



# Federal Emergency Management Agency

Washington, D.C. 20472

**April 17, 2013**

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

The Honorable Joe King  
Brazoria County Judge  
111 East Locust Street, Suite 102  
Angleton, TX 77515

IN REPLY REFER TO:

Case No.: 12-06-1432P  
Community Name: Brazoria County, TX  
Community No.: 485458  
Effective Date of  
This Revision: **August 29, 2013**

Dear Judge King:

The Flood Insurance Study Report and Flood Insurance Rate Map for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denton, Texas, at (940) 898-5127, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

Sincerely,

Stuart W. Rooney, CFM, PMP, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration

For: Luis Rodriguez, P.E., Chief  
Engineering Management Branch  
Federal Insurance and Mitigation Administration

List of Enclosures:

Letter of Map Revision Determination Document  
Annotated Flood Insurance Rate Map  
Annotated Flood Insurance Study Report

cc: The Honorable Laurie B. Kincannon  
Mayor, City of West Columbia

Mr. Herbert S. Smith, P.E.  
Principal Engineer  
Baker & Lawson, Inc.

Ms. Tracey Reid, CFM  
Floodplain Administrator

Ms. Debbie A. Sutherland  
City Manager, City of West Columbia

Mr. Dong H. Nguyen, P.E., CFM  
Baker & Lawson, Inc.



# Federal Emergency Management Agency

Washington, D.C. 20472

## LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	Brazoria County Texas (Unincorporated Areas)	CHANNELIZATION LEVEE	BASE MAP CHANGES FLOODWAY HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS LEVEE CERTIFICATION NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 485458		
IDENTIFIER	Columbia Lake Subdivision - Varner Creek	APPROXIMATE LATITUDE AND LONGITUDE: 29.166, -95.646 SOURCE: Precision Mapping Streets      DATUM: NAD 83	
ANNOTATED MAPPING ENCLOSURES		ANNOTATED STUDY ENCLOSURES	
TYPE: FIRM*	NO.: 48039C0395 H      DATE: June 5, 1989	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 22, 1999	
TYPE: FIRM*	NO.: 48039C0415 H      DATE: June 5, 1989	PROFILES: 86P, 87P, 88P, AND 99P FLOODWAY DATA TABLE: 6 SUMMARY OF DISCHARGES TABLE: 2	

Enclosures reflect changes to flooding sources affected by this revision.

\* FIRM - Flood Insurance Rate Map

### FLOODING SOURCE AND REVISED REACH

See Page 2 for Additional Flooding Sources

Varner Creek - from approximately 4,160 feet upstream of County Route 25 to approximately 14,700 feet upstream of County Route 25

### SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Varner Creek	Zone AE	Zone AE	YES	YES
	BFEs*	BFEs	NONE	YES
	Floodway	Floodway	YES	YES
	Zone X (shaded)	Zone X (shaded)	YES	YES

\* BFEs - Base Flood Elevations

### DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX), toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

Stuart W. Rooney, CFM, PMP, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration



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**LETTER OF MAP REVISION  
DETERMINATION DOCUMENT (CONTINUED)**

**OTHER FLOODING SOURCES AFFECTED BY THIS REVISION**

**FLOODING SOURCES AND REVISED REACHES**

Varner Creek - from approximately 4,160 feet upstream of County Route 25 to approximately 14,700 feet upstream of County Route 25  
Varner Creek Diversion Channel - from the confluence with Varner Creek to approximately 7,540 feet upstream of the confluence with Varner Creek

**SUMMARY OF REVISIONS**

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Varner Creek	Zone X (unshaded)	Zone AE	YES	NONE
	Zone X (unshaded)	Zone X (shaded)	YES	NONE
Varner Creek Diversion Channel	No BFEs*	BFEs	YES	NONE
	Zone X (unshaded)	Zone AE	YES	YES
	Zone X (unshaded)	Zone X (shaded)	YES	YES

\* BFEs - Base Flood Elevations

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX), toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

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**LETTER OF MAP REVISION  
DETERMINATION DOCUMENT (CONTINUED)**

**OTHER COMMUNITIES AFFECTED BY THIS REVISION**

**CID Number:** 480081      **Name:** City of West Columbia, Texas

**AFFECTED MAP PANELS**

TYPE: FIRM\*    NO.: 48039C0395 H    DATE: June 5, 1989

**AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT**

DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 22, 1999  
PROFILES: 86P, 87P, 88P, AND 99P  
FLOODWAY DATA TABLE: 6  
SUMMARY OF DISCHARGES TABLE: 2

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX), toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

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**LETTER OF MAP REVISION  
DETERMINATION DOCUMENT (CONTINUED)**

**COMMUNITY INFORMATION**

**APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION**

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

**COMMUNITY REMINDERS**

We based this determination on the 1-percent-annual-chance discharges computed in the FIS for Varner Creek; and in the submitted hydrologic model for Varner Creek Diversion Channel. Future development of projects upstream could cause increased discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and could, therefore, indicate that greater flood hazards exist in this area.

This revision involves an accredited levee system. Your community is responsible for maintaining and disseminating information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, for the levee systems shown as providing protection. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Web site at <http://www.fema.gov/business/nfip/index.shtm>.

Your community must regulate all proposed floodplain development and ensure that any permits required by Federal or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX), toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

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Engineering Management Branch  
Federal Insurance and Mitigation Administration





Federal Emergency Management Agency  
Washington, D.C. 20472

**LETTER OF MAP REVISION  
DETERMINATION DOCUMENT (CONTINUED)**

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Frank Pagano  
Director, Mitigation Division  
Federal Emergency Management Agency, Region VI  
Federal Regional Center, Room 206  
800 North Loop 288  
Denton, TX 76209  
(940) 898-5127

**STATUS OF THE COMMUNITY NFIP MAPS**

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panels and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX), toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at <http://www.fema.gov/business/nfip>.

A handwritten signature in black ink, appearing to read "Stuart W. Rooney".

Stuart W. Rooney, CFM, PMP, Program Specialist  
Engineering Management Branch  
Federal Insurance and Mitigation Administration



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD-1979)	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Unnamed Tributary to Chocolate Bayou (continued)	H	17,362 <sup>1</sup>	715	1.2	44.8	44.8	45.8	1.0
	I	19,713	379	2.2	47.4	47.4	48.4	1.0
	J	22,410	955	0.9	48.2	48.2	49.2	1.0
	K	26,340	582	1.2	48.8	48.8	49.8	1.0
	L	27,990	470	1.5	49.3	49.3	50.2	0.9
	M	30,400	88	1.7	51.1	51.1	51.9	0.8
Varner Creek	A	9,364 <sup>2</sup>	1,287	5.5	28.9	27.2 <sup>3</sup>	27.3	0.1
	B	11,313	1,729	4.1	29.0	28.6	28.8	0.2
	C	13,106	1,737	4.1	29.9	29.9	30.2	0.3
	D	14,652	1,619	4.4	31.2	31.2	31.5	0.3
	E	15,891	3,430	2.1	31.9	31.9	32.4	0.5
	F	19,450	12,240	0.6	32.0	32.0	32.9	0.9
	G	20,550	15,601	0.4	32.5	32.5	33.1	0.6
	H	23,250	9,989	0.4	32.5	32.5	33.2	0.7
	I	25,350	8,371	0.4	32.5	32.5	33.2	0.7
	J	29,950	997	0.4	32.5	32.5	33.2	0.7
	K	32,250	475	0.9	32.6	32.6	33.4	0.8
	L	35,050	665	0.6	32.6	32.6	33.5	0.9
	M	37,450	416	1.3	32.8	32.8	33.7	0.9
	N	40,100	280	2.4	33.8	33.8	34.8	1.0
O	41,800	389	1.2	34.4	34.4	35.4	1.0	

<sup>1</sup>Feet above confluence with Chocolate Bayou

<sup>2</sup>Feet above confluence with Brazos River

<sup>3</sup>Elevation computed without consideration of backwater effects from Brazos River

REVISED TO REFLECT LOMR EFFECTIVE: August 29, 2013

REVISED DATA

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BRAZORIA COUNTY, TX AND INCORPORATED AREAS**

**FLOODWAY DATA**

UNNAMED TRIBUTARY TO CHOCOLATE BAYOU - VARNER CREEK

**TABLE 6**



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NGVD-1979)	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Varner Creek (continued)								
P	43,320 <sup>1</sup>	137	963	2.2	34.6	35.6	35.6	1.0
Q	46,830 <sup>1</sup>	221	1,135	1.4	37.5	37.9	37.9	0.4
R	49,510 <sup>1</sup>	208	627	2.6	38.2	38.7	38.7	0.5
S	52,020 <sup>1</sup>	100	661	2.4	40.6	41.3	41.3	0.7
T	54,500 <sup>1</sup>	168	851	1.9	41.6	42.4	42.4	0.8
U	57,910 <sup>1</sup>	151	677	2.4	43.4	44.2	44.2	0.8
V	62,000 <sup>1</sup>	222	762	2.1	46.6	46.6	47.6	1.0
<b>REVISED DATA</b>								
West Fork Chocolate Bayou								
A	2,150 <sup>2</sup>	610	3,168	1.2	40.3	41.2	41.2	0.9
B	5,300 <sup>2</sup>	618	3,133	1.2	41.0	41.9	41.9	0.9
C	8,250 <sup>2</sup>	808	2,938	1.1	42.7	43.3	43.3	0.6
D	9,050 <sup>2</sup>	600	2,100	1.6	43.2	43.8	43.8	0.6
E	12,800 <sup>2</sup>	633	2,777	1.2	45.1	45.9	45.9	0.8
F	17,550 <sup>2</sup>	860	3,106	0.8	46.4	47.3	47.3	0.9
G	19,460 <sup>2</sup>	516	1,662	1.5	47.2	48.1	48.1	0.9
H	23,390 <sup>2</sup>	313	1,620	1.5	49.3	50.2	50.2	0.9
I	27,700 <sup>2</sup>	377	1,203	1.9	51.6	52.6	52.6	1.0
J	32,040 <sup>2</sup>	299	975	2.4	54.3	55.3	55.3	1.0
K	35,320 <sup>2</sup>	514	2,326	0.9	56.3	57.2	57.2	0.9
L	37,800 <sup>2</sup>	917	3,723	0.5	56.8	57.7	57.7	0.9
M	39,910 <sup>2</sup>	851	3,125	0.4	57.0	57.9	57.9	0.9
N	43,720 <sup>2</sup>	591	2,012	0.5	57.4	58.3	58.3	0.9
O	47,600 <sup>2</sup>	131	495	2.0	58.5	59.5	59.5	1.0
P	50,600 <sup>2</sup>	442	1,439	0.7	60.3	61.3	61.3	1.0

<sup>1</sup>Feet above confluence with Brazos River

<sup>2</sup>Feet above confluence with Chocolate Bayou

REVISED TO  
REFLECT LOMR  
EFFECTIVE: August 29, 2013

FEDERAL EMERGENCY MANAGEMENT AGENCY

**BRAZORIA COUNTY, TX  
AND INCORPORATED AREAS**

**FLOODWAY DATA**

**VARNER CREEK - WEST FORK CHOCOLATE BAYOU**

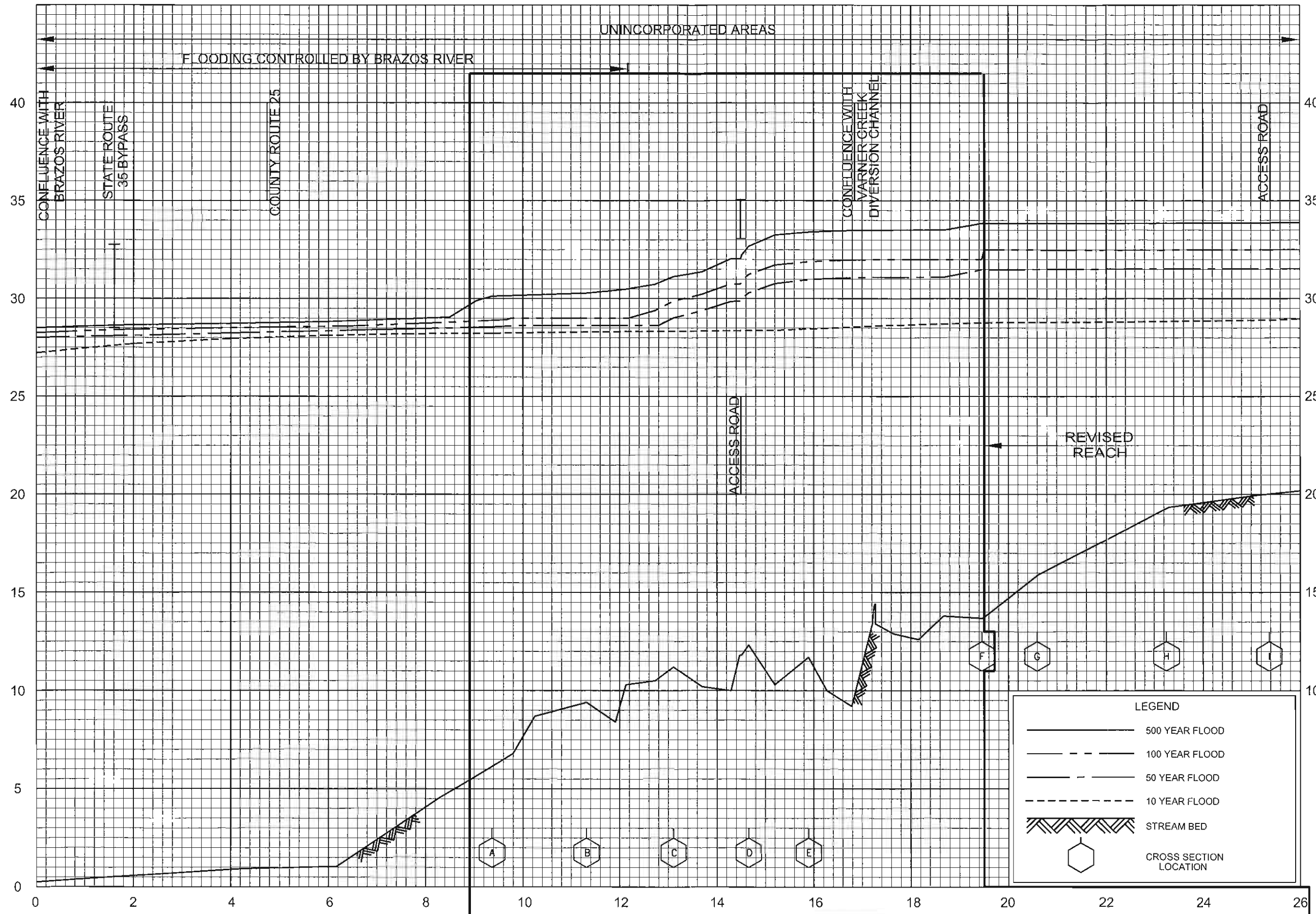
**TABLE 6**

TABLE 2 - SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA</u> <u>(sq. miles)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-YEAR</u>	<u>50-YEAR</u>	<u>100-YEAR</u>	<u>500-YEAR</u>
VARNER CREEK DIVERSION CHANNEL At Confluence with Varner Creek	1.65	158	227	260	370

CREATED TO  
REFLECT LOMR  
EFFECTIVE: August 29, 2013

ELEVATION IN FEET (NGVD - 1979 RELEVELING)

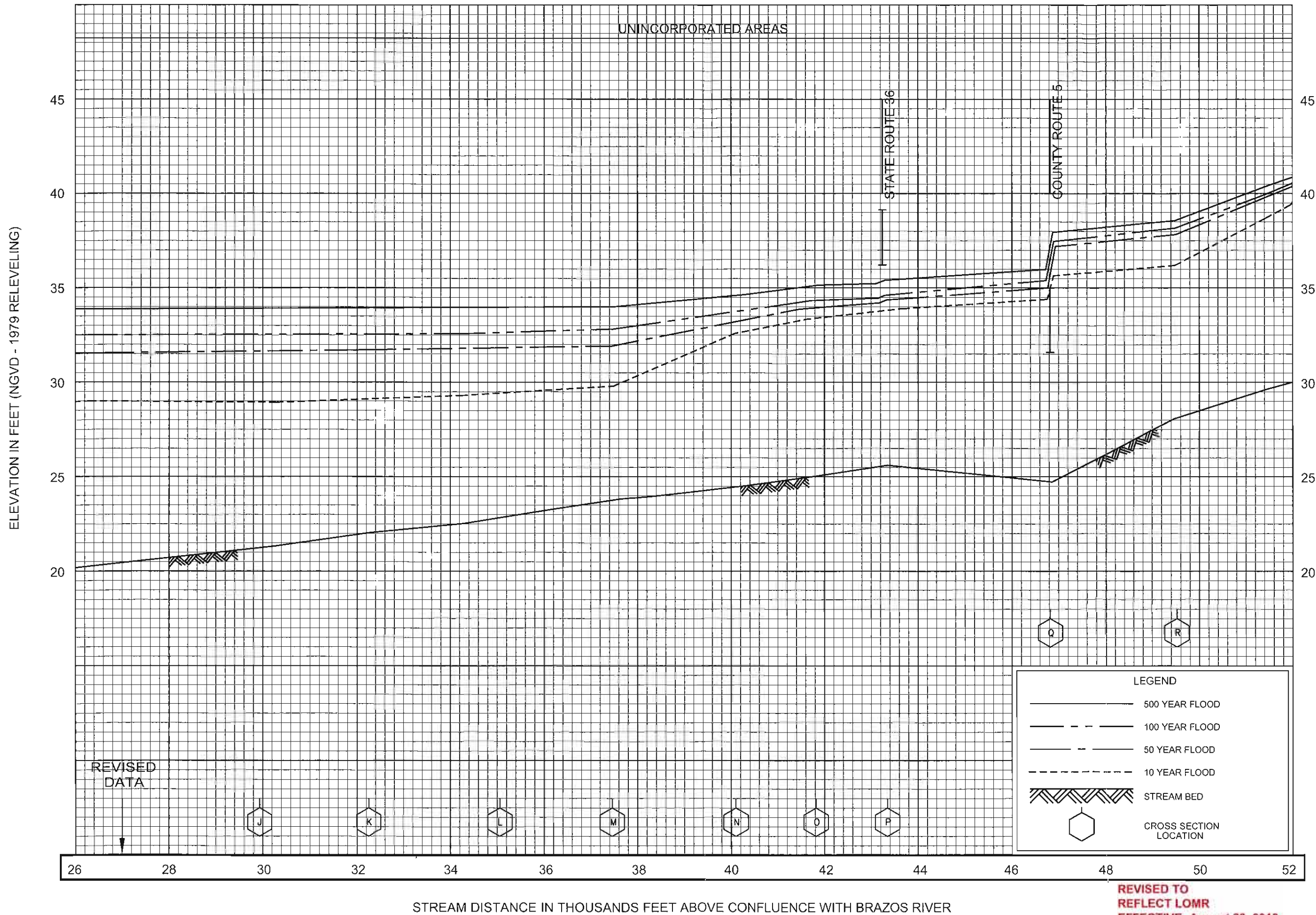


STREAM DISTANCE IN THOUSANDS FEET ABOVE CONFLUENCE WITH BRAZOS RIVER

REVISED TO  
REFLECT LOMR  
EFFECTIVE: August 29, 2013

FLOOD PROFILES  
VARNER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
BRAZORIA COUNTY, TX  
AND INCORPORATED AREAS



FLOOD PROFILES  
VARNER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
BRAZORIA COUNTY, TX  
AND INCORPORATED AREAS

REVISED TO  
REFLECT LOMR  
EFFECTIVE: August 29, 2013



ELEVATION IN FEET (NGVD - 1979 RELEVELING)



STREAM DISTANCE IN THOUSANDS FEET ABOVE CONFLUENCE WITH BRAZOS RIVER

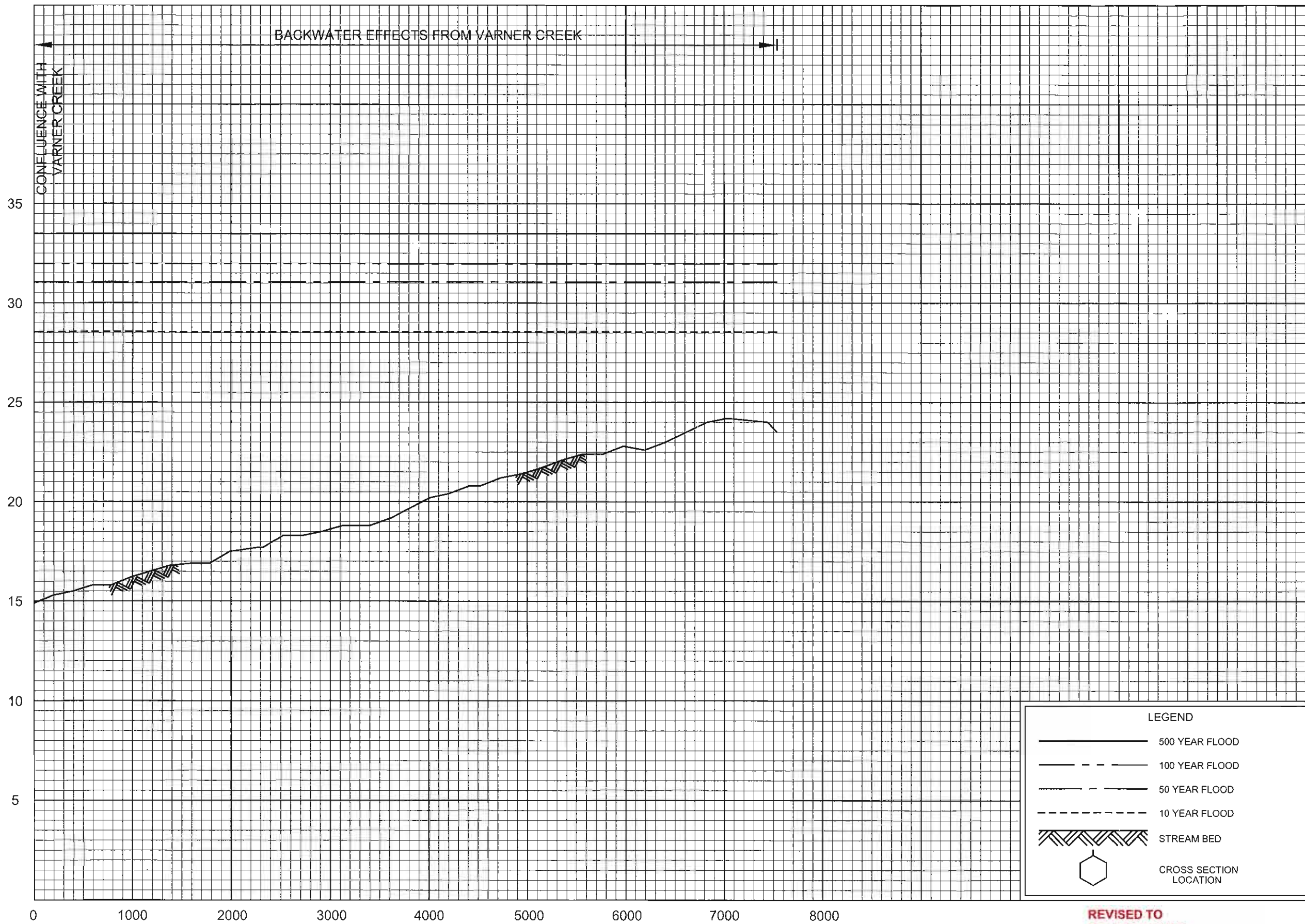
REVISED TO REFLECT LOMR EFFECTIVE: August 29, 2013

FLOOD PROFILES  
VARNER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY  
BRAZORIA COUNTY, TX  
AND INCORPORATED AREAS



ELEVATION IN FEET (NGVD - 1979 RELEVELING)



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH VARNER CREEK

REVISED TO REFLECT LOMR EFFECTIVE: August 29, 2013

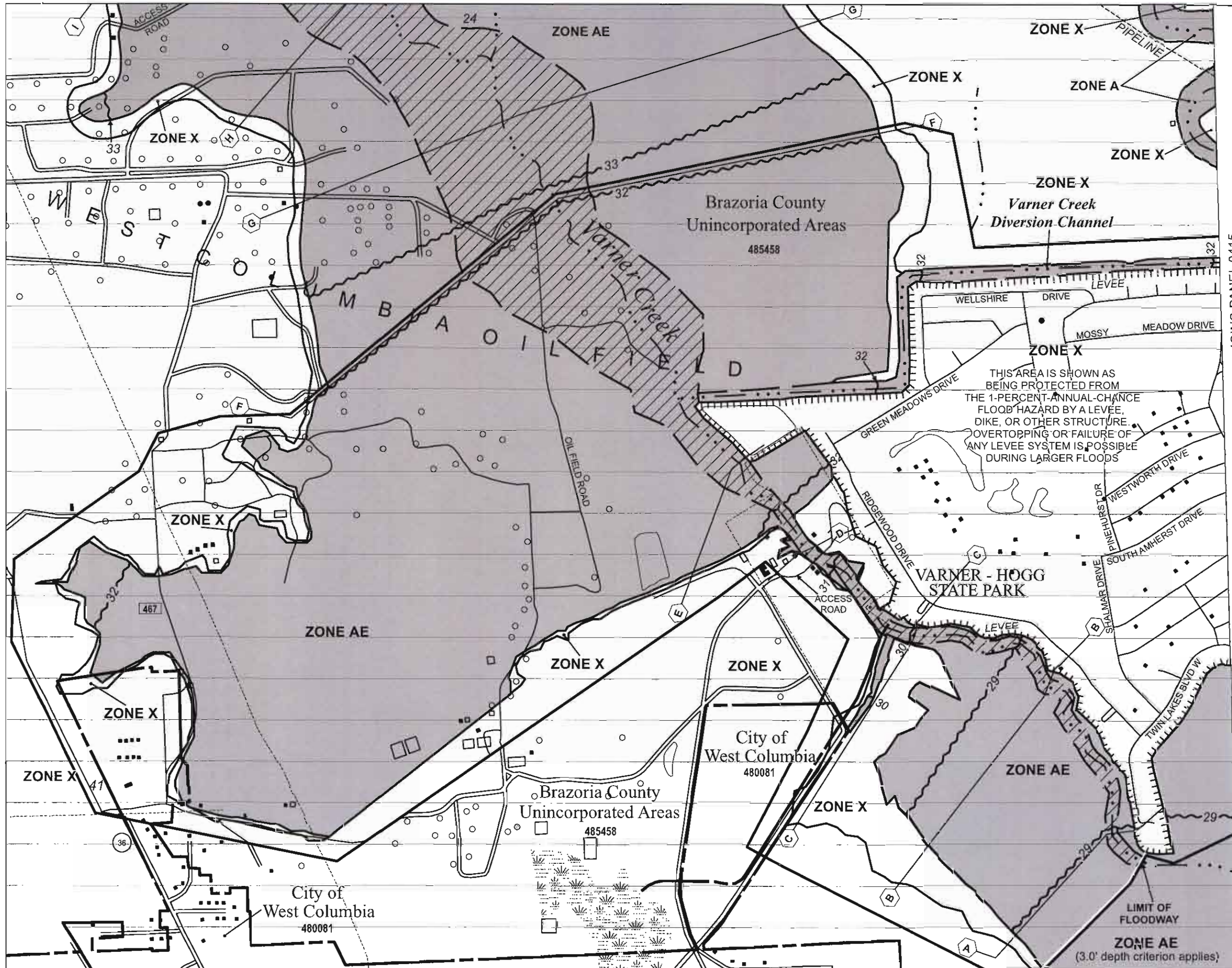
FEDERAL EMERGENCY MANAGEMENT AGENCY

BRAZORIA COUNTY, TX AND INCORPORATED AREAS

FLOOD PROFILES




VARNER CREEK DIVERSION CHANNEL





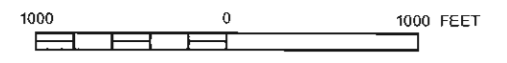
JOINS PANEL 0415

Legend

-  1% annual chance (100-Year) Floodplain
-  1% annual chance (100-Year) Floodway
-  0.2% annual chance (500-Year) Floodplain



MAP SCALE 1"= 1000'



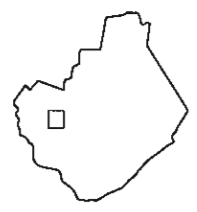
NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP  
BRAZORIA COUNTY  
TEXAS AND  
INCORPORATED AREAS

PANEL 395 OF 850  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WEST COLUMBIA, CITY OF	480081	0395	H
UNINCORPORATED AREAS	485458	0395	H



PANEL LOCATION

**REVISED TO REFLECT LOMR**  
**EFFECTIVE: August 29, 2013**



MAP NUMBER  
48039C0395 H  
EFFECTIVE DATE:  
JUNE 5, 1989

Federal Emergency Management Agency

THIS AREA IS SHOWN AS BEING PROTECTED FROM THE 1-PERCENT ANNUAL-CHANCE FLOOD HAZARD BY A LEVEE, DIKE, OR OTHER STRUCTURE. OVERTOPPING OR FAILURE OF ANY LEVEE SYSTEM IS POSSIBLE DURING LARGER FLOODS

LIMIT OF FLOODWAY

ZONE AE  
(3.0' depth criterion applies)



