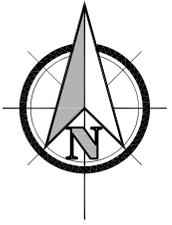


**LOMR COLLABORATIVE COMMITMENT PROCESSING (LCCP) PILOT PROGRAM CHECKLIST**

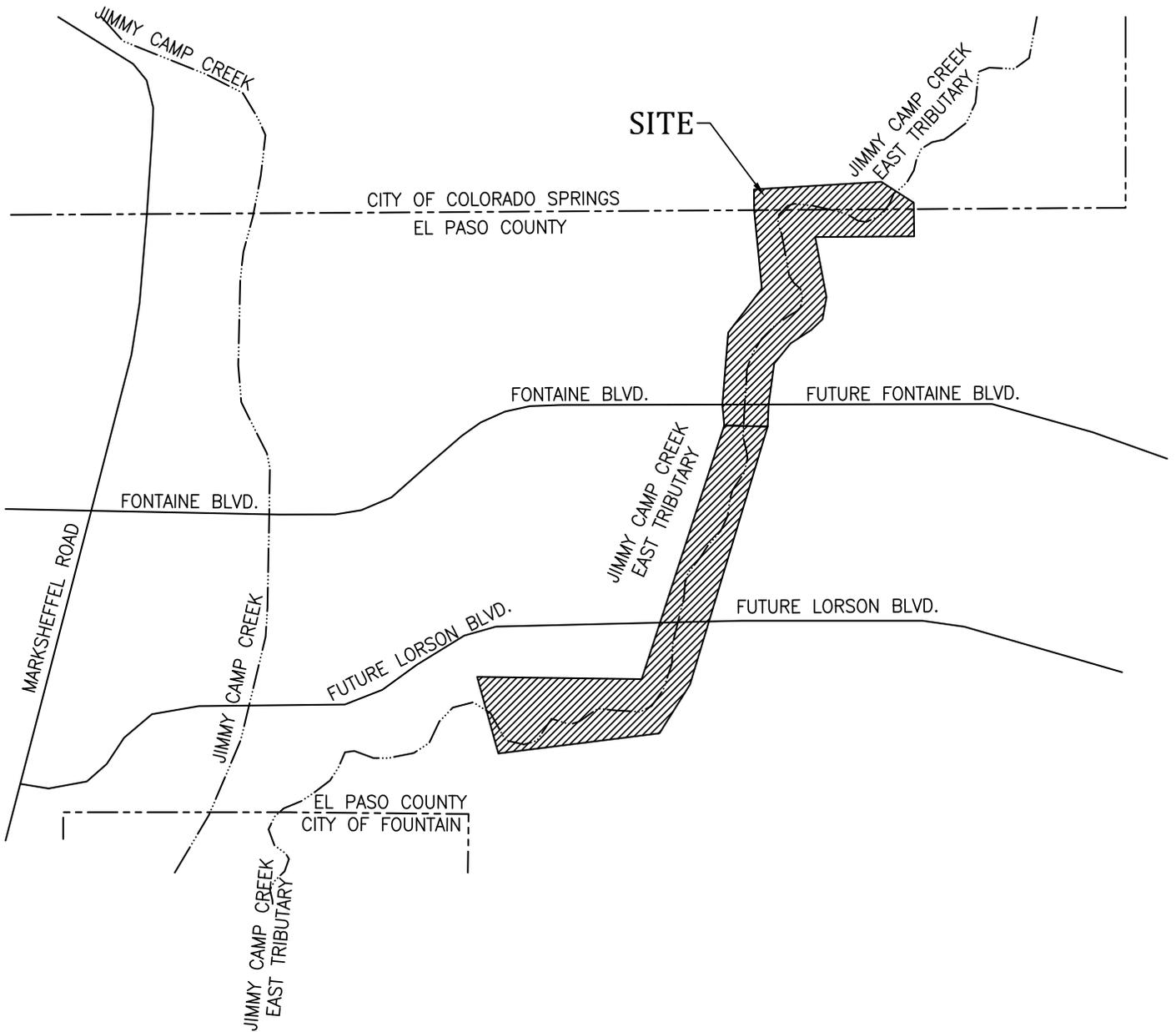
<b>NAME</b>	Stephen Brown
<b>COMPANY</b>	Kiowa Engineering Corporation
<b>CONTACT INFORMATION</b>	7175 West Jefferson Avenue Suite 2200 Lakewood, CO, 80235 sbrown@kiowaengineering.com 303-692-0369
<b>MT-2 CASE TYPE</b>	As-built LOMR following CLOMR
<b>PROJECT DESCRIPTION (One Page of brief and concise description about the purpose of the request)</b>	<input checked="" type="checkbox"/> Yes
<b>LATITUDE-LONGITUDE</b>	38.739292, 104.628095
<b>MT-2 FORMS Form 1, 2, 3</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>EFFECTIVE FIRM</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  <b>List all FIRM Panels affected below</b> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">08041C0769G and 08041C0957G</div>
<b>DIGITAL HYDRAULIC MODELS</b>	<input checked="" type="checkbox"/> Effective <input type="checkbox"/> Corrected Effective - (optional) <input checked="" type="checkbox"/> Pre-Project (Existing) - (optional) <input checked="" type="checkbox"/> Proposed - (optional) <input checked="" type="checkbox"/> Post-Project (As-Built) - (optional)
<b>EFFECTIVE HYDRAULIC MODELS - PDF COPY (if digital copy is not available)</b>	Digital HEC-2 Models provided
<b>DRAFT TOPOGRAPHIC WORK MAP</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>DRAFT ANNOTATED FIRM</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>ADDITIONAL NOTES</b>	<div style="border: 1px solid black; height: 80px; width: 100%;"></div>

**CHECKLIST AND DATA SUBMITTAL:**

This checklist including the required data may be submitted to Compass (FEMA PTS A&E Contractor) through email [Compass.MT-2@aecom.com](mailto:Compass.MT-2@aecom.com).



SCALE: NTS



**FIGURE 1**  
**VICINITY MAP**  
**EAST TRIBUTARY JIMMY CAMP CREEK LOMR**  
**LORSON RANCH**

## East Tributary to Jimmy Camp Creek LOMR Project Summary

This LOMR request follows a CLOMR for Jimmy Camp Creek East Tributary approved in 2017 (Case No. 17-08-1043R). The effective model for the reach was a 2015 LOMR (Case No. 14-08-0534P). The project reach at this time consisted of a natural and unimproved major drainageway. Channel improvements in the current LOMR reflect channelization, five drop structures, and bridge crossings and Fontaine Boulevard and Lorson Boulevard associated with Lorson Ranch residential development. Construction of the improved channel was completed in 2018 after which asbuilt survey provided the basis of the Post Project hydraulic model and workmap.



**Channel Upstream of Fontaine Blvd.**

**Upstream Face of Fontaine Blvd Bridge.**

The HECRAS hydraulic models for the duplicate effective, corrected effective and proposed conditions are organized into two separate plans each for the 10-, 50-, 100-, 500-year storm frequencies and floodway. The Post Project model plan contains all flood frequencies and the floodway profile. In general, the Post Project profiles match well with the Proposed profiles from the CLOMR.

Sheets 1-4 of the submittal show the Post Project Workmap with the 100-, 500-, and floodway floodplain delineations based on asbuilt survey and contours. The corrected effective floodplain delineations from the CLOMR are also shown. The Post Project delineations were plotted based on top widths and water surface elevations at each section and then interpolated between sections. A floodway encroachment analysis was performed and plotted; the floodway and 100-year floodplain were coincident through the majority of the reach since flows were contained in the channel.

Temporary riprap check dams were installed during construction as part of the erosion control plan (see Workmaps). These structures are to be removed once vegetation is established and were therefor not included in the Post Project model.

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 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
080060	City of Colorado Springs	CO	08041C	0976G	12/07/18
080059	El Paso County, Unincorporated Areas	CO	08041C	0957G	12/07/18

2. a. Flooding Source: Jimmy Camp Creek East Tributary

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

3. Project Name/Identifier: East Tributary Jimmy Camp Creek LOMR Lorson Ranch

4. FEMA zone designations affected: AE, 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.

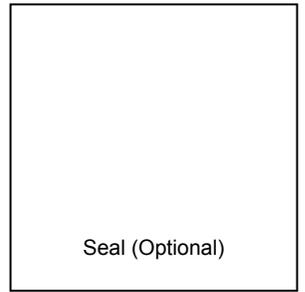


Ensure the forms that are appropriate to your revision request are included in your submittal.

**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   |



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**

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**PRIVACY ACT STATEMENT**

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**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: Jimmy Camp Creek East Tributary

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

**A. HYDROLOGY**

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

- |   |  |  |
|---|--|--|
| <input checked="" type="checkbox"/> Not revised (skip to section B) | <input type="checkbox"/> No existing analysis        | <input type="checkbox"/> Improved data                           |
| <input type="checkbox"/> Alternative methodology                    | <input type="checkbox"/> Proposed Conditions (CLOMR) | <input type="checkbox"/> 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)

- |   |  |
|---|--|
| <input type="checkbox"/> Statistical Analysis of Gage Records | <input type="checkbox"/> Precipitation/Runoff Model → Specify Model: _____ |
| <input type="checkbox"/> Regional Regression Equations        | <input type="checkbox"/> 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>1036 ft. u/s of FIRM section D</u>	<u>6746</u>	<u>5693.45</u>	<u>5693.45</u>
Upstream Limit*	<u>712 ft. d/s of FIRM section I</u>	<u>14800</u>	<u>5735.56</u>	<u>5735.56</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 5.0.5

---

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: <u>2019LOMR</u>	Plan Name: <u>Duplicate Eff FP</u>	File Name: <u>ProposedEastTribu</u> Plan Name: <u>Duplicate Eff FW</u>	NGVD 1929
Corrected Effective Model*	File Name: <u>2019LOMR</u>	Plan Name: <u>Corrected Eff FP</u>	File Name: _____ Plan Name: _____	NGVD 1929
Existing or Pre-Project Conditions Model	File Name: <u>2019LOMR</u>	Plan Name: <u>Corrected Eff FP</u>	File Name: _____ Plan Name: _____	NGVD 1929
Revised or Post-Project Conditions Model	File Name: <u>2019LOMR</u>	Plan Name: <u>Asbuilt Final</u>	File Name: <u>2019LOMR</u> Plan Name: <u>Asbuilt Final</u>	NGVD 1929
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: Colorado State Plane Coordinates, NAD 83, NGVD 29

Source: Field Survey Date: January 2019

Accuracy: 0.1'

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**

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**PRIVACY ACT STATEMENT**

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Flooding Source: Jimmy Camp Creek East Tributary

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: Fontaine Boulevard Bridge

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

Location of Structure: Fontaine Boulevard and Jimmy Camp Creek East Tributary

Downstream Limit/Cross Section: 11523

Upstream Limit/Cross Section: 11668

2. Name of Structure: Lorson Boulevard Bridge

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

Location of Structure: Lorson Boulevard and Jimmy Camp Creek East Tributary

Downstream Limit/Cross Section: 9459

Upstream Limit/Cross Section: 9573

3. Name of Structure: Jimmy Camp Creek East Tributary Channel Design

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

Location of Structure: Jimmy Camp Creek East Tributary from 100' d/s of Fontaine Blvd. to county line 3100' u/s

Downstream Limit/Cross Section: 11395

Upstream Limit/Cross Section: 14527

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



**D. DAM/BASIN**

Flooding Source: \_\_\_\_\_  
 Name of Structure: \_\_\_\_\_

1. This request is for (check one):       Existing dam/basin     New dam/basin     Modification of existing dam/basin
2. The dam/basin was designed by (check one):  Federal agency     State agency     Private organization     Local government agency

Name of the agency or organization: \_\_\_\_\_

3. The Dam was permitted as (check one):     Federal Dam                       State Dam

Provide the permit or identification number (ID) for the dam and the appropriate permitting agency or organization

Permit or ID number \_\_\_\_\_ Permitting Agency or Organization \_\_\_\_\_

- a.     Local Government Dam     Private Dam

Provided related drawings, specification and supporting design information.

4. Does the project involve revised hydrology?     Yes     No

If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

Was the dam/basin designed using critical duration storm? (must account for the maximum volume of runoff)

- Yes, provide supporting documentation with your completed Form 2.
- No, provide a written explanation and justification for not using the critical duration storm.

5. Does the submittal include debris/sediment yield analysis?     Yes     No

If Yes, then fill out Section F (Sediment Transport). If No, then attach your explanation for why debris/sediment analysis was not considered?

6. Does the Base Flood Elevation behind the dam/basin or downstream of the dam/basin change?     Yes     No

If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

FREQUENCY (% annual chance)	Stillwater Elevation Behind the Dam/Basin	
	FIS	REVISED
10-year (10%)	_____	_____
50-year (2%)	_____	_____
100-year (1%)	_____	_____
500-year (0.2%)	_____	_____
Normal Pool Elevation	_____	_____

7. Please attach a copy of the formal Operation and Maintenance Plan

**E. LEVEE/FLOODWALL**

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

- upgrading of an existing levee/floodwall system       a newly constructed levee/floodwall system       reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

- earthen embankment, dike, berm, etc.      Station \_\_\_\_\_ to \_\_\_\_\_  
 structural floodwall      Station \_\_\_\_\_ to \_\_\_\_\_  
 Other (describe): \_\_\_\_\_      Station \_\_\_\_\_ to \_\_\_\_\_

c. Structural Type (check one):     monolithic cast-in place reinforced concrete     reinforced concrete masonry block     sheet piling  
 Other (describe): \_\_\_\_\_

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

- Yes     No

If Yes, by which agency? \_\_\_\_\_

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

- 1. Plan of the levee embankment and floodwall structures. Sheet Numbers: \_\_\_\_\_
- 2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system. Sheet Numbers: \_\_\_\_\_
- 3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure. Sheet Numbers: \_\_\_\_\_
- 4. A layout detail for the embankment protection measures. Sheet Numbers: \_\_\_\_\_
- 5. Location, layout, and size and shape of the levee embankment features, foundation treatment, Floodwall structure, closure structures, and pump stations. Sheet Numbers: \_\_\_\_\_

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

- 3.0 feet or more at the downstream end and throughout  Yes  No
- 3.5 feet or more at the upstream end  Yes  No
- 4.0 feet within 100 feet upstream of all structures and/or constrictions  Yes  No

Coastal

- 1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).  Yes  No
- 2.0 feet above the 1%-annual-chance stillwater surge elevation  Yes  No

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE?  Yes  No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one):  exists  does not exist

If opening exists, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

- a. The maximum levee slope land side is: \_\_\_\_\_
- b. The maximum levee slope flood side is: \_\_\_\_\_
- c. The range of velocities along the levee during the base flood is: \_\_\_\_\_ (min.) to \_\_\_\_\_ (max.)
- d. Embankment material is protected by (describe what kind): \_\_\_\_\_
- e. Riprap Design Parameters (check one):       Velocity       Tractive stress  
Attach references

Reach	Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
					D <sub>100</sub>	D <sub>50</sub>	Thickness	
Sta    to								
Sta    to								
Sta    to								
Sta    to								
Sta    to								
Sta    to								

(Extend table on an added sheet as needed and reference each entry)

- f. Is a bedding/filter analysis and design attached?     Yes     No
- g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

- a. Identify locations and describe the basis for selection of critical location for analysis:  
\_\_\_\_\_
  - Overall height: Sta.: \_\_\_\_\_, height \_\_\_\_\_ ft.
  - Limiting foundation soil strength:  
 Strength  $\phi$  = \_\_\_\_\_ degrees, c = \_\_\_\_\_ psf  
 Slope: SS = \_\_\_\_\_ (h) to \_\_\_\_\_ (v)  
 (Repeat as needed on an added sheet for additional locations)
- b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):  
\_\_\_\_\_
- c. Summary of stability analysis results:

**E. LEVEE/FLOODWALL (CONTINUED)**

5. Embankment And Foundation Stability (continued)

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction		1.3
II	Sudden drawdown		1.0
III	Critical flood stage		1.4
IV	Steady seepage at flood stage		1.4
VI	Earthquake (Case I)		1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

- d. Was a seepage analysis for the embankment performed?  Yes  No  
 If Yes, describe methodology used:
- e. Was a seepage analysis for the foundation performed?  Yes  No
- f. Were uplift pressures at the embankment landside toe checked?  Yes  No
- g. Were seepage exit gradients checked for piping potential?  Yes  No
- h. The duration of the base flood hydrograph against the embankment is \_\_\_\_\_ hours.

Attach engineering analysis to support construction plans.

6. Floodwall And Foundation Stability

- a. Describe analysis submittal based on Code (check one):  UBC (1988)  Other (specify): \_\_\_\_\_
- b. Stability analysis submitted provides for:  Overturning  Sliding If not, explain: \_\_\_\_\_
- c. Loading included in the analyses were:  Lateral earth @  $P_A =$  \_\_\_\_\_ psf;  $P_p =$  \_\_\_\_\_ psf  
 Surcharge-Slope @ \_\_\_\_\_,  surface \_\_\_\_\_ psf  
 Wind @  $P_w =$  \_\_\_\_\_ psf  
 Seepage (Uplift); \_\_\_\_\_  Earthquake @  $P_{eq} =$  \_\_\_\_\_ %g
- 1%-annual-chance significant wave height: \_\_\_\_\_ ft.  
 1%-annual-chance significant wave period: \_\_\_\_\_ sec.
- d. Summary of Stability Analysis Results: Factors of Safety.  
 Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood, & Impact	1.5	1.5				
Dead, Soil, & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)  
Note: (Extend table on an added sheet as needed and reference)

**E. LEVEE/FLOODWALL (CONTINUED)**

6. Floodwall And Foundation Stability (continued)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

f. Foundation scour protection  is,  is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin?  Yes  No

b. The computed range of settlement is \_\_\_\_\_ ft. to \_\_\_\_\_ ft.

c. Settlement of the levee crest is determined to be primarily from :  Foundation consolidation  Embankment compression  
 Other (Describe): \_\_\_\_\_

d. Differential settlement of floodwalls  has  has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: \_\_\_\_\_ acres

Draining to ponding area: \_\_\_\_\_ acres

b. Relationships Established

Ponding elevation vs. storage  Yes  No

Ponding elevation vs. gravity flow  Yes  No

Differential head vs. gravity flow  Yes  No

c. The river flow duration curve is enclosed:  Yes  No

d. Specify the discharge capacity of the head pressure conduit: \_\_\_\_\_ cfs

e. Which flooding conditions were analyzed?

- Gravity flow (Interior Watershed)  Yes  No
- Common storm (River Watershed)  Yes  No
- Historical ponding probability  Yes  No
- Coastal wave overtopping  Yes  No

If No for any of the above, attach explanation.

e. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection.  Yes  No If No, attach explanation.

g. The rate of seepage through the levee system for the base flood is \_\_\_\_\_ cfs

h. The length of levee system used to drive this seepage rate in item g: \_\_\_\_\_ ft.

**E. LEVEE/FLOODWALL (CONTINUED)**

8. Interior Drainage (continued)

i. Will pumping plants be used for interior drainage?  Yes  No

If Yes, include the number of pumping plants: \_\_\_\_\_ For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operation be automatic?  Yes  No

If the pumps are electric, are there backup power sources?  Yes  No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction  is  is not a problem

Hydrocompaction  is  is not a problem

Heave differential movement due to soils of high shrink/swell  is  is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?  
 Yes  No Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered?  Yes  No

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

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations?  Yes  No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?  
 Yes  No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?  
 Yes  No If the answer is No to any of the above, please attach supporting documentation.

**E. LEVEE/FLOODWALL (CONTINUED)**

11. Maintenance Plan

Please attach a copy of the formal maintenance plan for the levee/floodwall

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

**CERTIFICATION OF THE LEVEE DOCUMENTATION**

This certification is to be signed and sealed by a licensed registered professional engineer authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.10(e) 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: \_\_\_\_\_ License No.: \_\_\_\_\_ Expiration Date: \_\_\_\_\_  
Company Name: \_\_\_\_\_ Telephone No.: \_\_\_\_\_ Fax No.: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

**F. SEDIMENT TRANSPORT**

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

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

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume \_\_\_\_\_ acre-feet

Debris load associated with the base flood discharge: Volume \_\_\_\_\_ acre-feet

Sediment transport rate \_\_\_\_\_ (percent concentration by volume)

Method used to estimate sediment transport: \_\_\_\_\_

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition: \_\_\_\_\_

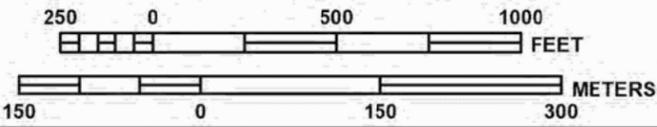
Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport: \_\_\_\_\_

Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.



MAP SCALE 1" = 500'



LEGEND	
	POST PROJECT 500-YEAR FLOODPLAIN
	POST PROJECT 100-YEAR FLOODPLAIN
	POST PROJECT FLOODWAY

NFIP

PANEL 0957G

NATIONAL FLOOD INSURANCE PROGRAM

# FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY,  
COLORADO  
AND INCORPORATED AREAS

PANEL 957 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0957	G
EL PASO COUNTY	080059	0957	G
FOUNTAIN, CITY OF	080061	0957	G

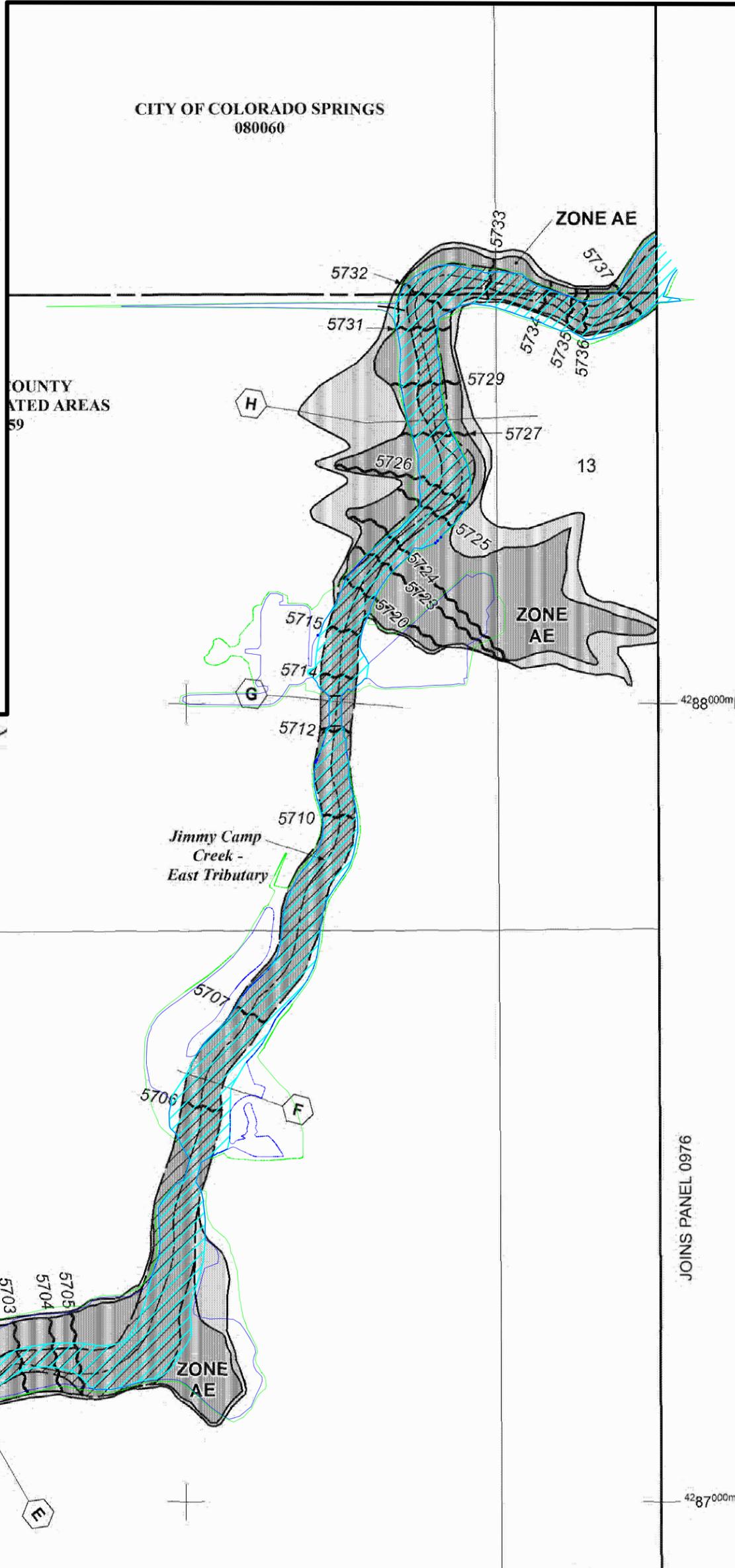
Notice to User: The **Map Number** shown below should be used when placing map orders: the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER  
08041C0957G

MAP REVISED  
DECEMBER 7, 2018

Federal Emergency Management Agency



E AE

EL PASO COUNTY

ANNOTATED FIRM  
 JIMMY CAMP CREEK EAST TRIBUTARY LOMR

LEGEND	
	POST PROJECT 500-YEAR FLOODPLAIN
	POST PROJECT 100-YEAR FLOODPLAIN
	POST PROJECT FLOODWAY

MAP SCALE 1" = 500'

**PANEL 0976G**

**FIRM**  
 FLOOD INSURANCE RATE MAP  
 EL PASO COUNTY,  
 COLORADO  
 AND INCORPORATED AREAS

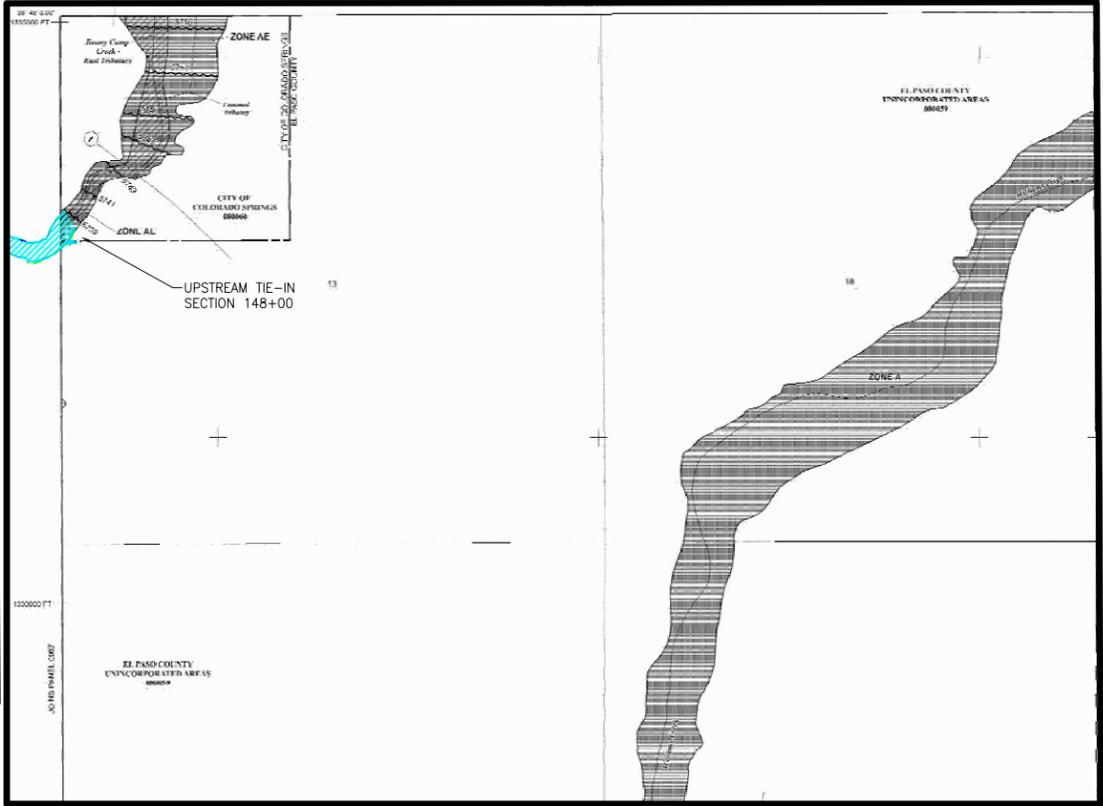
PANEL 976 OF 1300  
 (BY MAP SHEET OR OTHER PANEL LAYOUT)

CONTRACT:  
 CONTRACT NO. 08041C0976G

MAP NUMBER  
 08041C0976G

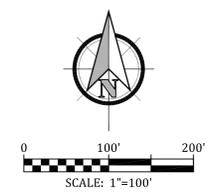
MAP REVISED  
 DECEMBER 7, 2018

Federal Emergency Management Agency





LEGEND	
	CORRECTED EFFECTIVE 100-YEAR FLOODPLAIN
	CORRECTED EFFECTIVE 500-YEAR FLOODPLAIN
	POST PROJECT 100-YEAR FLOODPLAIN
	POST PROJECT 500-YEAR FLOODPLAIN
	POST PROJECT FLOODWAY
	EXISTING CONTOURS



TOPOGRAPHY DOWNSTREAM OF SECTION 84+30 IS BASED UPON AERIAL MAPPING PROVIDED BY CORE ENGINEERING INC., COLORADO STATE PLANE COORDINATES 1983, AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.

THE TOPOGRAPHY WAS COMPILED IN ACCORDANCE WITH NATIONAL MAPPING STANDARDS FOR 1"=200' & 2' CONTOUR INTERVAL DETAIL.

TOPOGRAPHIC MAPPING UPSTREAM OF SECTION 54+30 IS BASED ON FIELD SURVEY BY M & S CIVIL CONSULTANTS, COLORADO STATE PLANE COORDINATES 1983, AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.

SITE BENCHMARK: FIMS MONUMENT NO. F204

STEPHEN A. BROWN  
COLORADO LIC. 40190

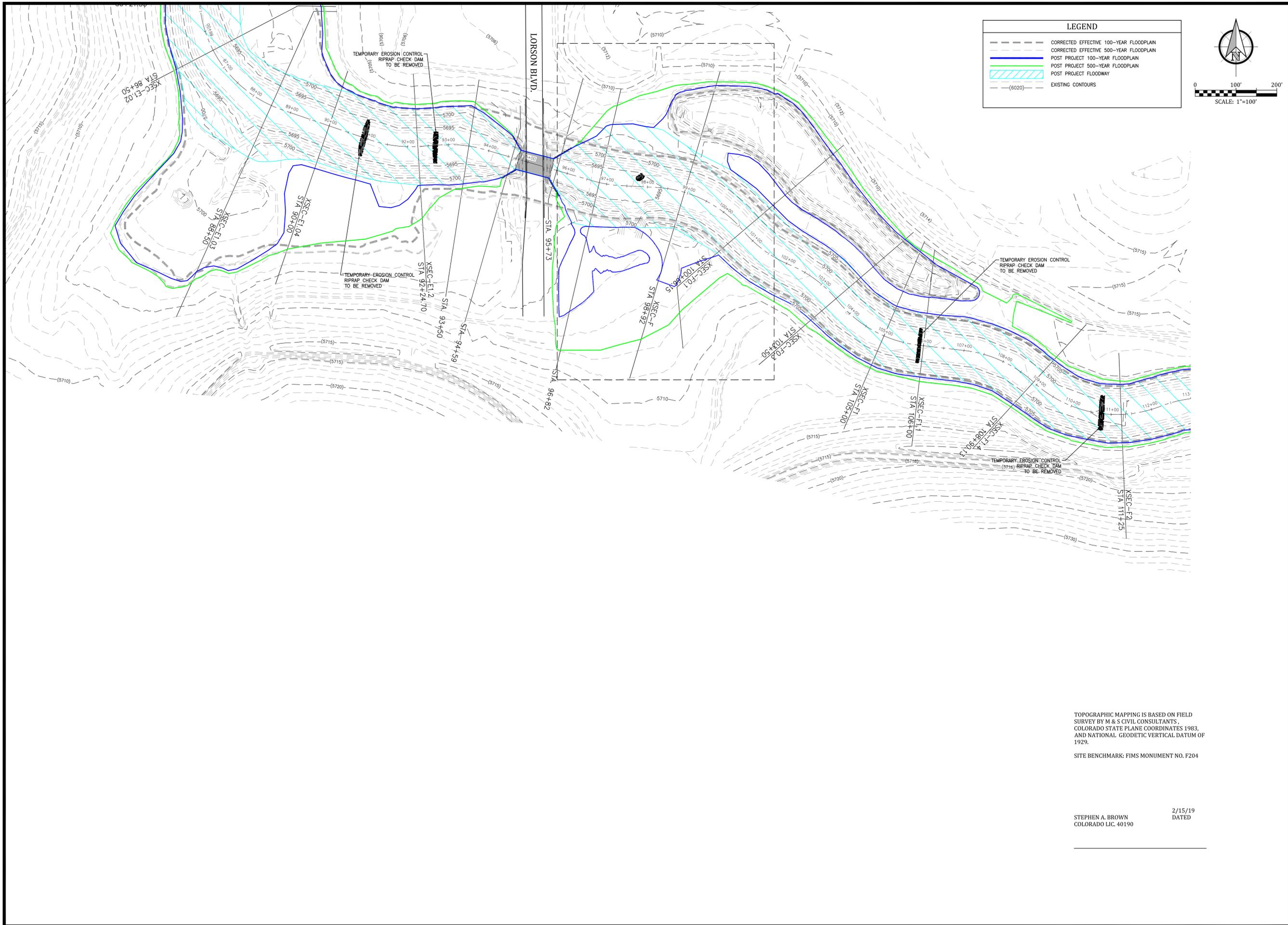
2/15/19  
DATED

**EAST TRIBUTARY JIMMY CAMP CREEK CLOMR  
LORSON RANCH  
POST PROJECT CONDITIONS FLOODPLAIN MAP  
EL PASO COUNTY, COLORADO**

**Kiowa**  
Celebrating 30 years  
Engineering Corporation  
1604 South 21st Street  
Colorado Springs, Colorado 80904  
(719) 630-7342

Project No.:	19001
Date:	FEBRUARY 7, 2019
Design:	SAB
Drawn:	SAB
Check:	RNW
Revisions:	

PLOT: LORSON\_RANCH\_FLOODPLAIN\_MAP/FEB\_15\_2019



**LEGEND**

- CORRECTED EFFECTIVE 100-YEAR FLOODPLAIN
- CORRECTED EFFECTIVE 500-YEAR FLOODPLAIN
- POST PROJECT 100-YEAR FLOODPLAIN
- POST PROJECT 500-YEAR FLOODPLAIN
- POST PROJECT FLOODWAY
- EXISTING CONTOURS

0 100' 200'  
SCALE: 1"=100'

TOPOGRAPHIC MAPPING IS BASED ON FIELD SURVEY BY M & S CIVIL CONSULTANTS, COLORADO STATE PLANE COORDINATES 1983, AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.  
SITE BENCHMARK: FIMS MONUMENT NO. F204

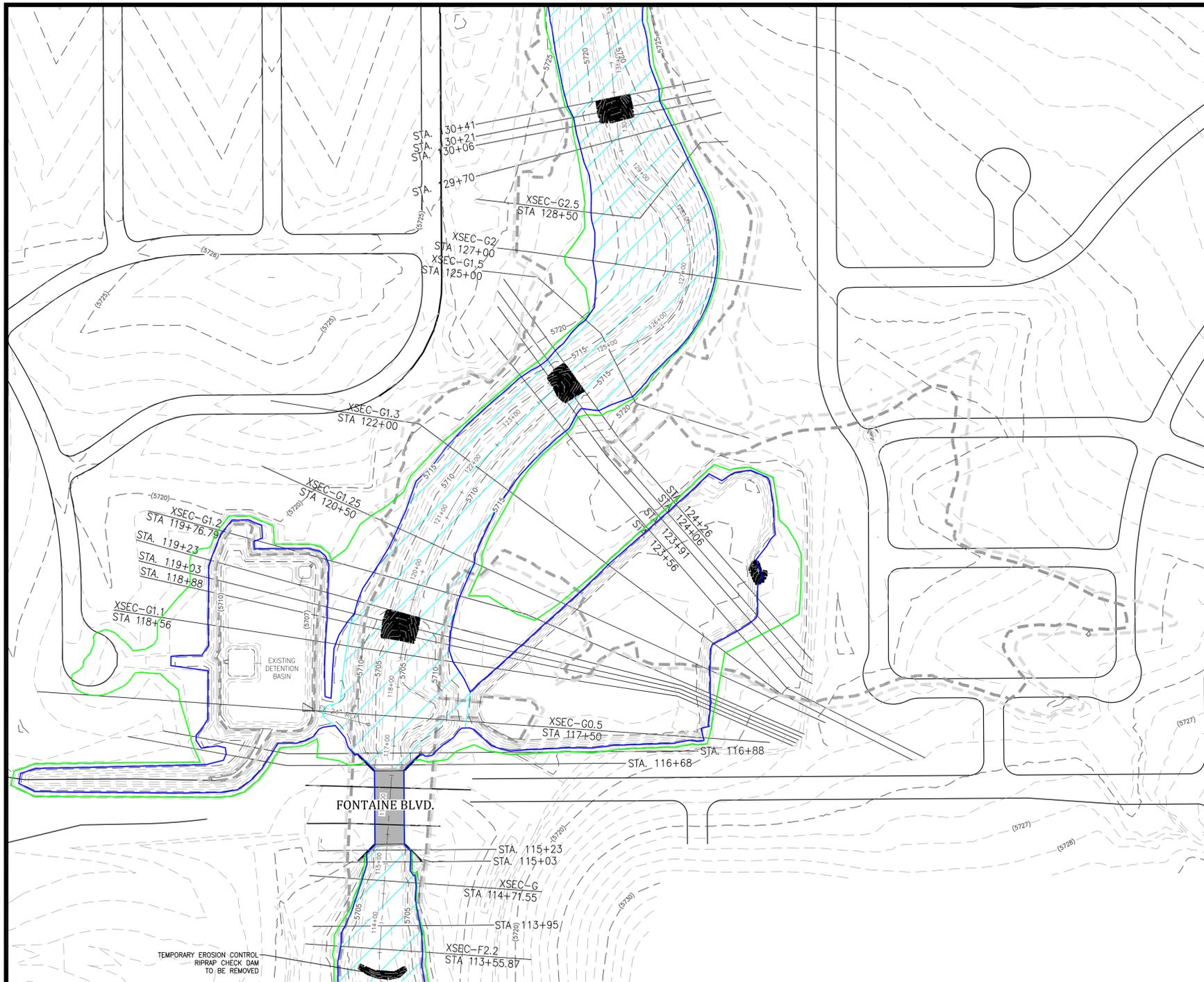
STEPHEN A. BROWN  
COLORADO LIC. 40190

2/15/19  
DATED

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LORSON RANCH  
POST PROJECT CONDITIONS FLOODPLAIN MAP  
EL PASO COUNTY, COLORADO**

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**LEGEND**

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- EXISTING CONTOURS

SCALE: 1"=100'

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**EAST TRIBUTARY JIMMY CAMP CREEK CLOMR**  
**LORSON RANCH**  
**POST PROJECT CONDITIONS FLOODPLAIN MAP**  
 EL PASO COUNTY, COLORADO

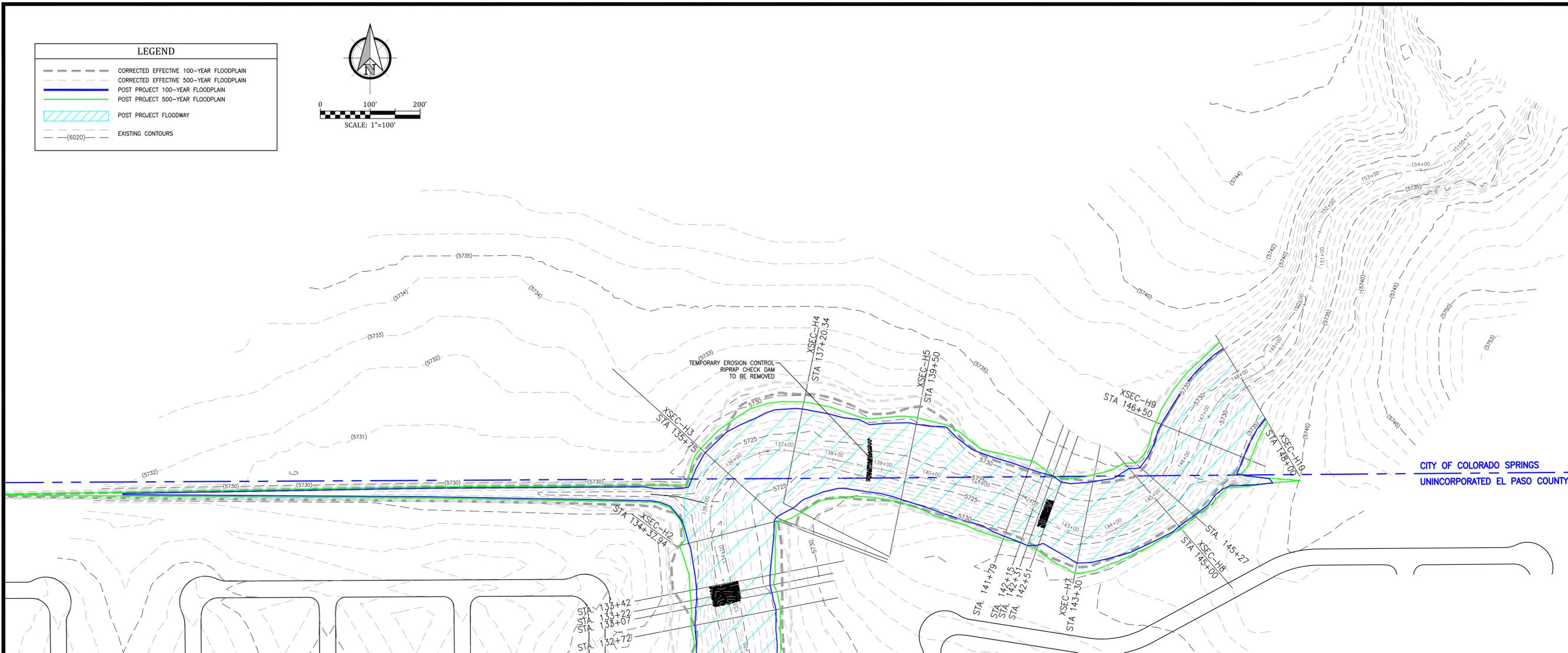
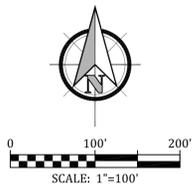
TOPOGRAPHIC MAPPING IS BASED FIELD SURVEY BY M & S CIVIL CONSULTANTS, COLORADO STATE PLANE COORDINATES 1983, AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.  
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STEPHEN A. BROWN  
 COLORADO LIC. 40190  
 2/15/19  
 DATED

Project No.:	19001
Date:	FEBRUARY 7, 2019
Design:	SAB
Drawn:	SAB
Check:	RNW
Revisions:	

PROJECT: LORSON RANCH; DRAWN: SAB; CHECK: RNW; DATE: 2/15/19; SHEET: 3 OF 4

LEGEND	
	CORRECTED EFFECTIVE 100-YEAR FLOODPLAIN
	CORRECTED EFFECTIVE 500-YEAR FLOODPLAIN
	POST PROJECT 100-YEAR FLOODPLAIN
	POST PROJECT 500-YEAR FLOODPLAIN
	POST PROJECT FLOODWAY
	EXISTING CONTOURS



TOPOGRAPHIC MAPPING IS BASED ON FIELD SURVEY BY M & S CIVIL CONSULTANTS, COLORADO STATE PLANE COORDINATES 1983, AND NATIONAL GEODETIC VERTICAL DATUM OF 1929.

SITE BENCHMARK: FIMS MONUMENT NO. F204

STEPHEN A. BROWN  
COLORADO LIC. 40190

2/15/19  
DATED

**EAST TRIBUTARY JIMMY CAMP CREEK CLOMR  
LORSON RANCH  
POST PROJECT CONDITIONS FLOODPLAIN MAP  
EL PASO COUNTY, COLORADO**



Project No.:	19001
Date:	FEBRUARY 7, 2019
Design:	SAB
Drawn:	SAB
Check:	RNW
Revisions:	

PROJECT LUMP SUM CONTRACT: FIMS/ENG/FEB 15, 2019