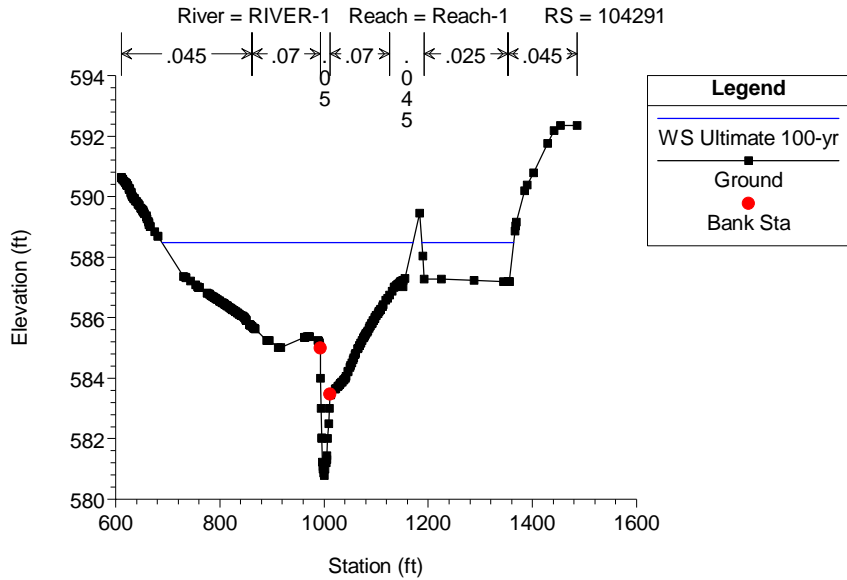


Stinson Highlands LOMR Plan: Post-Project 6/1/2018

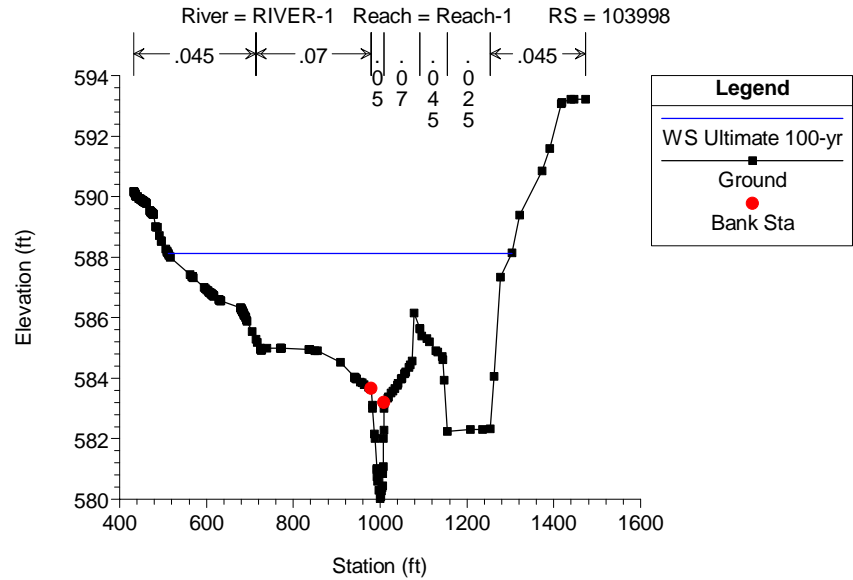
River = RIVER-1 Reach = Reach-1 RS = 104443



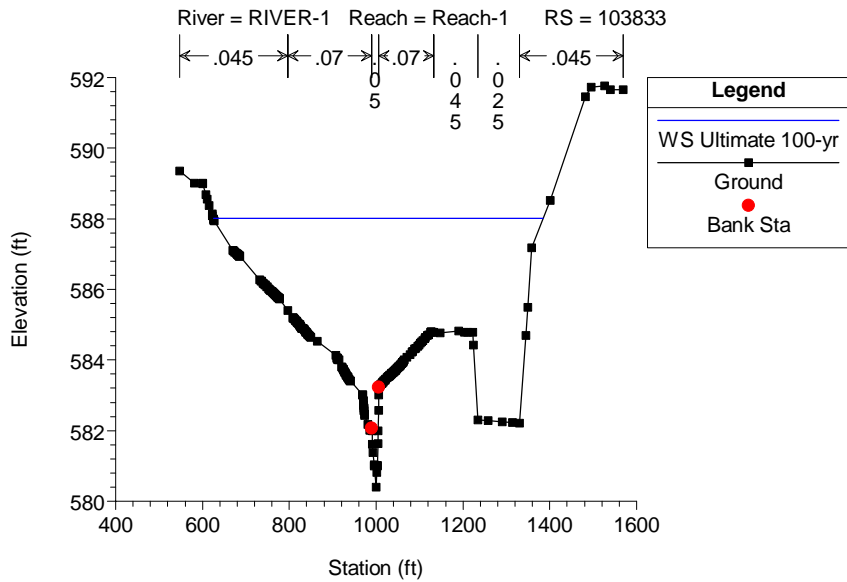
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



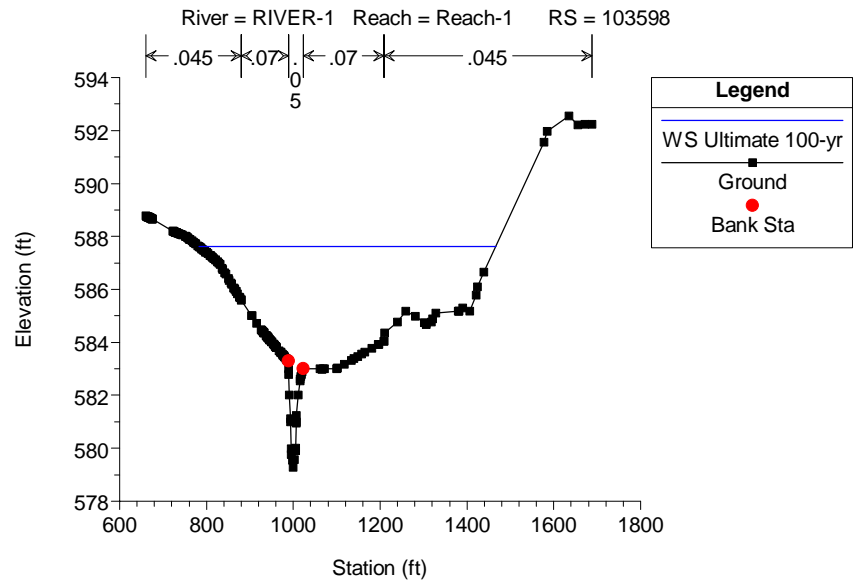
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



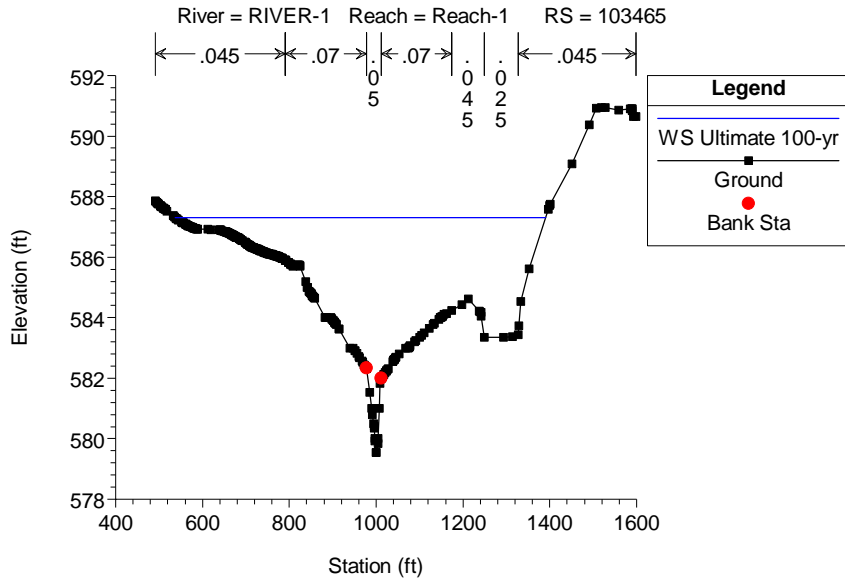
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



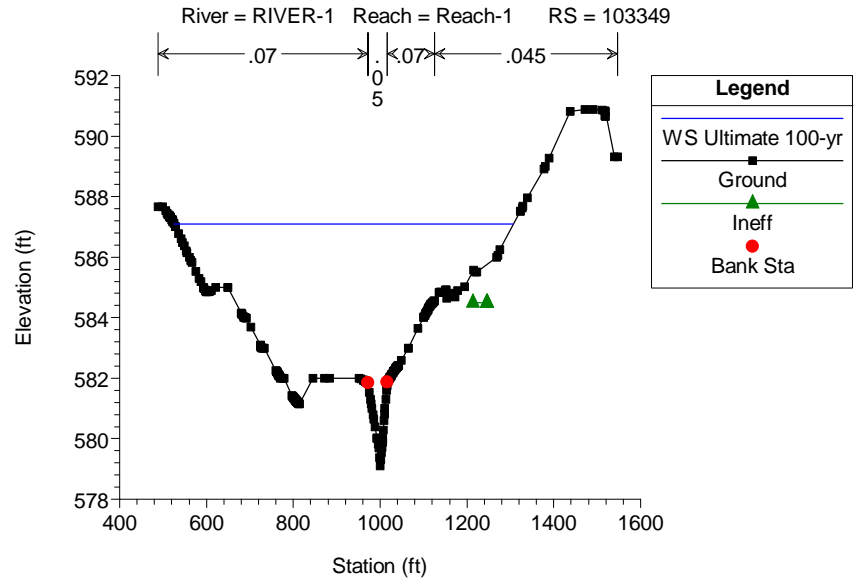
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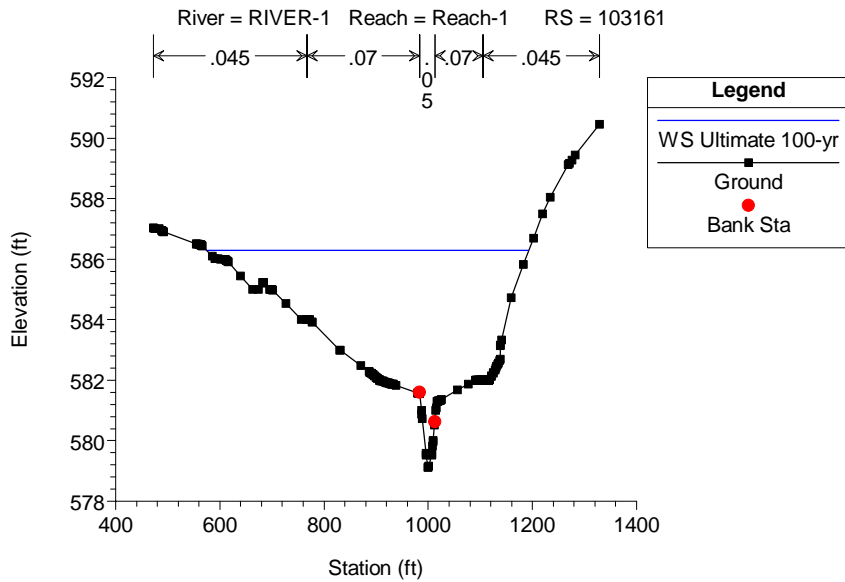
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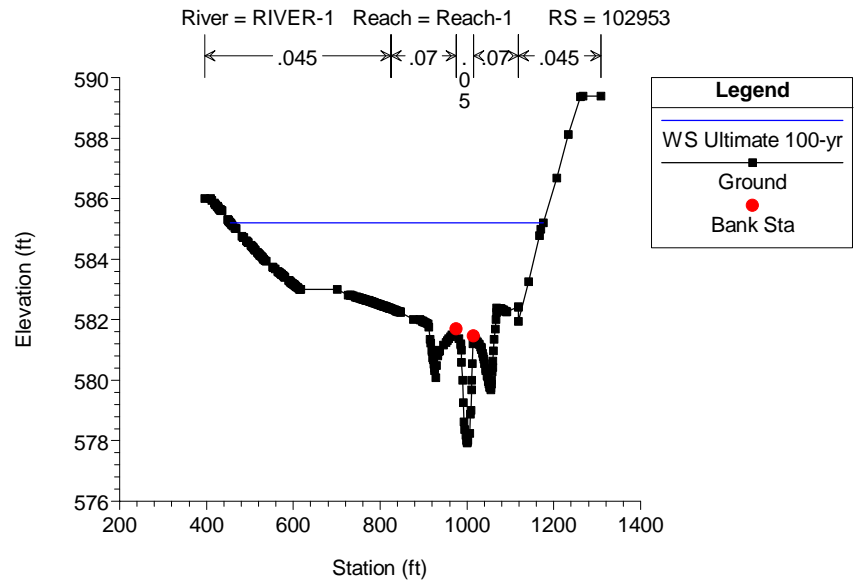
Stinson Highlands LOMR Plan: Post-Project 6/1/2018



Stinson Highlands LOMR Plan: Post-Project 6/1/2018

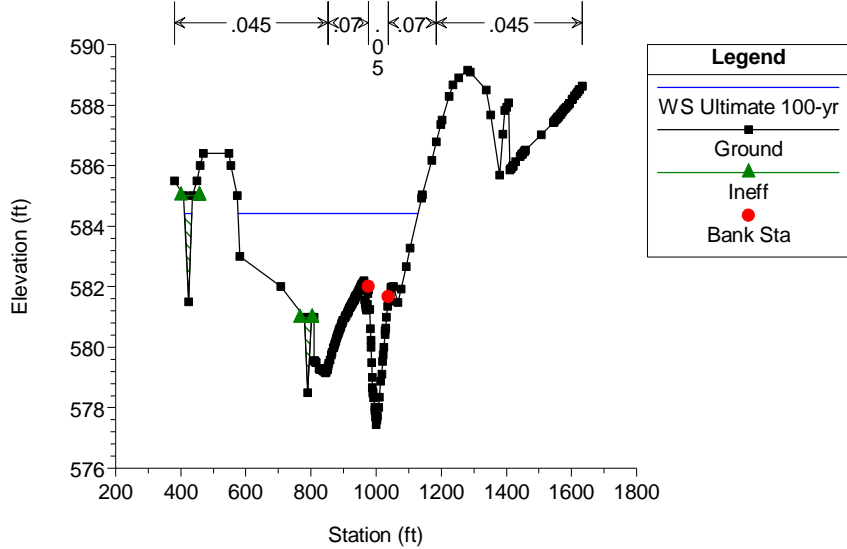


Stinson Highlands LOMR Plan: Post-Project 6/1/2018



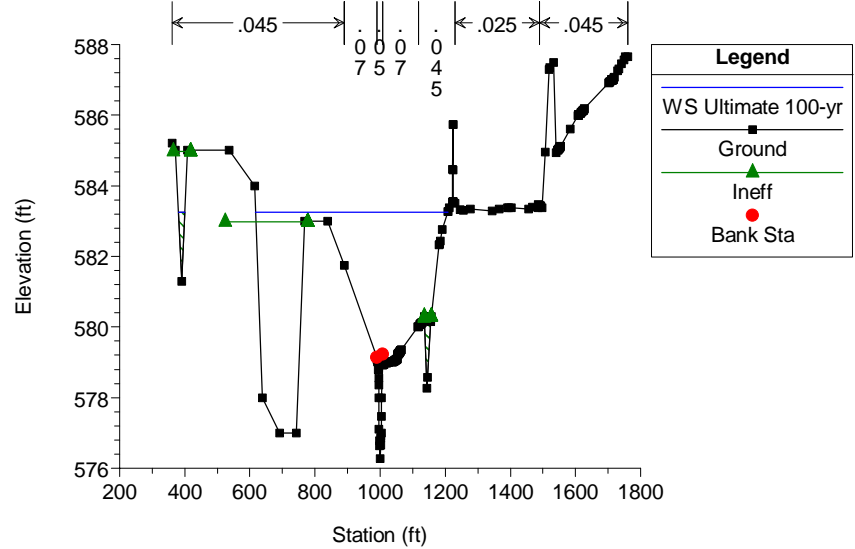
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 102849



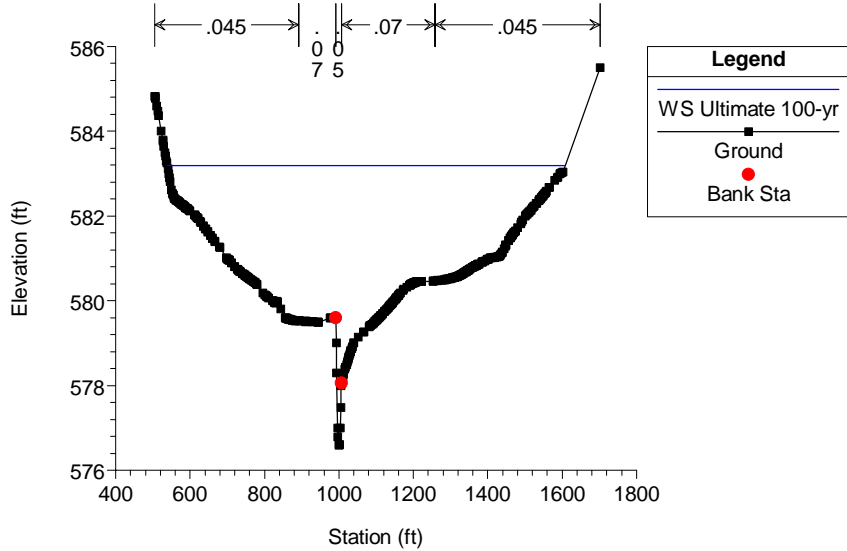
Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 102515



Stinson Highlands LOMR Plan: Post-Project 6/1/2018

River = RIVER-1 Reach = Reach-1 RS = 102469



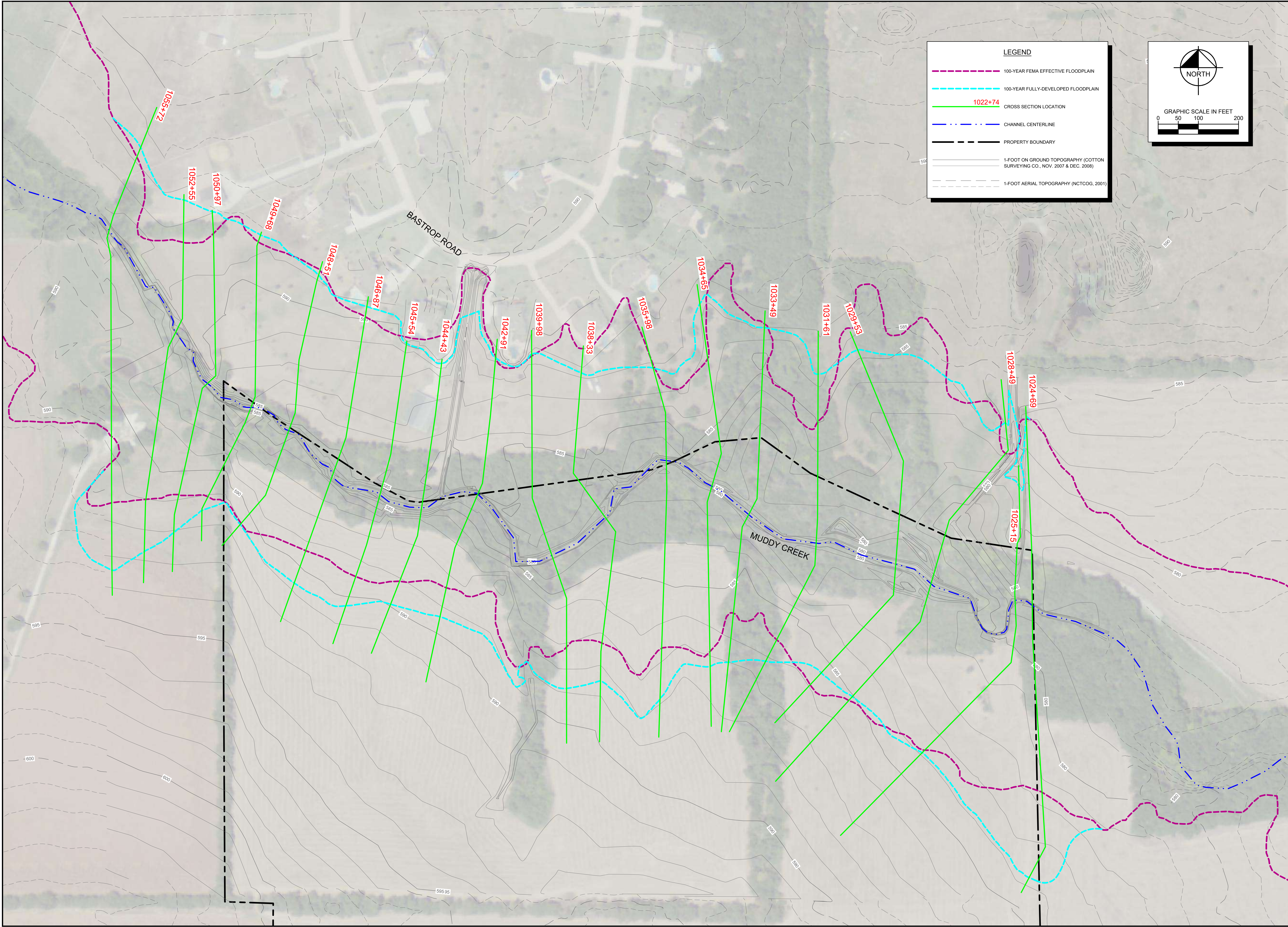






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**LEGEND**

- 100-YEAR FEMA EFFECTIVE FLOODPLAIN
- 100-YEAR FULLY-DEVELOPED FLOODPLAIN
- 1022+74 CROSS SECTION LOCATION
- CHANNEL CENTERLINE
- PROPERTY BOUNDARY
- 1-FOOT ON GROUND TOPOGRAPHY (COTTON SURVEYING CO., NOV. 2007 & DEC. 2008)
- 1-FOOT AERIAL TOPOGRAPHY (NCTCOG, 2001)

NORTH

GRAPHIC SCALE IN FEET

0 50 100 200

No.	REVISIONS	DATE	BY

**Kimley-Horn**

13445 NOEL ROAD, TWO GALLERIA OFFICE TOWER, SUITE 700  
 DALLAS, TX 75240 PHONE: 972-770-1300 FAX: 972-239-3820  
 TEXAS REGISTERED ENGINEERING FIRM F-928  
 WWW.KIMLEY-HORN.COM

FOR REVIEW ONLY  
 Not for construction or permit purposes.

**Kimley-Horn**

Engineer: MATT P. BROSMAN  
 P.E. No. 130228 Date: 06/08/2018

KHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
064347001	JUNE 2018	AS SHOWN	MPB	MPB	KEP

**PRE-PROJECT ULTIMATE  
 CONDITION HYDRAULIC  
 WORKMAP**

**STINSON HIGHLANDS  
 LOMR**

LUCAS TEXAS

SHEET NUMBER  
**6**







