EPC STORMWATER REVIEW COMMENTS
IN ORANGE BOXES WITH BLACK TEXT

MASTER DEVELOPMENT DRAINAGE PLAN
FOR
MARKSHEFFEL CROSSING

As applicable, update the LOI to identify a LOMR will be completed and channel work in area X will be completed by developer; other areas responsibility of XXXX

Prepared for:
RK FAMILY INVESTMENTS, LLC
4560 W. 33RD STREET
DENVER CO 80212
(719) 390-1900

Prepared by:
CLASSIC CONSULTING
619 N. CASCADE AVE SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job No. 2630.01
PCD File No. SKP-XXX

SKP-262

MASTER DEVELOPMENT DRAINAGE PLAN FOR
MARKSHEFFEL CROSSING

ENGINEER'S STATEMENT:
The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

Kyle R. Campbell Colorado P.E. #29794 Date

OWNER'S/DEVELOPER'S STATEMENT:
I, the owner/developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: RK Family Investments, LLC

By:

Title:

Address: 4560 W. 33rd Street

Denver, CO 80212

EL PASO COUNTY:
Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

For County Engineer, / ECM Administrator Date

Conditions:

Change to
"Joshua J. Palmer, PE
County Engineer/ECM Administrator"

CLASSIC CONSULTING ENGINEERS & SURVEYORS

MASTER DEVELOPMENT DRAINAGE PLAN FOR
MARKSHEFFEL CROSSING

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MASTER DEVELOPMENT DRAINAGE PLAN FOR MARKSHEFFEL CROSSING

PURPOSE

The intent of the owner/developer is to develop the Marksheffel Crossing Property. The purpose of this Master Development Drainage Plan, as part of the Marksheffel Crossing Property Sketch Plan Application, is to identify major drainage features and facilities upstream and required through the site and to provide drainage direction for development or redevelopment of the property. Also, the purpose is to outline the necessary improvements to safely route developed storm water runoff to adequate outfall facilities. The drainage improvements proposed in this report are preliminary in nature and final drainage reports are required upon any development or redevelopment within the Marksheffel Crossing Property that detail the 'to be constructed' drainage systems and stormwater quality facilities.

GENERAL DESCRIPTION (LOCATION AND DESCRIPTION)

The Marksheffel Crossing Property is a 57.277-acre site located in a portion of sections 5, township 14 south, range 65 west of the sixth principal meridian. The site is comprised of multiple parcels (both platted and unplatted). The site is bounded on the north by Venture Street, to the east by Marksheffel Road, to the west generally by existing unplatted, undeveloped parcels zoned industrial and PUP, and to the south by the existing Sand Creek Trapezoidal Channel (East Fork Sand Creek) and undeveloped property. The site is within the Sand Creek drainage basin and East Fork Sand Creek Sub Tributary 6 runs north south through and adjacent to the site. The proposed uses as shown on the Sketch Plan are as follows: Residential, retail commercial, and industrial. All roadway access will be from Marksheffel Road, Venture Street, future Colorado Tech Drive and Reed Grass Way.

PUD?

The average soil condition reflects Hydrologic Group "A" (Ellicott loamy coarse sand) and "B" (Blendon sandy loam) as determined by the "Soil Survey of El Paso County Area," prepared by the Soil Conservation Service (see map in Appendix).

EXISTING DRAINAGE CONDITIONS

The Marksheffel Crossing property is located in the Sand Creek Drainage Basin. Existing conditions in this basin include two existing industrial uses along Marksheffel to the north, an existing trailer storage facility to the south and rolling hills vegetated with native grasses. Existing slopes range from 20% to 2% across the site, and the East Fork Sand Creek Sub Tributary 6 runs at a slope of between 1.1 and 2.5% (unimproved). The entire property generally drains in a southerly direction through numerous natural ravines created from the off-site flows north of the site from the box culvert under Constitution Avenue. This site is analyzed in numerous reports. Due to complex ownership and property configuration of the Marksheffel Crossing sketch plan, the following is a breakdown of the significant reports that have defined drainage routing, in no specific order:

"Hydrology Analysis – East Fork Sand Creek Tributary 6", by Kiowa Engineering Corporation and approved by the County on August 27, 2008. This report predominantly defined the drainage flows at key locations along the East Fork Sand Creek Sub Tributary 6 corridor, including:

1. At Constitution Avenue $Q_{10} = 457$ cfs $Q_{100} = 1076$ cfs
2. At Outfall East Fork Sand Creek (South of Marksheffel Crossing) $Q_{10} = 925$ cfs $Q_{100} = 2088$ cfs

The East Fork Sand Creek Sub Tributary 6 is shown as a distinct and separate drainage corridor running somewhat parallel to the East Fork Sand Creek Improved Channel along Meadowbrook Parkway. See Map in the Appendix depicting the far south connection of the East Fork Sand Creek Tributary 6 into the East Fork Sand Creek. The Marksheffel Crossing sketch plan falls within Basins 7 and 8 of this report (see Appendix for Map).

In 2006, Merrick and Company prepared and obtained approval of the **"Conditional Letter of Map Revision – Wilshire Creek (Reach 6) Tributary to East Fork Sand Creek."** This report was

prepared for Grant Langdon at Wilshire Development, LLC and match the same Sub Tributary 6 outfall connection point into the East Fork Sand Creek corridor south of the proposed Marksheffel Crossing sketch plan. The proposed channel improvements approved with the CLOMR were never constructed (see Appendix for CLOMR).

Based upon the **"Office-level Ecological Assessment Report for the Rowley Site"**, by ECOSystem Services, LLC as contained within the Appendix of this report, they examined a much larger area in conjunction with their review, and in their opinion that the development of this site would not impact any critical habitat for threatened or endangered species nor plant communities and aquatic resources. This high-level assessment will be further defined as specific site development takes place with detailed field reconnaissance and reporting and permitting, if required.

The following descriptions represent the existing on and off-site basins and design points affecting this property:

Design Point E1 (Lot 3 Marksheffel Business Center Filing No. 1) is a 4.49-acre existing platted industrial zoned (I-3) lot currently being used as a storage yard (Sketch Plan Parcel No. 1). An office building is located on the site. Due to the lack of any adjacent storm facilities, all existing drainage flows from this site appear to sheet flow in a southwesterly direction.

Design Point E2 is a 5.14-acre unplatted parcel (Industrial Zone (I-3)) currently being used a trailer storage yard (Sketch Plan Parcel No. 2). An office building is located on the site. Due to the lack of any adjacent storm facilities, all existing drainage flows from this site appear to sheet flow in a southwesterly direction.

Design Point E3 is approximately 6.5-acres of the unplatted existing improved East Fork channel corridor. A public drainage easement was dedicated by this Developer as a part of channel

construction project. No further improvements to this channel are anticipated, and ultimately the corridor will be conveyed to El Paso County.

Design Point E4 is approximately 30.18-acres of unplatted existing industrial zoned (I-3) land. Approximately 20-acres of the area is being used as a trailer storage yard. Due to the lack of any adjacent storm facilities, all existing drainage flows from this site appear to sheet flow in a southwesterly direction.

Design Point E5 is approximately 11.23-acres if unplatted existing industrially zoned (I-3) land that sits directly south of Wilshire Subdivision Filing No. 2. Parcel No. 4 is proposed to be rezoned to allow residential uses that generally flows in a south, southwesterly and southeasterly direction.

See Appendix for the "Pre-Development Conditions" map.

PROPOSED DRAINAGE CONDITIONS

Development within the Marksheffel Crossing Sketch Plan Property is proposed to be urban residential, commercial, and industrial with associated curb, gutter, sidewalk and paved streets on all public and private streets and drive aisles. Overlot grading is anticipated for the majority of the development along with installation of urban utility mains and services. At all design points, where developed flows are greater than in the existing condition, detention facilities will be proposed providing an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage volume with an outlet control device. Frequent and infrequent inflows are released at rates approximating undeveloped conditions. This concept provides some mitigation of increased runoff volume by releasing a portion of the increased runoff at a low rate over an extended period of time, up to 72 hours. This means that frequent storms, smaller than the 2-year event, will be reduced to very low flows near or below the sediment carrying threshold value for downstream drainage ways. Also, by incorporating an outlet structure that limits the 100-

year runoff to the undeveloped condition rate, the discharge hydrograph for storms between the 2 year and the 100-year event will approximate the hydrograph for the undeveloped conditions and will help effectively mitigate the effects of development. Prior to development within the Marksheffel Crossing Sketch Plan property, final drainage reports and construction plans will be required detailing the requirements and specifics of proposed facilities.

Per current drainage criteria, detention/stormwater quality facilities are proposed. The following are concept design treatment area developed conditions with descriptions of anticipated basin areas and conceptual major storm systems and treatment facilities. See the Developed Conditions Drainage Plan in the Appendix.

Design Point D1 (Lot 3 Marksheffel Business Center Filing No. 1) is a 4.49-acre existing platted industrial zoned (I-3) lot currently being used as a storage yard **(Sketch Plan Parcel No. 1)**. An office building is also located on the site. Due to the lack of any adjacent storm facilities, any redevelopment of this site that increases imperviousness will necessitate a full drainage analysis, differential impervious use fees to be paid, and most likely on-site stormwater detention and stormwater quality treatment. No further detailed analysis of this site will be provided in this report, rather future redevelopment adherence to current El Paso County DCM will be required.

Design Point D2 is a 5.14-acre unplatted parcel industrial zoned (I-3) currently being used a trailer storage yard **(Sketch Plan Parcel No. 2)**. An office building is also located on the site. Due to the lack of any adjacent storm facilities, any redevelopment of this site that increases imperviousness will necessitate a full drainage analysis, differential impervious use fees to be paid, and most likely on-site stormwater detention and stormwater quality treatment. No further detailed analysis of this site will be provided in this report, rather future redevelopment adherence to current El Paso County DCM will be required.

This parcel is directly adjacent to the southerly directed East Fork Sand Creek Sub Tributary 6 channel alignment. Based upon prior granted easements and the numerous aforementioned Sub

Tributary 6 approved alignment documents, the far westerly portion of this unplatted parcel will share the channel alignment corridor on this lot split evenly with the adjacent owner. Redevelopment of this site may trigger the shared drainage corridor improvements, unless a satisfactory agreement is in place to defer the improvements.

Design Point D3 is approximately 6.5-acres of the unplatted existing improved East Fork Sand Creek channel corridor that runs in a southwesterly direction near Meadowbrook Parkway **(Drainage Easement No. 1)**. A public drainage easement was dedicated by this Developer as a part of channel construction project. No further improvements to this channel are anticipated, and ultimately the corridor will be conveyed to El Paso County with adjacent platting/development. If any proposed storm outfall connections are made to the channel, they will be analyzed at the time of adjacent development. As stated previously in this report, the connection of the East Fork Sand Creek Sub Tributary 6 drainage corridor into the existing improved East Fork channel takes place south of this proposed sketch plan area.

Design Point D4 is approximately 30.18-acres of unplatted existing industrial zoned (I-3) land **(Parcel No. 3)**. Approximately 20-acres of the area is being used as a trailer storage yard. Due to the lack of any adjacent storm facilities, any redevelopment of this site that increases imperviousness will necessitate a full drainage analysis, differential impervious use fees to be paid, and most likely on-site stormwater detention and stormwater quality treatment. No further detailed analysis of this site will be provided in this report, rather future redevelopment adherence to current El Paso County DCM will be required.

It is anticipated either one (1) southerly located full spectrum detention facility will be used to treat future industrial flows or smaller facilities installed as development occurs resulting in the same required detention and treatment.

Similar to Parcel 2 above, the East Fork Sand Creek Sub Tributary 6 drainage corridor will continue along its existing westerly alignment, sharing its full width evenly with the adjacent industrial

zone property. This is in conformance with the Sand Creek DBPS Hydrology Analysis, FEMA CLOMR and the Wilshire Subdivision Master Development Drainage Plan. Any development adjacent to this corridor will trigger the full channel improvement.

Design Point D5 is approximately 11.23-acres of unplatted existing industrially zoned (I-3) land that sits directly south of Wilshire Subdivision Filing No. 2. Per the proposed Marksheffel Crossing sketch plan it is identified as Parcel No. 4 and is proposed to be rezoned to allow residential uses.

This site, when developed, will provide its own detention and stormwater quality facility at the southeast corner of the parcel. Either site grading or proposed storms piping will direct flows to the east. Any existing upstream tributary flows (Reed Grass Way, rear yards of existing homes, etc.) will also be captured and treated per DCM Requirements.

Parcels 1, 2, 3 and 4 are all proposed to be developed or redeveloped into more intensive uses than currently exists, therefore full compliance with the DCM is proposed along with construction of the East Fork Sand Creek Sub Tributary 6 channel improvements.

East Fork Sand Creek Sub Tributary 6

Currently the East Fork Sand Creek Sub Tributary 6 is un-improved in its entirety along and through the Marksheffel Crossing Sketch Plan area. Per the original Sand Creek Drainage Basin Planning Study, this corridor is identified as Segment No. 6 reflecting a “new” rip-rap channel with a proposed 30’ bottom width rip-rap channel and flows of Q_{100} = 1380 cfs.

The alignment of Segment No. 6 corresponds to the FEMA Floodplan for this corridor with a more northerly outfall into the then proposed East Fork Sand Creek reach EF-2 (a prior proposed 70’ bottom width rip-rap lined channel running in a southwesterly direction.

The aforementioned 2008 Kiowa Hydrology Analysis supercedes the findings and recommendations of the original Sand Creek DBPS, including determining existing and future conditions channel routing elements that was then used to prepare and process the previously approved Conditional Letter of Map Revision.

The proposed Marksheffel Crossing Sketch Plan generally conforms to the most current previously approved as reflected on the attached Developed Conditions Map.

DETENTION FACILITIES / STORMWATER QUALITY

Final design of required facilities will include planning for water quality management and storm water runoff features will be designed during final design and construction of the proposed improvements in conjunction with development or redevelopment applications. Storm water quality measures will be utilized in order to reduce the amount of sediment, debris and pollutants that are allowed to enter the East Fork Sand Creek Sub Tributary 6 drainage corridor. These features include but are not limited to Full Spectrum Extended Detention Basin Sedimentation Facilities, Sand Filter Basins, and Rain Gardens. Site Planning and design techniques should limit impervious area, minimize directly impervious area, lengthen time of travel and increase infiltration in order to decrease the rate and volume of stormwater runoff. Facilities that require detention will provide an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage volume that will release the more frequent storms at a slower rate to help minimize the effects of development of the Marksheffel Crossing Property. These measures will be taken into consideration upon final design of the individual detention facilities as well as the development of the individual land uses within the Marksheffel Crossing Property.

All proposed detention facilities will be private with maintenance by individual lot owners, Homeowners or Business Associations with all drainage facilities within the public Right of Way being public with maintenance by El Paso County.

DRAINAGE CRITERIA

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014. Individual basin design used for detention/SWQ basin sizing was calculated using the Rational Method. Runoff Coefficients are based on the imperviousness of the particular land use and the hydrologic soil type in accordance with Table 6-6. The average rainfall intensity, by recurrence interval found in the Intensity-Duration-Frequency (IDF) curves in Figure 6-5. Mile High Flood District (MHFD)-Detention spreadsheet Ver. 4.05 used for Preliminary Detention/SWQ design. (See Appendix)

The City of Colorado Springs/El Paso County DCM requires the Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainage ways, and implementing long-term source controls. The Four Step Process pertains to management of smaller, frequently occurring storm events, as opposed to larger storms for which drainage and flood control infrastructure are sized. Implementation of these four steps helps to achieve storm water permit requirements.

Upon development, this site will adhere to this **Four Step Process** as follows:

1. **Employ Runoff Reduction Practices:** Proposed urban development (industrial, commercial and residential) impervious areas (roof tops, drive aisles, etc.) will sheet flow as practical across landscaped areas and through open space areas to slow runoff and increase time of concentration prior to being conveyed to the proposed public or private streets or detention facilities. This will minimize directly connected impervious areas within the project site.

2. **Stabilize Drainageways:** The major natural drainageway on-site will be improved with proposed adjacent development. Within this development, urban street sections will be

constructed along with buried storm systems to handle the developed runoff. The final drainage report(s) will better detail all capture methods and any required improvements to do so along with necessary hydraulic analysis and emergency overflow routing methods per County standards. After developed flows utilize the runoff reduction practices, developed flows will travel via curb and gutter within the public streets and eventually public storm systems. These collected flows are then routed directly to the proposed extended detention basins (full-spectrum facilities).

3. **Provide Water Quality Capture Volume (WQCV):** Runoff from this development will be treated through capture and slow release of the WQCV and excess urban runoff volume (EURV) in the proposed Full-Spectrum permanent Extended Detention Basin designed per current El Paso County drainage criteria.

two
(based on the maps two EDBs are anticiapted)

4. **Consider need for Industrial and Commercial BMPs**: Industrial uses are proposed within this development. However, a site-specific storm water quality and erosion control plan and narrative will be submitted along with the grading and erosion control plan. Details such as site-specific sediment and erosion control construction BMP's as well as temporary and permanent BMP's for all development use will be detailed in this plan and narrative to protect receiving waters. Multiple temporary BMP's are anticipated based on specific phasing of the overall development. BMP's will be constructed and maintained as the development has been graded and erosion control methods employed.

FLOODPLAIN STATEMENT

Portions of this site is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Numbers 08041C0752G and 0841C0756G, effective date, December 7, 2018 (See Appendix).

DRAINAGE AND BRIDGE FEES

Any applicable fees shall be provided prior to final plat recordation of any development within this site. Anticipated redevelopment of the existing north parcels will entail analyzing and an assumed increase in imperviousness, therefore they are not included in the summary below. The existing improved East Fork Sand Creek corridor is also not included. The following represents the anticipated overall fees for the undeveloped portions of the property:

Sand Creek Drainage Basin

This section can be removed if you like, since fees are much later down the path.

The property has a total area of 41.41-acres (Parcels No. 3 and 4) and lies entirely within the Sand Creek Drainage Basin boundaries. The following are fees based on the proposed land uses as defined on the Sketch Plan and calculated using the following impervious acreage method approved by El Paso County. The proposed Right-of-way area has been added to the adjacent residential uses:

Fees for 1/8 Ac. Avg. or less lots

(Per El Paso County Percent Impervious Chart: 65%)

11.23 Ac. x 65% = **7.30 Impervious Ac.**

Fees for Industrial Commercial Site

(Per El Paso County Percent Impervious Chart: 95**%**)

30.18 Ac. x 95% = **28.67 Impervious Ac.**

Total Impervious Acreage: 35.97 Imp. Ac.

If you leave this section in, then please update to 2026 fees.

The following calculations are based on the 2022 Sand Creek drainage/bridge fees:

ESTIMATED FEE TOTALS:

Bridge Fees

$ 11,518.00 x 35.97 Impervious Ac. = **$ 414,313.98**

Drainage Fees

$ 28,160.00 x 35.97 Impervious Ac. = **$ 1,012,915.20**

Final fee estimates for individual future filings will be handled under separate drainage reports upon submission of individual filing plats.

SUMMARY

The proposed Marksheffel Crossing property development is within the Sand Creek Drainage Basin. Recommendations are made within this report concerning necessary improvements that may be required as a result of development of this property. The points of storm water release from the proposed site are required to be at or below the calculated historic flow quantities. This development does not impact any downstream facility or property to an extent greater than that which currently exists in the 'historic' conditions. All drainage facilities within this report were sized according to the Drainage Criteria Manuals and the full-spectrum storm water quality requirements. Upon development of the individual parcels within the Marksheffel Crossing property, separate Final Drainage Reports will be required to be submitted and approved by El Paso County that details all storm systems, pond design and fee calculation.

Currently, specific uses and site layouts are unknown, so all future design will be re-examined at time of future entitlements and platting efforts.

Per MDDP checklist please include:

- Calculations & narrative description of offsite drainage areas
- Calculations for onsite drainage areas (existing & proposed)
- Analysis of downstream facilities (Existing & proposed)
- Discussion of any drainage problems anticipated within and downstream of development and proposed soluttions

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PREPARED BY:

Classic Consulting Engineers & Surveyors, LLC

Kyle R. Campbell, P.E.
Managing Partner

Sm/263001/Reports/MDDP.doc

REFERENCES

1. City of Colorado Springs/County of El Paso Drainage Criteria Manual as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014.

2. "Urban Storm Drainage Criteria Manual Volume 1, 2 & 3" Urban Drainage and Flood Control District, dated January 2016.

3. "Sand Creek Drainage Basin Planning Study," Kiowa Engineering Corporation, dated March 1996.

4. "Hydrology Analysis – East Fork Sand Creek Tributary 6", Kiowa Engineering Corporation, approved August 27, 2008.

5. "Wilshire Subdivision Master Development Drainage Plan", Merrick and Company, dated 2005.

6. "Office-level Ecological Assessment Report for the Rowley Site", Ecosystem Services, dated April 2, 2025.

7. "Conditional Letter of Map Revision – Wilshire Channel (Reach 6) Tributary to East Fork Sand Creek", Merrick and Company, dated July 2006.

APPENDIX

VICINITY MAP

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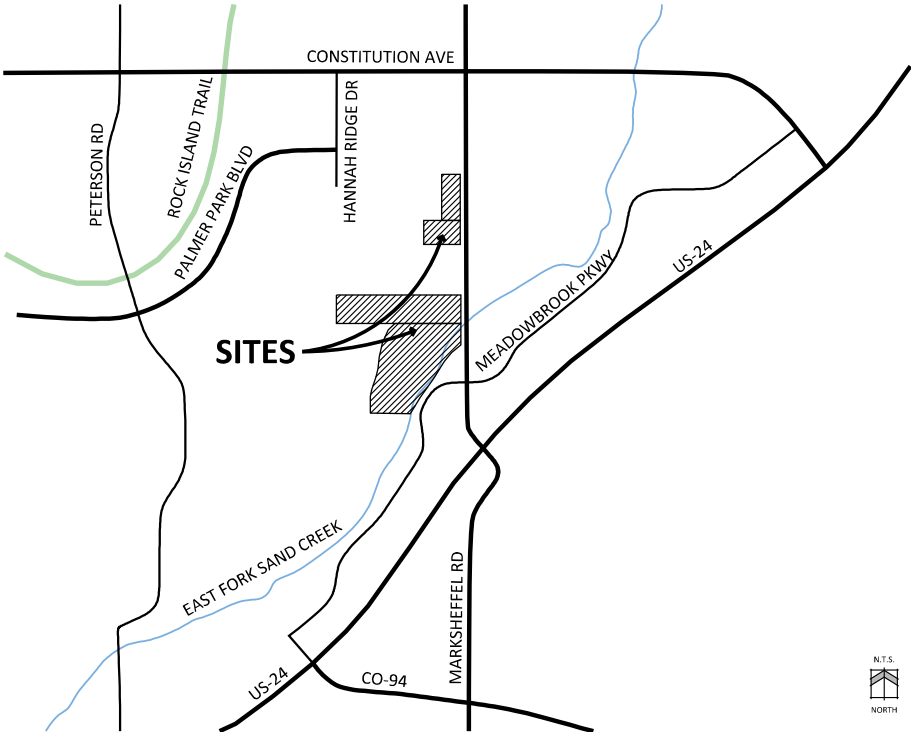
VICINITY MAP



SOILS MAP (S.C.S SURVEY)

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Map Scale: 1:7,930 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 23, Aug 29, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 23, 2024—Aug 4, 2024

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

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	A	72.2	27.1%
10	Blendon sandy loam, 0 to 3 percent slopes	B	132.7	49.8%
28	Ellicott loamy coarse sand, 0 to 5 percent slopes	A	61.9	23.2%
Totals for Area of Interest			**266.7**	**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: Higher

F.E.M.A. MAP

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NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

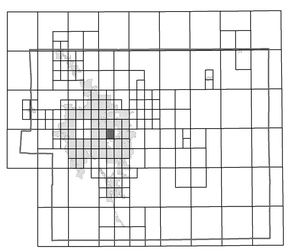
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

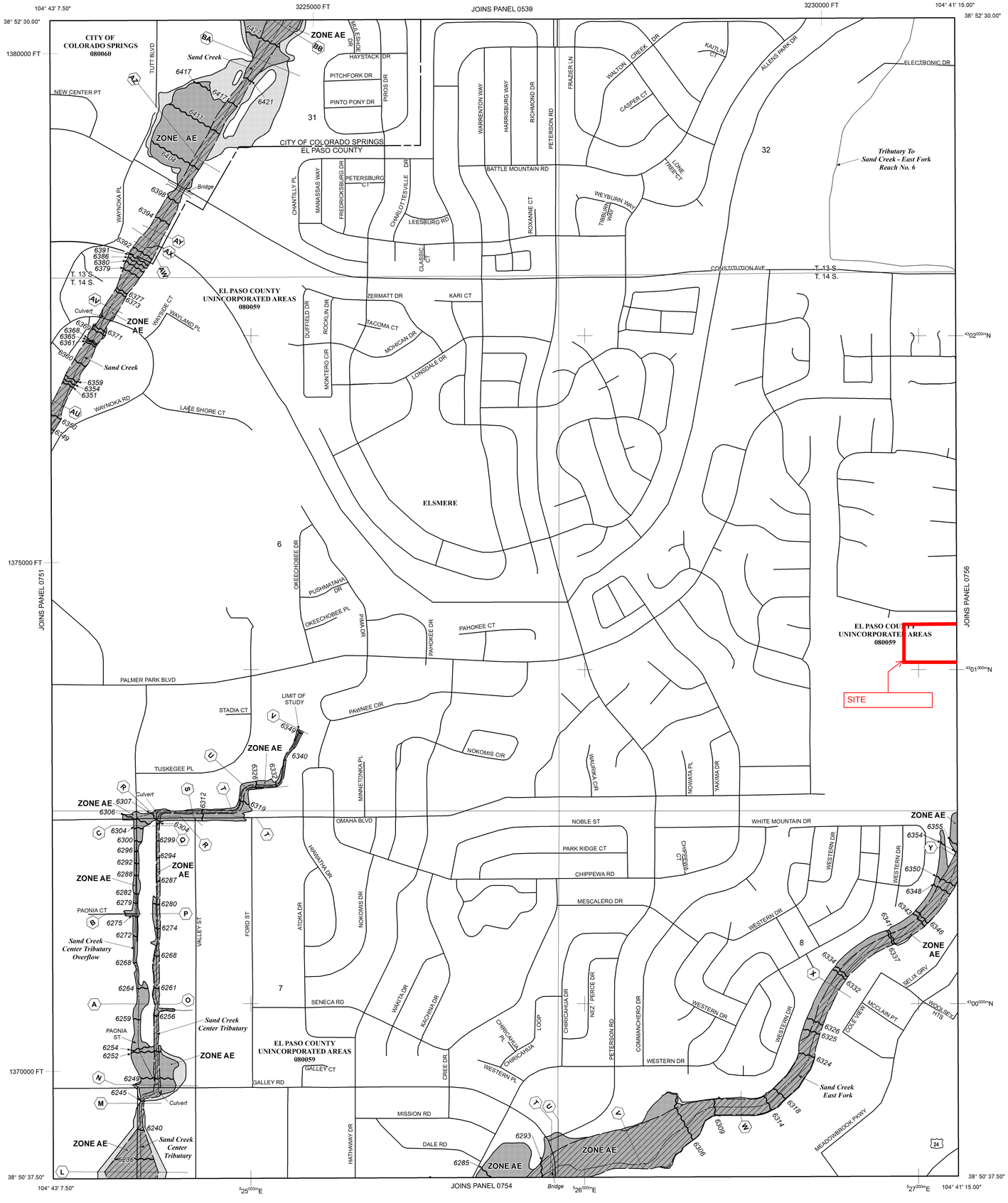
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 SOUTH, RANGE 65 WEST, AND TOWNSHIP 14 SOUTH, RANGE 65 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary

Floodway boundary

Zone D Boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A — Cross section line

23 — 23 — Transect line

97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13

6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection

DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

PANEL 0752G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 752 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0752	G
EL PASO COUNTY	080059	0752	G

Notice: This map was reissued on 05/15/2020 to make a correction.This version replaces any previous versions. See the Notice-to-User Letter that accompanied this correction for details.

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
08041C0752G

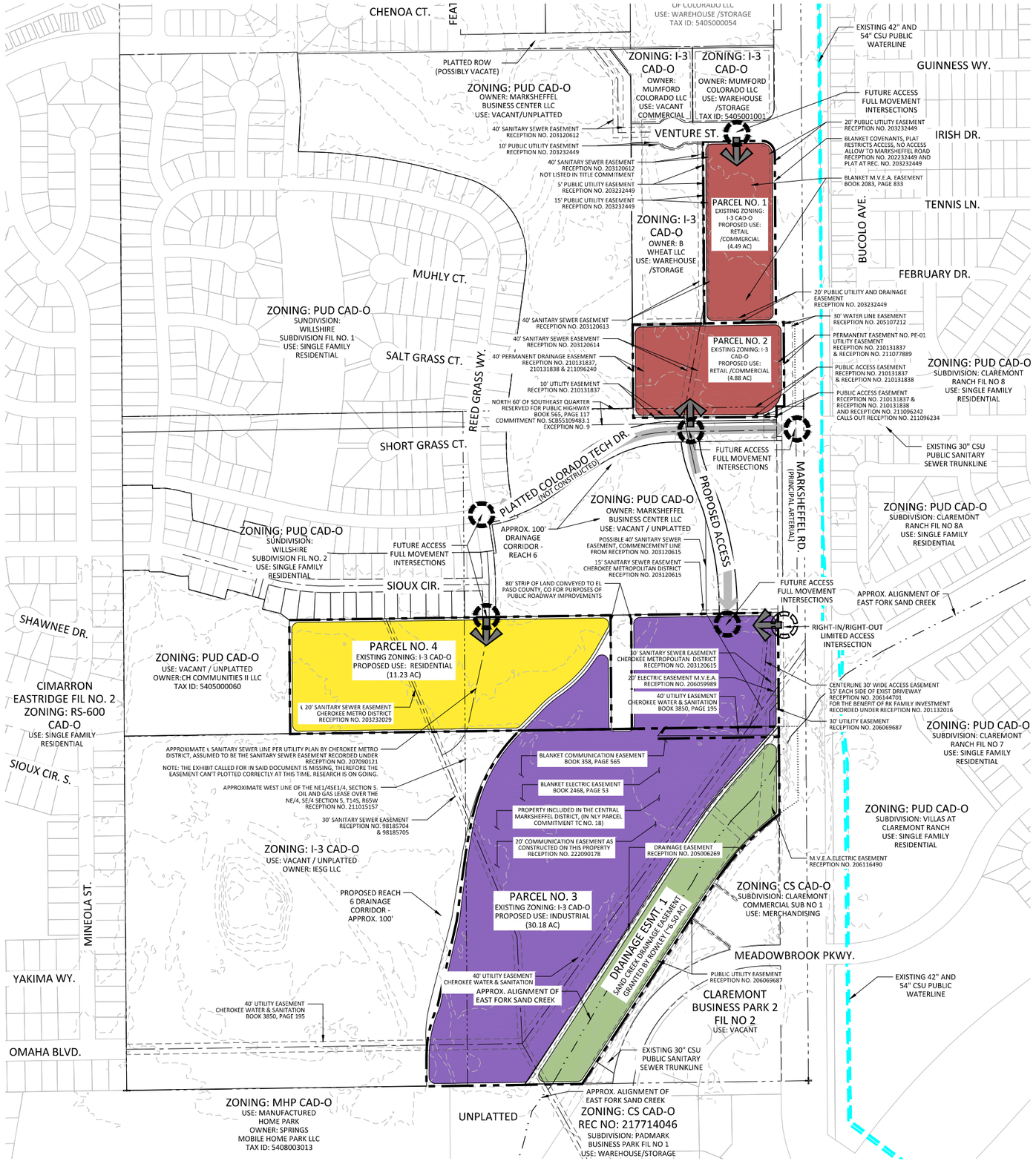
MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

MARKSHEFFEL CROSSING SKETCH PLAN

(ONLY SHEET 3)

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS



LINE TYPE LEGEND

- UTILITIES
- ROWLEY PROPERTY LINE
- EASEMENTS
- FULL MOVEMENT INTERSECTION
- RIGHT-IN/RIGHT-OUT INTERSECTION
- ACCESS POINT
- PROPOSED RETAIL / COMMERCIAL
- PROPOSED RESIDENTIAL
- PROPOSED INDUSTRIAL
- OPEN SPACE / DRAINAGE AREA

Please depict and substantial ponds on the Sketch Plan drawing when updating Sketch Plan

NES

N.E.S. Inc.
619 N. Cascade Avenue, Suite 200
Colorado Springs, CO 80903

Tel. 719.471.0073
Fax 719.471.0267

www.nescolorado.com

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PLANNER / LANDSCAPE ARCHITECT

IN ASSOCIATION WITH

MARKSHEFFEL CROSSING SKETCH PLAN

PROJECT INFO

DATE: 03/16/2026
PROJECT MGR: J. ALWINE
PREPARED BY: A. NETTER

EXAMP

SKETCH PLAN

ISSUE INFO

DATE:	BY:	DESCRIPTION:

ISSUE / REVISION

SHEET DESCRIPTION: **SKETCH PLAN**

SHEET NUMBER/TITLE

3

3 OF 4

XXAS FILE #

P:\RK Family Investments\Rowley Sketch Plan\Drawings\Planning\MP\Rowley Sketch Plan.dwg [SP] 6/3/2026 11:35:35 AM ametter

SAND CREEK DBPS UPDATE

EAST FORK SAND CREEK SUB TRIBUTARY 6

HYDROLOGIC BASIN MAP

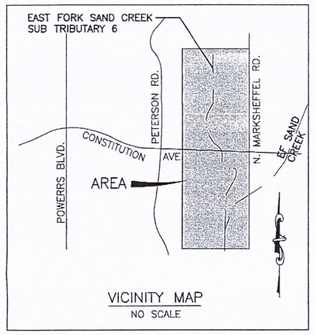
CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

SUMMARY OF DISCHARGES

DESIGN POINT LOCATION	DRAINAGE AREA (SM)	Q_{100}/Q_{10} (cfs)
1 AT N, CAREFREE CIR.	0.34	551/255
14 AT RAILROAD GRADE (INFLOW)	0.66	915/374
14 AT RAILROAD GRADE (OUTFLOW)	0.66	640/360
8 AT CONSTITUTION	1.07	1076/457
8A AT CONFLUENCE WITH EF SAND CREEK	1.91	2088/925
9 AT MINEOLA ST.	0.21	267/123
6 AT PALMER PARK BLVD.	1.2	1299/588
7 AT RIVER WALK PARKWAY	1.36	1561/695
10 AT MINEOLA AND RT. 9	0.22	175/110
9 AT MINEOLA AND RT. 9	0.36	3251/174

SUMMARY OF ROUTING ELEMENTS

ROUTING ELEMENT	LOCATION	DESCRIPTION
RT-9	DP 9 TO DP 8A	15' BW, 3:1 SS, S = 1.0% RIPRAP CHANNEL
RT-8	DP 7 TO DP 8A	45' BW, 3:1 SS, S = 0.7% RIPRAP CHANNEL
RT-7	DP 6 TO DP 7	45' BW, 3:1 SS, S = 0.7% RIPRAP CHANNEL
RT-6/6A	DP 8 TO D 6	30' BW, 3:1 SS, S = 0.7% RIPRAP CHANNEL
RT-2A	DP 4A TO DP 8	30' BW, 3:1 SS, S = 1.0% RIPRAP CHANNEL
RT-2B	DP 14 TO DP 4A	16' BW, 3:1 SS, S = 0.5% RIPRAP CHANNEL
RT 3 - RT 3A	SB 3 TO DP4A	60" RCP TO 42" RCP
RT-1	DP 1 TO DP14	NATURAL CHANNEL, S = 3.0%
RT-5	SB 5 TO DP1	NATURAL CHANNEL, S = 3.0%



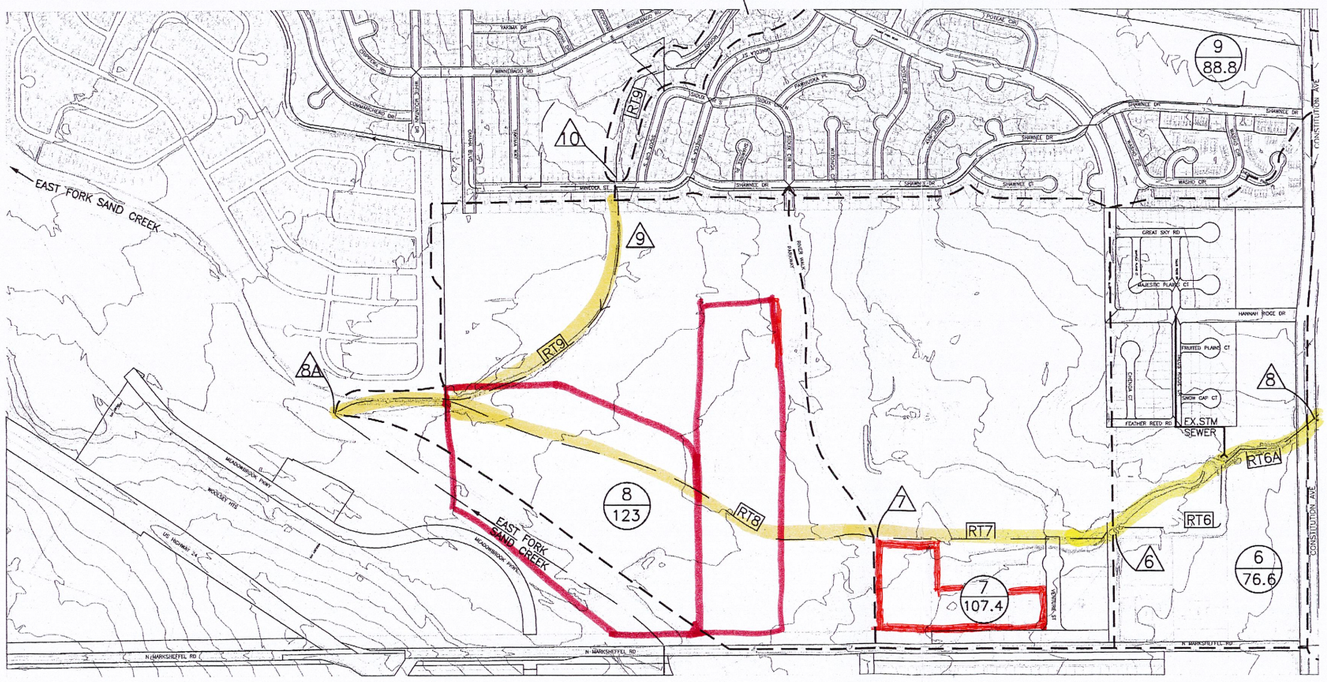
VICINITY MAP
NO SCALE

0' 400' 800'

LEGEND

- 1 / 89 — DRAINAGE BASIN DESIGNATION / DRAINAGE BASIN AREA (ACRES)
- RT1 / 20 / DBPS — HEC1 ROUTING ELEMENT / DBPS ROUTING ELEMENT
- DRAINAGE BASIN BOUNDARY
- 1 — DESIGN POINT

FOR CONTINUATION OF BASIN BOUNDARIES FOR SB'S 9, 10 & 11, SEE REPORT APPENDIX A



Kiowa Engineering Corporation
1604 South 21st Street
Colorado Springs, Colorado
80904-4208
(719) 630-7342

SAND CREEK DBPS UPDATE
EAST FORK SAND CREEK SUBTRIBUTARY 6
HYDROLOGIC BASIN MAP
EL PASO COUNTY, COLORADO

Project No.:	06040
Date:	AUG 2006
Design:	RNW
Drawn:	MFA
Check:	RNW
Revisions:	

FIG 4.1

06040 Fig4.1.dwg/Jan 23, 2007

OFFICE LEVEL ECOLOGICAL

ASSESSMENT REPORT

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

Office-level Ecological Assessment Report
for the
Rowley Site
Colorado Springs, Colorado

April 2, 2025

Prepared for:

Kyle Campbell
Classic Consulting
619 N. Cascade Ave., Suite 200
Colorado Springs, CO 80903

Prepared by:

1455 Washburn Street
Erie, Colorado 80516
(p): 970-812-3267

Project Number: 2025-2-1

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LIST OF APPENDICES

APPENDIX A – USFWS IPAC TRUST RESOURCES REPORT
APPENDIX B – USDA CUSTOM SOIL REPORT

LIST OF ACROYNMS AND ABBREVIATIONS

AMSL	Above Mean Sea Level
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
CDA	Colorado Department of Agriculture
CDPHE	Colorado Department of Public Health and Environment
CNHP	Colorado Natural Heritage Program
CPW	Colorado Parks and Wildlife
CWA	Clean Water Act
EA	Ecological Assessment
ECMC	Colorado Energy and Carbon Management Commission
ECOS	Ecosystem Services, LLC
EPC	El Paso County
ESA	Endangered Species Act
Classic	Classic Consulting
JD	Jurisdictional Determination under the Clean Water Act
LEDPA	Least Environmentally Damaging and Practicable Alternative
MBTA	Migratory Bird Treaty Act
Non-JD	Non-jurisdictional Determination under the Clean Water Act
NRCS	Natural Resource Conservation Service
NTCHS	Technical Committee for Hydric Soils
NWI	National Wetland Inventory
PCA	CNHP Potential Conservation Area
PMJM	Preble's meadow jumping mouse
Project	Rowley Property Project
Report	Ecological Assessment Report
Site	Project site
T&E Species	Threatened and Endangered species
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WQCD	Water Quality Control Division

1.0 INTRODUCTION

Ecosystem Services, LLC (ECOS) was retained by Classic Consulting (Classic) to perform an ecological assessment (EA) for the approximate 190-acre Rowley Site (Site) development project (Project) and prepare this Ecological Assessment Report (Report).

The contact information for the Vertex and ECOS representatives for this Report is provided below:

Client

Kyle Campbell
Classic Consulting
619 N. Cascade Ave., Suite 200
Colorado Springs, CO 80903
Phone: (719) 785-2800
kcampbell@classicconsulting.net

Agent

Jon Dauzvardis, P.W.S.
Ecosystem Services, LLC
1455 Washburn Street
Erie, Colorado 80516
Phone: (303) 579-6167
jon@ecologicalbenefits.com

1.1 Purpose

The purpose of this EA is to compare background information with present-day conditions, describe the physical/ecological characteristics and conditions of the Site, identify potential environmental opportunities and constraints associated with the Site, and determine the presence/absence and approximate extent of the following features:

- Topography / Natural Landforms;
- Soils
- Plant Communities;
- Riparian Areas;
- Wetland Habitat and Waters Resources (i.e., lakes, ponds, streams)
- Federal listed Threatened and Endangered Species; and
- Migratory Birds and Raptors

1.2 Site Location

The Site is located on the eastern edge of Colorado Springs, Colorado at the southwestern intersection of Constitution Avenue and Marksheffel Road. The southern Site boundary is an extension of Omaha Boulevard. The Site is specifically located within the northwest quarter of Section 5, Township 14 South, Range 65 West of the 6th P.M., El Paso County, Colorado. The center of the Site is located at approximately Latitude 38.860668° north, Longitude -104.685029° west at an elevation of approximately 6,400 feet above mean sea level (AMSL). Refer to Figure 1, USGS Site Location Map and Figure 2, Existing Conditions Aerial Photo.

1.3 Project Description

No Site plan was provided. The Applicant is conducting a due diligence review of environmental conditions on the Site.

Figure 1

USGS Site Location Map

Figure 1

USGS Site Location Map

Legend

Site Boundary

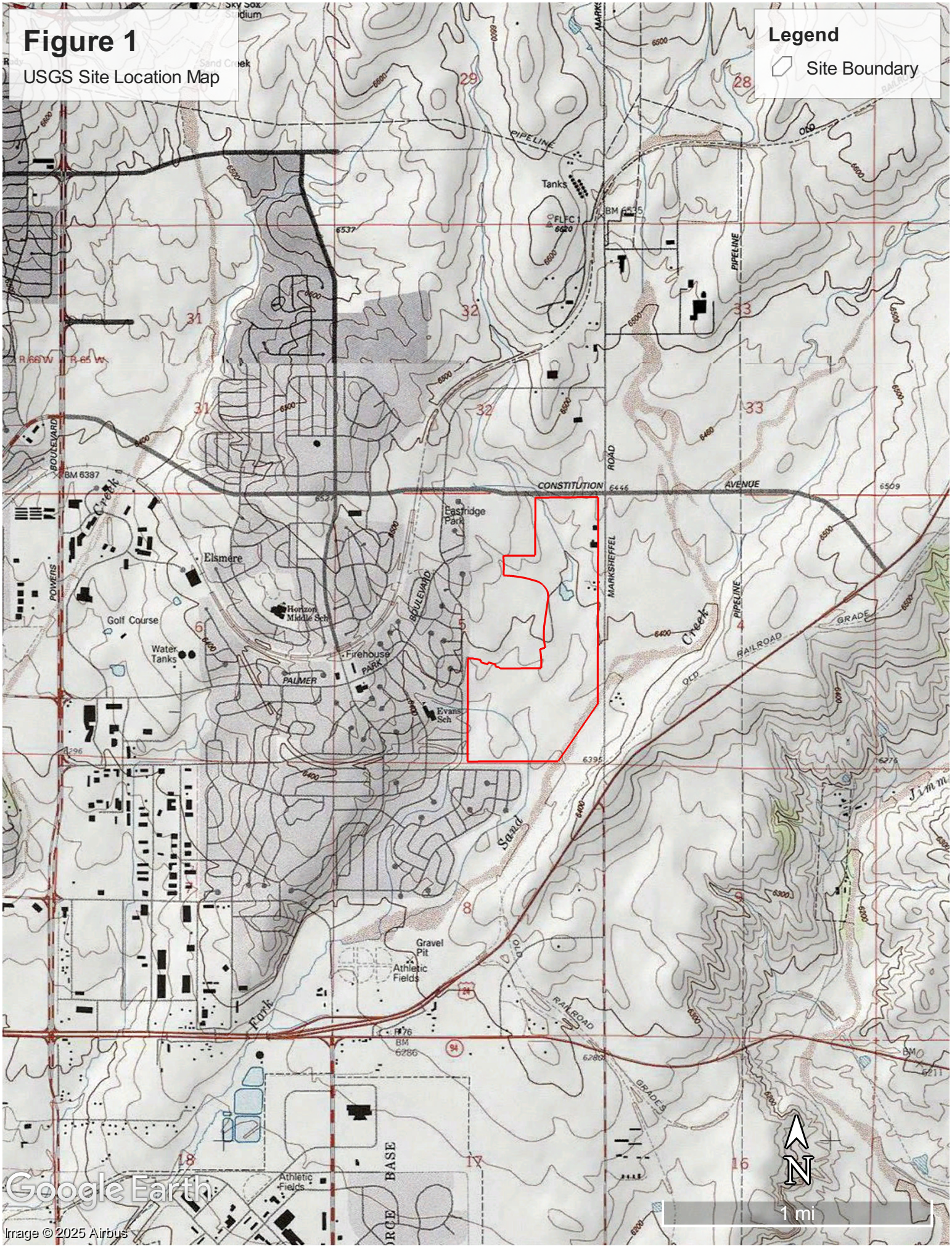


Figure 2
Existing Conditions Aerial Photo

Figure 2 – Existing Conditions Aerial Photo

Source: Google Earth, 3/2/2025.

2.0 METHODOLOGY

ECOS performed an office-level assessment in which available databases, resources, literature and field guides on local flora and fauna were reviewed to gather background information on the environmental setting of the Site. We consulted several organizations, agencies, and their databases, including:

- Colorado Natural Heritage Program (CNHP) Wetland and Riparian Areas;
- Colorado Energy and Carbon Management Commission (ECMC) Online GIS;
- Colorado Parks and Wildlife (CPW);
- Google Earth current and historic aerial imagery;
- Survey of Critical Biological Resources, El Paso County, Colorado;
- Survey of Critical Wetlands and Riparian Areas in El Paso and Pueblo Counties, Colorado;
- U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetlands Delineation Manual;
- USACE 2008 Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast;
- U.S. Department of Agriculture (USDA) PLANTS Database;
- U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey;
- U.S. Fish and Wildlife Service (USFWS) Region 6 data;
- USFWS Information, Planning, and Conservation (IPaC) database;
- USFWS National Wetland Inventory (NWI);
- U.S. Geological Survey (USGS); and
- Site-specific background data and plans provided by the Classic.

At this stage in the process, a field assessment has not been performed to verify the office level review of existing data and background information of the following features:

- Topography / Natural Landforms;
- Vegetation Communities;
- Riparian Areas;
- Wetlands and waters resources (i.e., lakes, ponds, streams) regulated under the Federal Clean Water Act (CWA) and State of Colorado Water Quality Control Act; and
- Wildlife habitat, including:
  - Federal listed Threatened and endangered Species habitat regulated under the Endangered Species Act;
  - Migratory birds and raptors regulated under the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BEGPA); and other

During the office assessment ECOS mapped the above features (if present) using a Google Earth aerial imagery. No on-site representative photographs of the ground conditions have been taken to assist in describing and documenting Site conditions.

3.0 ENVIRONMENTAL SETTING

The Site is located in the following Ecoregions:

- Level 1 Great Plains (Region 9)
- Level 2 South Central Semi-arid Prairies (Region 9.4)
- Level 3 Southwestern Tablelands (Subregion 26)
- Level 4 Foothills Grasslands (Subregion 26j)

Southwestern Tablelands are primarily comprised of sub-humid grassland and semiarid rangeland. The Foothill Grasslands (26j) *ecoregion contains a mix of grassland types, with some small areas of isolated tallgrass prairie species that are more common much further east. The proximity to runoff and moisture from the Front Range and the more loamy, gravelly, and deeper soils are able to support more tallgrass and midgrass species than neighboring ecoregions. Big and little bluestem, yellow Indiangrass, and switchgrass occur, along with foothill grassland communities similar to those of Ecoregion 21d (Foothill Shrublands). Although grasslands dominate, scattered pine woodlands similar to those found in 26i (Pine-Oak Woodlands) also occur. The annual precipitation of 14 to 20 inches tends to be greater than in regions farther east. Soils are loamy, gravelly, moderately deep, and mesic. They are formed from weathered arkosic sedimentary rock, gravelly alluvium, and materials weathered from sandstone and shales. Rangeland and pasture are common, with small areas of cropland. Urban and suburban development has increased in recent years, expanding out from Colorado Springs and the greater Denver area (Chapman, 2006)*

The Site is located within the western margin of the Fountain Creek Colorado Natural Heritage Program (CNHP) Potential Conservation Area (PCA), a PCA defined by the Fountain Creek watershed, including the East Fork of Sand Creek and Jimmy Camp Creek minus most of the developed areas around Colorado Springs. This PCA is designated primarily for Bald Eagle that are known to occur in the area (CNHP, 2025). The Site is not located within a Critical Wetland or Riparian Area according to the Survey of Critical Wetlands and Riparian Areas in El Paso County (CNHP, 2001).

The Site contains an unnamed, urbanized tributary to East Sand Creek which is a tributary to Sand Creek, Fountain Creek, and the Arkansas River.

4.0 FINDINGS

4.1 Topography / Natural Landform

The topography/natural landform of the Site is somewhat concave, with gentle (1-9%) side slopes leading to a central valley that slopes from north to south between 0-5%. Elevations range roughly between 6,440 along the northern site boundary and 6,360 feet AMSL at the southern boundary, a fall of approximately 80 feet. A sandy wash (Sandy Wash) winds through the center of the Site from north to south, joining the East Fork of Sand Creek approximately 900 feet south of the Site. A remnant impoundment (Remnant Pond) constructed prior to 1999, which has since breached its embankment, is present in the north-central portion of the Site. A major stormwater channel (Stormwater Channel) enters the Site from an adjacent neighborhood to the west and is confluent with the Sandy Wash at the southern Site boundary. Numerous smaller stormwater detention ponds, ditches, and outfall structures emanating from adjacent development drop into the Sandy Wash along its entire length. Numerous land clearing, grading, and excavation operations have occurred over time altering the natural landform, ground surface and vegetation cover.

4.2 Soils

ECOS utilized the USDA, Natural Resource Conservation Service (NRCS) Web Soil Survey (NRCS, 2025) to determine the types of soils present and if hydric soils are present within the Site, as this data assists in informing the presence/absence of potential wetland habitat regulated under the Clean Water Act (CWA). Please refer to the Custom Soil Report for the Site in Appendix B.

Pursuant to the Custom Soil Resource Report, 54% of the Site (103 acres) is comprised of 10 – Blendon sandy loam; 27% of the Site (51 acres) along the western edge is comprised of 8 – Blakeland loamy sand; and 19% of the Site (37 acres) is comprised of Ellicott loamy coarse sand along the sandy wash. These soils are somewhat excessively and well drained, have very low available water capacity, are not prone to ponding, and have very little to no silt or clay, all factors that support and sustain wetland vegetation. The frequency of flooding for Blakeland and Blendon soils is none. Ellicot soils are prone to frequent flooding. All sandy soils are highly erosive.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS, 1994) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in *Field Indicators of Hydric Soils in the United States* (USDA, NRCS, 2010). On a scale of 1-100%

the Blakeland, Blendon, and Ellicott soils present on site have a rating of 1-3% (not hydric).

4.3 Vegetation

The NRCS associates soil types with ecological site descriptions of plant communities within Major Land Resources Areas (MLRA's). The Blakeland and Blendo soils on the Site are associated with the Sandy Foothill MLRA. Ellicott soils are associated with the Sandy Bottomland MLRA.

4.3.1 Grassland

The Sandy Foothill plant community can be characterized by four conditions: *Reference, Shortgrass Dominated, Increased Bare Ground, and Invaded States. The Reference State is characterized by dominant warm-season tallgrass (big bluestem, prairie sandreed), and secondary cool-season midgrass (needle and thread, western wheatgrass). The Shortgrass State is characterized by a warm-season short bunchgrass (blue grama). The Increased Bare Ground State is characterized by early successional warm-season bunchgrass (Fendler threeawn), cool-season short bunchgrass (squirreltail), annual grasses, annual forbs, and soapweed yucca. The Invaded State has been disturbed by equipment and includes early successional annual plants as well as invasive species such as knapweeds and yellow toadflax* (NRCS, 2025).

NRCS indicates the plant community composition of the Reference Condition of the Sandy Foothills *would be favorable to the production of mid and tallgrass species giving this range site a rolling, mixed prairie aspect. The plant community is about 75 to 85% grasses and grass-like plants, 10 to 15% forbs and 5 to 10% shrubs. Big bluestem, little bluestem, prairie sandreed, switchgrass, needleandthread and sideoats grama make up most of the plant community and provide about 60-75% of the total production. Grasses such as blue grama, western wheatgrass and prairie junegrass are secondary in the plant community. Small amounts of sand dropseed, sun sedge, purple prairieclover, spreading eriogonum and Louisiana sagewort are scattered throughout the plant community (NRCS, 2025).* Given that this Site has been disturbed, modified, or manipulated frequently over the years by earth moving and ground disturbance, it is likely that there are only remnant plants of the Sandy Foothills plant community Reference condition and the Site is mostly in a weed-infested condition, consisting of blue grama, western wheatgrass, prairie junegrass, Fendler threeawn, diffuse knapweed, spotted knapweed, cheatgrass, and toadflax (NRCS, 2025).

NRCS indicates the plant community composition of the Reference Condition of the Sandy Bottomlands would consist *chiefly of tall warm-season grasses. Principle dominants are sand bluestem, prairie sandreed, switchgrass, and yellow Indiangrass. Sub-dominant grasses include needle and thread and blue grama. Significant forbs and shrubs are silky prairie clover, lemon scurfpea, dotted gayfeather, leadplant, and western sandcherry. The potential vegetation is about 70 to 85 percent grasses or grass-like plants, 10 to 15 percent forbs and 5 to 15 percent shrubs* with some occasional cottonwood (NRCS, 2025).

Given that the valley floor and drainage of the Site has been disturbed, modified or altered frequently over the years, it is likely that there are only remnant plants of the Sandy Bottomlands plant community Reference condition. It is likely that sandy wash has down-cut and eroded, leaving the valley floor mostly in a weed-infested condition, consisting of cottonwood, sand sagebrush, soapweed yucca, sand dropseed, Fendler threeawn. cheatgrass along with other noxious and invasive weeds.

The above grassland communities and species are not visible on aerial imagery and would require field confirmation.

4.3.2 Riparian Areas

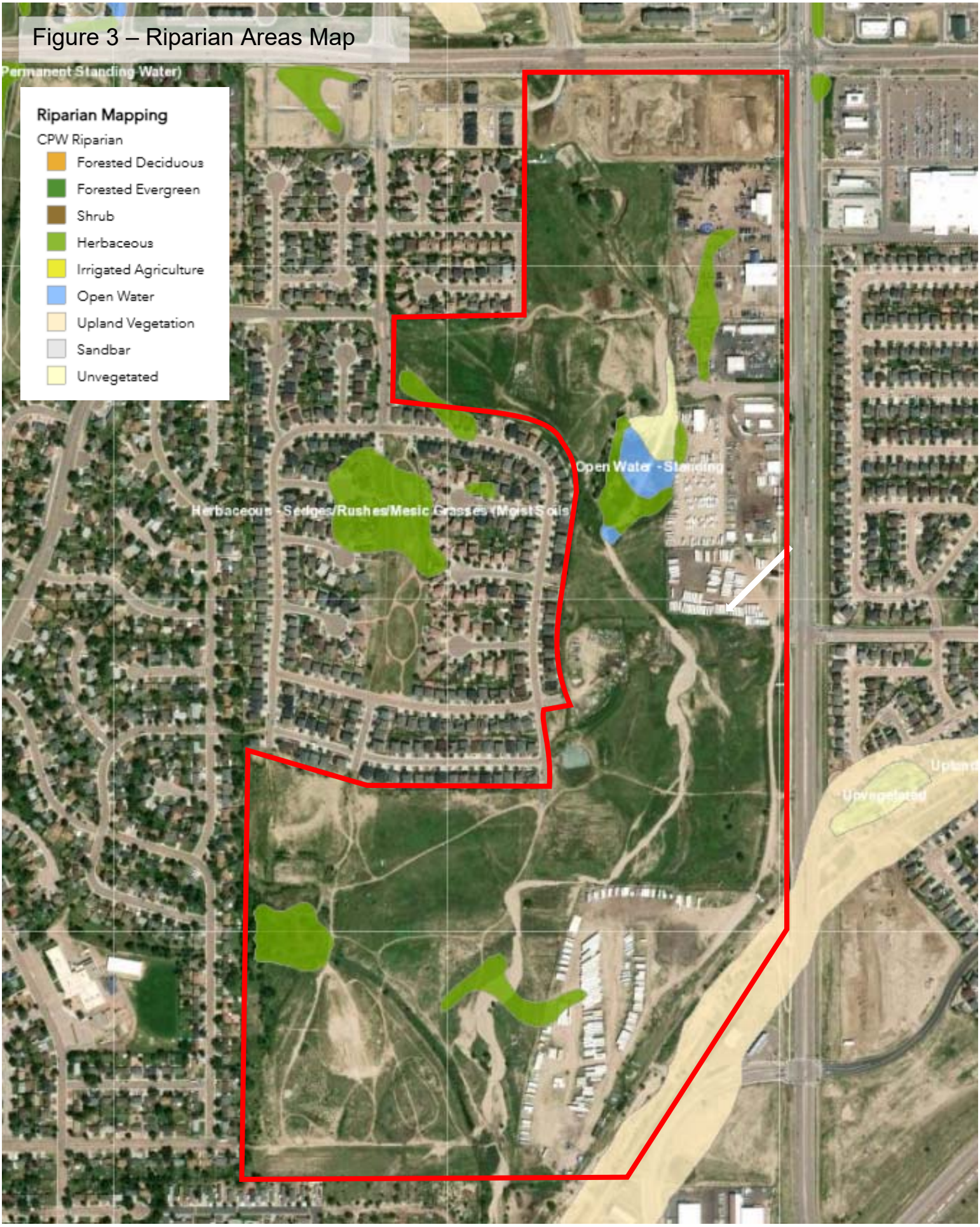
The Colorado Natural Heritage Center (CNHP) Colorado Wetland Information Center – Wetlands Mapper includes the option for illustrating potential riparian habitat based on aerial photo interpretation mapping produced by Colorado Parks and Wildlife (CPW). CNHP Riparian Area mapping indicates that there are several Open Water and Herbaceous riparian area patches along the Sandy Wash and Stormwater Channel that include sedges/rushes and mesic grasses (CNHP, 2025). Herbaceous riparian patches appear in now developed areas, indicating that the riparian mapping is based on older aerial imagery. Refer to Figure 3, Riparian Areas Map.

Riparian vegetation, including cottonwood and sandbar willow are visible on current aerial imagery (dated 10/6/2023 and 3/2/2025) within the footprint of the Remnant Pond, Stormwater Channel, and intermittently along the banks and point bars of the Sandy Wash. Refer to Figure 2 - Existing Conditions Aerial Photo and Figure 5 – Aquatic Resources Map.

Figure 3

Riparian Areas Map

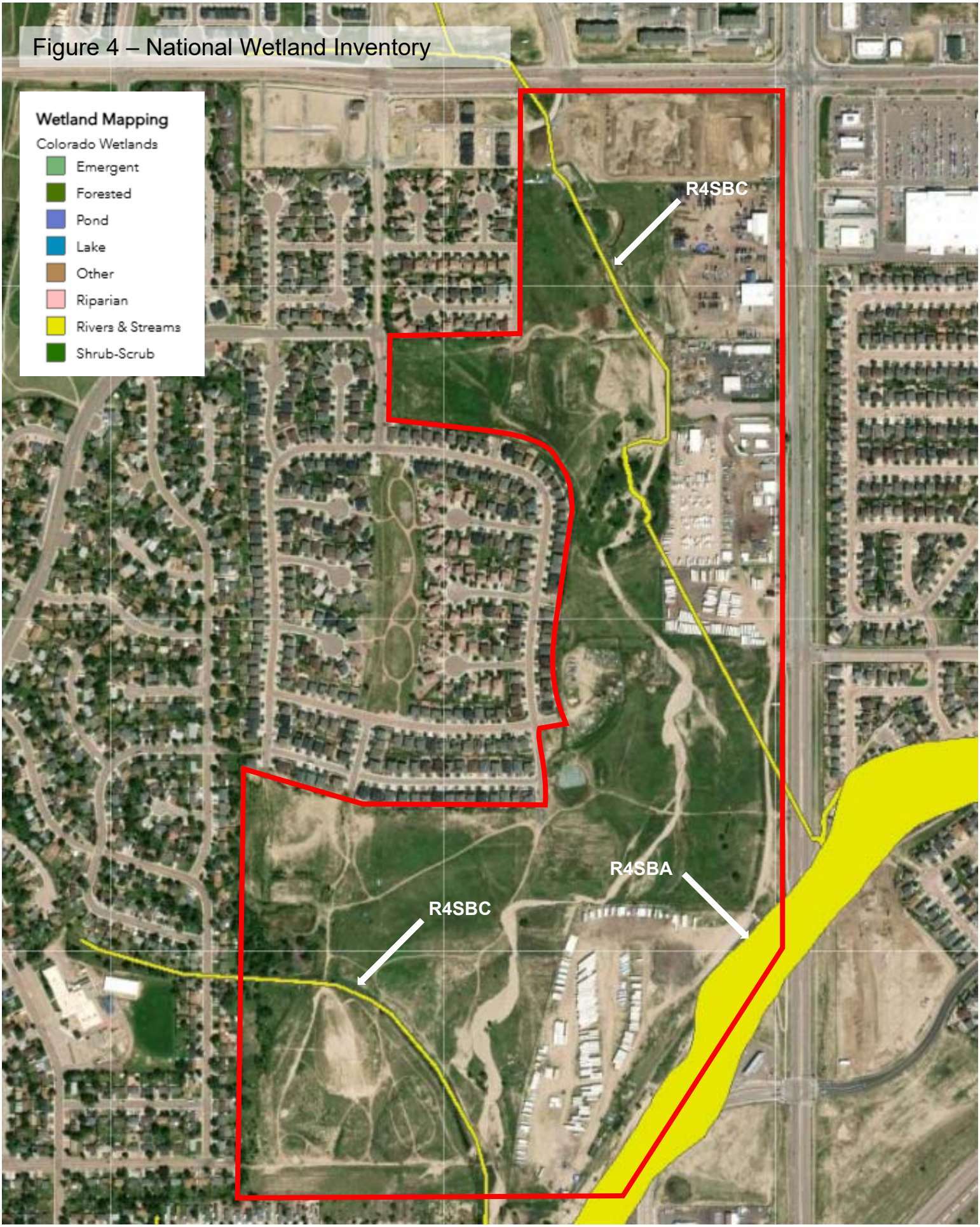
Figure 3 – Riparian Areas Map



Source: Colorado Natural Heritage Program (CNHP) Wetland Mapper

Figure 4
National Wetland Inventory Map

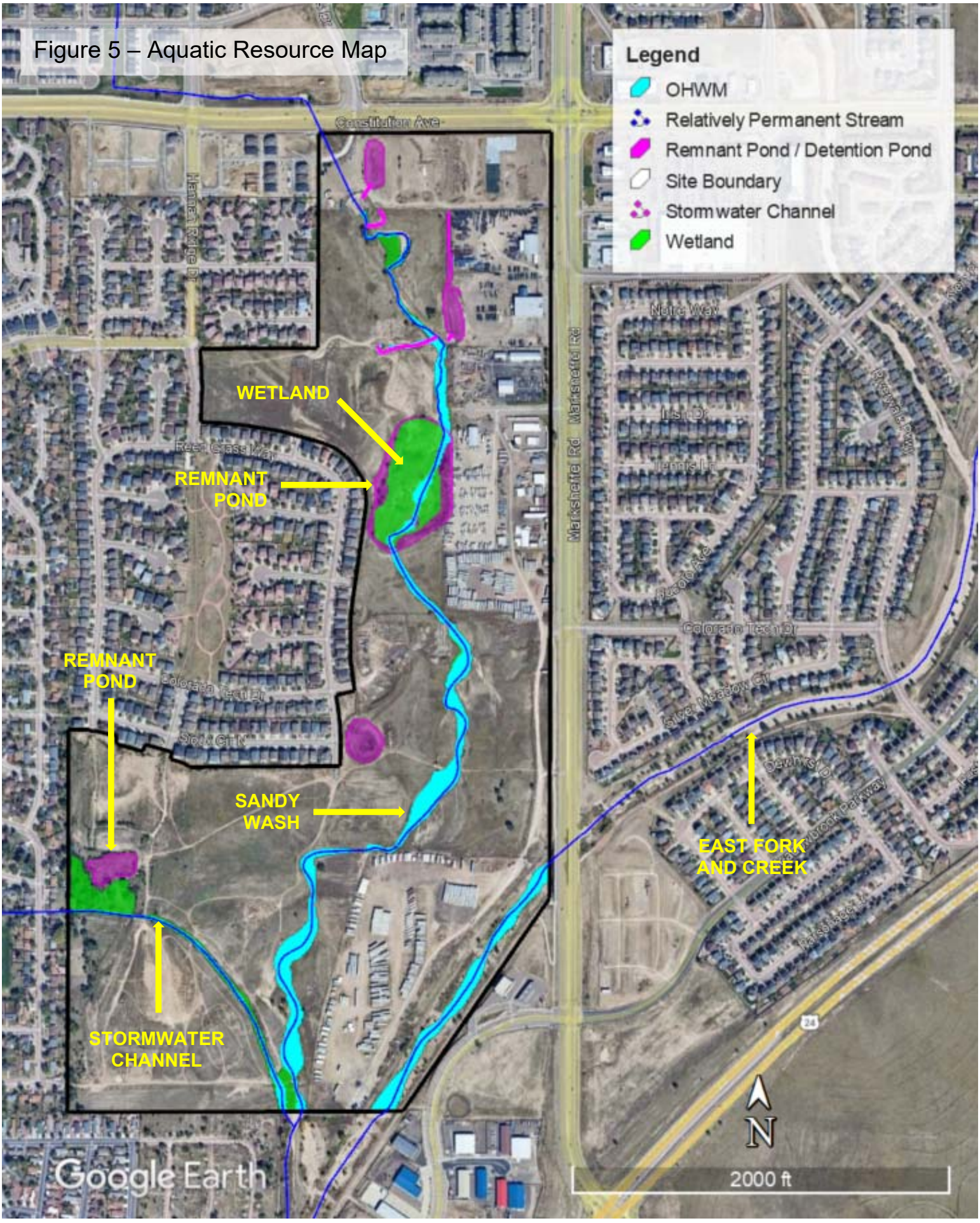
Figure 4 – National Wetland Inventory



Source: CNHP Wetland Mapper / USFWS National Wetland Inventory (NWI)

FIGURE 5
Aquatic Resources Map

Figure 5 – Aquatic Resource Map



Source: Google Earth, 10/6/2023. Ecosystem Services, LLC aerial interpretation, 4/2/2025.

4.4 Wetland Habitat and Waters

4.4.1 Methodology

ECOS utilized USGS 7.5-minute topographic mapping, CNHP National Wetland Inventory (NWI) Wetlands Mapper, and historic and current Google Earth aerial photography to identify the approximate presence or absence, reach, and extent of potentially jurisdictional wetland habitat and Waters of the U.S. (WOTUS) and Waters of the State of Colorado (WOSOC) on the Site. Refer to Figure 4, National Wetland Inventory Map and Figure 5, Aquatic Resources Map.

If detectable, hydrophytic vegetation (i.e., wetland vegetation), one of the three indicators of wetland habitat was mapped/interpreted on aerial imagery to preliminarily delineate the location, configuration and extent of wetlands. A field delineation is required to refine and verify the mapping looking at all three indicators (i.e., wetland hydrology, hydric soils and a predominance of hydrophytic vegetation) using the USACE wetland delineation methodology as explained in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and supplemented by the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region* (USACE, 2008). Indicators of an Ordinary High Water Mark (OHWM), if present, were also interpreted and mapped using aerial imagery following the National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams. The OHWM would also need to field verified or modeled.using the 1.5 or 2-year reoccurrence interval.

4.4.2 Office Assessment

USGS Mapping: As referenced in Section 4.1 Topography / Natural Landform, the Site slopes and drains south toward Omaha Blvd. USGS shows a perennial stream (solid blue line) draining north to south through the northwest corner of the site and then terminating in a pond (i.e., the Sandy Wash); a curvilinear perennial channel (solid blue line) in the southwest portion of the Site draining west to east from urbanized areas (i.e., the Stormwater Channel); and the East Fork of Sand Creek (Sand Creek) shown as a wash (speckled pattern). Refer to Figure 1, USGS Site Location Map.

CNHP National Wetland Inventory (NWI) Wetland Mapper: The NWI Wetland Mapper provides planning-scale identification of potential waters and wetlands (WOTUS and WOSOC), and indicates that the:

- Sandy Wash is an Intermittent Riverine Seasonally Flooded Stream (R4SBC) shown in a previous alignment;
- Stormwater Channel is an Intermittent Riverine Seasonally Flooded Stream (R4SBC); and the
- East Fork of Sand Creek is an Intermittent Riverine Temporarily Flooded Stream (R4SBA)
- No wetlands are present on the Site.

Refer to Figure 4, National Wetland Inventory Map.

These NWI designations are consistent with USGS designations and conditions of streams observed on aerial imagery. NWI mapping does not however reflect

USDA NRCS Web Soil Survey: The custom soil report generated for the Site via the NRCS Web Soil Survey (USDA NRCS, 2025) does not rate any of the soils present on the Site as hydric (wetland) soil.

Google Earth aerial imagery review: ECOS reviewed the Site using the time-lapse function in Google Earth (GE) to get a look back in time from 1999 to the present. In 1999, the Sandy Wash draining into the pond had little definition downstream of the pond. The Stormwater Channel built before 1999 appears as a man-made feature with a trapezoidal profile that runs offsite in parallel with Sand Creek until they converge. In 1999, Sand Creek is in a relatively natural, unconfined state until approximately 2011 when it was channelized and stabilized with a series of drop structures. Between 2006 and 2022, the neighborhoods abutting the Site to the northwest are almost fully developed, including two detention ponds along the south-central southwest Site boundary. By 2015, the upstream, offsite reach of the Sandy Wash has been modified and piped under Constitution Ave. to the Site. The Pond embankment on the Sandy Wash had breached by 2015 and the Sandy Wash is almost fully formed through the entire Site, modified somewhat by industrial land used along the eastern margin of the Site adjacent to Marksheffell Road. By 2025, it is apparent that the Sandy Wash, Stormwater Channel, and the East Fork of Sand Creek all flow frequently as a result of increased stormwater inputs from the surrounding urbanized area. The Sandy Wash is currently downcutting and migrating laterally. Refer to Figure 2, Existing Conditions Aerial Photo.

Using current aerial imagery, ECOS delineated the following features:

- Relatively Permanent Streams (Intermittent or Perennial)
- Wetlands (abutting relatively permanent streams)
- Ordinary High Water Mark (OHWM of relatively permanent streams)
- Ponds (remnant or active detention ponds or impoundments)

Refer to Figure 5, Aquatic Resources Map and Regulations and Recommendations section below regarding the jurisdictional disposition of the aquatic resources present on the Site.

4.5 Threatened and Endangered Species

The purpose of this section is to document the potential presence or absence of Threatened and Endangered Species (T&E Species) on the Site and the level of existing disturbance of the Site to ensure that proposed Project is reviewed with consideration of the impacts to their habitat.

4.5.2 Threatened and Endangered Species

A number of species that occur in El Paso County are listed as threatened and endangered (T&E Species) by the USFWS under the Endangered Species Act (ESA). ECOS compiled the data regarding T&E Species for the Site in Table 1 based on the Site-specific, USFWS IPaC Trust Resources Report (USFWS, 2025a) that we ran for the Project (Appendix A) and our onsite assessment. ECOS has provided our professional opinion regarding the probability that these species may occur within the Site and their probability of being impacted by the Project.

The likelihood that the Project would impact any of the species listed below is low to none. Most do not or are not expected to occur on the Site and no impacts are expected that would affect downstream listed species. The USFWS IPaC Report also states that No Critical Habitat of T&E Species, Wildlife Refuges or Hatcheries are present at or within the vicinity of the Site (USFWS, 2025a). Refer to Appendix A - USFWS IPaC Report.

TABLE 1 - FEDERAL LISTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT

Species	Status	Habitat Requirements and Presence	Probability of Impact by Project
BIRDS			
Eastern Black Rail (*Laterallus jamaicensis ssp. Jamaicensis*)	Threatened	Habitat includes tidally or non-tidally influenced marshes which range in salinity from salt to brackish to fresh. It requires dense overhead perennial herbaceous cover with underlying soils that are moist to saturated (occasionally dry) interspersed with or adjacent to very shallow water (typically ≤ 3 cm). Eastern black rails depend on this dense cover throughout their life cycle and is their primary strategy to avoid predation.	Low. Herbaceous wetland habitat is generally absent on the Site due to intermittent water supply and very well drained soils.
Piping plover (*Charadrius melodus*)	Threatened	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed project will not affect any of the listed river basins.
INSECTS			

TABLE 1 - FEDERAL LISTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	**Status**	**Habitat Requirements and Presence**	**Probability of Impact by Project**
Monarch butterfly (*Danaus plexippus*)	Proposed Threatened	Multigenerational migrant that breeds throughout North America and overwinters in dense congregations in Mexican montane fir forests. The larval hostplant is milkweed (*Asclepias* spp.). Habitat includes areas with nectar for feeding and/or milkweed for laying eggs, especially grasslands and wetlands. Breeding habitat threats are widespread native grassland loss and herbicide use. In Colorado, they are present in low numbers from May to September.	Low. Riparian habitat and milkweed is not likely present.
Suckley's Cuckoo Bumble Bee (Bombus suckleyi)	Proposed Threatened	The USFWS will be developing consultation guidance for the Suckley's cuckoo bumble bee. They strive for consistency in our conservation approach to bumble bees. Partners can expect consultation guidance to be similar to the Rusty-patched bumble bee guidance and Franklin's bumble bee guidance.	NA
PLANTS			
Ute ladies'-tresses orchid (*Spiranthes diluvialis*)	Threatened	Primarily occurs along seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels or valleys, and lakeshores. May also occur along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside borrow pits, reservoirs, and other human-modified wetlands.	Low. The site, stream channels, and flood terraces are highly disturbed and the substrate is very well drained prohibiting sub-irrigation. Wetland habitat is generally absent due to intermittent water supply and very well drained soils.

4.5.3 Preliminary Effects Determination

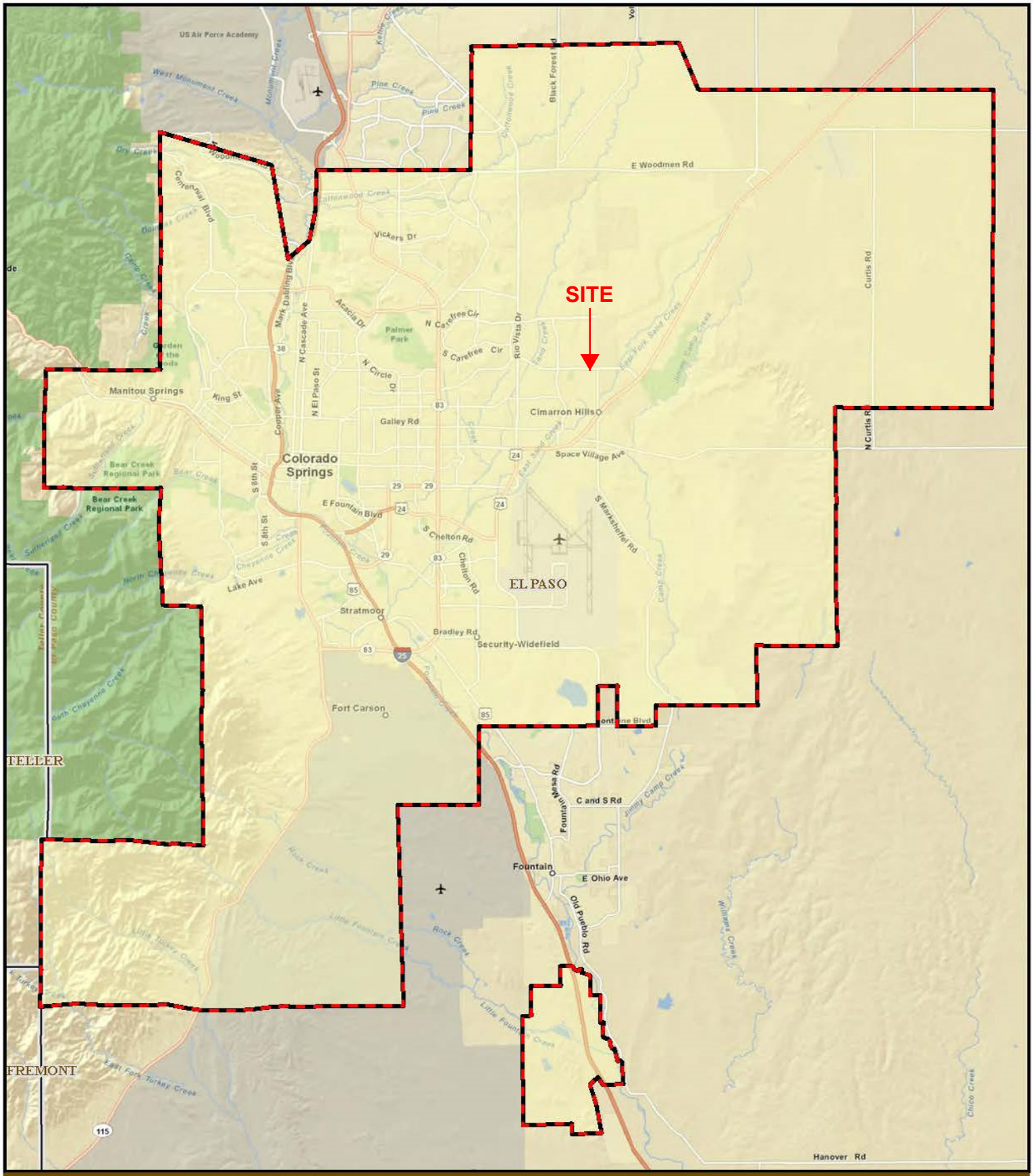
The USFWS IPaC Report (Appendix A) states that there is no Critical Habitat for T&E species in the Site. Based on the review of USFWS IPaC Report for the Site and our high level office assessment, it is ECOS' professional opinion that the likelihood that the Project would impact any of the species listed above in Table 1 is none. Most are not expected to occur in the Project area or on the Site; nor will they be affected by the indirect effects of the project as no downstream impacts to drainage basins supporting these T&E species are expected to affect them in offsite habitat. Therefore, ECOS' has preliminarily determined that the Project would have No Effect on any of the species listed above in Table 1.

Preble's meadow jumping mouse (PMJM) is a common concern in El Paso County and within their range along the Front Range of the Rockies. The USFWS does not list this T&E Species in the USFWS IPaC Report because the Site does not support the constituent elements and habitat requirement of PMJM. The site is not located within, adjacent, and is not connected to Occupied or designated Critical Habitat. Furthermore, this site falls within the Colorado Springs City-wide Block Clearance Zone for PMJM which has been extended multiple times since its establishment. Refer to Figure 6, PMJM Block Clearance Map for Colorado Springs which shows the location of the Site.

In addition, the plant communities and aquatic resources (habitat) on the Site have been disturbed and/or perturbed for many years by various on-site and adjacent land uses dating back to 1999, the latest Google Earth aerial photo on record.

Disturbance of the Site and vicinity is substantiated by the CNHP Landscape Disturbance Index (LDI). The LDI is a result of a CNHP collaboration with the Nature Conservancy to develop a prototype analysis of the status of Colorado's biodiversity, using a scorecard approach. The scorecard evaluated the status of ecological systems, animals, and rare plants under three broad categories: biodiversity status (size, quality and landscape integrity); threat status (both current and potential future impacts); and protection status. The Landscape Disturbance Index developed as part of this project to model ecological integrity against the negative effect of anthropogenic disturbance on the quality of habitats for species viability and conservation efforts. The model tests both distance-based and disturbance-density models in relation to ecological indicators. The model included roads, residential and commercial development, agricultural land use, mining, energy development infrastructure, and transmission structures as disturbance sources (CNHP, 2025c). The Landscape Disturbance Index for the Site and surrounding lands is rated as high (CNHP, 2025b). This means that the Site is already compromised or impaired and not a candidate or priority for conservation or protection of T&E Species. Refer to Figure 7, CNHP Landscape Disturbance Index Map.

FIGURE 6
PMJM Block Clearance Map for Colorado Springs



PREBLE'S MEADOW JUMPING MOUSE BLOCK CLEARANCE MAP: COLORADO SPRINGS

Please contact the U.S. Fish & Wildlife Service, Colorado Field Office, at (303) 236-4773 for assistance using this map. Visit http://1.usa.gov/n5r48y for more information on Preble's and the Block Clearance.

Block Clearance Area

County Boundaries

N

1:200,348

Miles

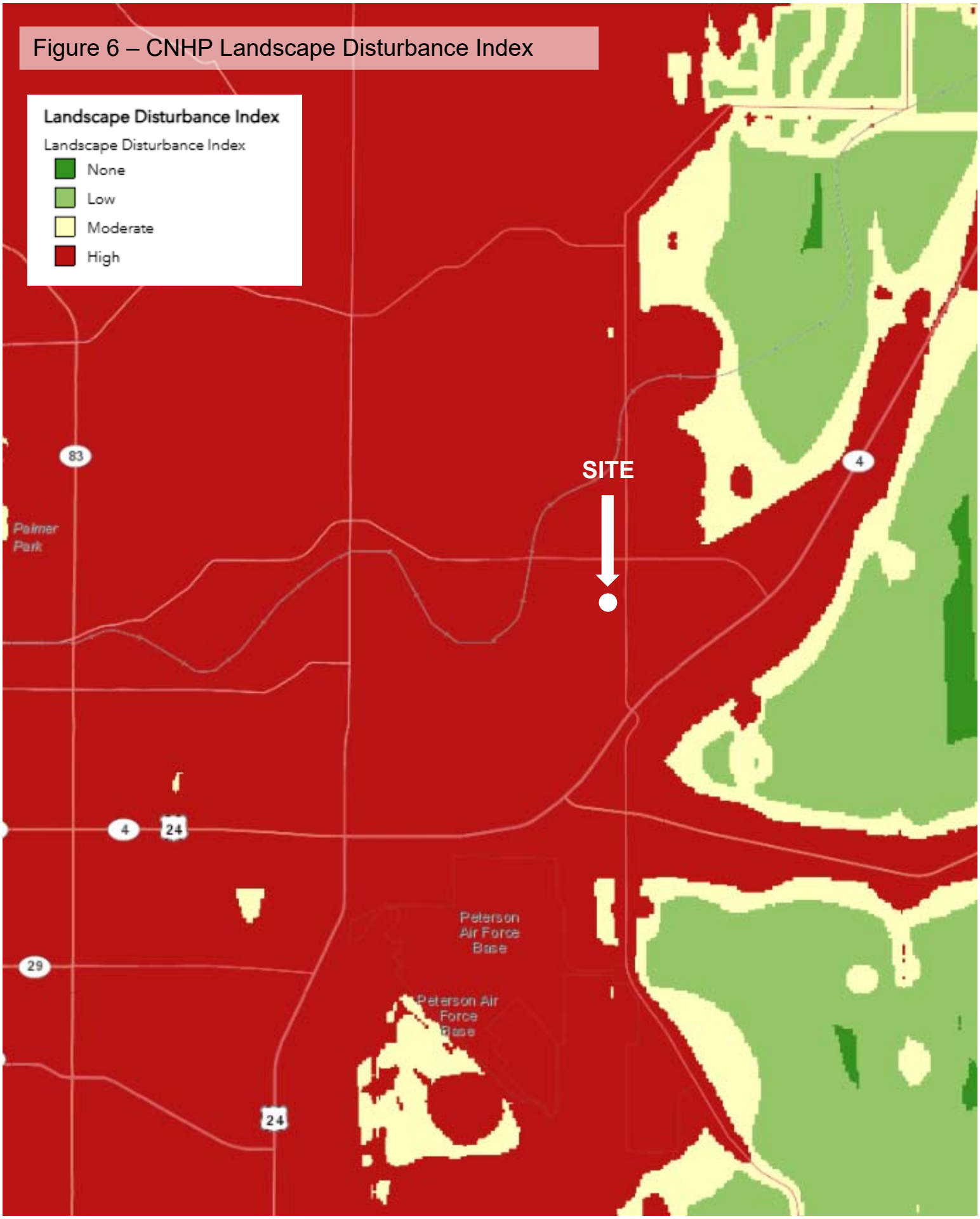
0 1.25 2.5 5

23 FEB 2012 | NAD83 UTM Z13N

Basemap: World Street Map, ESRI Services

FIGURE 7
CNHP Landscape Disturbance Index Map

Figure 6 – CNHP Landscape Disturbance Index



Source: CNHP Landscape Disturbance Index

4.6 RAPTORS AND MIGRATORY BIRDS

Raptors and most songbirds are protected by the Colorado Nongame Wildlife Regulations, as well as by the federal Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA).

4.6.1 ECMC Database

ECOS utilized the Colorado Energy and Carbon Management Commission (ECMC) Online GIS data (ECMC, 2025) to screen the Site for potential raptor nests. No raptor nests have been mapped within two miles of the Site (ECMC, 2025). The closest nest site is an active bald eagle nest is located 3.0 miles to the northeast of the Site on the Banning Lewis Ranch, located further upstream on the East Fork of Sand Creek.

4.6.2 USFWS IPaC Data

The USFWS IPaC data does not have data available at this time regarding the presence of raptors, migratory birds, or bald and golden eagles on the Site, but recommends that “any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitat, should follow appropriate regulations and consider implanting appropriate avoidance and minimization measures” as described in the various USFWS guidance documents. Refer to Appendix A, USFWS iPaC Report.

4.6.3 Office-level Assessment

The grassland and particularly riparian habitats (trees and shrubs around water resources) on the Site provide cover, feeding, nesting, and breeding habitat for transient and resident migratory birds and raptors, including prairie dog colonies that can be utilized by burrowing owl. Tree nest sites cannot be observed via aerial imagery to determine the presence or absence of potential bird and raptors. Prairie dog burrows are detectable on aerial imagery and can be seed scattered throughout the Site. On-site nest and burrow surveys are needed to confirm the presence or absence of nesting birds and raptors. Further discussion and recommendations on the MBTA and BGEPA are provided below.

5.0 REGULATIONS AND RECOMMENDATIONS

5.1 Clean Water Act

5.1.1 Jurisdictional Delineations

The USACE and the State of Colorado rely on delineations of the Ordinary High Water Mark (OHWM) and wetlands to establish the limits of jurisdictional WOTUS and WOSOC. According to the USACE National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams (USACE, 2022), the OHWM is that line on the shore or streambank established by the fluctuations of ordinary high water as indicated by physical characteristics, such as:

- a clear, natural line impressed on the bank;
- shelving;

- changes in the character of soil;
- destruction of terrestrial vegetation;
- the presence of litter and debris; or
- other appropriate means that consider the characteristics of the surrounding area.

Wetland delineations must include field assessment, documentation, and mapping of the presence or absence, location, and configuration of all three wetland indicators (i.e., wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation) using the USACE wetland delineation methodology as explained in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and supplemented by the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region (USACE, 2008).

5.1.2 Jurisdictional Status

Based on the office-level information documented above, and current Federal and State of Colorado rules, definitions, and field guides pertaining to WOTUS and WOSOC as outlined in the USACE Sackett Rules and State of Colorado House Bill 24-1379 (HB 24-1379), it is ECOS opinion that the following intermittent or perennial aquatic resources are jurisdictional as they meet the USACE definitions of a Relatively Permanent Stream (RPS), including any wetlands that may be directly abutting or have surface connections to these streams:

- Sandy Wash, including the online Remnant Pond and any minor tributaries;
- Stormwater Channel; and the
- *East Fork of Sand Creek*

It is ECOS opinion that the following do not meet the USACE definitions of a Relatively Permanent Stream (RPS) or are non-jurisdictional:

- All off-line storm water control features (remnant or active detention ponds, ditches, or outfall structures) that were constructed to convey, treat, or store storm water that were created in uplands;

Refer to Figure 7, Aquatic Resources Map below.

5.1.3 Federal CWA Permitting

Section 404 of the CWA prohibits the discharge of dredged or fill material into jurisdictional WOTUS, including wetland habitat without a valid CWA Section 404 Permit. It is ECOS opinion that any proposed dredge, fill, stabilization, impacts, or modifications to the above listed jurisdictional aquatic resources, including wetlands will require a Federal CWA Section 404 Permit as regulated by the USACE. We do not recommend pursuit of an Approved Jurisdictional Determination (AJD). The USACE can verify the jurisdiction of aquatic resources during the permitting process.

5.1.4 State CWA Permitting

Until the State of Colorado develops and passes specific regulations (i.e., pending Regulation 87), the State excludes the following types of waters under HB24-2379:

(I) all portions of ditches and canals that are excavated in uplands that convey water or wastewater;
(II) storm water control features that are constructed to convey, treat, or store storm water and that are created in uplands;
(III) artificially irrigated areas that would revert to uplands if irrigation ceased;
(IV) artificial lakes, lagoons, or ponds that are created entirely by excavating or diking upland to collect and retain water and that are used exclusively for stock watering, irrigation, settling basins, or rice growing;
(V) wetlands that are adjacent to a ditch or canal and supported by water in the adjacent ditch or canal;
(VI) recharge facilities, including ponds, included in uplands for the purpose of facilitating 1 recharge of aquifers or streams;
(VII) artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking upland to retain water for primarily aesthetic reasons;
(VIII) water-filled depressions created in uplands incidental to mining or construction activity and pits excavated in uplands for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting water feature is state waters;
(IX) swales and erosional features, such as gullies, small washes, and rills that do not contain wetlands or an ordinary high watermark;
(X) Groundwater, meaning subsurface waters in a zone of saturation that are or can be brought to the surface of the ground or to surface waters through wells, springs, seeps, or other discharge areas. "Groundwater" does not include wetlands; and
(XI) Prior converted cropland

In addition, the State of Colorado does not require an authorization/permit to discharge dredged or fill material that meet the following conditions:

(i) Activities in receipt of an active CWA Section 404 Permit through the USACE that was issued prior to May 25, 2023;
(ii) Activities in receipt of an approved jurisdictional determination issued by the USACE prior to May 25, 2023, finding that the state waters into which the proposed discharge of dredged or fill material will occur are not Waters of the United States unless there has been a significant hydrological change since the determination was issued; and
(iii) Activities in receipt of an active CWA Section 404 Permit that was issued by the USACE on or after May 25, 2023, except to the extent that the project

area of the Section 404 permit involves a discharge of dredged or fill material into State waters that have been determined by the United States USACE to not be Waters of The United States.

Based upon the above exclusions and permit conditions, it is ECOS opinion that if a Federal Clean Water Act (CWA) Section 404 Permit is obtained for any proposed dredge, fill, stabilization, impacts, or modifications to the above listed jurisdictional WOTUS, a State CWA Permit is not required as it meets condition (iii) noted above.

5.2 Endangered Species Act

The Site is not located within any Critical Habitat for T&E Species, Wildlife Refuges or Hatcheries according to the USFWS IPaC Trust Resources Report (USFWS, 2025a), nor does it exhibit any of the requisite or suitable habitat components to support T&E species listed for the area. As such, requests for concurrence with this report, clearance letters, or consultation with the USFWS under the ESA is not required.

Please note the following standard response from the USFWS in regard to ESA concurrence or clearance:

“If you (the project proponent) have determined that your project will have no effect to listed species or their habitat, or if suitable habitat for a listed species does not occur within your project area, you may not receive any further response or notification from us, as neither section 7 of the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C 1531 et seq.), nor implementing regulations under section 7 of the ESA, require us to review or concur with projects where “no effect” determinations have been made”.

This means that the USFWS may or may not comment or concur with the findings of this report or effects determination as documentation of ESA compliance, regardless of the Project being constructed, funded or permitted by a federal agency, or requests for ESA concurrence by local jurisdictions, counties, or FEMA.

5.3 Migratory Bird Treaty Act & Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) prohibits prohibits the "taking" of migratory birds or raptor, which includes pursuing, hunting, shooting, trapping, killing, capturing, or possessing them, or their eggs, parts, or nests, without prior authorization from the USFWS.

No raptor nests have been mapped within two miles of the Site. Activities on the Site will have no effect on the viability of the bald eagle nest located three miles away. No migratory bird nests were observable within the Site using aerial imagery. Potential burrowing owl habitat in scattered prairie dog colonies throughout the Site are visible on aerial imagery.

Given the seasonal and transitory nature of migratory birds and raptors and an field assessment and nest surveys have not been conducted in the preparation of

this Report. ECOS recommends a nesting bird survey prior to any proposed construction activities within the Site and within the CPW recommended buffers of the Site to identify any nests within the Site that could potentially be occupied, with eggs or chicks. If found, construction activities should be timed to avoid a taking and restricted during the breeding, egg laying, and fledging season near any identified migratory bird or raptors nests.

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Whitson, Tom D. L.C. Burrill, S.A. Dewey, D.W. Cudney, B.E. Nelson, R.D. Lee, and R. Parker. 2004. Weeds of the West, 9th Edition. Western Society of Weed Science, Western United States Land Grant Universities Cooperative Extension Services, and the University of Wyoming, Jackson Hole, Wyoming.

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Appendix A

USFWS IPaC Trust Resource Report

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

El Paso County, Colorado

Local office

Colorado Ecological Services Field Office

(303) 236-4773
(303) 236-4005

MAILING ADDRESS
Denver Federal Center
P.O. Box 25486
Denver, CO 80225-0486

PHYSICAL ADDRESS
1 Denver Federal Center
Bldg 53 Room Fw100}
Denver, CO 80225-0001

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

NOT FOR CONSULTATION

Birds

NAME	STATUS
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover Charadrius melodus This species only needs to be considered if the following condition applies: • Project includes water-related activities and/or use in the N. Platte, S. Platte, and Laramie River Basins which may affect listed species in Nebraska. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's Cuckoo Bumble Bee Bombus suckleyi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10885	Proposed Endangered

Flowering Plants

NAME	STATUS

Ute Ladies'-tresses Spiranthes diluvialis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2159	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Jul 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

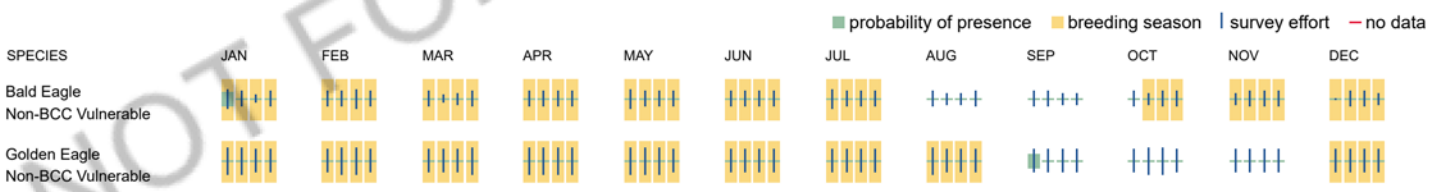
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Jul 31

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Broad-tailed Hummingbird Selasphorus platycercus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 25 to Aug 21
Ferruginous Hawk Buteo regalis This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6038	Breeds Mar 15 to Aug 15
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31
Northern Harrier Circus hudsonius This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15
Pinyon Jay Gymnorhinus cyanocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

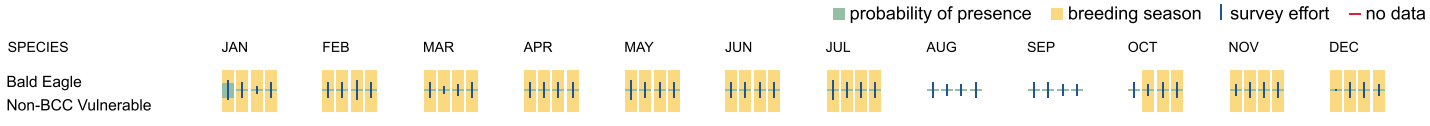
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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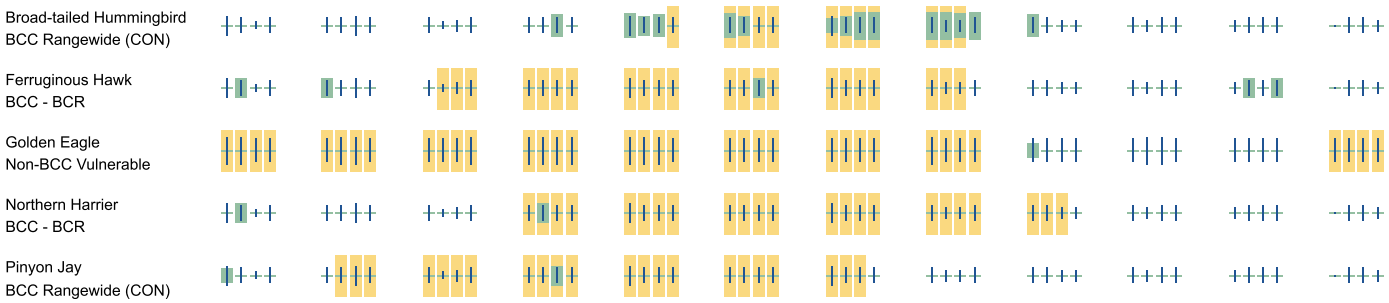


Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

NOT FOR CONSULTATION

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R4SBA
R4SBC
R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

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

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

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

Data exclusions

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

Data precautions

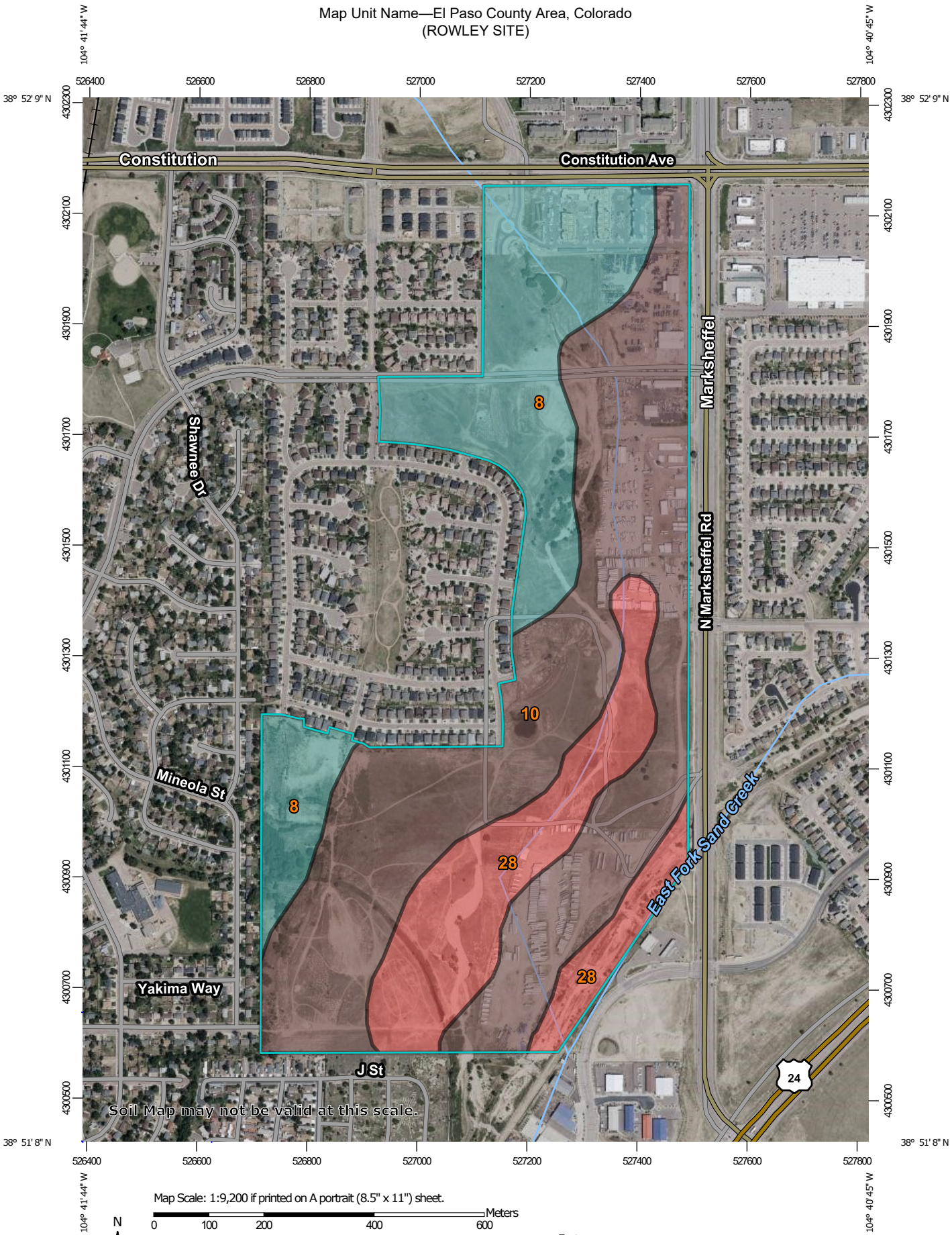
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal,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

NOT FOR CONSULTATION

Appendix B

USDA Custom Soil Resource Report

Map Unit Name—El Paso County Area, Colorado
(ROWLEY SITE)



Map Scale: 1:9,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Blakeland loamy sand, 1 to 9 percent slopes
- Blendon sandy loam, 0 to 3 percent slopes
- Ellicott loamy coarse sand, 0 to 5 percent slopes
- Not rated or not available

Soil Rating Lines

- Blakeland loamy sand, 1 to 9 percent slopes
- Blendon sandy loam, 0 to 3 percent slopes
- Ellicott loamy coarse sand, 0 to 5 percent slopes
- Not rated or not available

Soil Rating Points

- Blakeland loamy sand, 1 to 9 percent slopes
- Blendon sandy loam, 0 to 3 percent slopes
- Ellicott loamy coarse sand, 0 to 5 percent slopes
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 23, 2024—Aug 4, 2024

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.

Map Unit Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	Blakeland loamy sand, 1 to 9 percent slopes	51.0	26.6%
10	Blendon sandy loam, 0 to 3 percent slopes	Blendon sandy loam, 0 to 3 percent slopes	102.8	53.7%
28	Ellicott loamy coarse sand, 0 to 5 percent slopes	Ellicott loamy coarse sand, 0 to 5 percent slopes	37.6	19.7%
Totals for Area of Interest			**191.5**	**100.0%**

Description

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

CONDITIONAL LETTER OF

MAP REVISION

WILSHIRE CHANNEL (REACH 6)

TRIBUTARY TO EAST FORK SAND CREEK

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

MERRICK
Engineers & Architects

Merrick & Company
North Creek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO. 80919

719/260-8874/Fax 719/260-6098

LETTER OF TRANSMITTAL

To: Kevin Stilson
Regional Floodplain Administrator
2880 International Circle
Colorado Springs, CO 80910

Date: 7/14/06

Job No.: 18014674

Ref.: Wilshire Channel CLOMR

The following material is being transmitted: Herewith ☒ Under Separate Cover ☐

Quantity	Description
1 Copy	Wilshire Channel Conditional Letter of Map Revision

Herewith, please find a copy the CLOMR application which has been approved and signed by Kevin Stilson, the Floodplain Manager. This CLOMR will be submitted to FEMA within the week.

Please feel free to call me with any questions, at extension 5034.

Thank you.

When: 7/14/06 Via: Hand Delivery

This completes ☒ does not complete ☐ delivery of all material on this job.

Respectfully submitted,
MERRICK & COMPANY

By: Emily Skalsky, E.I.

Floodplain & Enumeration MR
1. 06-08-B000P
2. East Fork - Sand Creek - Reach 6

CONDITIONAL LETTER OF MAP REVISION

WILSHIRE CHANNEL
(REACH 6)
TRIBUTARY TO EAST FORK SAND CREEK
(REACH NO: EF-2)
EL PASO COUNTY, COLORADO

JULY 2006

PREPARED FOR:

Wilshire Development (Wisconsin), LLC
6040 N. 22nd Place
Phoenix, AZ 85016
Contact: Grant Langdon
Phone: (602) 957-0966

SUBMITTED TO:

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY OF COLORADO SPRINGS, COLORADO
EL PASO COUNTY, COLORADO

PREPARED BY:

MERRICK®
BUILDING QUALITY SOLUTIONS

Merrick & Company
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919
Contact: Sac Ayala, P.E.
Phone: (719)-260-8874

PROJECT NO. 18014674

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1 Introduction

1.1 Overview

This CLOMR[1] application documents a proposed revision of the floodplain along the East Fork of Sand Creek in El Paso County, Colorado. The revision area, known as "Reach 6", is located in the southwest quadrant of the intersection of Constitution Boulevard and Marksheffel Road, within the East Half of Section 5, Township 14 South, Range 65 West of the 6th Principle Meridian.

The reach of East Fork of Sand Creek (EFSC) where the revision is proposed is between an existing culvert crossing under Constitution Avenue upstream and downstream at approximately STA 225 of the East Fork of Sand Creek per the Sand Creek Drainage Basin Planning Study, (DBPS), by Kiowa Engineering Dated January 1993. See Section 1.3.2 for additional description of the revision Reach 6, inlet and outlet.

This request for map revision is based on the proposed channel required by the DBPS as a drainage way through proposed development in the Wilshire Development, Filing No. 1. The channel drains to the East Fork of Sand Creek 100-year floodplain, documented on NFIP[2] map panels 08041C 0756 F, effective March 17, 1997, revised by LOMR[3] dated November 24, 2003, effective March 24, 2004 as well as panel 08041C 0752 F. As proposed, the channel will convey flows collected from the existing upstream box culvert, through a constructed concrete lined and rip-rap lined channel connecting to the East Fork of Sand Creek at approximately DBPS STA 225.

The channel will be constructed on property owned by the developer of the adjacent site, the proposed Wilshire Filing No.1 subdivision. Results of the floodplain analysis presented in this application reflect a proposed change in the 100-year water surface elevation caused by the adjacent development and introduction of the channel. The property owners adjacent to the site, which will not be directly affected by channel construction, are: Sand Creek Investments North LLC, Real Estate Works LLC, Perkey Family LLC, and US Waste Industries Inc. The property owners affected by the change in the 100-year water surface elevation are the owner of the proposed development site, RichFamFive (represented by Mr. Richardson), Avery Oil & Gas LLLP, Advanced RV & Self Storage, B Wheat LLLP, Ban LLC, and the El Paso County Department of Transportation (EPC-DOT). In addition, the Army Corps of Engineers – Albuquerque District (COE) has a vested interest in the compromised wetland area at the southern most stretch of the proposed channel. As discussed with the COE, a 404 Permit will be required for construction of the proposed channel and shall be on file with the COE prior to construction. The 404 Permit Application is included in Appendix A.

EPC-DOT controls the property along the northern boundary of the proposed revision area, along the embankment slope of Constitution Avenue. Reach 6 of the EFSC crosses Constitution Avenue in 5'Hx12'W and 6'Hx15'W box culverts that discharge on the south side of the road into the proposed revision area. El Paso County officials have been informed as to the impacts associated with the proposed development and have concluded that the impacts are acceptable.

Mr. Richardson owns the development along the south-central area of revision. Materials were provided to Mr. Richardson documenting the impacts due to the proposed development. Mr. Richardson's consent will be requested in conjunction with this application.

Advanced RV & Self Storage, B Wheat LLLP, Avery Oil & Gas LLLP, and Ban LLC are property owners with the 100-year floodplain existing on their land. With the construction of the proposed

[1] CLOMR; Conditional Letter of Map Revision
[2] NFIP; National Flood Insurance Program
[3] LOMR; Letter of Map Revision

channel, the 100-yr floodplain surface area will be decreased and lessen the encroachment on their property. Each owner's consent will be requested in conjunction with this application. All letters are included in Appendix F.

The owner of the proposed development site, Wilshire Development LLC, has also provided consent for the revisions as proposed. Wilshire Development LLC is also the owner of the property along the western edge of revision, as well as the southern portion of development. The owner has provided consent to all revisions. Documentation reflecting that understanding and acceptance of the impacts due to the proposed development is also provided with this application.

The proposed revision reach is with a Zone A SFHA[4]. Prior to the LOMR, March 24, 2004, Base Flood Elevations were defined as in the FIRM 08041C 0756 F, dated March 17, 1997. The LOMR establishes BFE's[5] and documents flood profiles for the 10-, 50-, 100-, and 500-year recurrence intervals that are appended into the City of Colorado Springs and El Paso County Flood Insurance Studies. There is a LOMR in progress with FEMA, submitted by Matrix Engineering, which is the existing condition in respect to this study. That LOMR was conducted to revise the main stem of the East Fork of Sand Creek and introduce a wetland area adjacent to the main stem. The revised flood data for that LOMR is the existing condition for this CLOMR. With the submittal of this CLOMR, the effective floodplain will change slightly due to the introduction of a more recent survey for the northern portion of Reach 6 of the East Fork of Sand Creek. Refer to Section 1.3.2.2 for a more detailed explanation. Modification of the BFE's will be provided with documentation as part of a request for a LOMR following this CLOMR application.

In order to assess the potential impacts of all future development through the proposed revision reach, existing and proposed models were prepared based on DBPS flows that incorporated anticipated future land-use changes, the inclusion of a channel, and surrounding residential, commercial and industrial development. The proposed channel will consist of a concrete-lined, 4 to 1 side slope, 1% slope, 20' bottom width and 6' deep trapezoidal channel for the northern most 1,954 linear feet. The channel will transition to a rip-rap bottom and grass-lined channel (as detailed in the DBPS) of 3 to 1 side slopes, at 0.4% slope, 45' bottom width and 6' deep trapezoidal channel that incorporates drop structures to control the slope and erosion of the channel bed. The hydraulic model that was prepared to reflect the anticipated improvements included the abovementioned channel as well as construction allowing the channel to connect downstream with the East Fork of Sand Creek. The model also incorporated the encroachment into the East Fork of Sand Creek floodplain along the main stem. The modeling incorporated a fully-developed scenario to consider all impacts of the future development in this area. The result of this model is the 100-year water surface shown in Figure 5.

All modeling results and documentation will be provided to local agencies including El Paso County Development Services, the City of Colorado Springs, and the Regional Floodplain Administrator, Kevin Stilson (community official) for review. The modeling will be incorporated into a formal request Letter of Map Revision for the proposed revision reach upon completion of construction.

The revised floodway definition demonstrates that the proposed channel construction and surrounding development can occur and are compatible with the El Paso County standards. The floodway will be developed and documented as part of a LOMR request following this CLOMR application.

1.2 Background

This CLOMR application documents a proposed revision to the 100-year floodplain of "Reach 6" of the East Fork of Sand Creek. A Letter of Map Revision was issued on November 24, 2003, and

[4] SFHA; Special Flood Hazard Area
[5] BFE; Base Flood Elevation

became effective as of March 24, 2004. This CLOMR application seeks to redefine the East Fork of Sand Creek floodplain from what is defined in the LOMR dated March 24, 2004. The proposed floodplain revision affects two NFIP FIRM[6] panels that identify the same SFHA along the EFSC. As cited in Form 1, NFIP map panels in the City of Colorado Springs series (080060) and the El Paso County series (080059) both exhibit the area where the revision is proposed.

1.3 Included FEMA Forms

The central organizational feature of this CLOMR application is based on the order of the included FEMA[7] forms. This CLOMR application is for riverine type flooding, and includes channelization and a culvert installation. No revision to the existing hydrologic data is proposed. The following forms are included with this application:

- Form 1 – Overview & Concurrence Form provides basic information regarding the revision request and requires signatures of the requester, community official, and engineer.
- Form 2 – Riverine Hydrology & Hydraulics Form provides basic information on the scope and methodology of hydrologic and/or hydraulic analyses that are prepared in support of the revision request. This form should be used for revision requests that involve new or revised hydrologic and/or hydraulic analyses of rivers, streams, ponds or small lakes
- Form 3 – Riverine Structures Form provides basic information regarding hydraulic structures constructed in the stream channel or floodplain. This form shall be used for revision requests that involve new or proposed channelization, bridges/culverts, dams, and/or levees/floodwalls.
- Form 4 – Not needed for this CLOMR
- Form 5 – Not needed for this CLOMR
- Form 6 – Not needed for this CLOMR
- Payment Information Form – Provides basic information regarding any fees paid for a CLOMR.

Form 1 (FEMA Form 81-89) is signed by a representative of the community most affected by the floodplain revision, El Paso County. No additional signatures are required.

Form 2 is included because revisions are proposed along a reach of stream identified on a FEMA FIRM panel as a location where flooding occurs. A HEC-RAS analysis has been done to establish revised flood boundaries for the 100-year flood event. Results of this analysis are compared to results of the effective HEC-RAS model (from Matrix Engineering, dated January 2006, part of previous LOMR submittal) for the reach to be revised. A duplicate effective model is included as part of this application. The included duplicate model is a copy of the original HEC-RAS model that is the basis of the effective FEMA floodplain. The only changes made to the original model made for use in this application are to Title Records, to prevent confusion between the original files and those included in this application. Hydraulic data remains unmodified in the lower portion, except as described in Section 1.3.2. A disk including the following HEC-RAS models are included: the effective Matrix Model (unchanged), the corrected effective Matrix model with topography update, and the proposed model.

Form 3 is included because this CLOMR application proposes a revision to the effective 100-year floodplain. The FIMS mapping used in the analysis done for this application is not different from that used in the effective FIS[8] for the proposed revision reach in the lower portion of the study.

---

[6] FIRM; Flood Insurance Rate Map
[7] FEMA; Federal Emergency Management Agency
[8] FIS; Flood Insurance Study

However, the FIMS mapping was combined with additional survey to appropriately express the topography in the upper modeling of Reach 6, areas not included in the original effective HEC-RAS model. This transition between the FIMS topography and the additional survey occur at cross-section 6117.

The Payment Information Form is included to exhibit the mandatory fee payable to FEMA.

1.3.1 Form 1: Overview & Concurrence Form

1.3.1.1 Overview

The NFIP map panels affected by the proposed improvements are superseded by the Letter of Map Revision issued November 24, 2003, effective as of March 24, 2004. The proposed map revision documented in this application is to the floodplain delineation represented in that LOMR. The proposed map revisions are being made on behalf of El Paso County, Colorado and the City of Colorado Springs, Colorado to reflect proposed changes to the East Fork of Sand Creek floodplain from the construction of the Wilshire Channel "Reach 6". The changes to the East Fork of Sand Creek floodplain in the map revisions reflect a concrete-lined channel transitioning to rip-rap & grass-lined channel constructed between Constitution Avenue and the East Fork of Sand Creek, including a box culvert and several drop structures.

1.3.1.2 Encroachment Information

Results of a hydraulic analysis that incorporates the proposed channel show revised 100-year East Fork of Sand Creek and Tributary Reach 6 for the flood profiles through the proposed revision reach. The impact on adjacent property owners has been determined, and information disseminated to those affected. Acceptance of the proposed floodplain revision by affected property owners is documented herein.

No insurable structures are impacted.

1.3.1.3 Maintenance Responsibility

The channel will be maintained by El Paso County. Maintenance will include annual inspection of the channel bedding, clearing of debris and sedimentation, clearing of culvert openings, clearing the drop structures, and maintaining a cleared entry point to the East Fork of Sand Creek.

1.3.1.4 Signature

The proposed revision affects property within El Paso County boundaries.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B. No. 1660-0016
Expires August 31, 2007

PAPERWORK BURDEN DISCLOSURE NOTICE

The reporting burden for this form is estimated to average 1 hour 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, U.S Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, 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.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one)

☒ CLOMR: A letter from 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 FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway, or flood elevations. (See Parts 60 & 65 of the NFIP Regulations).

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
Ex: 480301	Katy, City	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
080059	El Paso County	CO	08041C	0756F	03/17/97
080060	Colorado Springs, City	CO	08041C	0756F	03/17/97
080059	El Paso County	CO	08041C	0752F	03/17/97
080060	Colorado Springs, City	CO	08041C	0752F	03/17/97

2. Flooding Source: East Fork of Sand Creek (Reach No: EF-2)

3. Project Name/Identifier: Wilshire Channel

4. FEMA zone designations affected: A (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 ☐ 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 types of flooding and structures (check all that apply).

Types of Flooding:	☒ Riverine	☐ Coastal	☐ Shallow Flooding (e.g., Zones AO and AH)
	☐ Alluvial fan	☐ Lakes	☐ Other (Attach Description)
Structures:	☒ Channelization	☐ Levee/Floodwall	☒ Bridge/Culvert
	☐ Dam	☐ Fill	☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $ 4000

☐ No, Attach Explanation

Please see FEMA website at http://www.fema.gov/mit/tsd/frm_fees.htm 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:	Company:	
Grant Langdon	Wilshire Development (Wisconsin), LLC	
Mailing Address:	Daytime Telephone No.:	Fax No.:
6040 N 22nd Place, Phoenix, AZ 85016	(602) 957-0966	(602) 957-9001
	E-Mail Address: gl@glangdon.com	
Signature of Requester (required):		Date: 7/12/06

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 the community floodplain management requirements, including the requirement that no fill be 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. 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:		Telephone No.:
Kevin Stilson, PE, CFM, Regional Floodplain Administrator		(719) 327-2907
Community Name: El Paso County	Community Official's Signature: (required)	Date: 7/14/06

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. 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:
Sacramento Ayala, P.E.	26663	1-31-2008
Company Name: Merrick and Company	Telephone No.: (303) 751-0741	Fax No.: (303) 343-0596
Signature:		Date: 07/12/06

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

Form Name and (Number)	Required if...
☒ Riverine Hydrology & Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Seal (optional)

LANGDON HAMILTON FAMILY PARTNERSHIP

91-535/1221 8500
1000819698

2501

DATE 7/12/06

PAY TO THE ORDER OF Federal Emergency Management Agency $ 4,000-

Four Thousand. DOLLARS

Security Features Included. Details on Back.

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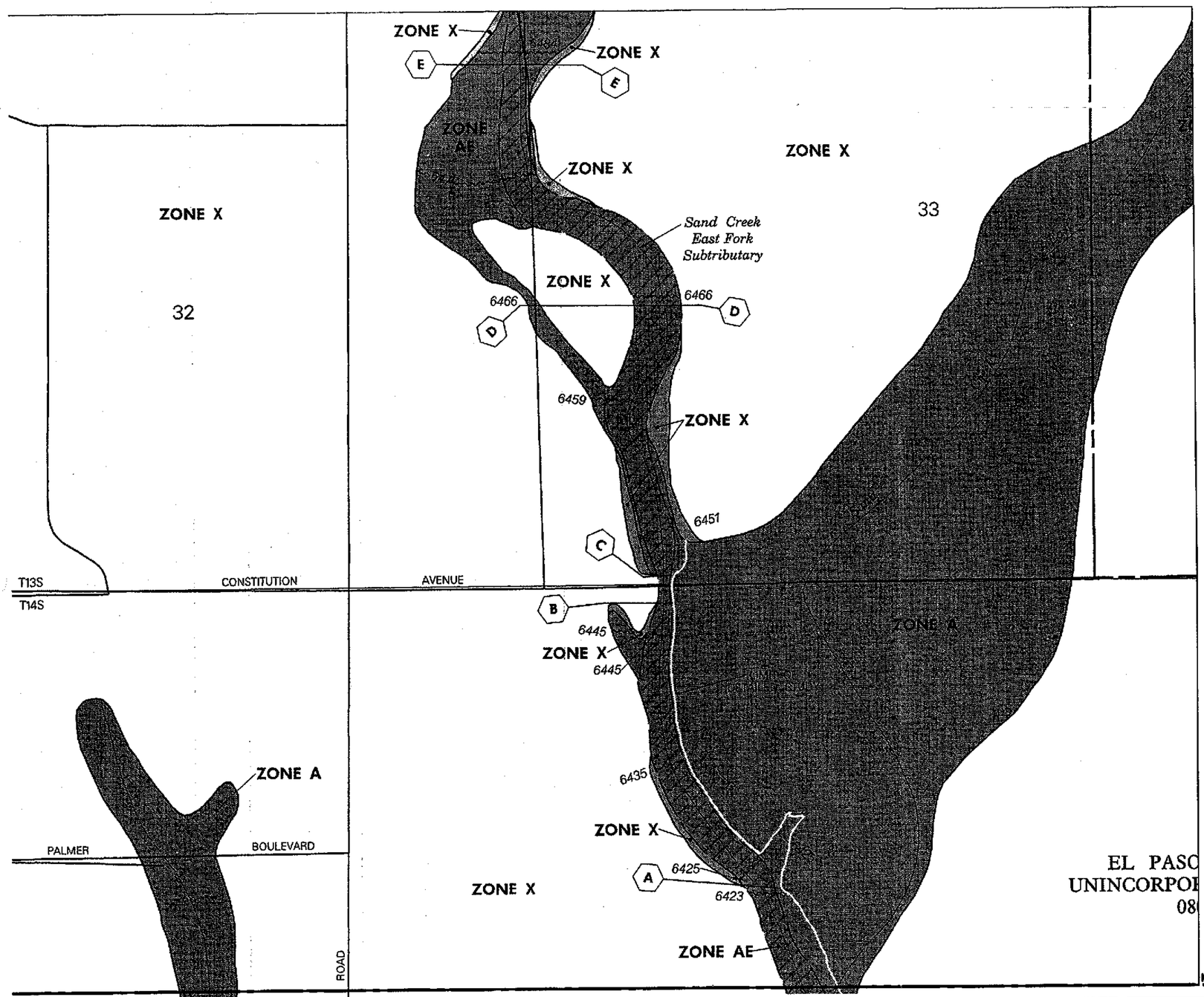

MATCHLINE SHEET 1A

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 756 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0756	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0756	F

MAP NUMBER 08041C0756 F

EFFECTIVE DATE: MARCH 17, 1997

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

NO	REVISION DESCRIPTION	DATE	CHANGED BY	CHECKED BY	APPROVED BY

MERRICK
Engineers & Architects
5755 MARK DABLING BLVD., SUITE 350
COLORADO SPRINGS, CO 80919
PHONE: (719) 260-8474

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MERRICK	SIGNATURE	DATE
DRAWN	EAS	04-27-06
DESIGNED	EAS	04-27-06
QC REVIEW		
APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		

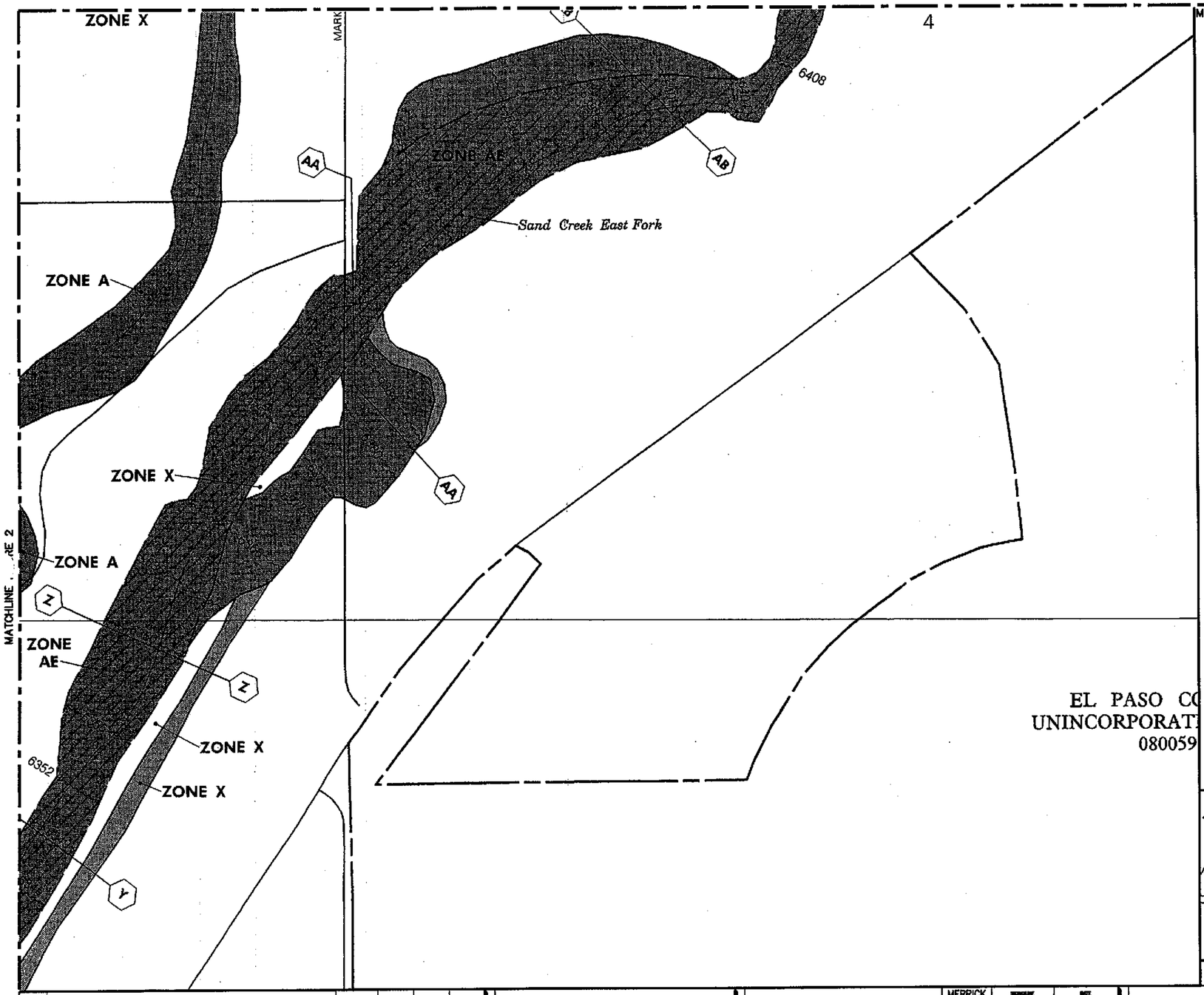
CAD FILE NAME

WILSHIRE DEVELOPMENT
FIRM MAP

CLIENT PROJECT NO.	-
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE
FIGURE 1
FIRM MAP 08041C 0756 F
SHEET 1

REVISIONS	DRAWING NO.	SHEET NO.
		1 OF 2



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 756 OF 1300

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0756	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0756	F

MAP NUMBER 08041C0756 F

EFFECTIVE DATE: MARCH 17, 1997

Federal Emergency Management Agency

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NO	REVISION DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY

MERRICK
Engineers & Architects
5755 MARK DABLING BLVD., SUITE 350
COLORADO SPRINGS, CO 80918
PHONE: (719) 260-8674

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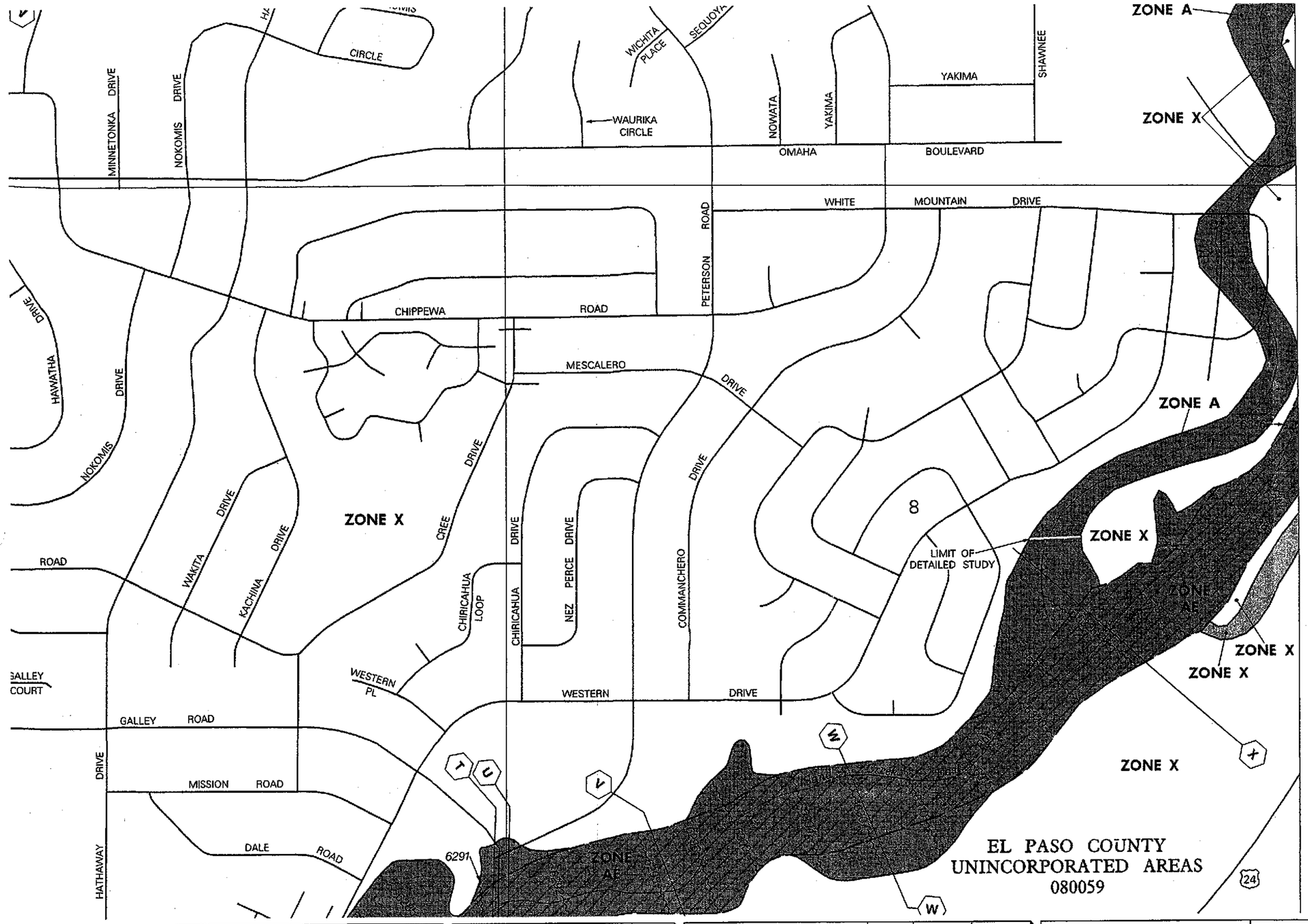
MERRICK	SIGNATURE	DATE
DRAWN	EAS	04-27-06
DESIGNED	EAS	04-27-06
QC REVIEW		
APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		
CAD FILE NAME		

WILSHIRE DEVELOPMENT
FIRM MAP

CLIENT PROJECT NO.	–
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE:
FIGURE 1
FIRM MAP 08041C 0756 F
SHEET 2

REVISION	DRAWING NO.	SHEET NO.
		2 OF 2



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 752 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0752	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0752	F

MAP NUMBER 08041C0752 F

EFFECTIVE DATE: MARCH 17, 1997

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

REV	REVISION DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY

MERRICK
Engineers & Architects
5755 MARK DABLING BLVD., SUITE 350
COLORADO SPRINGS, CO 80918
PHONE: (719) 260-0074

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	SIGNATURE	DATE
MERRICK		
DRAWN	EAS	04-27-06
DESIGNED	EAS	04-27-06
QC REVIEW		
APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		

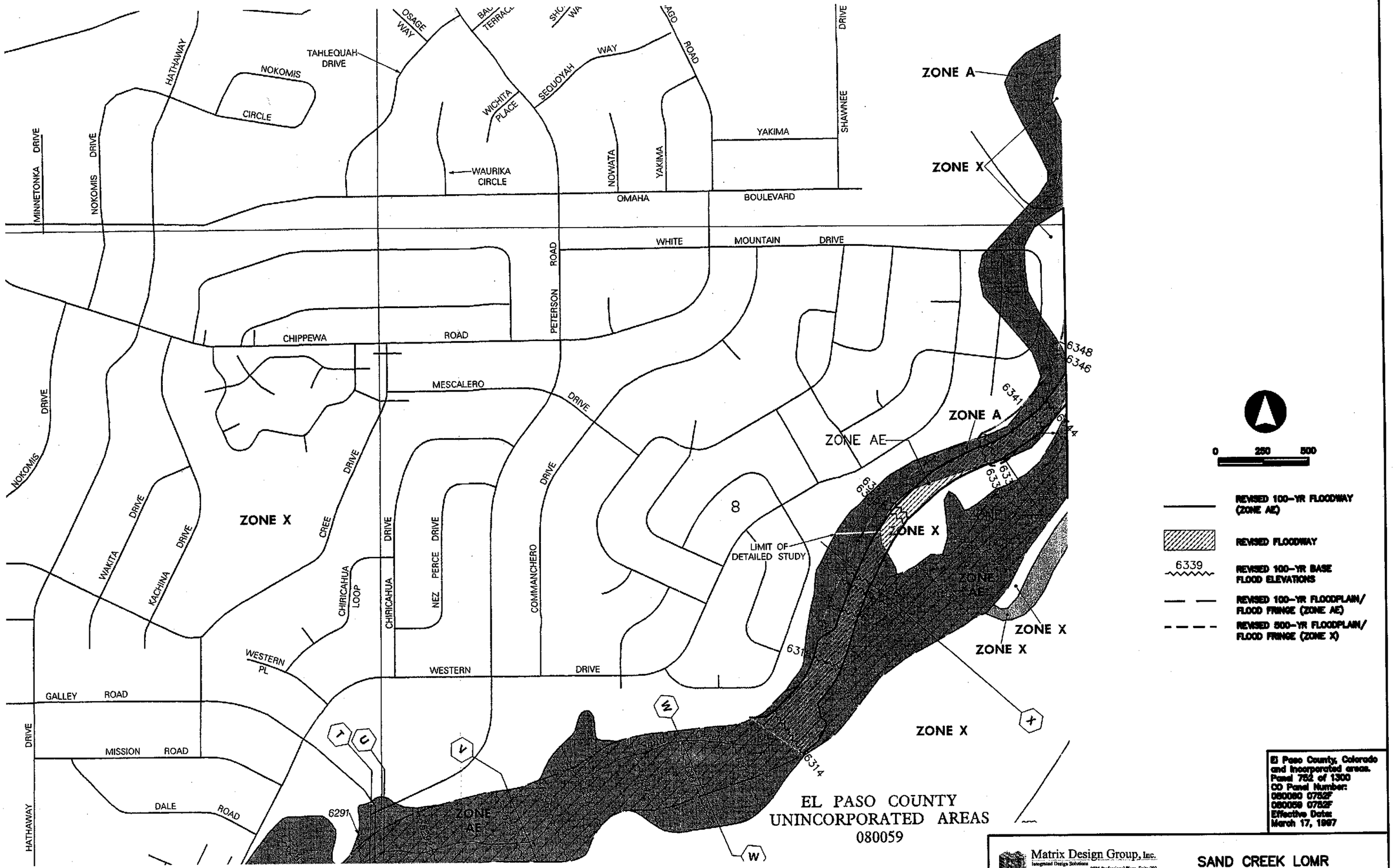
CAD FILE NAME

WILSHIRE DEVELOPMENT
FIRM MAP

CLIENT PROJECT NO.	–
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE:
FIGURE 2
FIRM MAP 08041C 0752 F

REVISIONS	DRAWING NO.	SHEET NO.
		1 OF 1



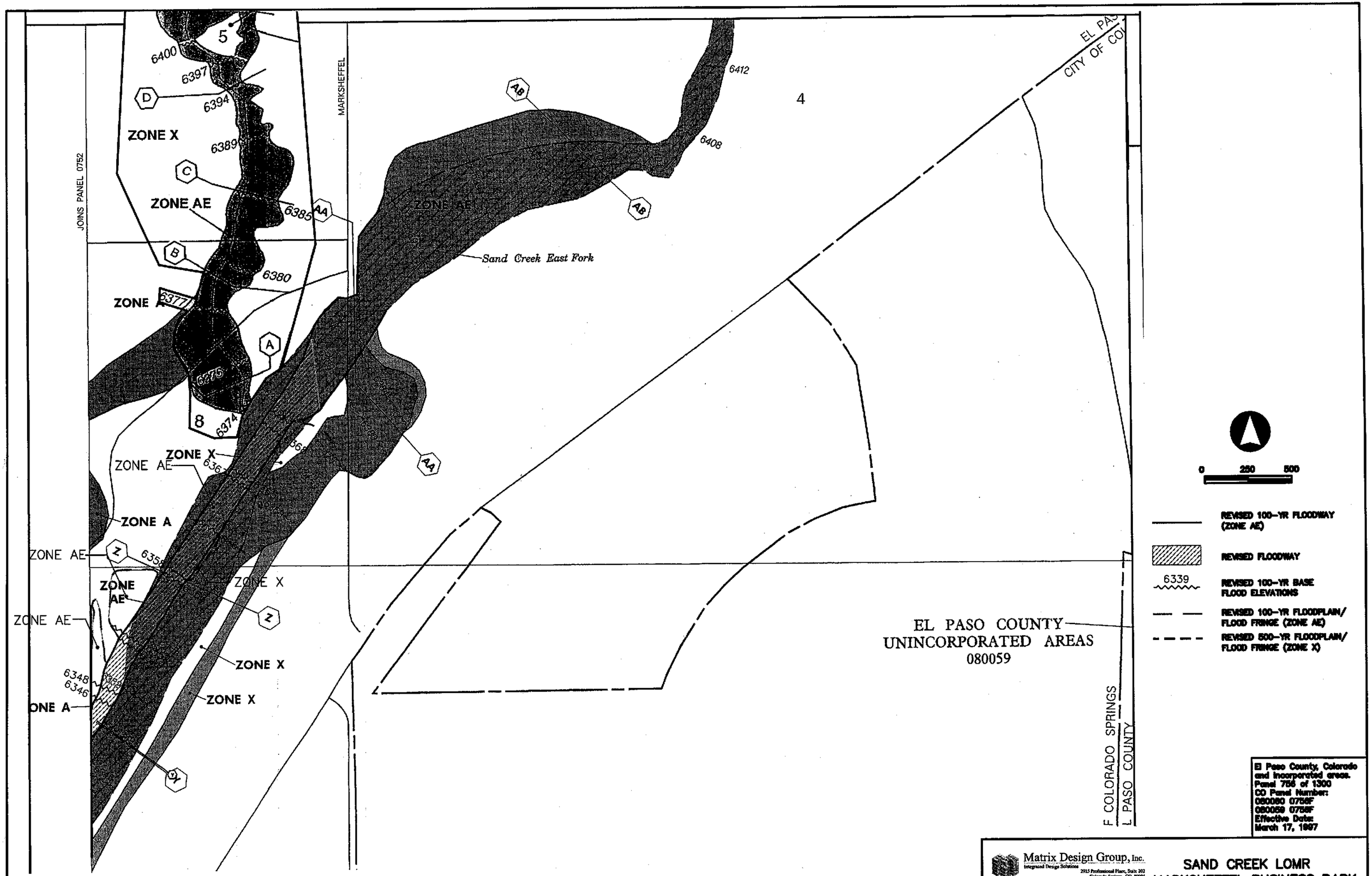
EL PASO COUNTY
UNINCORPORATED AREAS
080059

El Paso County, Colorado and Incorporated areas.
Panel 752 of 1300
CO Panel Number:
080059 0752F
080059 0752F
Effective Date:
March 17, 1997

Matrix Design Group, Inc.
Integrated Design Solutions
2925 Professional Place, Suite 202
Colorado Springs, CO 80904
Phone 719-575-0100
Fax 719-575-0208

SAND CREEK LOMR
MARKSHEFFEL BUSINESS PARK
ANNOTATED FLOOD INSURANCE RATE MAP

JANUARY 2006



El Paso County, Colorado and Incorporated areas.
Panel 755 of 1300
CO Panel Number:
080060 0755F
080059 0755F
Effective Date:
March 17, 1997

Matrix Design Group, Inc.
Integrated Design Solutions
2015 Professional Place, Suite 202
Colorado Springs, CO 80904
Phone 719-575-0100
Fax 719-575-0208

SAND CREEK LOMR
MARKSHEFFEL BUSINESS PARK
ANNOTATED FLOOD INSURANCE RATE MAP

JANUARY 2006

1.3.2 Form 2: Riverine Hydrology & Hydraulics Form

1.3.2.1 Reach To Be Revised

The proposed revision tributary is located just downstream of an existing culvert crossing Constitution Avenue in El Paso County, Colorado. The tributary, broken into three reaches, is approximately 6,850 feet in length, crossing from north to south. Phase 1 of the proposed revision tributary is bounded by Constitution Avenue on the North and the Proposed Box Culvert to the south. Phase 2 of the proposed revision tributary is bounded by the Proposed Box Culvert to the north and the East Fork of Sand Creek to the south. (See Figure 5). The revised 100-year flood profile ties into the effective flood profile at these locations.

1.3.2.2 Models Submitted

A 100-year floodplain delineation was prepared for East Fork of Sand Creek by Drexel, Barrell & Company that resulted in a LOMR dated November 24, 2003. The floodplain delineation adopted by that LOMR became effective on March 24, 2004. The corresponding model for existing conditions based on the LOMR is titled *EFSC_Prop.prj*. The hydraulic model that is the basis of the effective East Fork Sand Creek 100-year floodplain is provided as the Duplicate Effective Model. The name of the HEC-RAS input file is *EX_FP_MERRICK.prj*. The original HEC-RAS model, developed from Matrix Engineering's LOMR model, showed the 100-year flood profile using an "undeveloped" flow rate of 552 cfs. A recent survey was introduced to the northern portion of Reach 6, between Constitution Blvd and the beginning of the Matrix model, thus the Corrected Effective model is a product of the original modeling provided by Matrix Engineering, and a consideration of the existing conditions north until Constitution Avenue. No adjustments were made to the original existing conditions model; the only alteration was adding the northern remainder of Reach 6 and the consideration of the updated topography.

Merrick & Company used updated topography information and an "undeveloped" flow rate of 552 cfs. Merrick's model begins at the culvert outlet south of Constitution Avenue and ties into Matrix's model at HEC-RAS section 6135.

The model for the phase 1 revised conditions is named *PR_FP1_MERRICK.prj*. the model for the phase 2 revised conditions is named *PR_FP2_MERRICK.prj*. These models reflect proposed improvements necessary to develop the Wilshire Channel and constructing the adjacent development.

HEC-RAS input files, along with summary output for both hydraulic models are included with this application as appendices to this document.

1.3.2.3 Starting Water Surface Elevations

The complete (Phases 1 & 2) revision tributary is an approximately 6,850 foot length of a proposed channel consisting of concrete lining and transitioning to a rip-rap and grass-lined trapezoidal channel. The hydraulic model used to analyze and document Phase 1 of the proposed floodplain revision is a model of the revised portion of the tributary from Constitution Avenue south to the box culvert, the remaining portion of the natural tributary and a portion of the main stem of Sand Creek. The hydraulic model used to analyze and document Phase 2 of the proposed floodplain revision is a model of the entire tributary and a portion of the main stem of Sand Creek. The hydraulic conditions downstream of the revision reach are therefore incorporated into the analysis of the impacts in the revision area. The starting water surface elevation used in modeling the proposed floodplain revision is based on the hydraulic conditions through the downstream reaches of Sand Creek.

1.3.2.4 Results

Results of the hydraulic analyses for Phase 1 and the completed Phase 2 floodplain revision reflect a change in the 100-year water surface. The 100-year floodway will be channelized into the proposed channel throughout the revision reach, thus reducing the impact of a 100-year flood on the surrounding natural land. The impact of the rise/decrease is located both on and off the requester's property; however there are no areas within the revision reach that increase the flood encroachment area, only reducing the

floodplain within the channelized area. The majority of the reach revision and channel construction occur on the requester's property, however the adjoining property owners have been notified.

1.3.2.5 Revised FIRM

At the upstream and downstream limits of the proposed revision reach, the revised profile matches the effective flood profile.

Merrick proposes a realignment of portions of the creek and development of the Wilshire Property south of Constitution Avenue. Phase 1 includes a realignment south of Constitution Avenue to the box culvert. The channel south of the box culvert will be undisturbed during Phase 1. The proposed realignment offers a smoother trapezoidal shape and a more consistent slope of approximately 1% in the concrete lined portion, and 0.4% in the rip-rap/grass-lined area. A new HEC-RAS model of the realigned creek shows a more contained 100-year floodplain throughout the section, with provided freeboard exceeding the 1-foot minimum requirement. Phase 2 includes a realignment of the channel south of the box culvert. The model of the Phase 2 channel is extended about 1500 feet south of the original confluence (at the junction of the main stem of the East Fork of Sand Creek and Reach 6), and incorporates a small wetlands area at the proposed confluence. An undeveloped flow of 552 cfs was used throughout most of the channel. Please see Figure 4 for the Topographic Workmap. The flow velocities and depths are maintained to approximately that of the existing channel by using consistent slopes, cross-sections and a series of drop structures. The channel design has been developed and documented as part of this CLOMR application. A Floodway Data Table is provided as part of this document for the CLOMR request.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B. No. 1660-0016
Expires August 31, 2007

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Flooding Source: East Fork of Sand Creek (Reach No: EF-2) - Section A

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 2)
- ☐ Alternative methodology
- ☐ No existing analysis
- ☐ Proposed Conditions (CLOMR)
- ☐ Improved data
- ☐ Changed physical condition of watershed

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

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

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

- ☐ Statistical Analysis of Gage Records
- ☐ Regional Regression Equations
- ☐ Precipitation/Runoff Model _____ [TR-20, HEC-1, HEC-HMS, etc.]
- ☐ 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. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

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

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation or why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	Transition Structure Constitution			
Upstream Limit	Avenue			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2, HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre -Submittal Review of Hydraulic Models

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. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/mit/tsd/frm_soft.htm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name	EFSC_Prop	Floodway File Name	
Corrected Effective Model*	Natural File Name	EFSC_Prop2	Floodway File Name	
Existing or Pre-Project Conditions Model	Natural File Name	EX_FP_Mer	Floodway File Name	
Revised or Post-Project Conditions Model	Natural File Name	PR_FP_Mer	Floodway File Name	
Other - (attach description)	Natural File Name		Floodway File Name	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) - for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" list the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

C. MAPPING REQUIREMENTS

A certified topographic 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.).

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**, 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 of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) Increase? ☒ Yes ☐ No

   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.
   - The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

   If Yes, the community must acknowledge that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets (will meet) all of the standards of the the local floodplain ordinances, and is (will be) reasonably safe from flooding in accordance with NFIP regulation 44 CFR 65.2(c). 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 added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☐ No

   If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B. No. 1660-0016
Expires August 31, 2007

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Flooding Source: East Fork of Sand Creek (Reach No: EF-2) - Section B

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

A. HYDROLOGY

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

- [X] Not revised (skip to section 2)
- [ ] Alternative methodology
- [ ] No existing analysis
- [ ] Proposed Conditions (CLOMR)
- [ ] Improved data
- [ ] Changed physical condition of watershed

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

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

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

- [ ] Statistical Analysis of Gage Records
- [ ] Regional Regression Equations
- [ ] Precipitation/Runoff Model _____ [TR-20, HEC-1, HEC-HMS, etc.]
- [ ] 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. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

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

Was sediment transport considered? [ ] Yes [ ] No If Yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation or why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	Box Culvert			
Upstream Limit	Transition Structure			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2, HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre -Submittal Review of Hydraulic Models

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. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP l rements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/mit/tsd/frm_soft.htm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name	EFSC_Prop	Floodway File Name	
Corrected Effective Model*	Natural File Name	EFSC_Prop2	Floodway File Name	
Existing or Pre-Project Conditions Model	Natural File Name	EX_FP_Mer	Floodway File Name	
Revised or Post-Project Conditions Model	Natural File Name	PR_FP_Mer	Floodway File Name	
Other - (attach description)	Natural File Name		Floodway File Name	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) - for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" list the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

C. MAPPING REQUIREMENTS

A certified topographic 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; l ion and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

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**, 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 of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) Increase? ☒ Yes ☐ No

   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.
   - The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

   If Yes, the community must acknowledge that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets (will meet) all of the standards of the the local floodplain ordinances, and is (will be) reasonably safe from flooding in accordance with NFIP regulation 44 CFR 65.2(c). 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 added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

   or LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☐ No

   If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B. No. 1660-0016
Expires August 31, 2007

PAPERWORK BURDEN DISCLOSURE NOTICE

The reporting burden for this form is estimated to average 3 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, U.S Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, 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.**

Flooding Source: East Fork of Sand Creek (Reach No: EF-2) - Section C

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 2)
- ☐ Alternative methodology
- ☐ No existing analysis
- ☐ Proposed Conditions (CLOMR)
- ☐ Improved data
- ☐ Changed physical condition of watershed

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

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

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

- ☐ Statistical Analysis of Gage Records
- ☐ Regional Regression Equations
- ☐ Precipitation/Runoff Model _____ [TR-20, HEC-1, HEC-HMS, etc.]
- ☐ 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. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

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

Was sediment transport considered? ☐ Yes ☐ No If Yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation or why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	EF Sand Creek			
Upstream Limit	Box Culvert			

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2, HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre -Submittal Review of Hydraulic Models

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. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP r ements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/mit/tsd/frm_soft.htm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name	EFSC_Prop	Floodway File Name	
Corrected Effective Model*	Natural File Name	EFSC_Prop2	Floodway File Name	
Existing or Pre-Project Conditions Model	Natural File Name	EX_FP_Mer	Floodway File Name	
Revised or Post-Project Conditions Model	Natural File Name	PR_FP_Mer	Floodway File Name	
Other - (attach description)	Natural File Name		Floodway File Name	

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) - for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" list the models accepted by FEMA. This document can be found at: http://www.fema.gov/mit/tsd/en_modl.htm.

C. MAPPING REQUIREMENTS

A certified topographic 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; l on and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

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   - The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

   If Yes, the community must acknowledge that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets (will meet) all of the standards of the the local floodplain ordinances, and is (will be) reasonably safe from flooding in accordance with NFIP regulation 44 CFR 65.2(c). 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 added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☐ No

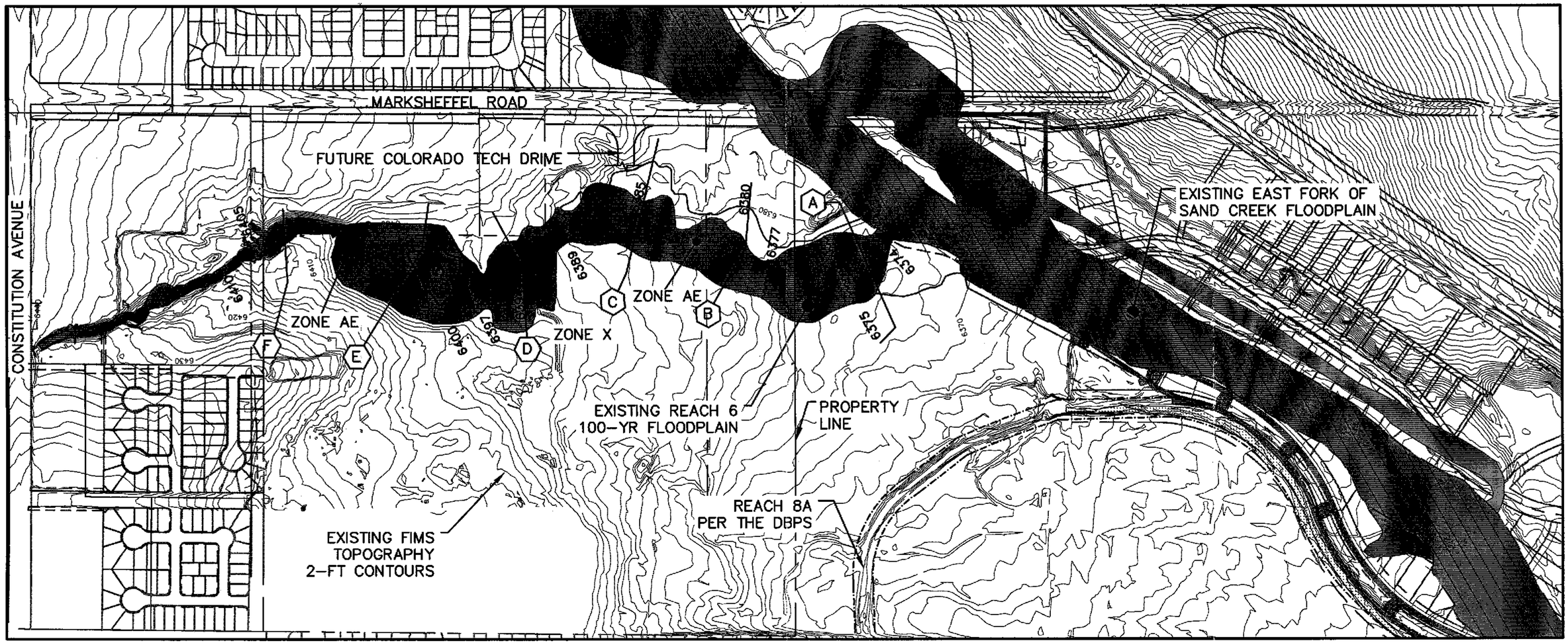
   If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

1.3.3 Form 3: Riverine Structures Form

1.3.3.1 Mapping Changes

A topographic workmap is provided at a scale of 1"=300' to present the revised East Fork of Sand Creek 100-year floodplain boundary. This CLOMR application is for a revision to an approximate (Zone A) 100-year floodplain. A detailed 100-year floodplain boundary has been defined through the southern portion of the proposed revision reach. A 100-year revised floodplain boundary will be developed and documented in a request for a LOMR following this CLOMR application.

The effective FIRM map is at a scale of 1"=500'. The topographic workmap is at a scale of 1"=500'. An annotated FIRM is provided at 1"=500'.



GRAPHIC SCALE

500 0 250 500

(IN FEET)

1 inch = 500 ft.

REV	REVISION DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY

MERRICK
Engineers & Architects
5725 MARK DABLING BLVD., SUITE 350
COLORADO SPRINGS, CO 80918
PHONE: (719) 290-8674

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DESIGNED	EAS	07-11-06
QC REVIEW		
APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		
CAD FILE NAME		

WILSHIRE DEVELOPMENT

TOPOGRAPHIC WORKMAP
EXISTING CONDITION

CLIENT PROJECT NO.	-
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE:

FIGURE 4
EXISTING FLOOD PLAIN
REACH 6 TRIBUTARY TO
EAST FORK OF SAND CREEK

DESIGNED	DRAWING NO.	SHEET NO.
		1 OF 3

MARKSHEFFEL ROAD

FUTURE COLORADO TECH DRIVE

CONSTITUTION AVENUE

CONCRETE TRANSITION STRUCTURE BEGIN SECTION B

END SECTION B

DBL CONCRETE BOX CULVERT

PROPOSED CONCRETE LINED CHANNEL

END SECTION A

DROP STRUCTURE (TYP)

END PHASE 1 CONSTRUCTION

BEGIN PHASE 1 CONSTRUCTION

PROPOSED RIP-RAP/GRASS LINED CHANNEL

BEGIN SECTION A

EXISTING EAST FORK OF SAND CREEK FLOODPLAIN

PROPOSED CONFLUENCE END SECTION C

WETLAND AREA

PROPERTY LINE (TYP.)

PROPOSED REACH 6 100-YR FLOODPLAIN

PROPOSED 2-FT CONTOURS

EXISTING FIMS TOPOGRAPHY 2-FT CONTOURS

GRAPHIC SCALE

500 0 250 500

(IN FEET)

1 inch = 500 ft.

NO	REVISION DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY

MERRICK

Engineers & Architects

5725 MARK DABLING BLVD., SUITE 350
COLORADO SPRINGS, CO 80918
PHONE: (719) 260-0074

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APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		

CAD FILE NAME:

WILSHIRE DEVELOPMENT

TOPOGRAPHIC WORKMAP
PROPOSED CONDITION

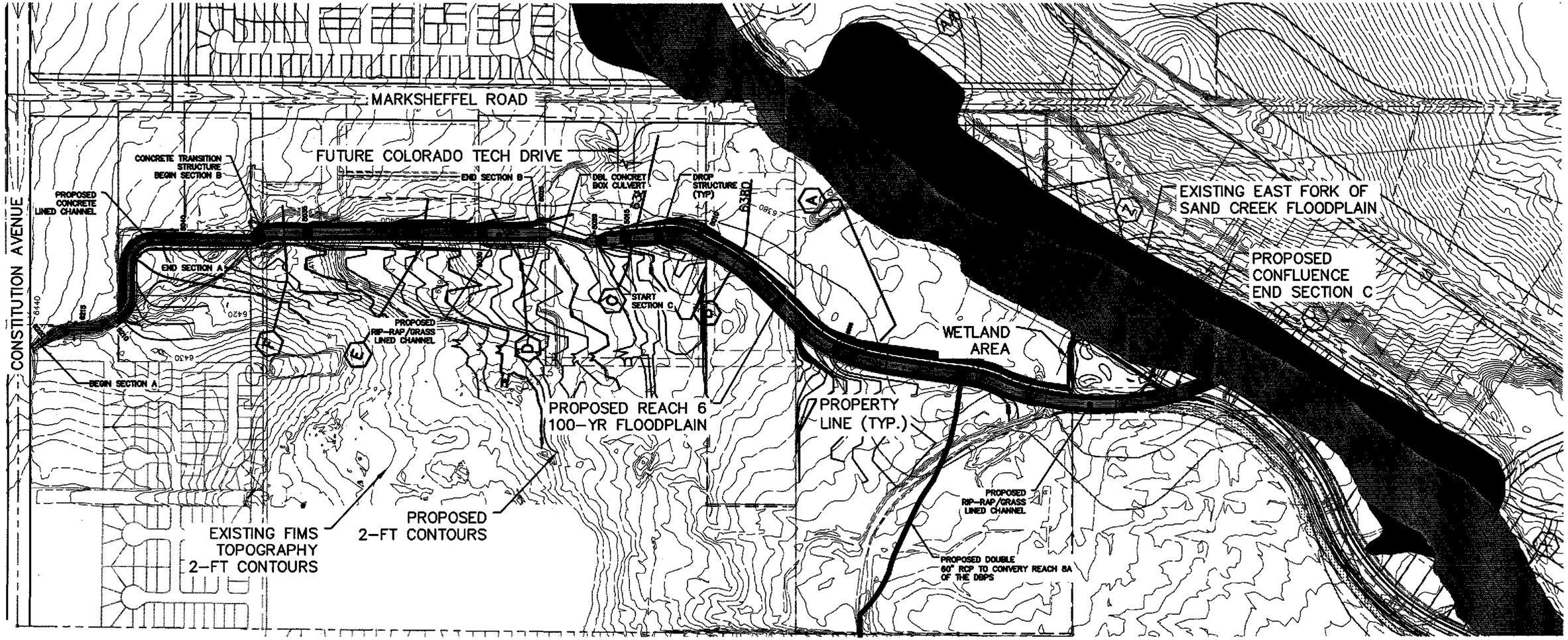
CLIENT PROJECT NO.	-
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE:

FIGURE 5
PROPOSED FLOOD PLAIN
PHASE 1 (PARTIAL CONSTRUCTION)
REACH 6 TRIBUTARY TO
EAST FORK OF SAND CREEK

REVISIONS | DRAWING NO. | SHEET NO.

2 OF 3



GRAPHIC SCALE

500 0 250 500

(IN FEET)

1 inch = 500 ft.

NO.	REVISION DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY

MERRICK

Engineers & Architects

5735 MARI DARLING BLVD., SUITE 350
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PHONE: (719) 260-9674

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APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		
CAD FILE NAME		

WILSHIRE DEVELOPMENT

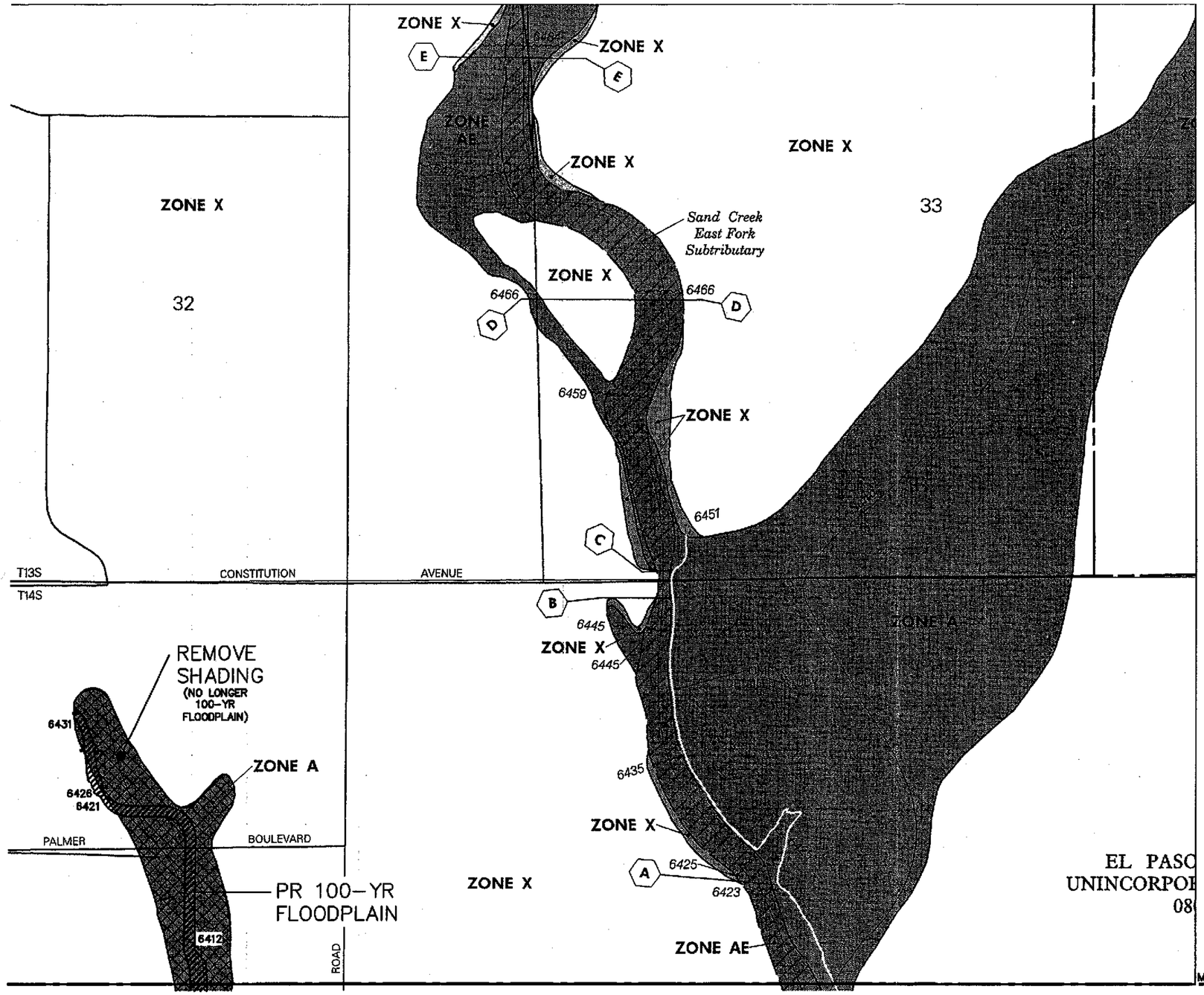
TOPOGRAPHIC WORKMAP
PROPOSED CONDITION

CLIENT PROJECT NO.	-
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE:

FIGURE 5
PROPOSED FLOOD PLAIN
PHASE 2 (COMPLETE)
REACH 6 TRIBUTARY TO
EAST FORK OF SAND CREEK

REVISION NO.	SHEET NO.
	3 OF 3



NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 756 OF 1300

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0756	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0756	F

MAP NUMBER 08041C0756 F

EFFECTIVE DATE: MARCH 17, 1997

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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Engineers & Architects
5755 MARK DABLING BLVD., SUITE 350
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PHONE: (719) 260-0874

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DESIGNED	EAS	04-27-06
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APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		
CAD FILE NAME		

WILSHIRE DEVELOPMENT

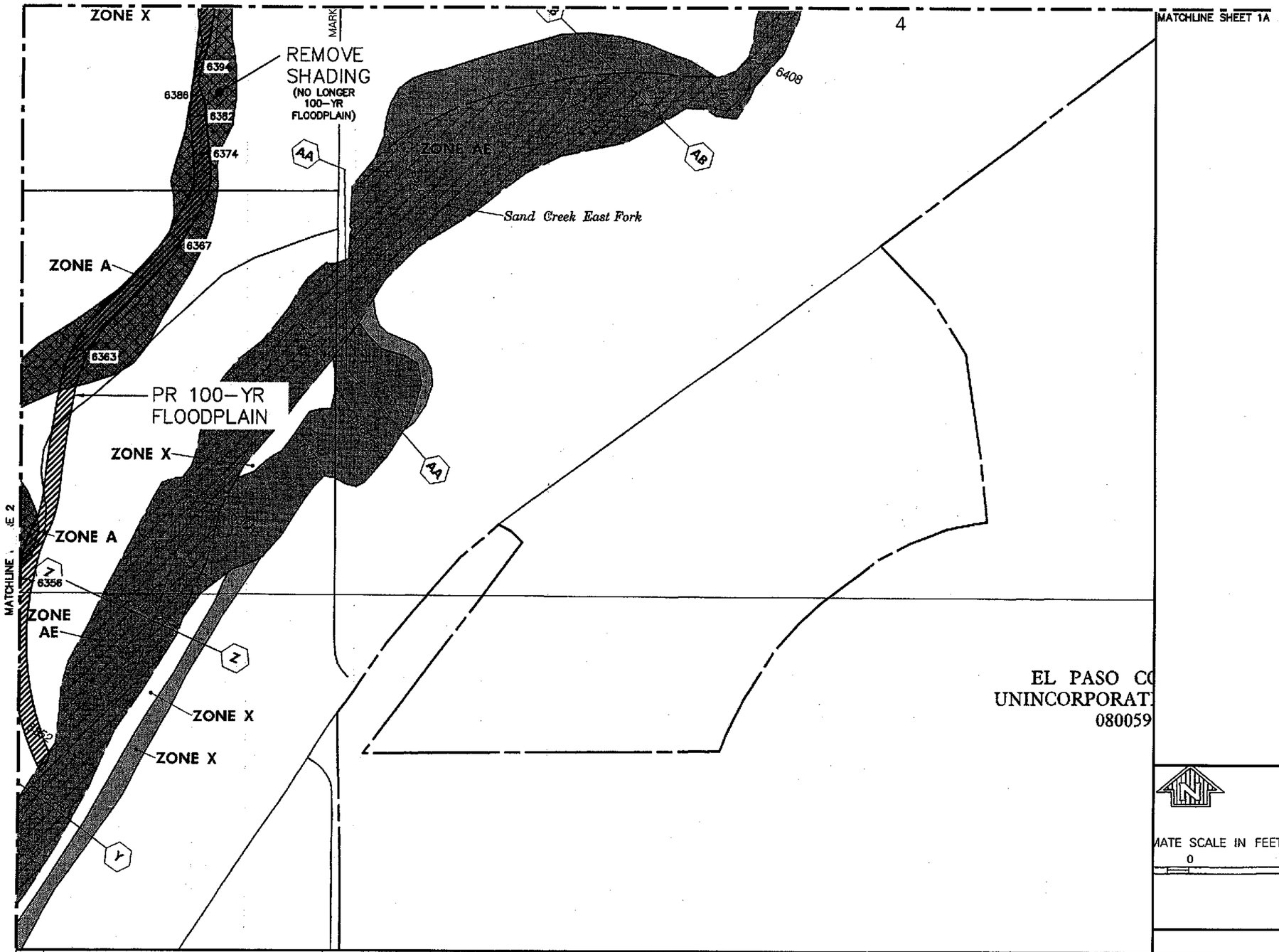
ANNOTATED FIRM MAP

CLIENT PROJECT NO.	–
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

SACRAMENTO AYALA
Colorado Registered Professional
26663
For and on Behalf of
Merrick & Company
Merrick & Company Job No. 18014674

TITLE:
FIGURE 5
FIRM MAP 08041C 0756 F
SHEET 1

REVISION	DRAWING NO.	SHEET NO.
		1 OF 2



4

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 756 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0756	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0756	F

MAP NUMBER 08041C0756 F

EFFECTIVE DATE: MARCH 17, 1997

Federal Emergency Management Agency

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REV	REVISION DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPROVED BY

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5613 MARK DABLING BLVD., SUITE 360
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REVIEW		
APPROVED		

CAD FILE NAME

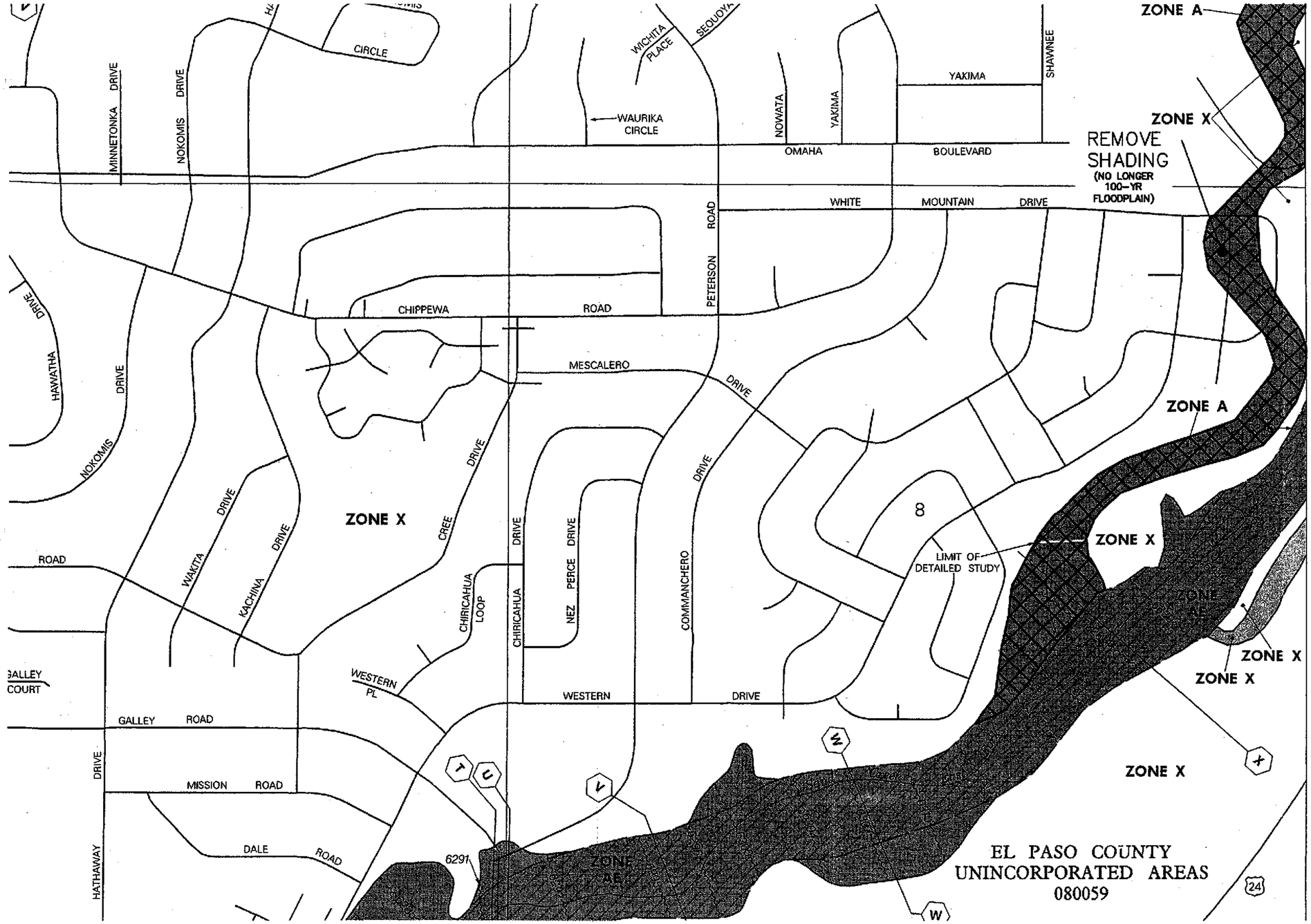
WILSHRIE DEVELOPEMENT
ANNOTATED FIRM MAP

CLIENT PROJECT NO.	-
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

SACRAMENTO AYALA
Colorado Registered Professional
25863
For and on Behalf of
Merrick & Company
Merrick & Company Job No. 18014674

TITLE:
FIGURE 5
FIRM MAP 08041C 0756 F
SHEET 2

REVISION NO.	DRAWING NO.	SHEET NO.
		2 OF 2



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 752 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0752	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0752	F

MAP NUMBER 08041C0752 F

EFFECTIVE DATE: MARCH 17, 1997

Federal Emergency Management Agency

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REV	REVISION DESCRIPTION	DATE	CHANGED BY	CHECKED BY	APPROVED BY

MERRICK
Engineers & Architects
8758 YORK DARLING BLVD., SUITE 350
COLORADO SPRINGS, CO 80918
PHONE: (719) 260-8674

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DESIGNED	EAS	04-27-06
QC REVIEW		
APPROVED		
CLIENT	SIGNATURE	DATE
REVIEW		
APPROVED		
CAD FILE NAME		

WILSHIRE DEVELOPMENT
ANNOTATED FIRM MAP

CLIENT PROJECT NO.	-
MERRICK PROJECT NO.	18014674
SCALE:	1" = 500'

TITLE:
FIGURE 5
FIRM MAP 08041C 0752 F

REVISIONS	DRAWING NO.	SHEET NO.
		1 OF 1

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 1660-0016
Expires August 31, 2007

PAPERWORK BURDEN DISCLOSURE NOTICE

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Flooding Source: Proposed Wilshire Channel -Reach 6- East Fork of Sand Creek - Section A
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 Structure

1. **Name of Structure:** Concrete-Lined Channel - Section A

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

Location of Structure: Approx. 440' South of Constitution Ave. and approx. 1150' West of Marksheffel Blvd.

Downstream Limit/Cross Section: Property Line and Transition Structure

Upstream Limit/Cross Section: Property Line and Start of Concrete Lined Channel

2. **Name of Structure:** Grass-Lined Channel - Section B

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

Location of Structure: Approx. 2100' South in Proposed Channel Alignment

Downstream Limit/Cross Section: Concrete Box Culvert at Colorado Tech Drive

Upstream Limit/Cross Section: Property Line and Transition Structure

3. **Name of Structure:** Concrete Box Culvert - Under Colorado Tech Drive

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

Location of Structure: Approx. 1500' South in Proposed Channel Alignment at Colorado Tech Drive

Downstream Limit/Cross Section: End Box Culvert, Proposed Sta 36+84

Upstream Limit/Cross Section: Begin Box Culvert, Proposed Sta 33+93

Note: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Wilshire Channel to East Fork of Sand Creek - Section A

Name of Structure: Concrete-Lined Channel

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees (Attach Levee/Floodwall System Analysis Form - Section E)
- ☒ Superelevated sections
- ☐ Debris basin/detention basin
- ☐ Other (Describe):
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☒ Energy dissipator

2. Drawing Checklist

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

3. Hydraulic Considerations

The channel was designed to carry 1120 (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): _____

4. 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.

C. BRIDGE/CULVERT

Flooding Source: Wilshire Channel to East Fork of Sand Creek

Name of structure: Concrete Box Culvert at Colorado Tech Drive

1. This revision reflects (check one):

- ☒ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New 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):

- ☒ Dimensions (height, width, span, radius, length)
- ☒ Shape (culverts only)
- ☒ Material
- ☐ Beveling or Rounding
- ☒ Wing Wall Angle
- ☒ Skew Angle
- ☒ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations - Upstream and Downstream
- ☒ Top of Road Elevations - Upstream and Downstream
- ☒ Structure Invert Elevations - Upstream and Downstream
- ☒ Stream Invert Elevations - Upstream and Downstream
- ☒ Cross-Section Locations

4. 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 transport was not considered.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 1660-0016
Expires August 31, 2007

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,U.S. Deaprtment of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington, DC 20472, 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.**

Flooding Source: Proposed Wilshire Channel to East Fork of Sand Creek - Section C

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 Structure

1. **Name of Structure:** Rip-Rap and Grass-Lined Channel - Section C

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

Location of Structure: Southern Stretch of the Proposed Channel

Downstream Limit/Cross Section: East Fork of Sand Creek

Upstream Limit/Cross Section: Proposed Culvert under Colorado Tech Drive

2. **Name of Structure:** Rip-Rap and Grass-Lined Channel - Section C

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: Wilshire Channel to East Fork of Sand Creek - Section C

Name of Structure: Rip-Rap and Grass-Lined Channel

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees (Attach Levee/Floodwall System Analysis Form - Section E)
- ☒ Superelevated sections
- ☐ Debris basin/detention basin
- ☐ Other (Describe):
- ☒ Drop structures
- ☒ Transitions in cross sectional geometry
- ☒ Energy dissipator

2. Drawing Checklist

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

3. Hydraulic Considerations

The channel was designed to carry 1815 (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): _____

4 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.

C. BRIDGE/CULVERT

Flooding Source: _____

Name of structure: _____

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New 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):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations - Upstream and Downstream
- ☐ Top of Road Elevations - Upstream and Downstream
- ☐ Structure Invert Elevations - Upstream and Downstream
- ☐ Stream Invert Elevations - Upstream and Downstream
- ☐ Cross-Section Locations

4. 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 transport was not considered.

1.3.4 Form 4: Payment Information Form

FEDERAL EMERGENCY MANAGEMENT AGENCY

PAYMENT INFORMATION FORM

Community Name: El Paso County, Colorado

,ect Identifier: Wilshire Channel Tributary to East Fork of Sand Creek

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO ONE OF TWO POST OFFICE BOXES (SEE BELOW) OR FAXED TO THE FAX NUMBER BELOW.

Type of request:

MT-1 application fee
MT-2 application fee
} (Insert **3173** as the P.O. Box number in the address below)

External Data Requests (EDRs) (Insert **398** as the P.O. Box number in the address below)

Federal Emergency Management Agency
Revisions Fee-Collection System Administrator
P. O. Box 3173
Merrifield, Virginia 22116
Fax: (703) 849-0282
Phone: (703) 849-0432

Request # _____ (if known) Amount: $4,000.00

☐ INITIAL FEE * ☒ FINAL FEE ☐ FEE BALANCE ** ☐ MASTER CARD ☐ VISA ☐ CHECK ☐ MONEY ORDER

'ote: Applicable only for EDR and/or Alluvial Fan requirements (as appropriate)
te: Applicable only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

EXP. DATE

☐☐☐☐ — ☐☐☐☐ — ☐☐☐☐ — ☐☐☐☐ ☐☐ — ☐☐

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 Month Year

CARD NUMBER

_____ Date

_____ Signature

NAME (AS IT APPEARS ON CARD): _____

ADDRESS:
(for your Credit card receipt-please print or type) _____

DAYTIME PHONE: _____

REFERENCES

1. Sand Creek Drainage Basin Planning Study. Kiowa Engineering Corporation. January 1993, Revised March 1996.

2. National Flood Insurance Program, Flood Insurance Rate Map, El Paso County, City of Colorado Springs. Panel 756 of 1300. Map Number 08041C 0756 F. Effective Date: March 17, 1997. Revised by LOMR, Effective: March 24, 2004.

3. Letter of Map Revision, El Paso County, Colorado, Case No: 03-08-0619P. Federal Emergency Management Agency. November 24, 2003. Effective March 24, 2004.

4. Final Drainage Report for Wilshire Subdivision Filing No. 1. Merrick & Company, November 2005.

LIST OF APPENDICES

Appendix A.....Army Corps of Engineers 404 Permit Application

Appendix B.....Floodplain Development Permit Application

Appendix C..... Letter of Map Revision for FIRM 08041C0756

Appendix D..... HEC-RAS Input Files and Summary Output

Appendix E..... CHECK-RAS Summary Output

Appendix F..... Notification Letters

Albuquerque District Regulatory Branch
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109-3435
(505) 342-3283
Web Page: www.spa.usace.army.mil/reg/

CHECKLIST OF INFORMATION REQUIRED FOR COMPLETE APPLICATION

The following information will assist the U.S. Army Corps of Engineers in reviewing your application for a Department of the Army permit (ENG Form 4345). Not all of the information is necessary or applicable to each project. Please provide the information appropriate to your proposed project. Supplying this information when you file your application could significantly reduce the processing time. This checklist is supplemental to the official instructions provided with ENG Form 4345, and is provided for informational purposes.

GENERAL

☐ Describe the proposed project in detail. If more space is needed, attach extra sheets.

APPLICANT INFORMATION

☐ Contact's name. If corporation or agency, include contact name.
☐ The applicant is the responsible party(ies)
☐ Mailing Address
☐ Telephone Number during business hours
    ☐ Fax number and e-mail address, if available
☐ Signature and statement designating official agent, if any

ACTIVITY INFORMATION

☐ Complete written description of activity (see below)
☐ Location (e.g., address, UTM coordinates, latitude/longitude)
☐ Construction schedule for the proposed activity (start and end dates)

PURPOSE

☐ Purpose for proposed activity/discharge
☐ Need for the proposed activity

DISCHARGE OF DREDGED (EXCAVATED) AND FILL MATERIAL

☐ Type of material to be dredged (excavated) or used as fill
☐ Describe temporary and permanent fills and dredged material discharges

- ☐ Type (composition) of material to be dredged or used as fill
- ☐ Quantity of material to be dredged or used as fill (cubic yards) in waters of the U.S.
- ☐ Method of dredging, if applicable
- ☐ Plans and location for disposal of the dredged material
- ☐ Dimensions of the fill area in square feet in waters of the U.S.
- ☐ Location of the dredged or fill site
- ☐ Discuss activities above and below the ordinary high water mark
- ☐ Delineation of special aquatic sites (e.g., wetlands, etc.)
- ☐ Source of the fill material
- ☐ Method of discharging material
- ☐ Method of transportation of dredged material
- ☐ Description of any existing structures or fills, including proposed modifications
- ☐ Proposed use of fill area, including specific structures to be erected on fill area or platform

NAMES AND ADDRESSES OF ADJOINING PROPERTY OWNERS/LESSEES

☐ Include owners and lessees adjoining the project and along the waterbody who might be affected by the proposed work.
☐ Please notify Corps of Engineers if more than four addresses and submit these on pre-typed address labels or in an electronic file such as Word

STATUS OF ADDITIONAL PERMITS, CERTIFICATIONS OR DOCUMENTATION REQUIRED

- ☐ Section 401 water quality certification
- ☐ State Historic Preservation Officer - documentation of contact
- ☐ US Fish and Wildlife Service - documentation of contact
- ☐ Other approvals (NPDES, drainage reports, easement acquisition, etc)

REQUIRED DRAWINGS

☐ Samples - see Public Notices on our web page: www.spa.usace.army.mil/reg/
☐ Provide enough drawings to show the scope and character of the project for public understanding of the Public Notice.
☐ Submit one legible copy of all drawings showing the proposed work on 8 1/2 x 11-inch white paper with a 1/2-inch margin around the entire sheet. Leave a 1"x4" area blank for the Corps' title box.
☐ Vicinity Map
    - ☐ Cover an area large enough so the project can be easily located
    - ☐ Arrow marking the project area
    - ☐ Section, Township, Range
    - ☐ Identifiable landmarks
    - ☐ Name or number of roads
    - ☐ North arrow and Scale, as appropriate
☐ Plan View Drawing

- ☐ Existing and proposed bank lines, as appropriate (1 or 2 drawings)
- ☐ Ordinary high water line and/or wetland boundary
- ☐ Average water depth around the activity (dimensions immediately adjacent to the proposed activity)
- ☐ North arrow
- ☐ Scale

☐ Elevation and/or Cross Section Drawing(s)

- ☐ Ordinary high water mark
- ☐ Dimensions of the proposed project
- ☐ Scale, as appropriate

ADDITIONAL PROJECT INFORMATION

☐ Mitigation Plan and Checklist (see the Albuquerque District Mitigation and Monitoring Guidelines and Checklist). Include layout and mitigation; description; schedule of planting; species list; maintenance and monitoring program

☐ Photographs of the project site (aerials if available)

☐ Any available environmental or archeological studies or reports

- ☐ Results of SHPO coordination
- ☐ Report describing the biological resources on the project site
- ☐ Results of focused surveys for threatened and endangered species. Contact the U.S. Fish & Wildlife Service
- ☐ Report describing the cultural resources on the project site

☐ Alternatives Analysis for the proposed project design and location

- ☐ Describe and discuss other alternatives considered that would avoid and minimize impacts, and satisfy the project purpose and need.
- ☐ Discuss why those alternatives were rejected.
- ☐ Discuss why the chosen plan is the least damaging alternative to the environment.

☐ Confirmation of property ownership or authority to conduct the work

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, nd completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of .formation, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business	10. AGENT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
15. LOCATION OF PROJECT _____ COUNTY _____ STATE	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

'7. DIRECTIONS TO THE SITE

18. Nature of Activity *(Description of project, include all features)*

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

23. Is Any Portion of the Work Already Complete? Yes _____ No _____ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States, knowingly and willfully falsifies, conceals, or covers up any trick scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a
Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is <u>not</u> required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, *e.g.*, Landmark Plaza, rned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the county and state where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Section, Township, and Range of the site and / or the latitude and longitude. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known.

Block 17, Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site.

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wingwalls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify ...y structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identity the authorization, if possible.

Block 24. Names and Addresses of Adjoining Property Owners, Lessees, etc.,Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed ‘ivity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 25. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 26. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (tracing paper or film may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

.ch illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

APPENDIX B

Floodplain Development
Permit Application

PIKES PEAK REGIONAL BUILDING DEPARTMENT

OFFICE USE ONLY
Permit #
Application received
Plan Approved

Floodplain Development Permit Application

This application is required for authorization of any construction or modification within a designated floodplain. If you need further information regarding this application and regulations, call 719-327-2907. Submit application and attachments to the Regional Floodplain Administration at Pikes Peak Regional Building Department.

DATE _____

PROPERTY OWNER Name _____

Telephone _____ E-mail _____ Fax _____

Mailing address of property owner _____

City _____ State _____ Zip Code _____

CONTRACTOR Name _____

Telephone _____ E-mail _____ Fax _____

PROJECT Address _____ **(Attach legal description)**

City _____ State _____ Zip Code _____

Location description/directions _____

Parcel Schedule # _____ Flood Insurance Rate Map (FIRM)# _____

Water Course _____ Base Flood Elevation _____

(Check all that apply to your project.)

- ☐ NEW CONSTRUCTION
- ☐ ADDITION/REMODEL/REPAIR
- ☐ SINGLE FAMILY
- ☐ MULTIFAMILY
- ☐ MANUFACTURED UNIT
- ☐ NONRESIDENTIAL USE
- ☐ WATER COURSE MODIFICATION
- ☐ FILL/EXCAVATION
- ☐ BRIDGE
- ☐ CULVERT
- ☐ OTHER _____

DESCRIBE PROJECT _____

REQUIREMENTS OF CONSTRUCTION PLANS

- Mean sea level elevations of proposed lowest floor. Flood proofing level must be noted on plans for new structures.
- All structural elements must be designed to withstand the effects of flooding by an engineer licensed by the state of Colorado.
- A state of Colorado licensed engineer must certify that construction in a floodway will not increase the flood elevations.
- Plans must be drawn to scale and include applicable items (listed in box).

PLANS (application attachments)

- ☐ Drawn to scale
- ☐ Dimensions
- ☐ Elevations
- ☐ Project location indicated on site
- ☐ New/Existing structures indicated
- ☐ Fill/Excavation areas noted
- ☐ Drainage
- ☐ Material storage areas
- ☐ Other _____

OFFICE USE ONLY *(Do not write in this box)*

Submittals to FEMA
- ☐ None
- ☐ CLOMA
- ☐ CLOMR-F
- ☐ CLOMR
- ☐ Date approved _____

Planned Submittals
- ☐ None
- ☐ LOMA
- ☐ LOMR-F
- ☐ LOMR
- ☐ Other _____

Elevation Certificate Required: Yes ____ No ____ Unknown ____

Pikes Peak Regional Building Department

FLOODPLAIN REVIEW & PERMIT PROCESS

If property is located in or near a FEMA designated floodplain:

SUBDIVISION PLAT	FLOODPLAIN ZONE	LAND REQUIREMENTS	LOMR	PLAT INFORMATION REQUIREMENTS
	A - Proposed development		LOMR prior to plat.	Show FEMA approved floodplain boundary and flood elevation.
	AE -Proposed lots in flood fringe	Floodplain permit to elevate lots; No new lots in floodplain.	LOMR prior to plat.	Show FEMA approved floodplain boundary and flood elevation.
	AE - Proposed lots in floodway	No new lots in floodplain.		Plat floodplain as a NO BUILD zone tract.
	AO - Proposed development	Fill lots.	LOMR prior to plat.	Show FEMA approved floodplain boundary and flood elevation.

SINGLE LOT	PROJECT TYPE	REQUIREMENTS	FLOODPLAIN PERMIT	ELEVATION CERTIFICATE
RESIDENTIAL	**Remodel less than 50 percent**	Flood proof techniques to minimize future flooding; Meet construction codes as applicable.	Required	Required
	Remodel more than 50 percent	Must meet new construction requirements.	Required	Required
	New construction	Lowest floor raised 1 foot above FEMA flood elevation; Meet all current construction code requirements.	Required	
	Exterior improvement*	Design to withstand flood or break-away. Proof of retaining system.	Required	
COMMERCIAL	**Remodel less than 50 percent**	Use flood proofing techniques to minimize flood impact; Meet all construction codes as applicable.	Required	Required
	Remodel more than 50 percent	Meet all current construction code requirements.	Required	Required
	New construction	Lowest floor raised 1 foot above flood elevation or flood proof; Meet all current construction code requirements.	Required	Required
	Exterior improvement*	Design to withstand flood, or design to break away in a flood event. Provide proof of retaining system.	Required	

*** Exterior improvements** include changes to property (such as fill, excavation, landscaping, retaining wall, fence) and to structures (such as roofing, siding, deck, shed, etc.)

PIKES PEAK REGIONAL BUILDING DEPARTMENT

Construction and Alterations in the Floodplain

The Federal Emergency Management Agency (FEMA) maps 100-year floodplains and sets regulations for alteration, construction and modification in these designated areas. Regional Floodplain Management enforces FEMA regulations through investigation and notification to correct violations, public education, evaluation of construction plans to determine if the property is located within a floodplain, and review of applications for Floodplain Development Permits. The permit is required for new construction, alteration to an existing structure and/or modification to property within a floodplain, including designated zones A, AO, AE and AH. For more information call the Floodplain Administration at 719-327-2907.

FLOODPLAIN CONSTRUCTION

Construction is defined, but not limited to, building a new structure, altering or adding to an existing structure, fence installation, septic system, utilities, excavation, fill and bank stabilization. All of these activities require an application and approved Floodplain Development Permit issued by Pikes Peak Regional Floodplain Administration. Construction in a floodplain is regulated to **prevent**:

- Flotation, collapse or lateral movement during a flood;
- Action that will increase flood depth or make flooding more severe;
- Infiltration of flood water into existing utility systems or discharge from the utility systems into flood water;
- Contamination of flood water by hazardous materials.

RESIDENTIAL CONSTRUCTION GUIDELINES

- ❑ Plans for construction in a floodway must include certification by a professional engineer, licensed by the state of Colorado, that no increase in flood depths will result from the construction. (Note: Floodway refers to the central path of waters, not the outlying floodplain.
- ❑ The lowest floor, including the basement, must be at least 1 foot above the base flood elevation.
- ❑ Garage, storage areas, utility systems and structural supports can be placed below the base flood elevation.
- ❑ Mechanical and electrical equipment must be situated 1 foot above the base flood elevation.
- ❑ Methods of elevating a structure include piers or extended foundation walls.
- ❑ Manufactured homes, including mobile units: Temporary set, new or relocated, must be elevated a minimum 3 feet above grade or 1 foot above base flood elevation whichever is greater. Permanent set manufactured (and mobile) homes must be elevated 1 foot about base flood elevation.
- ❑ An approved Elevation Certificate (EC) is required before a Certificate of Occupancy (CO) is issued. (CO is required before a structure can be inhabited.)

NONRESIDENTIAL CONSTRUCTION GUIDELINES

- ❑ Plans for construction in a floodway must include certification by a professional engineer, licensed by the state of Colorado, that no increase in flood depths will result from the construction. (Note: Floodway refers to the central path of waters, not the outlying floodplain.
- ❑ The structure, including the basement, must be constructed and/or flood proofed to 1 foot above the base elevation.
- ❑ Garage, utility systems and structural supports can be placed below the base flood elevation.
- ❑ Mechanical and electric equipment must be flood proofed or placed 1 foot above the base flood elevation.
- ❑ Certification of flood proofing measures must be provided before occupancy. **Note:** Flood proofed is defined as watertight and structurally resistant to flood damage. Flood proofing measures include, but are not limited to, watertight doors, berms, blocking and protective walls.
- ❑ Emergency Operations Procedure Manual must be proved before occupancy.
- ❑ An approved Elevation Certificate (EC) is required before a Certificate of Occupancy (CO) is issued. (CO is required before a structure can be occupied.)

EXCAVATION OR FILL GUIDELINES IN A FLOODPLAIN

- ❑ Grading plan must be approved prior to construction.
- ❑ Provide documented proof that adjacent properties will not be harmed by fill and/or excavation.
- ❑ The toe of the fill slope must not be in the floodway.
- ❑ Slopes: Grass lined slopes can be no greater than 4:1. Steeper slopes require erosion protection such as riprap.
- ❑ Earth fill material must be protected from the effects of flooding that include erosion, sediment deposition, water velocity and hydrostatic pressure.
- ❑ Fill must be checked and certified to ensure conformity to the approved plan. Compaction must meet FEMA requirements.

2880 International Circle, Colorado Springs, Colorado 80910 ■ Telephone 719-327-2880 ■ Web site www.pprbd.org

101401/110204

APPENDIX C

Letter of Map Revision for
FIRM 08041C0756

Federal Emergency Management Agency

Washington, D.C. 20472

NOV 24 2003

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Chuck Brown
Chairman, El Paso County
Board of Commissioners
27 East Vermijo Avenue
Colorado Springs, CO 80903-2208

IN REPLY REFER TO:
Case No.: 03-08-0619P
Community Name: El Paso County, CO
Community No.: 080059
Effective Date of This Revision: **MAR 24 2004**

Dear Mr. Brown:

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 panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which 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, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denver, Colorado, at (303) 235-4830, or the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Kevin C. Long

Kevin C. Long, CFM, Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

For: Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

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

cc: Mr. Kevin Stilson, P.E., CFM
Regional Floodplain Administrator
Pikes Peak Regional Building Department

[redacted], P.E.
Drexel, Barrell & Co.

 | Issue Date: NOV 24 2003 | Effective Date: MAR 24 2004 | Case No.: 03-08-0619P | LOMR-APP

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	El Paso County Colorado (Unincorporated Areas)	NO PROJECT	HYDROLOGIC ANALYSIS HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 080059		
IDENTIFIER	Marksheffel Business Center	APPROXIMATE LATITUDE & LONGITUDE: 38.854, -104.692 SOURCE: USGS QUADRANGLE DATUM: NAD 27	
FLOODING SOURCE(S) & REVISED REACH(ES)	Tributary to Sand Creek East Fork (Reach No. 6) – from the confluence with Sand Creek East Fork to approximately 50 feet downstream of Palmer Boulevard		

SUMMARY OF REVISIONS

Effective Flooding:	Zone A	Zone A	Zone A	No BFEs*
Revised Flooding:	Zone AE	Zone X (shaded)	Zone AO	BFEs*
Increases:	YES	YES	NONE	YES
Decreases:	YES	NONE	YES	NONE

* BFEs – Base Flood Elevations

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO: 08041C0752 F Date: March 17, 1997 TYPE: FIRM* NO: 08041C0756 F Date: March 17, 1997	PROFILE: 344P PROFILE: 345P SUMMARY OF DISCHARGES TABLE

* FIRM – Flood Insurance Rate Map; ** FBFM – Flood Boundary and Floodway Map; *** FHBM – Flood Hazard Boundary Map

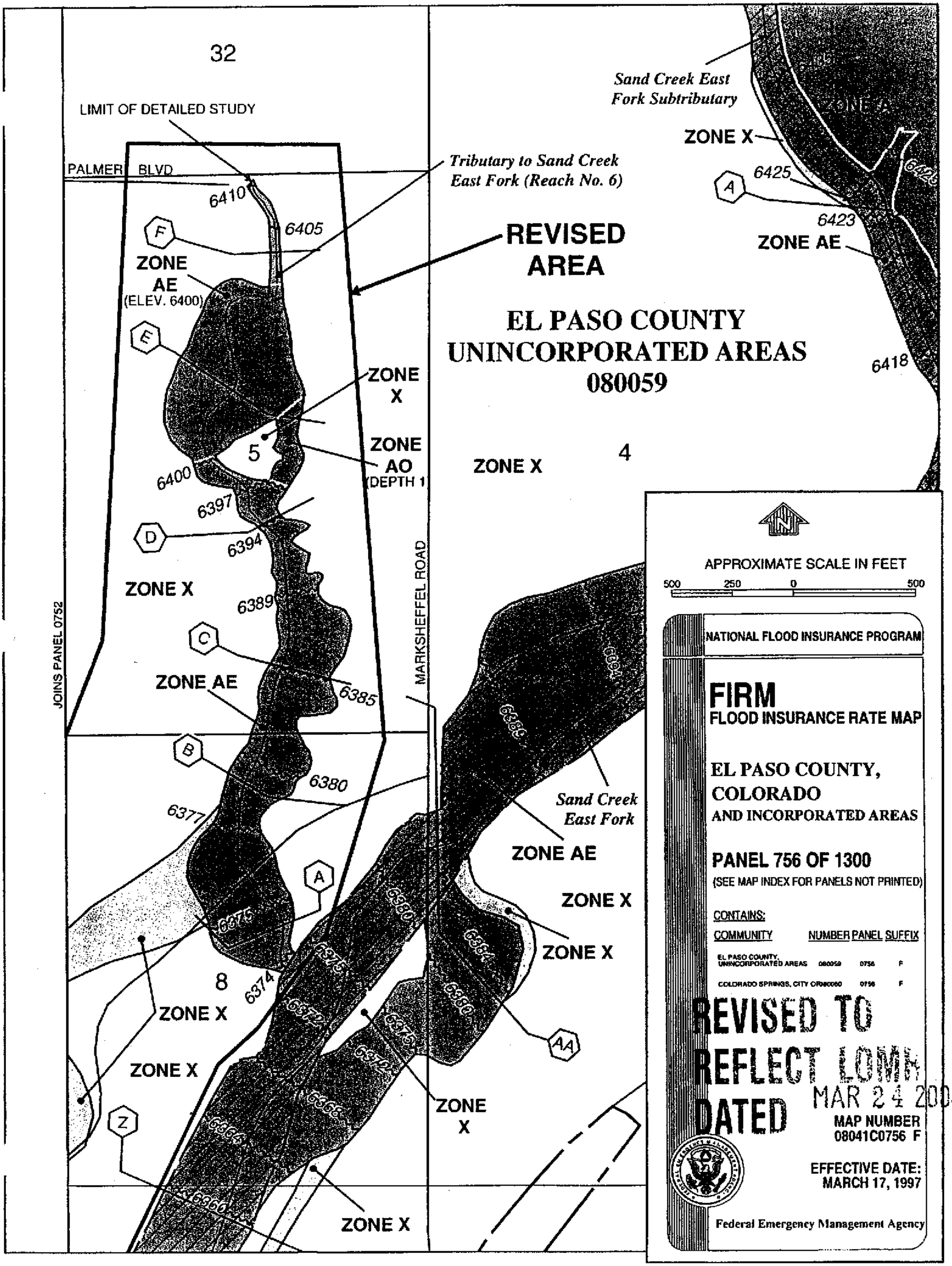
DETERMINATION

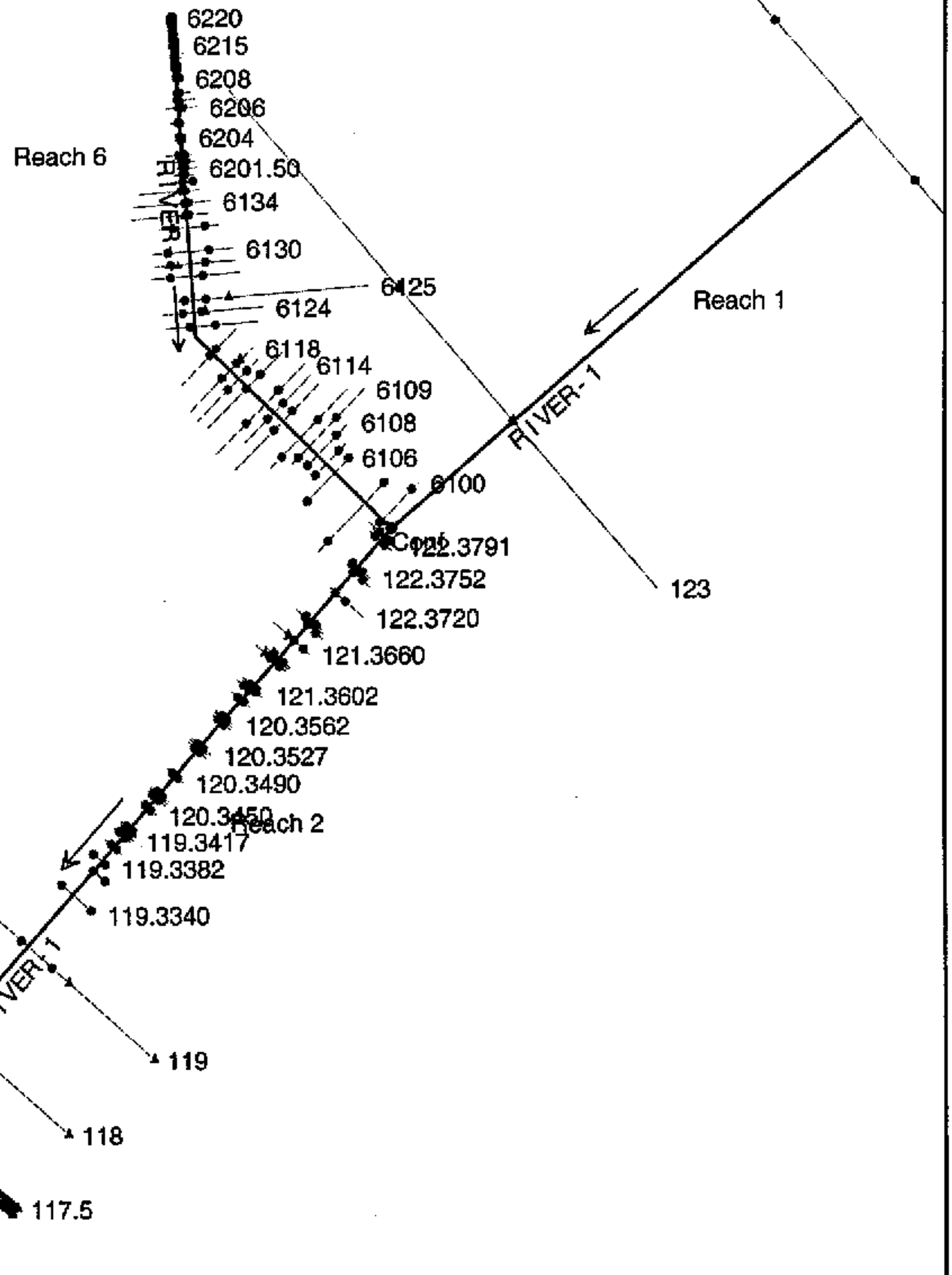
This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards 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 Assistance Center toll free at 1-877-336-2677 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness and Response Directorate

10080302.DA03080619 IAC


32
LIMIT OF DETAILED STUDY
PALMER BLVD
6410
6405
F
ZONE AE (ELEV. 6400)
E
ZONE X
ZONE AO (DEPTH 1
5
6400
6397
D
6394
ZONE X
6389
C
ZONE AE
6385
B
6380
6377
A
6375
8
6374
ZONE X
ZONE X
Z
ZONE X
JOINS PANEL 0752
MARKSHEFFEL ROAD
Tributary to Sand Creek East Fork (Reach No. 6)
REVISED AREA
EL PASO COUNTY
UNINCORPORATED AREAS
080059
Sand Creek East Fork Subtributary
ZONE A
ZONE X
6425
A
6423
ZONE AE
6426
6418
4
ZONE X
6394
6388
Sand Creek East Fork
ZONE AE
ZONE X
6380
6384
ZONE X
6372
6368
6364
AA
ZONE X
6360
APPROXIMATE SCALE IN FEET
500 250 0 500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO
AND INCORPORATED AREAS
PANEL 756 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
EL PASO COUNTY, UNINCORPORATED AREAS 080059 0756 F
COLORADO SPRINGS, CITY OF 080060 0756 F
REVISED TO REFLECT LOMR DATED MAR 24 2004
MAP NUMBER
08041C0756 F
EFFECTIVE DATE:
MARCH 17, 1997
Federal Emergency Management Agency


6220
6215
6208
6206
6204
6201.50
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6118
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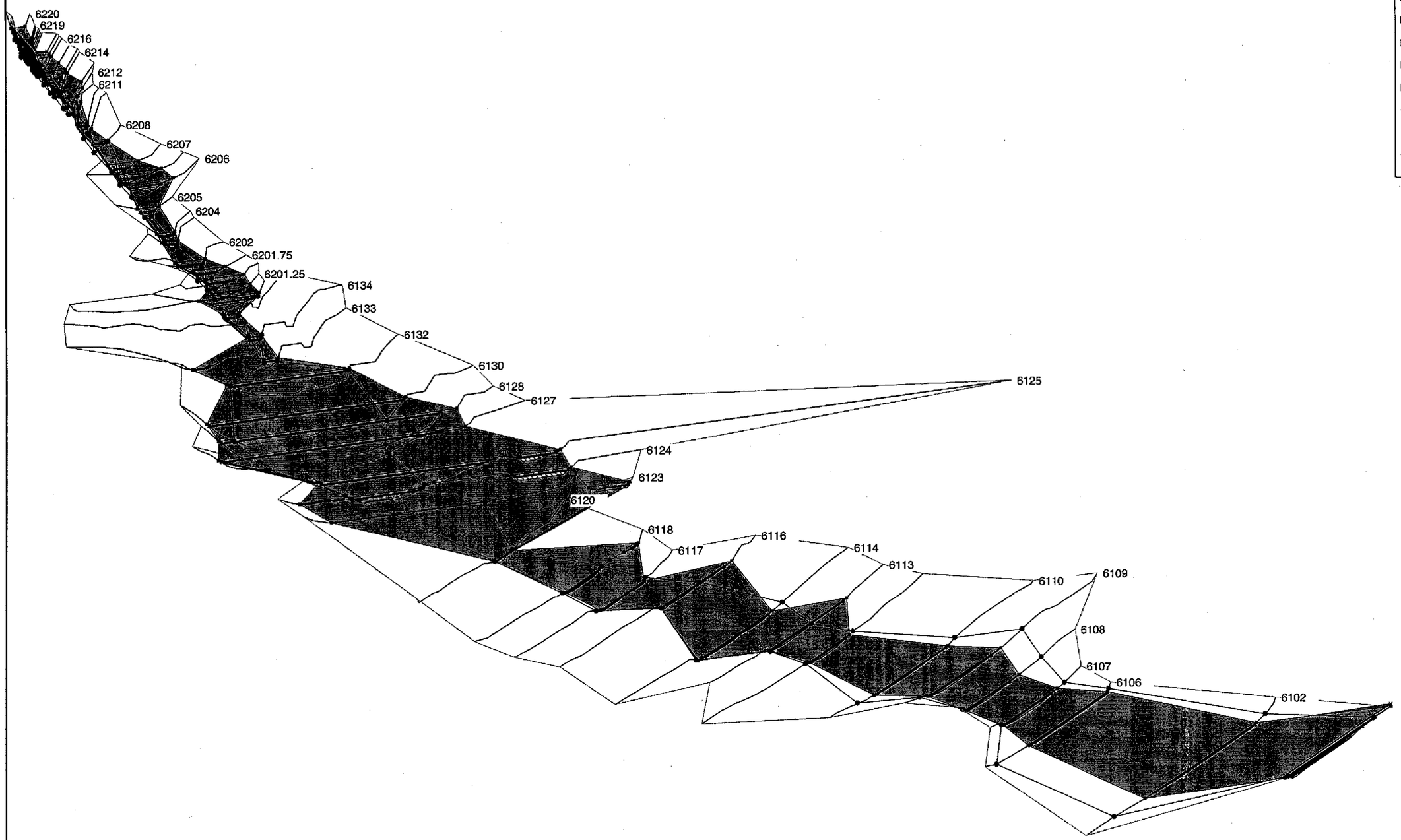
6100
122.3791
122.3752
122.3720
121.3660
121.3602
120.3562
120.3527
120.3490
120.3450
119.3417
119.3382
119.3340
119
118
117.5
116
123
Reach 6
Reach 1
Reach 2
RIVER-1
RIVER-1
RIVER-1

Existing Floodplain - Merrick Plan: Existing - Matrix 5/5/2006



HEC-RAS Plan: EX_MATRIX

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6220	10-Year	301.00	6424.00	6426.24	6426.24	6427.18	0.009399	8.21	40.58	22.31	0.97
Reach 6	6220	50-Year	465.00	6424.00	6426.91	6426.91	6428.10	0.008555	9.33	56.44	24.81	0.96
Reach 6	6220	100-Year	552.00	6424.00	6427.23	6427.23	6428.52	0.008220	9.80	64.46	25.98	0.96
Reach 6	6220	500-Year	552.00	6424.00	6427.23	6427.23	6428.52	0.008220	9.80	64.46	25.98	0.96
Reach 6	6220	100-Developed	1120.00	6424.00	6428.87	6428.87	6430.69	0.007054	11.95	112.27	32.10	0.95
Reach 6	6219	10-Year	301.00	6423.00	6424.86	6425.34	6426.50	0.028946	10.33	29.80	23.67	1.56
Reach 6	6219	50-Year	465.00	6423.00	6425.31	6425.94	6427.45	0.026318	11.88	40.57	25.03	1.56
Reach 6	6219	100-Year	552.00	6423.00	6425.52	6426.22	6427.88	0.025083	12.51	46.05	25.70	1.55
Reach 6	6219	500-Year	552.00	6423.00	6425.52	6426.22	6427.88	0.025083	12.51	46.05	25.70	1.55
Reach 6	6219	100-Developed	1120.00	6423.00	6426.75	6427.75	6430.09	0.019557	15.14	79.78	29.47	1.48
Reach 6	6218.2	10-Year	301.00	6422.00	6423.14	6423.96	6426.03	0.066613	13.92	22.53	21.65	2.30
Reach 6	6218.2	50-Year	465.00	6422.00	6423.56	6424.58	6427.02	0.052690	15.32	32.07	23.03	2.16
Reach 6	6218.2	100-Year	552.00	6422.00	6423.77	6424.87	6427.47	0.047979	15.89	36.94	23.70	2.10
Reach 6	6218.2	500-Year	552.00	6422.00	6423.77	6424.87	6427.47	0.047979	15.89	36.94	23.70	2.10
Reach 6	6218.2	100-Developed	1120.00	6422.00	6424.94	6426.42	6429.75	0.032782	18.41	66.88	27.46	1.89
Reach 6	6218.1	10-Year	301.00	6421.00	6422.01	6422.97	6425.79	0.100985	16.64	19.68	20.99	2.78
Reach 6	6218.1	50-Year	465.00	6421.00	6422.41	6423.59	6426.81	0.075974	17.18	28.37	22.18	2.55
Reach 6	6218.1	100-Year	552.00	6421.00	6422.61	6423.88	6427.26	0.067864	17.73	32.84	22.77	2.46
Reach 6	6218.1	500-Year	552.00	6421.00	6422.61	6423.88	6427.26	0.067864	17.73	32.84	22.77	2.46
Reach 6	6218.1	100-Developed	1120.00	6421.00	6423.74	6425.46	6429.57	0.043194	20.17	60.49	26.13	2.15
Reach 6	6218	10-Year	301.00	6420.00	6421.23	6422.26	6425.52	0.117756	16.75	18.39	20.06	2.98
Reach 6	6218	50-Year	465.00	6420.00	6421.63	6422.89	6426.58	0.087145	18.08	26.64	21.22	2.72
Reach 6	6218	100-Year	552.00	6420.00	6421.83	6423.20	6427.06	0.077505	18.65	30.87	21.78	2.62
Reach 6	6218	500-Year	552.00	6420.00	6421.83	6423.20	6427.06	0.077505	18.65	30.87	21.78	2.62
Reach 6	6218	100-Developed	1120.00	6420.00	6427.13	6424.83	6427.79	0.001578	7.11	186.46	36.91	0.48
Reach 6	6217.75	10-Year	301.00	6419.75	6421.81	6422.63	6424.54	0.041225	13.42	23.30	16.85	1.89
Reach 6	6217.75	50-Year	465.00	6419.75	6422.36	6423.38	6425.68	0.034047	14.93	33.02	18.33	1.81
Reach 6	6217.75	100-Year	552.00	6419.75	6422.63	6423.73	6426.18	0.031155	15.49	38.14	19.07	1.77
Reach 6	6217.75	500-Year	552.00	6419.75	6422.63	6423.73	6426.18	0.031155	15.49	38.14	19.07	1.77
Reach 6	6217.75	100-Developed	1120.00	6419.75	6425.60	6425.60	6427.63	0.006642	12.26	106.91	28.25	0.93
Reach 6	6217.50	10-Year	301.00	6419.50	6421.61	6422.39	6424.18	0.037131	13.01	24.00	16.71	1.81
Reach 6	6217.50	50-Year	465.00	6419.50	6422.14	6423.14	6425.41	0.032756	14.78	33.24	18.01	1.78
Reach 6	6217.50	100-Year	552.00	6419.50	6422.41	6423.50	6425.93	0.030343	15.41	38.21	18.67	1.75
Reach 6	6217.50	500-Year	552.00	6419.50	6422.41	6423.50	6425.93	0.030343	15.41	38.21	18.67	1.75
Reach 6	6217.50	100-Developed	1120.00	6419.50	6425.03	6425.41	6427.52	0.008686	13.46	95.92	25.59	1.06
Reach 6	6217.25	10-Year	301.00	6419.25	6421.39	6422.14	6423.86	0.034551	12.74	24.48	16.56	1.75
Reach 6	6217.25	50-Year	465.00	6419.25	6421.91	6422.91	6425.14	0.031814	14.68	33.39	17.73	1.76
Reach 6	6217.25	100-Year	552.00	6419.25	6422.18	6423.26	6425.69	0.029843	15.36	38.19	18.32	1.74
Reach 6	6217.25	500-Year	552.00	6419.25	6422.18	6423.26	6425.69	0.029843	15.36	38.19	18.32	1.74
Reach 6	6217.25	100-Developed	1120.00	6419.25	6424.66	6425.19	6427.42	0.009820	14.07	90.97	24.55	1.12
Reach 6	6217	10-Year	301.00	6419.00	6421.17	6421.90	6423.58	0.033239	12.60	24.71	16.41	1.72
Reach 6	6217	50-Year	465.00	6419.00	6421.68	6422.66	6424.90	0.031310	14.63	33.41	17.47	1.75
Reach 6	6217	100-Year	552.00	6419.00	6421.95	6423.01	6425.46	0.029476	15.33	38.15	18.02	1.73
Reach 6	6217	500-Year	552.00	6419.00	6421.95	6423.01	6425.46	0.029476	15.33	38.15	18.02	1.73
Reach 6	6217	100-Developed	1120.00	6419.00	6424.32	6424.98	6427.31	0.010795	14.58	87.17	23.66	1.17
Reach 6	6216.5	10-Year	301.00	6418.50	6421.75	6421.77	6422.74	0.008135	8.64	41.24	22.20	0.92
Reach 6	6216.5	50-Year	465.00	6418.50	6421.93	6422.48	6423.89	0.015064	12.26	45.30	23.17	1.26
Reach 6	6216.5	100-Year	552.00	6418.50	6422.10	6422.81	6424.44	0.016974	13.50	49.22	24.05	1.35
Reach 6	6216.5	500-Year	552.00	6418.50	6422.10	6422.81	6424.44	0.016974	13.50	49.22	24.05	1.35
Reach 6	6216.5	100-Developed	1120.00	6418.50	6426.07	6424.42	6426.76	0.002041	8.11	186.52	45.38	0.54
Reach 6	6216.25	10-Year	301.00	6418.25	6421.32	6421.54	6422.57	0.010989	9.60	36.46	20.38	1.05
Reach 6	6216.25	50-Year	465.00	6418.25	6421.77	6422.27	6423.55	0.013819	11.98	46.16	22.64	1.21
Reach 6	6216.25	100-Year	552.00	6418.25	6421.99	6422.62	6424.15	0.014633	12.93	51.31	23.75	1.27
Reach 6	6216.25	500-Year	552.00	6418.25	6421.99	6422.62	6424.15	0.014633	12.93	51.31	23.75	1.27
Reach 6	6216.25	100-Developed	1120.00	6418.25	6426.06		6426.73	0.001878	7.96	190.98	45.33	0.52
Reach 6	6216	10-Year	301.00	6418.00	6421.01	6421.30	6422.39	0.012369	10.02	34.56	19.39	1.11
Reach 6	6216	50-Year	465.00	6418.00	6421.57	6422.04	6423.45	0.013433	11.94	46.10	21.99	1.20
Reach 6	6216	100-Year	552.00	6418.00	6422.96	6422.41	6423.84	0.004150	8.51	81.34	28.91	0.71
Reach 6	6216	500-Year	552.00	6418.00	6422.96	6422.41	6423.84	0.004150	8.51	81.34	28.91	0.71
Reach 6	6216	100-Developed	1120.00	6418.00	6426.05		6426.69	0.001730	7.81	195.48	45.28	0.50
Reach 6	6215.5	10-Year	301.00	6417.50	6421.10	6420.37	6421.64	0.003361	6.40	55.23	22.91	0.62
Reach 6	6215.5	50-Year	465.00	6417.50	6422.52	6421.12	6423.00	0.002005	6.27	91.90	29.06	0.51
Reach 6	6215.5	100-Year	552.00	6417.50	6423.14		6423.62	0.001726	6.31	110.89	32.28	0.48
Reach 6	6215.5	500-Year	552.00	6417.50	6423.14		6423.62	0.001726	6.31	110.89	32.28	0.48
Reach 6	6215.5	100-Developed	1120.00	6417.50	6426.12		6426.59	0.001069	6.66	230.82	48.25	0.41
Reach 6	6215	10-Year	301.00	6417.00	6421.27		6421.47	0.000968	3.99	91.33	30.87	0.34
Reach 6	6216	50-Year	465.00	6417.00	6422.67		6422.87	0.000729	4.20	137.48	35.33	0.31
Reach 6	6215	100-Year	552.00	6417.00	6423.28		6423.49	0.000676	4.33	159.72	37.29	0.31

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6215	500-Year	552.00	6417.00	6423.28		6423.49	0.000676	4.33	159.72	37.29	0.31
Reach 6	6215	100-Developed	1120.00	6417.00	6426.21		6426.50	0.000585	5.22	286.78	50.40	0.30
Reach 6	6214	10-Year	301.00	6416.00	6421.19		6421.44	0.001046	4.43	82.30	25.94	0.36
Reach 6	6214	50-Year	465.00	6416.00	6422.57		6422.85	0.000881	4.83	122.79	32.83	0.35
Reach 6	6214	100-Year	552.00	6416.00	6423.18		6423.47	0.000827	4.98	143.83	35.89	0.34
Reach 6	6214	500-Year	552.00	6416.00	6423.18		6423.47	0.000827	4.98	143.83	35.89	0.34
Reach 6	6214	100-Developed	1120.00	6416.00	6426.14		6426.48	0.000673	5.74	272.55	51.94	0.33
Reach 6	6213	10-Year	301.00	6415.00	6421.09		6421.38	0.001029	4.87	80.02	24.13	0.36
Reach 6	6213	50-Year	465.00	6415.00	6422.46		6422.79	0.000946	5.41	118.07	31.33	0.36
Reach 6	6213	100-Year	552.00	6415.00	6423.07		6423.42	0.000906	5.60	138.22	34.63	0.36
Reach 6	6213	500-Year	552.00	6415.00	6423.07		6423.42	0.000906	5.60	138.22	34.63	0.36
Reach 6	6213	100-Developed	1120.00	6415.00	6426.07		6426.44	0.000727	6.27	271.47	54.35	0.34
Reach 6	6212	10-Year	301.00	6415.00	6421.14		6421.32	0.000628	3.86	99.78	28.06	0.29
Reach 6	6212	50-Year	465.00	6415.00	6422.52		6422.73	0.000592	4.34	142.12	33.58	0.29
Reach 6	6212	100-Year	552.00	6415.00	6423.13		6423.36	0.000582	4.55	163.45	36.31	0.29
Reach 6	6212	500-Year	552.00	6415.00	6423.13		6423.36	0.000582	4.55	163.45	36.31	0.29
Reach 6	6212	100-Developed	1120.00	6415.00	6426.10		6426.39	0.000555	5.53	295.57	54.05	0.30
Reach 6	6211	10-Year	301.00	6414.00	6419.64	6419.64	6421.12	0.011500	9.93	32.20	11.74	0.92
Reach 6	6211	50-Year	465.00	6414.00	6420.78	6420.78	6422.52	0.009834	11.00	47.02	14.33	0.89
Reach 6	6211	100-Year	552.00	6414.00	6421.26	6421.26	6423.13	0.009480	11.52	54.23	15.43	0.88
Reach 6	6211	500-Year	552.00	6414.00	6421.26	6421.26	6423.13	0.009480	11.52	54.23	15.43	0.88
Reach 6	6211	100-Developed	1120.00	6414.00	6423.65	6423.65	6426.12	0.008326	13.86	97.61	20.87	0.88
Reach 6	6210	10-Year	301.00	6413.00	6414.92	6416.05	6420.04	0.152243	18.16	16.57	17.27	3.27
Reach 6	6210	50-Year	465.00	6413.00	6415.29	6416.75	6421.47	0.123274	19.95	23.37	18.53	3.09
Reach 6	6210	100-Year	552.00	6413.00	6415.48	6417.07	6422.09	0.110123	20.65	26.89	18.87	2.99
Reach 6	6210	500-Year	552.00	6413.00	6415.48	6417.07	6422.09	0.110123	20.65	26.89	18.87	2.99
Reach 6	6210	100-Developed	1120.00	6413.00	6416.60	6418.84	6425.07	0.067813	23.54	49.03	20.89	2.57
Reach 6	6209	10-Year	301.00	6412.00	6413.93	6414.91	6417.30	0.058155	15.10	21.07	16.49	2.23
Reach 6	6209	50-Year	465.00	6412.00	6414.34	6415.65	6418.97	0.057872	17.82	28.03	17.61	2.32
Reach 6	6209	100-Year	552.00	6412.00	6414.53	6416.00	6419.74	0.057195	18.96	31.52	18.14	2.34
Reach 6	6209	500-Year	552.00	6412.00	6414.53	6416.00	6419.74	0.057195	18.96	31.52	18.14	2.34
Reach 6	6209	100-Developed	1120.00	6412.00	6415.64	6417.84	6423.43	0.049606	23.61	53.35	21.19	2.35
Reach 6	6208	10-Year	301.00	6411.00	6414.06	6414.10	6414.90	0.012650	7.36	41.77	27.16	1.05
Reach 6	6208	50-Year	465.00	6411.00	6414.31	6414.69	6415.77	0.020534	9.87	48.26	29.20	1.35
Reach 6	6208	100-Year	552.00	6411.00	6414.41	6414.96	6416.23	0.024473	11.00	51.39	30.13	1.48
Reach 6	6208	500-Year	552.00	6411.00	6414.41	6414.96	6416.23	0.024473	11.00	51.39	30.13	1.48
Reach 6	6208	100-Developed	1120.00	6411.00	6414.98	6416.21	6419.03	0.044405	16.42	69.86	35.13	2.05
Reach 6	6207	10-Year	301.00	6410.00	6411.73	6412.05	6412.84	0.023590	8.66	36.92	37.59	1.38
Reach 6	6207	50-Year	465.00	6410.00	6412.17	6412.50	6413.41	0.017987	9.28	54.92	43.13	1.27
Reach 6	6207	100-Year	552.00	6410.00	6412.36	6412.70	6413.68	0.016832	9.65	63.27	44.86	1.25
Reach 6	6207	500-Year	552.00	6410.00	6412.36	6412.70	6413.68	0.016832	9.65	63.27	44.86	1.25
Reach 6	6207	100-Developed	1120.00	6410.00	6414.39	6413.80	6415.15	0.004081	7.77	173.97	68.16	0.69
Reach 6	6206.5	10-Year	301.00	6409.50	6411.72	6411.72	6412.31	0.008620	7.20	54.04	46.18	0.91
Reach 6	6206.5	50-Year	465.00	6409.50	6412.30	6412.16	6412.88	0.006383	7.38	84.44	57.52	0.81
Reach 6	6206.5	100-Year	552.00	6409.50	6412.68	6412.36	6413.18	0.004765	6.99	107.63	64.85	0.72
Reach 6	6206.5	500-Year	552.00	6409.50	6412.68	6412.36	6413.18	0.004765	6.99	107.63	64.85	0.72
Reach 6	6206.5	100-Developed	1120.00	6409.50	6414.50		6414.85	0.001994	6.24	257.50	100.00	0.50
Reach 6	6206	10-Year	301.00	6409.00	6411.73	6410.80	6411.87	0.001351	3.11	109.07	63.55	0.37
Reach 6	6206	50-Year	465.00	6409.00	6412.46		6412.61	0.001090	3.37	157.68	69.82	0.35
Reach 6	6206	100-Year	552.00	6409.00	6412.80		6412.96	0.001015	3.50	181.66	72.72	0.34
Reach 6	6206	500-Year	552.00	6409.00	6412.80		6412.96	0.001015	3.50	181.66	72.72	0.34
Reach 6	6206	100-Developed	1120.00	6409.00	6414.52		6414.73	0.000844	4.21	329.64	101.39	0.33
Reach 6	6205	10-Year	301.00	6408.00	6410.64	6410.64	6411.47	0.006845	7.67	43.94	27.88	0.92
Reach 6	6205	50-Year	465.00	6408.00	6411.25	6411.25	6412.25	0.008048	8.64	62.19	32.28	0.92
Reach 6	6205	100-Year	552.00	6408.00	6411.52	6411.52	6412.61	0.007805	9.06	71.27	34.26	0.92
Reach 6	6205	500-Year	552.00	6408.00	6411.52	6411.52	6412.61	0.007805	9.06	71.27	34.26	0.92
Reach 6	6205	100-Developed	1120.00	6408.00	6412.96	6412.96	6414.39	0.006682	10.88	131.10	50.92	0.91
Reach 6	6204	10-Year	301.00	6407.00	6408.74	6409.08	6410.02	0.017630	9.51	35.04	26.15	1.27
Reach 6	6204	50-Year	465.00	6407.00	6409.20	6409.66	6410.88	0.017338	11.04	48.05	30.01	1.31
Reach 6	6204	100-Year	552.00	6407.00	6409.42	6409.95	6411.25	0.017060	11.65	54.72	31.81	1.32
Reach 6	6204	500-Year	552.00	6407.00	6409.42	6409.95	6411.25	0.017060	11.65	54.72	31.81	1.32
Reach 6	6204	100-Developed	1120.00	6407.00	6410.51	6411.31	6413.13	0.015898	14.43	94.58	40.94	1.36
Reach 6	6203	10-Year	301.00	6405.00	6406.82	6407.54	6409.21	0.052108	13.56	24.99	23.53	2.08
Reach 6	6203	50-Year	465.00	6405.00	6407.24	6408.13	6410.10	0.044811	15.14	35.72	26.98	2.02
Reach 6	6203	100-Year	552.00	6405.00	6407.44	6408.40	6410.49	0.042341	15.80	41.16	28.57	2.00
Reach 6	6203	500-Year	552.00	6405.00	6407.44	6408.40	6410.49	0.042341	15.80	41.16	28.57	2.00
Reach 6	6203	100-Developed	1120.00	6405.00	6408.45	6409.71	6412.44	0.034144	18.75	74.08	36.76	1.92

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6202	10-Year	301.00	6404.00	6406.24	6405.81	6406.53	0.004714	4.34	70.08	49.87	0.64
Reach 6	6202	50-Year	465.00	6404.00	6406.77	6406.22	6407.12	0.004286	4.80	98.25	56.24	0.63
Reach 6	6202	100-Year	552.00	6404.00	6407.02	6406.41	6407.40	0.004067	4.97	112.83	59.16	0.62
Reach 6	6202	500-Year	552.00	6404.00	6407.02	6406.41	6407.40	0.004067	4.97	112.83	59.16	0.62
Reach 6	6202	100-Developed	1120.00	6404.00	6408.49	6407.37	6408.96	0.002515	5.65	206.82	69.39	0.54
Reach 6	6201.75	10-Year	301.00	6403.50	6406.19		6406.36	0.001482	3.45	94.28	46.94	0.39
Reach 6	6201.75	50-Year	465.00	6403.50	6406.69		6406.95	0.001790	4.30	118.70	50.37	0.44
Reach 6	6201.75	100-Year	552.00	6403.50	6406.93		6407.23	0.001894	4.65	130.92	52.00	0.46
Reach 6	6201.75	500-Year	552.00	6403.50	6406.93		6407.23	0.001894	4.65	130.92	52.00	0.46
Reach 6	6201.75	100-Developed	1120.00	6403.50	6408.36		6408.84	0.001953	6.05	219.99	73.32	0.50
Reach 6	6201.50	10-Year	301.00	6403.00	6405.92		6406.23	0.003166	4.99	74.87	50.73	0.57
Reach 6	6201.50	50-Year	465.00	6403.00	6406.38		6406.80	0.003550	5.92	100.24	58.64	0.61
Reach 6	6201.50	100-Year	552.00	6403.00	6406.64		6407.08	0.003422	6.15	115.96	63.05	0.61
Reach 6	6201.50	500-Year	552.00	6403.00	6406.64		6407.08	0.003422	6.15	115.96	63.05	0.61
Reach 6	6201.50	100-Developed	1120.00	6403.00	6408.31		6408.79	0.001947	6.16	244.43	87.80	0.50
Reach 6	6201.25	10-Year	301.00	6403.00	6405.54		6405.98	0.005598	5.93	63.46	52.57	0.73
Reach 6	6201.25	50-Year	465.00	6403.00	6406.15		6406.58	0.004190	6.11	99.56	66.19	0.66
Reach 6	6201.25	100-Year	552.00	6403.00	6406.47		6406.87	0.003529	6.04	121.56	73.26	0.62
Reach 6	6201.25	500-Year	552.00	6403.00	6406.47		6406.87	0.003529	6.04	121.56	73.26	0.62
Reach 6	6201.25	100-Developed	1120.00	6403.00	6408.29		6408.58	0.001420	5.27	281.01	96.31	0.42
Reach 6	6201	10-Year	301.00	6403.00	6405.48		6405.67	0.003389	3.55	88.41	71.30	0.53
Reach 6	6201	50-Year	465.00	6403.00	6406.17		6406.33	0.002221	3.37	144.27	91.08	0.45
Reach 6	6201	100-Year	552.00	6403.00	6406.50		6406.66	0.001845	3.28	176.19	100.65	0.42
Reach 6	6201	500-Year	552.00	6403.00	6406.50		6406.66	0.001845	3.28	176.19	100.65	0.42
Reach 6	6201	100-Developed	1120.00	6403.00	6408.34		6408.48	0.000728	3.09	396.79	138.95	0.29
Reach 6	6135	10-Year	301.00	6402.00	6404.44	6404.44	6405.20	0.012116	7.00	43.01	28.50	1.00
Reach 6	6135	50-Year	465.00	6402.00	6404.96	6404.96	6405.95	0.011334	7.98	58.27	29.88	1.01
Reach 6	6135	100-Year	552.00	6402.00	6405.22	6405.22	6406.31	0.010871	8.35	66.12	30.58	1.00
Reach 6	6135	500-Year	552.00	6402.00	6405.22	6405.22	6406.31	0.010871	8.35	66.12	30.58	1.00
Reach 6	6135	100-Developed	1120.00	6402.00	6406.55	6406.55	6408.20	0.009509	10.31	108.85	33.77	1.00
Reach 6	6134	10-Year	301.00	6400.00	6401.86	6402.28	6403.32	0.030211	9.68	31.11	25.09	1.53
Reach 6	6134	50-Year	465.00	6400.00	6402.30	6402.84	6404.18	0.027821	11.01	42.25	26.14	1.53
Reach 6	6134	100-Year	552.00	6400.00	6402.50	6403.10	6404.59	0.027034	11.58	47.68	26.64	1.53
Reach 6	6134	500-Year	552.00	6400.00	6402.50	6403.10	6404.59	0.027034	11.58	47.68	26.64	1.53
Reach 6	6134	100-Developed	1120.00	6400.00	6403.69	6404.51	6406.67	0.022527	13.86	80.79	29.34	1.47
Reach 6	6133	10-Year	301.00	6398.00	6400.03	6400.17	6400.95	0.016866	7.66	39.31	29.20	1.16
Reach 6	6133	50-Year	465.00	6398.00	6400.38	6400.70	6401.76	0.018835	9.42	49.50	29.96	1.27
Reach 6	6133	100-Year	552.00	6398.00	6400.54	6400.94	6402.16	0.019682	10.22	54.27	30.31	1.32
Reach 6	6133	500-Year	552.00	6398.00	6400.54	6400.94	6402.16	0.019682	10.22	54.27	30.31	1.32
Reach 6	6133	100-Developed	1120.00	6398.00	6401.40	6402.32	6404.43	0.022304	14.03	81.42	66.80	1.50
Reach 6	6132	10-Year	301.00	6393.45	6399.42	6394.59	6399.42	0.000004	0.27	1109.31	262.19	0.02
Reach 6	6132	50-Year	465.00	6393.45	6399.81	6394.91	6399.81	0.000008	0.38	1213.46	266.47	0.03
Reach 6	6132	100-Year	552.00	6393.45	6399.99	6395.01	6400.00	0.000010	0.44	1262.31	268.45	0.04
Reach 6	6132	500-Year	552.00	6393.45	6399.99	6395.01	6400.00	0.000010	0.44	1262.31	268.45	0.04
Reach 6	6132	100-Developed	1120.00	6393.45	6400.81	6395.49	6400.82	0.000024	0.76	1484.58	277.38	0.06
Reach 6	6130	10-Year	301.00	6390.00	6399.42		6399.42	0.000000	0.09	3520.27	434.62	0.01
Reach 6	6130	50-Year	465.00	6390.00	6399.81		6399.81	0.000000	0.13	3692.75	438.68	0.01
Reach 6	6130	100-Year	552.00	6390.00	6400.00		6400.00	0.000000	0.15	3773.04	440.56	0.01
Reach 6	6130	500-Year	552.00	6390.00	6400.00		6400.00	0.000000	0.15	3773.04	440.56	0.01
Reach 6	6130	100-Developed	1120.00	6390.00	6400.81		6400.81	0.000001	0.28	4136.69	448.72	0.02
Reach 6	6128	10-Year	301.00	6388.00	6399.42		6399.42	0.000000	0.08	4325.88	486.17	0.00
Reach 6	6128	50-Year	465.00	6388.00	6399.81		6399.81	0.000000	0.11	4518.58	490.45	0.01
Reach 6	6128	100-Year	552.00	6388.00	6400.00		6400.00	0.000000	0.13	4608.33	492.41	0.01
Reach 6	6128	500-Year	552.00	6388.00	6400.00		6400.00	0.000000	0.13	4608.33	492.41	0.01
Reach 6	6128	100-Developed	1120.00	6388.00	6400.81		6400.81	0.000001	0.25	5044.77	537.59	0.01
Reach 6	6127	10-Year	301.00	6390.11	6399.42		6399.42	0.000000	0.12	2681.15	466.65	0.01
Reach 6	6127	50-Year	465.00	6390.11	6399.81		6399.81	0.000001	0.18	2868.76	484.38	0.01
Reach 6	6127	100-Year	552.00	6390.11	6400.00		6400.00	0.000001	0.21	2958.67	500.25	0.01
Reach 6	6127	500-Year	552.00	6390.11	6400.00		6400.00	0.000001	0.21	2958.67	500.25	0.01
Reach 6	6127	100-Developed	1120.00	6390.11	6400.81		6400.81	0.000003	0.38	3409.18	558.67	0.02
Reach 6	6125	10-Year	301.00	6390.00	6399.42	6390.80	6399.42	0.000001	0.18	1971.32	428.89	0.01
Reach 6	6125	50-Year	465.00	6390.00	6399.81	6391.05	6399.81	0.000002	0.26	2116.24	451.22	0.02
Reach 6	6125	100-Year	552.00	6390.00	6399.99	6391.17	6400.00	0.000002	0.29	2184.54	461.53	0.02
Reach 6	6125	500-Year	552.00	6390.00	6399.99	6391.17	6400.00	0.000002	0.29	2184.54	461.53	0.02
Reach 6	6125	100-Developed	1120.00	6390.00	6400.81	6391.78	6400.81	0.000006	0.53	2500.16	508.46	0.03
Reach 6	6124	10-Year	301.00	6397.14	6399.36	6398.51	6399.41	0.000965	1.78	169.33	249.19	0.28
Reach 6	6124	50-Year	465.00	6397.14	6399.74	6398.73	6399.81	0.001038	2.09	222.63	265.91	0.30
Reach 6	6124	100-Year	552.00	6397.14	6399.91	6398.84	6399.99	0.001053	2.22	248.72	272.48	0.31

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6124	500-Year	552.00	6397.14	6399.91	6398.84	6399.99	0.001053	2.22	248.72	272.48	0.31
Reach 6	6124	100-Developed	1120.00	6397.14	6400.67	6399.41	6400.80	0.001093	2.90	420.04	413.34	0.33
Reach 6	6123	10-Year	301.00	6399.25	6398.77	6398.77	6399.14	0.014382		61.83	83.08	0.00
Reach 6	6123	50-Year	465.00	6399.25	6399.02	6399.02	6399.51	0.013238		83.03	84.91	0.00
Reach 6	6123	100-Year	552.00	6399.25	6399.15	6399.15	6399.69	0.012762		93.45	85.80	0.00
Reach 6	6123	500-Year	552.00	6399.25	6399.15	6399.15	6399.69	0.012762		93.45	85.80	0.00
Reach 6	6123	100-Developed	1120.00	6399.25	6400.23	6400.23	6400.58	0.004166	1.52	294.37	461.71	0.47
Reach 6	6120	10-Year	301.00	6392.00	6393.31	6393.51	6394.04	0.024008	6.84	43.99	52.15	1.31
Reach 6	6120	50-Year	465.00	6392.00	6393.60	6393.85	6394.52	0.025344	7.89	60.46	62.64	1.38
Reach 6	6120	100-Year	552.00	6392.00	6393.71	6394.01	6394.73	0.026105	8.11	68.10	66.67	1.41
Reach 6	6120	500-Year	552.00	6392.00	6393.71	6394.01	6394.73	0.026105	8.11	68.10	66.67	1.41
Reach 6	6120	100-Developed	1120.00	6392.00	6393.83	6394.80	6397.20	0.060237	14.72	76.08	70.63	2.50
Reach 6	6118	10-Year	301.00	6390.00	6390.63	6390.63	6390.92	0.016048	4.32	69.68	121.94	1.01
Reach 6	6118	50-Year	465.00	6390.00	6390.84	6390.84	6391.21	0.014571	4.87	95.41	140.86	1.00
Reach 6	6118	100-Year	552.00	6390.00	6390.94	6390.94	6391.34	0.013617	5.05	109.22	155.59	0.98
Reach 6	6118	500-Year	552.00	6390.00	6390.94	6390.94	6391.34	0.013617	5.05	109.22	155.59	0.98
Reach 6	6118	100-Developed	1120.00	6390.00	6391.45	6391.45	6392.04	0.012321	6.17	181.38	213.85	1.00
Reach 6	6117	10-Year	301.00	6388.00	6388.72	6388.58	6388.86	0.006036	3.04	99.00	174.56	0.71
Reach 6	6117	50-Year	465.00	6388.00	6388.63	6388.77	6389.11	0.032039	5.60	83.00	165.15	1.39
Reach 6	6117	100-Year	552.00	6388.00	6388.67	6388.84	6389.25	0.035006	6.10	90.52	169.47	1.47
Reach 6	6117	500-Year	552.00	6388.00	6388.67	6388.84	6389.25	0.035006	6.10	90.52	169.47	1.47
Reach 6	6117	100-Developed	1120.00	6388.00	6388.94	6389.23	6389.95	0.040585	8.06	138.88	191.00	1.67
Reach 6	6116	10-Year	301.00	6386.64	6387.55	6387.55	6387.79	0.014586	3.95	80.12	186.40	0.95
Reach 6	6116	50-Year	465.00	6386.64	6387.73	6387.73	6388.00	0.013293	4.34	116.27	226.34	0.94
Reach 6	6116	100-Year	552.00	6386.64	6387.81	6387.81	6388.09	0.012685	4.48	134.92	242.14	0.93
Reach 6	6116	500-Year	552.00	6386.64	6387.81	6387.81	6388.09	0.012685	4.48	134.92	242.14	0.93
Reach 6	6116	100-Developed	1120.00	6386.64	6388.17	6388.17	6388.55	0.011209	5.29	237.57	306.72	0.93
Reach 6	6114	10-Year	301.00	6384.00	6384.64	6384.48	6384.73	0.005819	2.37	126.82	254.68	0.59
Reach 6	6114	50-Year	465.00	6384.00	6384.80	6384.61	6384.92	0.005793	2.78	167.20	263.85	0.62
Reach 6	6114	100-Year	552.00	6384.00	6384.87	6384.66	6385.00	0.005963	2.97	185.97	272.00	0.63
Reach 6	6114	500-Year	552.00	6384.00	6384.87	6384.66	6385.00	0.005963	2.97	185.97	272.00	0.63
Reach 6	6114	100-Developed	1120.00	6384.00	6385.23	6385.00	6385.45	0.006750	3.84	291.70	318.21	0.71
Reach 6	6113	10-Year	301.00	6382.99	6383.86	6383.74	6384.02	0.008600	3.17	95.02	165.88	0.74
Reach 6	6113	50-Year	465.00	6382.99	6384.07	6383.92	6384.26	0.007388	3.47	141.98	320.00	0.71
Reach 6	6113	100-Year	552.00	6382.99	6384.16	6384.06	6384.35	0.006749	3.57	169.63	323.38	0.69
Reach 6	6113	500-Year	552.00	6382.99	6384.16	6384.06	6384.35	0.006749	3.57	169.63	323.38	0.69
Reach 6	6113	100-Developed	1120.00	6382.99	6384.61		6384.82	0.004727	3.99	318.39	340.61	0.62
Reach 6	6112	10-Year	301.00	6382.00	6382.82	6382.74	6383.04	0.010912	3.76	79.96	128.84	0.84
Reach 6	6112	50-Year	465.00	6382.00	6383.01	6382.95	6383.31	0.012036	4.42	105.13	143.13	0.91
Reach 6	6112	100-Year	552.00	6382.00	6383.09	6383.05	6383.43	0.012619	4.72	116.84	149.30	0.94
Reach 6	6112	500-Year	552.00	6382.00	6383.09	6383.05	6383.43	0.012619	4.72	116.84	149.30	0.94
Reach 6	6112	100-Developed	1120.00	6382.00	6383.53	6383.53	6384.07	0.013152	5.90	189.87	179.37	1.01
Reach 6	6110	10-Year	301.00	6379.54	6380.12	6380.12	6380.28	0.019006	3.22	93.47	288.59	1.00
Reach 6	6110	50-Year	465.00	6379.54	6380.22	6380.22	6380.44	0.018038	3.73	124.61	296.58	1.01
Reach 6	6110	100-Year	552.00	6379.54	6380.28	6380.28	6380.52	0.017635	3.95	139.77	300.40	1.02
Reach 6	6110	500-Year	552.00	6379.54	6380.28	6380.28	6380.52	0.017635	3.95	139.77	300.40	1.02
Reach 6	6110	100-Developed	1120.00	6379.54	6380.51	6380.57	6380.94	0.019572	5.29	211.76	317.55	1.14
Reach 6	6109	10-Year	301.00	6378.28	6379.26	6379.02	6379.34	0.004610	2.33	129.05	223.44	0.54
Reach 6	6109	50-Year	465.00	6378.28	6379.45	6379.18	6379.56	0.004681	2.66	174.61	250.63	0.56
Reach 6	6109	100-Year	552.00	6378.28	6379.53	6379.25	6379.65	0.004771	2.82	195.75	261.56	0.57
Reach 6	6109	500-Year	552.00	6378.28	6379.53	6379.25	6379.65	0.004771	2.82	195.75	261.56	0.57
Reach 6	6109	100-Developed	1120.00	6378.28	6379.98	6379.62	6380.16	0.004684	3.46	323.78	314.06	0.60
Reach 6	6108	10-Year	301.00	6377.50	6378.27	6378.27	6378.52	0.017827	3.97	75.85	163.17	1.03
Reach 6	6108	50-Year	465.00	6377.50	6378.44	6378.44	6378.75	0.016347	4.41	105.36	181.07	1.02
Reach 6	6108	100-Year	552.00	6377.50	6378.53	6378.53	6378.85	0.015317	4.55	121.40	189.99	1.00
Reach 6	6108	500-Year	552.00	6377.50	6378.53	6378.53	6378.85	0.015317	4.55	121.40	189.99	1.00
Reach 6	6108	100-Developed	1120.00	6377.50	6378.94	6378.94	6379.39	0.013890	5.41	206.98	231.85	1.01
Reach 6	6107	10-Year	301.00	6376.00	6376.90	6376.62	6376.99	0.003997	2.40	125.56	187.42	0.52
Reach 6	6107	50-Year	465.00	6376.00	6377.07	6376.79	6377.20	0.004839	2.94	158.35	201.22	0.58
Reach 6	6107	100-Year	552.00	6376.00	6377.14	6376.87	6377.30	0.005175	3.18	173.44	205.42	0.61
Reach 6	6107	500-Year	552.00	6376.00	6377.14	6376.87	6377.30	0.005175	3.18	173.44	205.42	0.61
Reach 6	6107	100-Developed	1120.00	6376.00	6377.52	6377.28	6377.82	0.006862	4.34	257.91	236.81	0.73
Reach 6	6106	10-Year	301.00	6376.00	6376.44	6376.31	6376.51	0.005750	2.14	140.75	327.51	0.57
Reach 6	6106	50-Year	465.00	6376.00	6376.58	6376.41	6376.67	0.005522	2.50	186.01	332.22	0.59
Reach 6	6106	100-Year	552.00	6376.00	6376.64	6376.45	6376.75	0.005538	2.67	206.51	334.33	0.60
Reach 6	6106	500-Year	552.00	6376.00	6376.64	6376.46	6376.75	0.005538	2.67	206.51	334.33	0.60
Reach 6	6106	100-Developed	1120.00	6376.00	6376.96	6376.72	6377.16	0.005841	3.55	315.76	348.00	0.66

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6102	10-Year	301.00	6374.00	6374.41	6374.28	6374.47	0.005886	1.97	152.44	406.97	0.57
Reach 6	6102	50-Year	465.00	6374.00	6374.52	6374.38	6374.61	0.006357	2.36	196.99	426.21	0.61
Reach 6	6102	100-Year	552.00	6374.00	6374.57	6374.42	6374.67	0.006392	2.51	219.92	435.79	0.62
Reach 6	6102	500-Year	552.00	6374.00	6374.57	6374.42	6374.67	0.006392	2.51	219.92	435.79	0.62
Reach 6	6102	100-Developed	1120.00	6374.00	6374.86	6374.66	6375.02	0.006339	3.17	352.92	488.88	0.66
Reach 6	6100	10-Year	301.00	6371.63	6372.30	6372.30	6372.48	0.020085	3.36	89.49	269.75	1.03
Reach 6	6100	50-Year	465.00	6371.63	6373.19	6372.42	6373.22	0.000637	1.32	351.33	322.58	0.22
Reach 6	6100	100-Year	552.00	6371.63	6373.74	6372.48	6373.76	0.000251	1.01	545.78	372.84	0.15
Reach 6	6100	500-Year	552.00	6371.63	6375.13		6375.14	0.000025	0.49	1167.56	462.77	0.05
Reach 6	6100	100-Developed	1120.00	6371.63	6374.07	6372.78	6374.11	0.000536	1.67	674.06	462.77	0.22
Reach 1	124	10-Year	1890.00	6398.00	6400.11	6400.11	6400.54	0.010274	5.28	358.19	436.63	1.03
Reach 1	124	50-Year	4070.00	6398.00	6400.70	6400.70	6401.32	0.008867	6.28	647.64	543.84	1.01
Reach 1	124	100-Year	5190.00	6398.00	6400.94	6400.94	6401.62	0.008547	6.61	785.47	595.14	1.01
Reach 1	124	500-Year	7920.00	6398.00	6401.39	6401.39	6402.25	0.007861	7.43	1066.45	636.81	1.01
Reach 1	124	100-Developed	5190.00	6398.00	6400.95	6400.95	6401.62	0.008514	6.60	786.63	595.59	1.01
Reach 1	123	10-Year	1890.00	6380.80	6382.66	6382.71	6383.21	0.010481	5.91	319.99	970.64	1.06
Reach 1	123	50-Year	4070.00	6380.80	6383.21	6383.39	6384.16	0.011978	7.82	520.41	1049.00	1.20
Reach 1	123	100-Year	5190.00	6380.80	6383.42	6383.66	6384.56	0.012354	8.55	606.88	1073.43	1.24
Reach 1	123	500-Year	7920.00	6380.80	6383.85	6384.24	6385.41	0.013278	10.02	790.27	1119.51	1.33
Reach 1	123	100-Developed	5190.00	6380.80	6383.42	6383.66	6384.56	0.012415	8.57	605.87	1073.15	1.24
Reach 2	122.3791	10-Year	1890.00	6366.65	6368.55	6369.17	6370.64	0.037769	11.63	164.17	127.12	1.78
Reach 2	122.3791	50-Year	4070.00	6366.65	6369.61	6370.45	6372.52	0.024445	13.81	302.41	135.14	1.58
Reach 2	122.3791	100-Year	5190.00	6366.65	6370.08	6371.01	6373.33	0.021448	14.61	367.40	138.76	1.52
Reach 2	122.3791	500-Year	7920.00	6366.65	6371.17	6372.21	6374.98	0.016566	15.92	522.93	147.04	1.41
Reach 2	122.3791	100-Developed	5758.00	6366.65	6370.35	6371.27	6373.65	0.019375	14.75	405.36	140.82	1.47
Reach 2	122.3789	10-Year	1890.00	6366.40	6368.87	6368.97	6369.94	0.012582	8.34	230.32	130.74	1.08
Reach 2	122.3789	50-Year	4070.00	6366.40	6369.82	6370.25	6371.91	0.014188	11.70	358.42	137.66	1.23
Reach 2	122.3789	100-Year	5190.00	6366.40	6370.25	6370.81	6372.77	0.014251	12.89	417.56	140.74	1.27
Reach 2	122.3789	500-Year	7920.00	6366.40	6371.30	6372.03	6374.52	0.012610	14.64	569.52	148.37	1.25
Reach 2	122.3789	100-Developed	5758.00	6366.40	6370.52	6371.07	6373.14	0.013292	13.14	456.17	142.72	1.24
Reach 2	122.3785	10-Year	1890.00	6363.89	6365.53	6366.39	6368.72	0.076053	14.35	132.52	125.94	2.44
Reach 2	122.3785	50-Year	4070.00	6363.89	6366.41	6367.67	6370.75	0.046733	16.79	247.18	132.54	2.11
Reach 2	122.3785	100-Year	5190.00	6363.89	6366.80	6368.24	6371.84	0.041098	17.77	299.59	135.44	2.04
Reach 2	122.3785	500-Year	7920.00	6363.89	6367.67	6369.42	6373.50	0.032866	19.60	420.11	141.90	1.92
Reach 2	122.3785	100-Developed	5758.00	6363.89	6367.00	6368.49	6372.05	0.038753	18.19	325.78	136.87	2.01
Reach 2	122.3752	10-Year	1890.00	6361.12	6363.41	6363.41	6364.35	0.010537	7.82	246.16	134.87	1.00
Reach 2	122.3752	50-Year	4070.00	6361.12	6364.67	6364.67	6366.19	0.008771	10.00	421.22	143.05	0.99
Reach 2	122.3752	100-Year	5190.00	6361.12	6365.21	6365.21	6366.98	0.008327	10.83	499.63	146.57	0.99
Reach 2	122.3752	500-Year	7920.00	6361.12	6366.35	6366.35	6368.68	0.007720	12.47	671.41	153.99	1.00
Reach 2	122.3752	100-Developed	5758.00	6361.12	6365.47	6365.47	6367.36	0.008129	11.19	538.00	148.26	0.99
Reach 2	122.3750	10-Year	1890.00	6360.72	6362.93	6363.11	6364.09	0.014751	8.65	221.56	133.53	1.16
Reach 2	122.3750	50-Year	4070.00	6360.72	6364.07	6364.38	6365.95	0.012394	11.11	377.21	140.92	1.16
Reach 2	122.3750	100-Year	5190.00	6360.72	6364.59	6364.91	6366.74	0.011338	11.89	452.36	144.35	1.14
Reach 2	122.3750	500-Year	7920.00	6360.72	6365.66	6366.06	6368.46	0.010317	13.62	610.67	151.33	1.14
Reach 2	122.3750	100-Developed	5758.00	6360.72	6364.82	6365.19	6367.13	0.011169	12.33	485.52	145.84	1.14
Reach 2	122.3746	10-Year	1890.00	6358.45	6360.28	6361.04	6362.91	0.055260	13.09	146.63	125.63	2.11
Reach 2	122.3746	50-Year	4070.00	6358.45	6361.21	6362.33	6364.97	0.036871	15.71	266.41	131.65	1.90
Reach 2	122.3746	100-Year	5190.00	6358.45	6361.64	6362.89	6365.82	0.032326	16.62	323.05	134.41	1.83
Reach 2	122.3746	500-Year	7920.00	6358.45	6362.59	6364.09	6367.62	0.025727	18.30	453.27	140.53	1.72
Reach 2	122.3746	100-Developed	5758.00	6358.45	6361.85	6363.15	6366.22	0.030446	17.00	351.35	135.76	1.80
Reach 2	122.3720	10-Year	1890.00	6357.18	6359.63	6359.19	6360.24	0.005284	6.33	308.01	139.35	0.73
Reach 2	122.3720	50-Year	4070.00	6357.18	6360.88	6360.45	6362.03	0.005724	8.77	486.55	147.21	0.82
Reach 2	122.3720	100-Year	5190.00	6357.18	6361.40	6360.98	6362.81	0.005840	9.70	564.40	150.51	0.84
Reach 2	122.3720	500-Year	7920.00	6357.18	6362.37	6362.04	6364.47	0.006649	11.91	713.24	152.79	0.93
Reach 2	122.3720	100-Developed	5758.00	6357.18	6361.65	6361.25	6363.18	0.005894	10.13	601.41	152.06	0.86
Reach 2	122.3685	10-Year	1890.00	6354.10	6356.71	6356.71	6357.67	0.010527	7.89	243.29	131.01	1.00
Reach 2	122.3685	50-Year	4070.00	6354.10	6358.00	6358.00	6359.55	0.008734	10.09	416.37	138.85	0.99
Reach 2	122.3685	100-Year	5190.00	6354.10	6358.55	6358.55	6360.36	0.008259	10.91	494.40	142.25	0.99
Reach 2	122.3685	500-Year	7920.00	6354.10	6359.91	6359.91	6362.11	0.006767	12.12	701.62	168.81	0.94
Reach 2	122.3685	100-Developed	5758.00	6354.10	6358.82	6358.82	6360.74	0.008054	11.27	532.47	143.88	0.99
Reach 2	122.3683	10-Year	1940.00	6353.37	6355.66	6356.11	6357.30	0.024231	10.29	190.01	127.01	1.46
Reach 2	122.3683	50-Year	4180.00	6353.37	6356.82	6357.41	6359.22	0.016926	12.51	342.14	134.59	1.34
Reach 2	122.3683	100-Year	5330.00	6353.37	6357.34	6357.98	6360.05	0.015158	13.31	412.94	137.97	1.31
Reach 2	122.3683	500-Year	8120.00	6353.37	6358.44	6359.15	6361.81	0.012677	14.93	569.16	145.16	1.26
Reach 2	122.3683	100-Developed	5898.00	6353.37	6357.57	6358.25	6360.43	0.014624	13.70	445.39	139.50	1.30
Reach 2	121.3679	10-Year	1940.00	6351.60	6353.12	6353.91	6355.83	0.050499	13.30	148.54	117.57	2.05
Reach 2	121.3679	50-Year	4180.00	6351.60	6354.08	6355.29	6358.11	0.036196	16.28	265.01	123.62	1.90
Reach 2	121.3679	100-Year	5330.00	6351.60	6354.54	6355.88	6359.02	0.031707	17.21	321.79	126.47	1.84

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	121.3679	500-Year	8120.00	6351.60	6355.54	6357.15	6360.91	0.025270	18.93	451.78	132.75	1.73
Reach 2	121.3679	100-Developed	5898.00	6351.60	6354.75	6356.16	6359.44	0.030043	17.62	348.92	127.80	1.81
Reach 2	121.3660	10-Year	1940.00	6349.23	6351.78	6351.37	6352.24	0.004725	5.84	383.20	322.10	0.69
Reach 2	121.3660	50-Year	4180.00	6349.23	6353.26	6352.38	6353.91	0.003488	7.03	684.51	376.44	0.64
Reach 2	121.3660	100-Year	5330.00	6349.23	6353.95	6352.83	6354.68	0.003082	7.41	828.68	382.12	0.62
Reach 2	121.3660	500-Year	8120.00	6349.23	6355.58	6353.74	6356.42	0.002379	8.02	1174.81	400.55	0.57
Reach 2	121.3660	100-Developed	5898.00	6349.23	6354.28	6353.04	6355.04	0.002925	7.57	897.68	384.82	0.61
Reach 2	121.3638	10-Year	1940.00	6347.63	6350.17	6349.93	6350.94	0.007105	7.13	280.03	230.05	0.84
Reach 2	121.3638	50-Year	4180.00	6347.63	6351.67	6351.26	6352.89	0.005694	9.00	485.30	245.91	0.82
Reach 2	121.3638	100-Year	5330.00	6347.63	6352.32	6351.84	6353.73	0.005352	9.70	577.25	252.74	0.82
Reach 2	121.3638	500-Year	8120.00	6347.63	6353.47	6353.06	6355.52	0.005705	11.71	750.32	288.73	0.88
Reach 2	121.3638	100-Developed	5898.00	6347.63	6352.63	6352.11	6354.12	0.005176	9.99	622.24	255.63	0.81
Reach 2	121.3636	10-Year	1940.00	6347.43	6349.80	6349.80	6350.76	0.009671	7.90	248.61	191.11	0.98
Reach 2	121.3636	50-Year	4180.00	6347.43	6351.12	6351.12	6352.72	0.008472	10.21	419.88	212.86	0.98
Reach 2	121.3636	100-Year	5330.00	6347.43	6351.72	6351.72	6353.56	0.007879	10.99	500.49	220.60	0.97
Reach 2	121.3636	500-Year	8120.00	6347.43	6352.96	6352.96	6355.36	0.007188	12.60	673.26	236.66	0.97
Reach 2	121.3636	100-Developed	5898.00	6347.43	6351.98	6351.98	6353.95	0.007769	11.39	535.95	223.95	0.98
Reach 2	121.3633	10-Year	1940.00	6344.35	6345.88	6346.87	6349.79	0.097770	15.87	122.92	128.35	2.75
Reach 2	121.3633	50-Year	4180.00	6344.35	6346.79	6348.25	6351.84	0.056463	18.13	234.70	149.27	2.30
Reach 2	121.3633	100-Year	5330.00	6344.35	6347.20	6348.82	6352.72	0.046934	18.97	287.68	158.03	2.16
Reach 2	121.3633	500-Year	8120.00	6344.35	6348.12	6350.03	6354.55	0.035553	20.57	409.37	175.52	2.00
Reach 2	121.3633	100-Developed	5898.00	6344.35	6347.40	6349.08	6353.12	0.043827	19.34	313.18	161.76	2.14
Reach 2	121.3602	10-Year	1940.00	6342.13	6345.75	6345.00	6346.29	0.003664	6.38	364.47	149.04	0.64
Reach 2	121.3602	50-Year	4180.00	6342.13	6347.27	6346.43	6348.19	0.003873	8.56	615.02	177.48	0.70
Reach 2	121.3602	100-Year	5330.00	6342.13	6347.85	6347.11	6348.93	0.003980	9.38	718.28	181.54	0.72
Reach 2	121.3602	500-Year	8120.00	6342.13	6349.07	6348.21	6350.50	0.004098	10.95	944.91	191.24	0.76
Reach 2	121.3602	100-Developed	5898.00	6342.13	6348.11	6347.34	6349.27	0.004019	9.74	766.48	183.41	0.73
Reach 2	121.3600	10-Year	1940.00	6342.10	6345.10	6345.10	6346.12	0.010144	8.77	280.51	137.34	1.01
Reach 2	121.3600	50-Year	4180.00	6342.10	6346.51	6346.51	6348.02	0.008421	10.94	476.28	168.26	1.00
Reach 2	121.3600	100-Year	5330.00	6342.10	6347.11	6347.11	6348.77	0.007746	11.59	579.59	174.95	0.98
Reach 2	121.3600	500-Year	8120.00	6342.10	6348.21	6348.21	6350.33	0.007520	13.28	776.98	183.92	1.00
Reach 2	121.3600	100-Developed	5898.00	6342.10	6347.35	6347.35	6349.11	0.007699	11.98	621.77	176.90	0.99
Reach 2	121.3597	10-Year	1940.00	6339.78	6341.56	6342.69	6345.27	0.050935	15.64	128.18	81.97	2.14
Reach 2	121.3597	50-Year	4180.00	6339.78	6342.95	6344.44	6347.31	0.027766	17.35	272.96	124.20	1.75
Reach 2	121.3597	100-Year	5330.00	6339.78	6343.52	6345.03	6348.10	0.023875	18.02	347.84	136.86	1.67
Reach 2	121.3597	500-Year	8120.00	6339.78	6347.55	6346.18	6348.81	0.002835	10.23	1028.12	183.19	0.65
Reach 2	121.3597	100-Developed	5898.00	6339.78	6343.78	6345.28	6348.44	0.022427	18.30	385.14	145.62	1.64
Reach 2	121.3585	10-Year	1940.00	6338.90	6343.10	6342.23	6343.72	0.003065	6.61	339.29	131.04	0.60
Reach 2	121.3585	50-Year	4180.00	6338.90	6344.55	6343.99	6345.73	0.003991	9.39	548.16	151.64	0.73
Reach 2	121.3585	100-Year	5330.00	6338.90	6345.17	6344.60	6346.57	0.004170	10.34	642.69	156.15	0.76
Reach 2	121.3585	500-Year	8120.00	6338.90	6346.47		6348.34	0.004395	12.15	853.30	169.30	0.80
Reach 2	121.3585	100-Developed	5898.00	6338.90	6345.42	6344.88	6346.94	0.004303	10.81	663.11	158.04	0.77
Reach 2	120.3562	10-Year	1940.00	6338.33	6341.52	6341.52	6342.61	0.007934	8.95	265.37	134.73	0.93
Reach 2	120.3562	50-Year	4180.00	6338.33	6343.01	6343.01	6344.52	0.006949	11.05	487.16	155.81	0.93
Reach 2	120.3562	100-Year	5330.00	6338.33	6343.54	6343.54	6345.31	0.007117	12.07	571.03	159.27	0.96
Reach 2	120.3562	500-Year	8120.00	6338.33	6344.68	6344.68	6347.01	0.007328	14.07	758.04	173.84	1.01
Reach 2	120.3562	100-Developed	5898.00	6338.33	6343.82	6343.82	6345.67	0.006995	12.41	615.53	161.08	0.96
Reach 2	120.3560	10-Year	1940.00	6337.20	6340.49	6341.00	6342.31	0.016021	11.33	201.76	122.67	1.28
Reach 2	120.3560	50-Year	4180.00	6337.20	6341.87	6342.49	6344.24	0.012719	13.60	389.90	148.72	1.23
Reach 2	120.3560	100-Year	5330.00	6337.20	6342.39	6343.04	6345.04	0.012286	14.56	468.80	153.41	1.23
Reach 2	120.3560	500-Year	8120.00	6337.20	6343.45	6344.16	6346.73	0.011768	16.50	636.09	160.91	1.25
Reach 2	120.3560	100-Developed	5898.00	6337.20	6342.63	6343.29	6345.40	0.012058	14.96	506.24	155.12	1.23
Reach 2	120.3557	10-Year	1940.00	6334.27	6336.03	6337.35	6341.08	0.078119	18.13	109.07	75.95	2.61
Reach 2	120.3557	50-Year	4180.00	6334.27	6337.46	6339.27	6343.28	0.037446	19.62	222.15	82.18	2.02
Reach 2	120.3557	100-Year	5330.00	6334.27	6338.16	6340.28	6344.16	0.029151	19.98	281.10	85.25	1.85
Reach 2	120.3557	500-Year	8120.00	6334.27	6339.77	6341.86	6346.00	0.018986	20.59	438.59	122.16	1.59
Reach 2	120.3557	100-Developed	5898.00	6334.27	6338.51	6340.63	6344.56	0.026161	20.11	310.70	86.75	1.78
Reach 2	120.3527	10-Year	1940.00	6332.45	6336.71	6335.56	6337.27	0.002630	6.18	354.29	132.59	0.56
Reach 2	120.3527	50-Year	4180.00	6332.45	6338.38	6337.37	6339.35	0.003055	8.49	597.25	155.09	0.64
Reach 2	120.3527	100-Year	5330.00	6332.45	6339.04	6338.06	6340.20	0.003175	9.34	701.50	159.59	0.67
Reach 2	120.3527	500-Year	8120.00	6332.45	6340.22	6339.30	6341.93	0.003806	11.51	904.69	169.62	0.75
Reach 2	120.3527	100-Developed	5898.00	6332.45	6339.39	6338.34	6340.60	0.003134	9.63	757.39	161.95	0.67
Reach 2	120.3525	10-Year	1940.00	6332.66	6335.93	6335.93	6337.12	0.007995	8.99	236.12	121.42	0.93
Reach 2	120.3525	50-Year	4180.00	6332.66	6337.60	6337.60	6339.21	0.006432	10.93	470.67	150.16	0.90
Reach 2	120.3525	100-Year	5330.00	6332.66	6338.18	6338.18	6340.04	0.006525	11.92	558.75	155.49	0.93
Reach 2	120.3525	500-Year	8120.00	6332.66	6339.52	6339.52	6341.79	0.006120	13.47	785.84	183.57	0.93
Reach 2	120.3525	100-Developed	5898.00	6332.66	6338.42	6338.42	6340.43	0.006708	12.46	596.79	160.28	0.95

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	120.3522	10-Year	1940.00	6329.40	6330.87	6332.21	6336.14	0.087261	18.62	107.26	78.75	2.74
Reach 2	120.3522	50-Year	4180.00	6329.40	6332.20	6334.01	6338.35	0.042997	20.28	217.71	86.23	2.15
Reach 2	120.3522	100-Year	5330.00	6329.40	6332.86	6334.76	6339.21	0.033770	20.69	275.28	89.88	1.97
Reach 2	120.3522	500-Year	8120.00	6329.40	6334.34	6336.60	6341.03	0.022467	21.45	414.53	97.50	1.71
Reach 2	120.3522	100-Developed	5898.00	6329.40	6333.16	6335.10	6339.63	0.030787	20.92	303.01	91.59	1.91
Reach 2	120.3490	10-Year	1940.00	6327.55	6330.62	6330.62	6331.81	0.008656	8.96	234.42	104.54	0.96
Reach 2	120.3490	50-Year	4180.00	6327.55	6332.27	6332.27	6334.09	0.007340	11.33	422.86	124.49	0.96
Reach 2	120.3490	100-Year	5330.00	6327.55	6332.96	6332.96	6335.03	0.006990	12.19	512.03	134.00	0.96
Reach 2	120.3490	500-Year	8120.00	6327.55	6334.53	6334.53	6336.92	0.005866	13.38	736.33	150.88	0.92
Reach 2	120.3490	100-Developed	5898.00	6327.55	6333.28	6333.28	6335.48	0.006815	12.55	555.99	138.45	0.95
Reach 2	120.3467	10-Year	1940.00	6326.19	6329.88	6329.01	6330.48	0.003238	6.60	351.37	131.67	0.61
Reach 2	120.3467	50-Year	4180.00	6326.19	6331.49	6330.67	6332.52	0.003626	8.94	576.47	144.96	0.69
Reach 2	120.3467	100-Year	5330.00	6326.19	6332.14	6331.26	6333.37	0.003763	9.85	671.18	148.47	0.72
Reach 2	120.3467	500-Year	8120.00	6326.19	6333.37	6332.43	6335.16	0.004342	12.01	871.31	186.60	0.80
Reach 2	120.3467	100-Developed	5898.00	6326.19	6332.44	6331.53	6333.76	0.003804	10.24	716.15	150.10	0.73
Reach 2	120.3465	10-Year	1940.00	6326.00	6329.18	6329.18	6330.32	0.009113	9.13	250.62	121.29	0.98
Reach 2	120.3465	50-Year	4180.00	6326.00	6330.73	6330.73	6332.36	0.007613	11.29	457.32	141.68	0.97
Reach 2	120.3465	100-Year	5330.00	6326.00	6331.34	6331.34	6333.21	0.007416	12.19	544.71	146.39	0.98
Reach 2	120.3465	500-Year	8120.00	6326.00	6332.45	6332.45	6334.98	0.007800	14.36	713.05	154.59	1.04
Reach 2	120.3465	100-Developed	5898.00	6326.00	6331.61	6331.61	6333.59	0.007334	12.59	585.90	148.61	0.98
Reach 2	120.3462	10-Year	1940.00	6323.20	6325.14	6326.36	6329.44	0.061763	16.77	118.88	79.62	2.34
Reach 2	120.3462	50-Year	4180.00	6323.20	6326.54	6328.09	6331.61	0.032380	18.50	245.52	101.97	1.89
Reach 2	120.3462	100-Year	5330.00	6323.20	6327.15	6328.80	6332.46	0.026962	19.13	311.03	111.00	1.78
Reach 2	120.3462	500-Year	8120.00	6323.20	6328.44	6330.36	6334.28	0.020479	20.43	464.50	126.51	1.63
Reach 2	120.3462	100-Developed	5898.00	6323.20	6327.44	6329.13	6332.88	0.025161	19.42	342.94	115.14	1.74
Reach 2	120.3450	10-Year	1940.00	6322.77	6325.63	6325.63	6326.73	0.009083	8.88	249.14	117.31	0.97
Reach 2	120.3450	50-Year	4180.00	6322.77	6327.07	6327.16	6328.84	0.008484	11.53	432.30	136.47	1.01
Reach 2	120.3450	100-Year	5330.00	6322.77	6327.48	6327.79	6329.74	0.009636	13.10	488.81	140.41	1.10
Reach 2	120.3450	500-Year	8120.00	6322.77	6328.30	6329.10	6331.72	0.011802	16.25	607.66	146.84	1.25
Reach 2	120.3450	100-Developed	5898.00	6322.77	6327.65	6328.11	6330.17	0.010192	13.84	513.99	142.13	1.14
Reach 2	119.3423	10-Year	1940.00	6320.25	6323.90	6323.21	6324.47	0.003471	6.49	352.15	136.84	0.63
Reach 2	119.3423	50-Year	4180.00	6320.25	6325.57	6324.62	6326.51	0.003478	8.52	588.42	145.91	0.67
Reach 2	119.3423	100-Year	5330.00	6320.25	6326.22	6325.20	6327.36	0.003585	9.40	684.88	149.69	0.70
Reach 2	119.3423	500-Year	8120.00	6320.25	6327.57	6326.41	6329.18	0.003858	11.25	894.75	170.58	0.75
Reach 2	119.3423	100-Developed	5898.00	6320.25	6326.53	6325.46	6327.75	0.003614	9.77	731.34	151.91	0.71
Reach 2	119.3421	10-Year	1940.00	6320.17	6323.20	6323.20	6324.32	0.008535	8.85	250.52	121.72	0.95
Reach 2	119.3421	50-Year	4180.00	6320.17	6324.74	6324.74	6326.35	0.007223	11.00	457.01	141.33	0.94
Reach 2	119.3421	100-Year	5330.00	6320.17	6325.32	6325.32	6327.19	0.007144	11.93	540.79	144.38	0.96
Reach 2	119.3421	500-Year	8120.00	6320.17	6326.56	6326.56	6328.99	0.007055	13.81	724.06	153.93	0.99
Reach 2	119.3421	100-Developed	5898.00	6320.17	6325.60	6325.60	6327.58	0.007084	12.33	580.60	145.81	0.96
Reach 2	119.3417	10-Year	1940.00	6317.05	6318.82	6320.05	6323.27	0.062678	17.07	116.75	76.26	2.37
Reach 2	119.3417	50-Year	4180.00	6317.05	6320.33	6321.93	6325.48	0.030516	18.52	238.15	83.78	1.84
Reach 2	119.3417	100-Year	5330.00	6317.05	6321.07	6323.03	6326.37	0.023872	18.88	301.70	87.46	1.69
Reach 2	119.3417	500-Year	8120.00	6317.05	6322.76	6324.50	6328.27	0.015764	19.52	483.51	137.47	1.46
Reach 2	119.3417	100-Developed	5898.00	6317.05	6321.44	6323.36	6326.78	0.021452	18.99	333.75	89.26	1.63
Reach 2	119.3414	10-Year	1940.00	6316.71	6320.67	6320.12	6321.55	0.004858	7.61	269.36	100.89	0.74
Reach 2	119.3414	50-Year	4180.00	6316.71	6321.01	6322.08	6324.27	0.015944	14.74	306.16	120.89	1.37
Reach 2	119.3414	100-Year	5330.00	6316.71	6321.53	6322.73	6325.35	0.015978	16.12	371.70	134.54	1.40
Reach 2	119.3414	500-Year	8120.00	6316.71	6322.39	6324.00	6327.72	0.016025	19.42	492.74	143.92	1.53
Reach 2	119.3414	100-Developed	5898.00	6316.71	6321.76	6323.01	6325.84	0.016046	16.74	403.10	139.45	1.41
Reach 2	119.3400	10-Year	1940.00	6316.38	6319.27	6319.27	6320.58	0.009338	9.31	217.54	86.76	1.00
Reach 2	119.3400	50-Year	4180.00	6316.38	6321.23	6321.23	6322.87	0.006067	10.78	461.31	149.55	0.88
Reach 2	119.3400	100-Year	5330.00	6316.38	6321.85	6321.85	6323.72	0.006029	11.68	554.43	152.46	0.89
Reach 2	119.3400	500-Year	8120.00	6316.38	6323.08	6323.15	6325.47	0.006098	13.50	745.55	157.60	0.93
Reach 2	119.3400	100-Developed	5898.00	6316.38	6322.14	6322.14	6324.10	0.005970	12.04	598.65	153.74	0.90
Reach 2	119.3382	10-Year	1940.00	6315.51	6317.14	6317.37	6318.29	0.017679	8.64	226.01	156.09	1.24
Reach 2	119.3382	50-Year	4180.00	6315.51	6317.63	6318.52	6320.62	0.031589	13.95	305.69	158.92	1.74
Reach 2	119.3382	100-Year	5330.00	6315.51	6317.98	6319.02	6321.47	0.029932	15.11	361.13	160.91	1.74
Reach 2	119.3382	500-Year	8120.00	6315.51	6318.75	6320.09	6323.25	0.026465	17.19	487.39	165.36	1.72
Reach 2	119.3382	100-Developed	5898.00	6315.51	6318.14	6319.25	6321.87	0.029260	15.62	387.21	161.84	1.74
Reach 2	119.3370	10-Year	1940.00	6314.30	6316.52	6316.13	6317.09	0.005568	6.10	324.22	158.66	0.74
Reach 2	119.3370	50-Year	4180.00	6314.30	6317.26	6317.26	6318.69	0.009139	9.59	447.54	162.65	1.00
Reach 2	119.3370	100-Year	5330.00	6314.30	6317.77	6317.77	6319.42	0.008739	10.42	527.90	165.20	1.00
Reach 2	119.3370	500-Year	8120.00	6314.30	6318.81	6318.85	6321.00	0.008192	12.05	701.44	170.57	1.01
Reach 2	119.3370	100-Developed	5898.00	6314.30	6318.02	6318.02	6319.77	0.008416	10.72	569.04	166.49	0.99
Reach 2	119.3340	10-Year	1940.00	6312.79	6314.41	6314.41	6314.96	0.009170	5.91	328.16	309.81	1.01
Reach 2	119.3340	50-Year	4180.00	6312.79	6315.13	6315.13	6316.02	0.007719	7.55	553.72	318.27	1.01
Reach 2	119.3340	100-Year	5330.00	6312.79	6315.26	6315.45	6316.51	0.009991	8.97	594.07	319.76	1.16

HEC-RAS Plan: EX_MATRIX (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	119.3340	500-Year	8120.00	6312.79	6315.52	6316.12	6317.74	0.015042	11.96	679.10	322.88	1.45
Reach 2	119.3340	100-Developed	5898.00	6312.79	6315.30	6315.59	6316.76	0.011369	9.71	607.66	320.26	1.24
Reach 2	119	10-Year	1940.00	6304.30	6306.38	6306.53	6306.97	0.017103	6.50	331.84	516.07	1.31
Reach 2	119	50-Year	4180.00	6304.30	6306.69	6307.04	6307.89	0.022955	9.31	496.53	532.27	1.60
Reach 2	119	100-Year	5330.00	6304.30	6306.96	6307.26	6308.11	0.016936	9.16	639.44	543.83	1.42
Reach 2	119	500-Year	8120.00	6304.30	6307.49	6307.74	6308.73	0.011874	9.48	933.81	561.95	1.25
Reach 2	119	100-Developed	5898.00	6304.30	6307.09	6307.37	6308.23	0.014739	9.08	712.55	546.69	1.35
Reach 2	118	10-Year	1940.00	6288.90	6291.89	6290.55	6291.98	0.000606	2.41	804.11	401.84	0.29
Reach 2	118	50-Year	4180.00	6288.90	6292.94	6291.28	6293.13	0.000739	3.46	1217.64	560.27	0.34
Reach 2	118	100-Year	5330.00	6288.90	6293.36	6291.57	6293.60	0.000790	3.88	1390.66	596.50	0.36
Reach 2	118	500-Year	8120.00	6288.90	6294.19	6292.19	6294.54	0.000903	4.75	1747.02	666.79	0.40
Reach 2	118	100-Developed	5898.00	6288.90	6293.55	6291.72	6293.81	0.000814	4.07	1469.29	612.32	0.37
Reach 2	117.5	10-Year	1940.00	6285.50	6290.77	6290.55	6291.10	0.002496	7.18	488.16	341.14	0.55
Reach 2	117.5	50-Year	4180.00	6285.50	6291.56	6291.24	6292.06	0.002959	8.46	784.74	415.93	0.61
Reach 2	117.5	100-Year	5330.00	6285.50	6291.83	6291.52	6292.44	0.003237	9.11	901.63	443.69	0.64
Reach 2	117.5	500-Year	8120.00	6285.50	6292.44	6292.11	6293.25	0.003430	9.98	1194.66	506.63	0.67
Reach 2	117.5	100-Developed	5898.00	6285.50	6291.96	6291.64	6292.62	0.003293	9.32	963.03	457.59	0.65
Reach 2	117.25		Bridge									
Reach 2	117	10-Year	1940.00	6281.70	6290.52	6290.52	6291.07	0.002506	8.39	446.79	321.58	0.50
Reach 2	117	50-Year	4180.00	6281.70	6291.20	6291.20	6292.01	0.004010	10.91	684.58	379.50	0.62
Reach 2	117	100-Year	5330.00	6281.70	6291.50	6291.50	6292.39	0.004196	11.39	802.94	410.10	0.64
Reach 2	117	500-Year	8120.00	6281.70	6292.12	6292.12	6293.18	0.004363	12.10	1078.49	473.74	0.66
Reach 2	117	100-Developed	5898.00	6281.70	6291.64	6291.64	6292.56	0.004232	11.55	861.83	424.50	0.65
Reach 2	116	10-Year	1940.00	6273.80	6275.18	6276.40	6282.94	0.124212	23.36	96.41	122.96	3.77
Reach 2	116	50-Year	4180.00	6273.80	6275.97	6277.11	6282.52	0.068083	23.69	267.46	337.96	3.01
Reach 2	116	100-Year	5330.00	6273.80	6276.18	6277.35	6282.53	0.063311	24.26	340.38	366.45	2.95
Reach 2	116	500-Year	8120.00	6273.80	6276.61	6277.84	6283.15	0.058984	26.10	517.52	486.40	2.92
Reach 2	116	100-Developed	5898.00	6273.80	6276.27	6277.46	6282.62	0.062056	24.61	373.48	378.67	2.94

Errors Warnings and Notes for Plan : EX_MATRIX

Location:	River: RIVER-1 Reach: Reach 6 RS: 6220 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6220 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6220 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6220 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6220 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6219 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6219 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6219 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6219 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6219 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.2 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.2 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.2 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.2 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.2 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.2 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.1 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.1 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.1 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.1 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218.1 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6218 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6217.75 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6217.75 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6217.75 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6217.75 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6217.75 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6217.50 Profile: 100-Developed
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6216.5 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6216.5 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Location:	River: RIVER-1 Reach: Reach 6 RS: 6216.5 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6216.5 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6216.5 Profile: 100-Developed
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6216 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6216 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6215.5 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6215.5 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6215.5 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6215.5 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6212 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6212 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6212 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6212 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6212 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6211 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6211 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6211 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6211 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6211 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6210 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6210 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6210 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6210 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6209 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6209 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6209 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6209 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6209 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6208 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6208 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6208 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6208 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6208 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6208 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6207 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6207 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6207 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6207 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6207 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206.5 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206.5 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206.5 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206.5 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206.5 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6206 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6205 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6205 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6205 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6205 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6205 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6204 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6204 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6204 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6204 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6204 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6203 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6203 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6203 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6203 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6203 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6202 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6202 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6202 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6202 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6202 Profile: 100-Developed
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201.75 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201.75 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6201 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow into the channel, a levee or ineffective flow may have to be added or the Manning's n of the overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow into the channel, a levee or ineffective flow may have to be added or the Manning's n of the overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow into the channel, a levee or ineffective flow may have to be added or the Manning's n of the overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow into the channel, a levee or ineffective flow may have to be added or the Manning's n of the overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6114 Profile: 50-Year
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6114 Profile: 50-Year
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6114 Profile: 100-Year
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6114 Profile: 500-Year
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6114 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6113 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 100-Developed
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 100-Year

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 100-Developed
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 5 RS: 6102 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 100-Developed
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 500-Year
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 100-Developed
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too shallow for slope area to converge during supercritical flow calculations (normal depth is above critical depth). Water surface set to critical depth
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too shallow for slope area to converge during supercritical flow calculations (normal depth is above critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too shallow for slope area to converge during supercritical flow calculations (normal depth is above critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 500-Year
Warning:	Slope too shallow for slope area to converge during supercritical flow calculations (normal depth is above critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too shallow for slope area to converge during supercritical flow calculations (normal depth is above critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 100-Developed
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	During supercritical flow calculations a junction was encountered. During standard step calculations the program used the stream with the greatest momentum to balance the energy equation.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	During supercritical flow calculations a junction was encountered. During standard step calculations the program used the stream with the greatest momentum to balance the energy equation.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	During supercritical flow calculations a junction was encountered. During standard step calculations the program used the stream with the greatest momentum to balance the energy equation.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	During supercritical flow calculations a junction was encountered. During standard step calculations the program used the stream with the greatest momentum to balance the energy equation.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3748 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3748 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3748 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3748 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3748 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 100-Developed
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 10-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 50-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 100-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 500-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 100-Developed
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 10-Year
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 100-Developed
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 10-Year
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 10-Year
Warning:	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

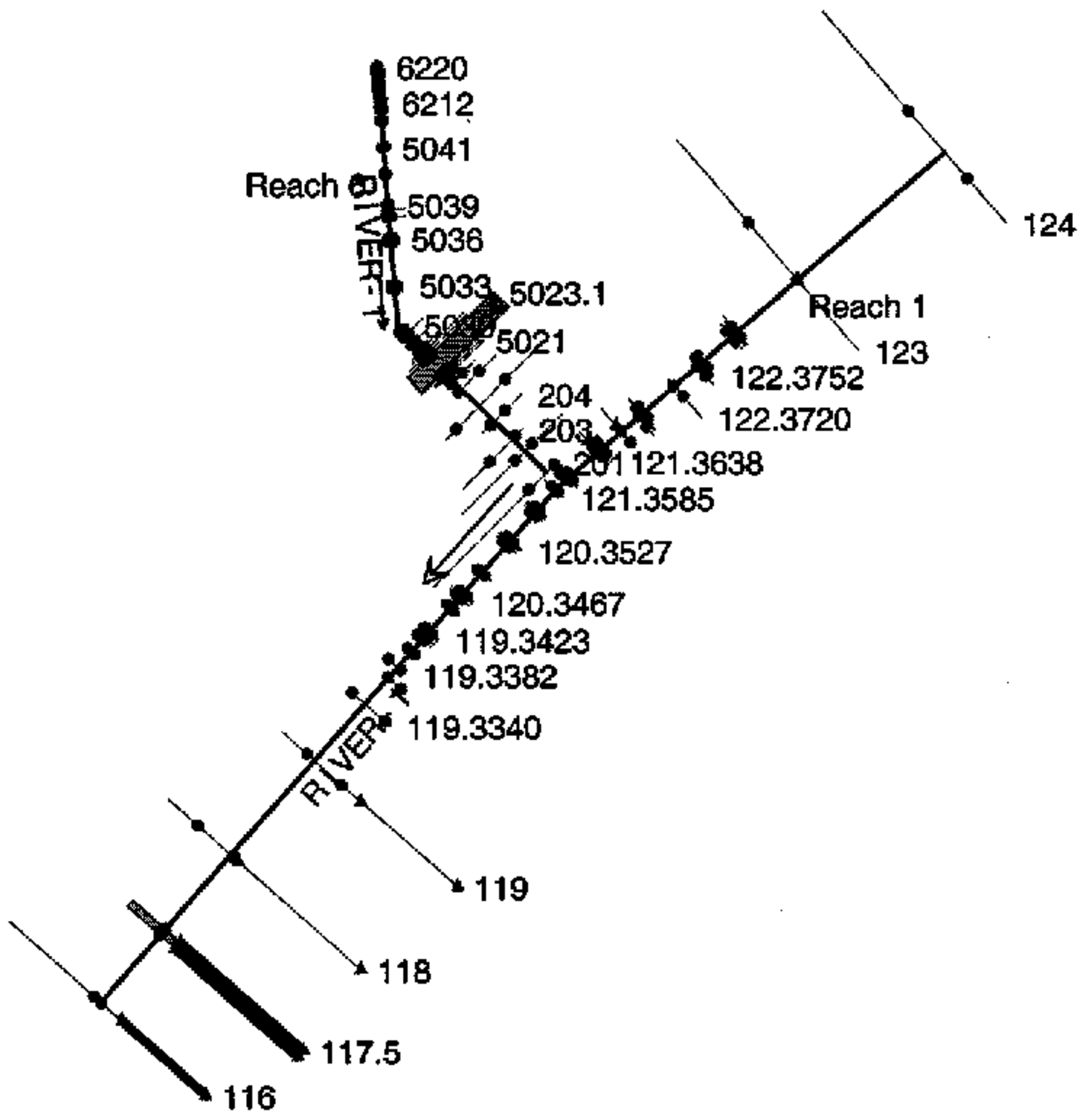
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 100-Developed
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 100-Developed
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Program found supercritical flow starting at this cross section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Note:	Hydraulic jump has occurred between this cross section and the previous upstream section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 10-Year
Warning:	The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 10-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the
	bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 10-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside
	the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 50-Year
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 50-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the
	bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 50-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside
	the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Year
Warning:	The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the
	bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside
	the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 500-Year
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 500-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the
	bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 500-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the energy is based on critical depth over the weir. The water surface has been projected.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Developed
Warning:	The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Warning:	The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Developed Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the
	bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Developed Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside
	the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 100-Developed
Warning:	The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer.
	The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 500-Year

Errors Warnings and Notes for Plan : EX_MATRIX (Continued)

Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 100-Developed
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.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119.3423
119.3382
119.3340
RIVER-1
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118
117.5
116
Reach 1
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123
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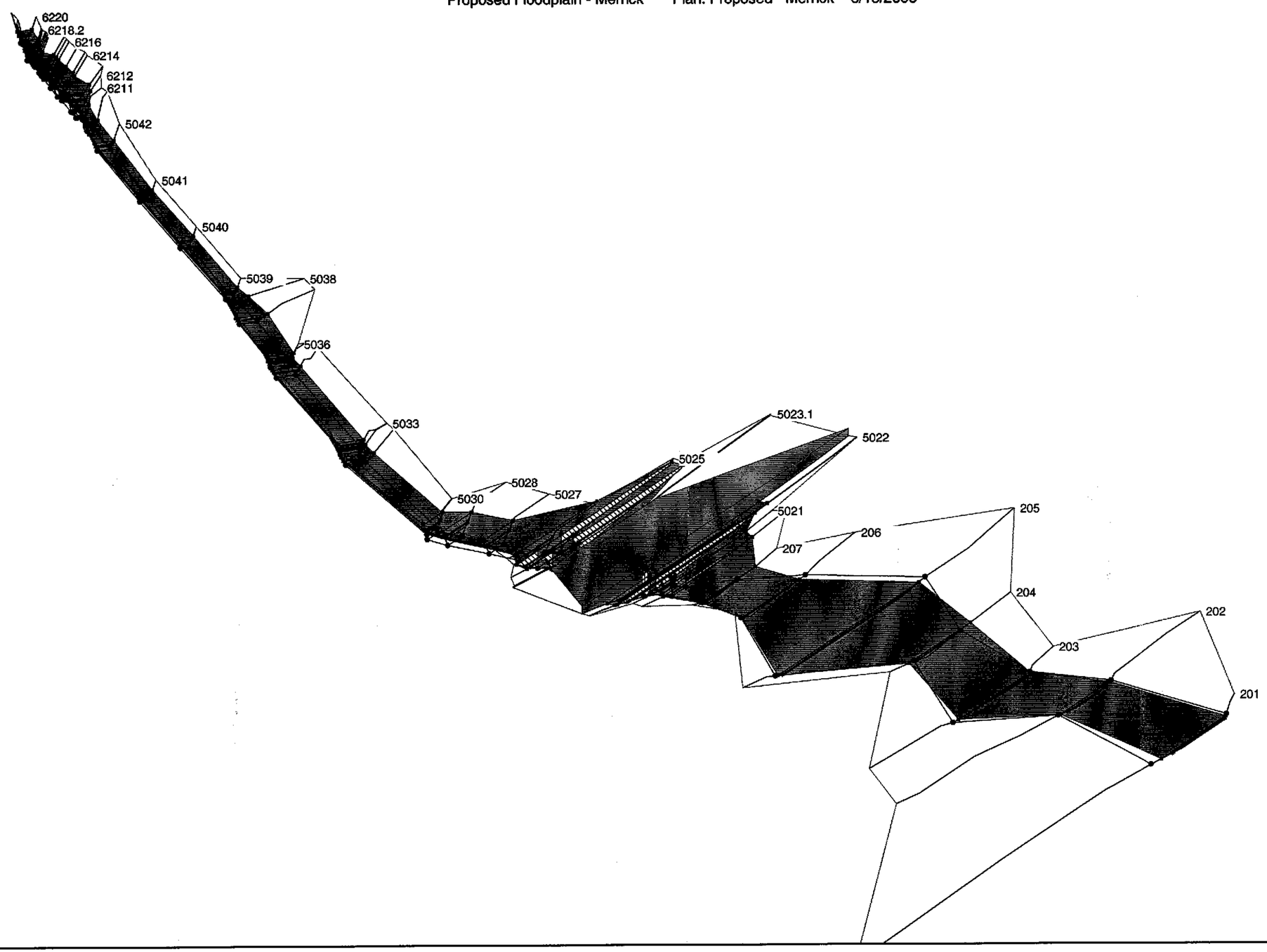
122.3720

Proposed Floodplain - Merrick Plan: Proposed - Merrick 6/15/2006



HEC-RAS Plan: PR_MERRICK River: RIVER-1 Reach: Reach 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	124	10-Year	1890.00	6398.00	6400.12	6400.12	6400.54	0.010118	5.25	360.11	437.48	1.02
Reach 1	124	50-Year	4070.00	6398.00	6400.71	6400.71	6401.32	0.008786	6.26	649.77	544.54	1.01
Reach 1	124	100-Year	5190.00	6398.00	6400.95	6400.95	6401.62	0.008497	6.59	787.21	595.82	1.01
Reach 1	124	500-Year	7920.00	6398.00	6401.40	6401.40	6402.25	0.007715	7.38	1072.67	637.14	1.00
Reach 1	124	100-Developed	5190.00	6398.00	6400.95	6400.95	6401.62	0.008497	6.59	787.21	595.82	1.01
Reach 1	123	10-Year	1890.00	6380.80	6382.70	6382.70	6383.20	0.009321	5.67	333.49	977.13	1.01
Reach 1	123	50-Year	4070.00	6380.80	6383.39	6383.39	6384.12	0.008189	6.88	591.64	1069.20	1.01
Reach 1	123	100-Year	5190.00	6380.80	6383.66	6383.66	6384.50	0.007851	7.33	708.18	1099.60	1.01
Reach 1	123	500-Year	7920.00	6380.80	6384.24	6384.24	6385.27	0.007313	8.15	971.27	1161.21	1.01
Reach 1	123	100-Developed	5190.00	6380.80	6383.66	6383.66	6384.50	0.007851	7.33	708.18	1099.60	1.01
Reach 1	122.3791	10-Year	1890.00	6366.65	6369.23	6369.17	6370.13	0.009503	7.67	251.49	132.25	0.96
Reach 1	122.3791	50-Year	4070.00	6366.65	6370.45	6370.45	6372.00	0.008716	10.10	419.14	141.56	0.99
Reach 1	122.3791	100-Year	5190.00	6366.65	6371.01	6371.01	6372.80	0.008206	10.90	499.41	145.82	0.99
Reach 1	122.3791	500-Year	7920.00	6366.65	6372.21	6372.21	6374.55	0.007516	12.53	682.74	170.08	0.99
Reach 1	122.3791	100-Developed	5758.00	6366.65	6371.27	6371.27	6373.18	0.008014	11.26	538.12	147.82	0.99
Reach 1	122.3789	10-Year	1890.00	6366.40	6368.97	6368.97	6369.93	0.010506	7.90	243.57	131.47	1.00
Reach 1	122.3789	50-Year	4070.00	6366.40	6370.25	6370.25	6371.80	0.008732	10.10	418.04	140.77	0.99
Reach 1	122.3789	100-Year	5190.00	6366.40	6370.81	6370.81	6372.60	0.008226	10.90	497.73	144.82	0.99
Reach 1	122.3789	500-Year	7920.00	6366.40	6372.03	6372.03	6374.35	0.007395	12.46	662.05	163.85	0.98
Reach 1	122.3789	100-Developed	5758.00	6366.40	6371.07	6371.07	6372.99	0.008035	11.27	536.17	146.73	0.99
Reach 1	122.3785	10-Year	1890.00	6363.89	6366.55	6366.39	6367.36	0.007989	7.27	265.76	133.57	0.88
Reach 1	122.3785	50-Year	4070.00	6363.89	6367.67	6367.67	6369.21	0.008733	10.09	419.28	141.86	0.99
Reach 1	122.3785	100-Year	5190.00	6363.89	6368.24	6368.24	6370.01	0.008135	10.85	501.18	146.09	0.98
Reach 1	122.3785	500-Year	7920.00	6363.89	6369.42	6369.42	6371.72	0.007426	12.43	679.06	154.87	0.98
Reach 1	122.3785	100-Developed	5758.00	6363.89	6368.49	6368.49	6370.39	0.008023	11.25	538.29	147.96	0.99
Reach 1	122.3752	10-Year	1890.00	6361.12	6363.41	6363.41	6364.35	0.010537	7.82	246.16	134.87	1.00
Reach 1	122.3752	50-Year	4070.00	6361.12	6364.67	6364.67	6366.19	0.008771	10.00	421.22	143.05	0.99
Reach 1	122.3752	100-Year	5190.00	6361.12	6365.21	6365.21	6366.98	0.008327	10.83	499.63	146.57	0.99
Reach 1	122.3752	500-Year	7920.00	6361.12	6366.35	6366.35	6368.68	0.007720	12.47	671.41	153.99	1.00
Reach 1	122.3752	100-Developed	5758.00	6361.12	6365.47	6365.47	6367.36	0.008129	11.19	538.00	148.26	0.99
Reach 1	122.3750	10-Year	1890.00	6360.72	6363.11	6363.11	6364.05	0.010518	7.81	245.96	134.72	1.00
Reach 1	122.3750	50-Year	4070.00	6360.72	6364.38	6364.38	6365.90	0.008712	9.98	421.57	142.96	0.99
Reach 1	122.3750	100-Year	5190.00	6360.72	6364.91	6364.91	6366.69	0.008329	10.83	498.93	146.44	0.99
Reach 1	122.3750	500-Year	7920.00	6360.72	6366.06	6366.06	6368.39	0.007722	12.47	670.51	153.88	1.00
Reach 1	122.3750	100-Developed	5758.00	6360.72	6365.19	6365.19	6367.07	0.008025	11.15	539.51	148.23	0.98
Reach 1	122.3748	10-Year	1890.00	6358.45	6361.18	6361.04	6362.02	0.008372	7.41	262.17	131.44	0.90
Reach 1	122.3748	50-Year	4070.00	6358.45	6362.41	6362.33	6363.89	0.008120	9.93	428.33	139.38	0.96
Reach 1	122.3748	100-Year	5190.00	6358.45	6362.91	6362.89	6364.70	0.008130	10.92	499.80	142.66	0.98
Reach 1	122.3748	500-Year	7920.00	6358.45	6364.09	6364.09	6366.44	0.007548	12.58	671.93	150.26	0.99
Reach 1	122.3748	100-Developed	5758.00	6358.45	6363.15	6363.15	6365.09	0.008127	11.37	534.19	144.21	0.99
Reach 1	122.3720	10-Year	1890.00	6357.18	6359.63	6359.19	6360.24	0.005284	6.33	308.01	139.35	0.73
Reach 1	122.3720	50-Year	4070.00	6357.18	6360.88		6362.03	0.005724	8.77	486.55	147.21	0.82
Reach 1	122.3720	100-Year	5190.00	6357.18	6361.40		6362.81	0.005840	9.70	564.40	150.51	0.84
Reach 1	122.3720	500-Year	7920.00	6357.18	6362.37	6362.04	6364.47	0.006649	11.91	713.24	162.79	0.93
Reach 1	122.3720	100-Developed	5758.00	6357.18	6361.65		6363.18	0.005894	10.13	601.41	152.06	0.86
Reach 1	122.3685	10-Year	1890.00	6354.10	6356.71	6356.71	6357.67	0.010527	7.89	243.29	131.01	1.00
Reach 1	122.3685	50-Year	4070.00	6354.10	6358.00	6358.00	6359.55	0.008734	10.09	416.37	138.85	0.99
Reach 1	122.3685	100-Year	5190.00	6354.10	6358.55	6358.55	6360.36	0.008259	10.91	494.40	142.25	0.99
Reach 1	122.3685	500-Year	7920.00	6354.10	6359.91	6359.91	6362.11	0.006767	12.12	701.62	168.81	0.94
Reach 1	122.3685	100-Developed	5758.00	6354.10	6358.82	6358.82	6360.74	0.008054	11.27	532.47	143.88	0.99
Reach 1	122.3683	10-Year	1940.00	6353.37	6356.11	6356.11	6357.06	0.010245	7.94	247.85	129.95	0.99
Reach 1	122.3683	50-Year	4180.00	6353.37	6357.41	6357.41	6359.00	0.008689	10.22	422.25	138.41	0.99
Reach 1	122.3683	100-Year	5330.00	6353.37	6357.98	6357.98	6359.83	0.008165	11.03	502.81	142.15	0.99
Reach 1	122.3683	500-Year	8120.00	6353.37	6359.15	6359.15	6361.59	0.007673	12.74	672.91	149.74	1.00
Reach 1	122.3683	100-Developed	5898.00	6353.37	6358.25	6358.25	6360.21	0.007981	11.39	540.44	143.86	0.99
Reach 1	121.3679	10-Year	1940.00	6351.60	6353.91	6353.91	6354.93	0.010217	8.20	243.56	122.53	1.00
Reach 1	121.3679	50-Year	4180.00	6351.60	6355.29	6355.29	6356.94	0.008532	10.49	418.15	131.16	0.99
Reach 1	121.3679	100-Year	5330.00	6351.60	6355.88	6355.88	6357.80	0.008060	11.34	497.13	134.68	0.99
Reach 1	121.3679	500-Year	8120.00	6351.60	6357.15	6357.15	6359.63	0.007370	12.98	673.00	143.00	0.99
Reach 1	121.3679	100-Developed	5898.00	6351.60	6356.16	6356.16	6358.20	0.007894	11.72	534.64	136.61	0.99
Reach 1	121.3660	10-Year	1940.00	6349.23	6351.78	6351.37	6352.24	0.004725	5.84	383.20	322.10	0.69
Reach 1	121.3660	50-Year	4180.00	6349.23	6353.26	6352.38	6353.91	0.003488	7.03	684.51	376.44	0.64
Reach 1	121.3660	100-Year	5330.00	6349.23	6353.95	6352.83	6354.68	0.003082	7.41	828.68	382.12	0.62
Reach 1	121.3660	500-Year	8120.00	6349.23	6355.58	6353.74	6356.42	0.002379	8.02	1174.81	400.55	0.57
Reach 1	121.3660	100-Developed	5898.00	6349.23	6354.28	6353.04	6355.04	0.002925	7.57	897.68	384.82	0.61
Reach 1	121.3638	10-Year	1940.00	6347.63	6350.17	6349.93	6350.94	0.007105	7.13	280.03	230.05	0.84
Reach 1	121.3638	50-Year	4180.00	6347.63	6351.67	6351.26	6352.89	0.005694	9.00	485.30	245.91	0.82
Reach 1	121.3638	100-Year	5330.00	6347.63	6352.32	6351.84	6353.73	0.005352	9.70	577.25	252.74	0.82

HEC-RAS Plan: PR_MERRICK River: RIVER-1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	121.3636	500-Year	8120.00	6347.63	6353.47	6353.06	6355.52	0.005705	11.71	760.32	288.73	0.88
Reach 1	121.3636	100-Developed	5898.00	6347.63	6352.63	6352.11	6354.12	0.005176	9.99	622.24	255.63	0.81
Reach 1	121.3636	10-Year	1940.00	6347.43	6349.80	6349.80	6350.76	0.009871	7.90	248.61	191.11	0.96
Reach 1	121.3636	50-Year	4180.00	6347.43	6351.12	6351.12	6352.72	0.008472	10.21	419.88	212.86	0.96
Reach 1	121.3636	100-Year	5330.00	6347.43	6351.72	6351.72	6353.56	0.007879	10.99	500.49	220.60	0.97
Reach 1	121.3636	500-Year	8120.00	6347.43	6352.96	6352.96	6355.36	0.007188	12.60	673.26	236.66	0.97
Reach 1	121.3636	100-Developed	5898.00	6347.43	6351.98	6351.98	6353.95	0.007769	11.39	535.95	223.95	0.98
Reach 1	121.3633	10-Year	1940.00	6344.35	6347.11	6346.87	6347.90	0.007053	7.18	276.58	156.40	0.84
Reach 1	121.3633	50-Year	4180.00	6344.35	6348.50	6348.25	6349.85	0.006457	9.44	461.46	182.78	0.87
Reach 1	121.3633	100-Year	5330.00	6344.35	6349.02	6348.82	6350.67	0.006640	10.46	534.72	192.78	0.90
Reach 1	121.3633	500-Year	8120.00	6344.35	6350.07	6350.03	6352.44	0.007141	12.60	686.68	213.59	0.97
Reach 1	121.3633	100-Developed	5898.00	6344.35	6349.26	6349.08	6351.05	0.006742	10.93	568.06	197.47	0.92
Reach 1	121.3602	10-Year	1940.00	6342.13	6345.75		6346.29	0.003664	6.38	364.47	149.04	0.64
Reach 1	121.3602	50-Year	4180.00	6342.13	6347.27		6348.19	0.003873	8.55	615.02	177.48	0.70
Reach 1	121.3602	100-Year	5330.00	6342.13	6347.85		6348.93	0.003980	9.38	718.28	181.54	0.72
Reach 1	121.3602	500-Year	8120.00	6342.13	6349.07		6350.50	0.004098	10.95	944.91	191.24	0.76
Reach 1	121.3602	100-Developed	5898.00	6342.13	6348.11		6349.27	0.004019	9.74	766.48	183.41	0.73
Reach 1	121.3600	10-Year	1940.00	6342.10	6345.10	6345.10	6346.12	0.010144	8.77	260.51	137.34	1.01
Reach 1	121.3600	50-Year	4180.00	6342.10	6346.51	6346.51	6348.02	0.006421	10.94	476.28	168.26	1.00
Reach 1	121.3600	100-Year	5330.00	6342.10	6347.11	6347.11	6348.77	0.007746	11.59	579.59	174.95	0.98
Reach 1	121.3600	500-Year	8120.00	6342.10	6348.21	6348.21	6350.33	0.007520	13.28	776.98	183.92	1.00
Reach 1	121.3600	100-Developed	5898.00	6342.10	6347.35	6347.35	6349.11	0.007699	11.98	621.77	176.90	0.99
Reach 1	121.3597	10-Year	1940.00	6339.78	6343.48		6344.11	0.003287	6.64	342.78	137.92	0.62
Reach 1	121.3597	50-Year	4180.00	6339.78	6345.24		6346.18	0.003175	8.53	621.95	169.97	0.65
Reach 1	121.3597	100-Year	5330.00	6339.78	6345.98		6347.03	0.003051	9.11	748.90	173.95	0.66
Reach 1	121.3597	500-Year	8120.00	6339.78	6347.55		6348.81	0.002835	10.23	1028.12	183.19	0.65
Reach 1	121.3597	100-Developed	5898.00	6339.78	6346.31		6347.41	0.003021	9.39	806.36	175.73	0.65
Reach 1	121.3585	10-Year	1940.00	6338.90	6343.10		6343.72	0.003065	6.61	339.29	131.04	0.60
Reach 1	121.3585	50-Year	4180.00	6338.90	6344.55		6345.73	0.003991	9.39	548.16	151.64	0.73
Reach 1	121.3585	100-Year	5330.00	6338.90	6345.17		6346.57	0.004170	10.34	642.69	156.15	0.76
Reach 1	121.3585	500-Year	8120.00	6338.90	6346.47		6348.34	0.004395	12.15	853.30	169.30	0.80
Reach 1	121.3585	100-Developed	5898.00	6338.90	6345.42		6346.94	0.004303	10.81	683.11	158.04	0.77
Reach 1	120.3562	10-Year	1940.00	6338.33	6341.52	6341.52	6342.61	0.007934	8.95	265.37	134.73	0.93
Reach 1	120.3562	50-Year	4180.00	6338.33	6343.01	6343.01	6344.52	0.006949	11.05	487.18	155.81	0.93
Reach 1	120.3562	100-Year	5330.00	6338.33	6343.54	6343.54	6345.31	0.007117	12.07	571.03	159.27	0.96
Reach 1	120.3562	500-Year	8120.00	6338.33	6344.68	6344.68	6347.01	0.007328	14.07	758.04	173.84	1.01
Reach 1	120.3562	100-Developed	5898.00	6338.33	6343.82	6343.82	6345.67	0.006995	12.41	615.53	161.08	0.96
Reach 1	120.3560	10-Year	1940.00	6337.20	6341.00	6341.00	6342.08	0.007680	8.69	266.56	134.28	0.91
Reach 1	120.3560	50-Year	4180.00	6337.20	6342.49	6342.49	6344.01	0.006865	11.06	484.72	154.14	0.93
Reach 1	120.3560	100-Year	5330.00	6337.20	6343.04	6343.04	6344.81	0.006966	12.04	570.45	158.01	0.95
Reach 1	120.3560	500-Year	8120.00	6337.20	6344.16	6344.16	6346.51	0.007271	14.09	752.96	170.74	1.01
Reach 1	120.3560	100-Developed	5898.00	6337.20	6343.29	6343.29	6345.18	0.006982	12.46	611.03	159.81	0.96
Reach 1	120.3557	10-Year	1940.00	6334.27	6337.50	6337.35	6338.72	0.007641	8.96	226.01	82.39	0.91
Reach 1	120.3557	50-Year	4180.00	6334.27	6339.27	6339.27	6341.34	0.007172	11.83	381.80	104.39	0.96
Reach 1	120.3557	100-Year	5330.00	6334.27	6340.28	6340.28	6342.43	0.006863	12.17	504.96	135.64	0.89
Reach 1	120.3557	500-Year	8120.00	6334.27	6341.86	6341.86	6344.39	0.005274	13.58	735.90	155.87	0.88
Reach 1	120.3557	100-Developed	5898.00	6334.27	6340.63	6340.63	6342.87	0.005715	12.50	553.43	140.13	0.89
Reach 1	120.3527	10-Year	1940.00	6332.45	6336.71		6337.27	0.002630	6.18	354.29	132.59	0.56
Reach 1	120.3527	50-Year	4180.00	6332.45	6338.38		6339.35	0.003055	8.49	597.25	155.09	0.64
Reach 1	120.3527	100-Year	5330.00	6332.45	6339.04		6340.20	0.003175	9.34	701.50	159.59	0.67
Reach 1	120.3527	500-Year	8120.00	6332.45	6340.22		6341.93	0.003606	11.51	904.69	169.62	0.75
Reach 1	120.3527	100-Developed	5898.00	6332.45	6339.39		6340.60	0.003134	9.63	757.39	161.95	0.67
Reach 1	120.3525	10-Year	1940.00	6332.66	6335.93	6335.93	6337.12	0.007995	8.99	236.12	121.42	0.93
Reach 1	120.3525	50-Year	4180.00	6332.66	6337.60	6337.60	6339.21	0.006432	10.93	470.67	150.16	0.90
Reach 1	120.3525	100-Year	5330.00	6332.66	6338.18	6338.18	6340.04	0.006525	11.92	558.75	155.49	0.93
Reach 1	120.3525	500-Year	8120.00	6332.66	6339.52	6339.52	6341.79	0.006120	13.47	785.84	183.57	0.93
Reach 1	120.3525	100-Developed	5898.00	6332.66	6338.42	6338.42	6340.43	0.006708	12.46	596.79	160.28	0.95
Reach 1	120.3522	10-Year	1940.00	6329.40	6332.91		6333.73	0.004230	7.40	280.33	90.20	0.70
Reach 1	120.3522	50-Year	4180.00	6329.40	6334.44		6336.14	0.005546	10.80	424.36	97.97	0.85
Reach 1	120.3522	100-Year	5330.00	6329.40	6335.00	6334.76	6337.18	0.006233	12.28	479.61	100.54	0.92
Reach 1	120.3522	500-Year	8120.00	6329.40	6336.60	6336.60	6339.37	0.005855	14.09	672.81	142.70	0.93
Reach 1	120.3522	100-Developed	5898.00	6329.40	6335.25	6335.10	6337.66	0.006523	12.95	505.33	101.71	0.95
Reach 1	120.3490	10-Year	1940.00	6327.55	6330.62	6330.62	6331.81	0.008656	8.96	234.42	104.54	0.96
Reach 1	120.3490	50-Year	4180.00	6327.55	6332.27	6332.27	6334.09	0.007340	11.33	422.86	124.49	0.96
Reach 1	120.3490	100-Year	5330.00	6327.55	6332.96	6332.96	6335.03	0.006990	12.19	512.03	134.00	0.96
Reach 1	120.3490	500-Year	8120.00	6327.55	6334.53	6334.53	6336.92	0.005866	13.38	738.33	150.88	0.92
Reach 1	120.3490	100-Developed	5898.00	6327.55	6333.28	6333.28	6335.46	0.006815	12.55	555.99	138.45	0.95

HEC-RAS Plan: PR_MERRICK River: RIVER-1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(fps)	(sq ft)	(ft)	
Reach 1	120.3467	10-Year	1940.00	6326.19	6329.88		6330.48	0.003238	6.60	351.37	131.67	0.61
Reach 1	120.3467	50-Year	4180.00	6326.19	6331.49		6332.52	0.003626	8.94	576.47	144.96	0.69
Reach 1	120.3467	100-Year	5330.00	6326.19	6332.14		6333.37	0.003763	9.85	671.18	148.47	0.72
Reach 1	120.3467	500-Year	8120.00	6326.19	6333.37		6335.16	0.004342	12.01	871.31	186.60	0.80
Reach 1	120.3467	100-Developed	5898.00	6326.19	6332.44		6333.76	0.003804	10.24	716.15	150.10	0.73
Reach 1	120.3465	10-Year	1940.00	6326.00	6329.18	6329.18	6330.32	0.009113	9.13	250.62	121.29	0.98
Reach 1	120.3465	50-Year	4180.00	6326.00	6330.73	6330.73	6332.36	0.007613	11.29	457.32	141.58	0.97
Reach 1	120.3465	100-Year	5330.00	6326.00	6331.34	6331.34	6333.21	0.007416	12.19	544.71	146.39	0.98
Reach 1	120.3465	500-Year	8120.00	6326.00	6332.45	6332.45	6334.98	0.007800	14.36	713.05	154.59	1.04
Reach 1	120.3465	100-Developed	5898.00	6326.00	6331.61	6331.61	6333.59	0.007334	12.59	585.90	148.61	0.98
Reach 1	120.3462	10-Year	1940.00	6323.20	6326.62	6326.36	6327.65	0.006361	8.34	253.58	103.12	0.84
Reach 1	120.3462	50-Year	4180.00	6323.20	6328.09	6328.09	6329.95	0.007143	11.48	420.72	121.84	0.95
Reach 1	120.3462	100-Year	5330.00	6323.20	6328.80	6328.80	6330.91	0.006790	12.33	510.82	131.26	0.95
Reach 1	120.3462	500-Year	8120.00	6323.20	6330.36	6330.36	6332.84	0.005895	13.67	730.84	148.79	0.92
Reach 1	120.3462	100-Developed	5898.00	6323.20	6329.13	6329.13	6331.34	0.006625	12.69	554.93	135.63	0.95
Reach 1	120.3460	10-Year	1940.00	6322.77	6325.63	6325.63	6326.73	0.009083	8.88	249.14	117.31	0.97
Reach 1	120.3460	50-Year	4180.00	6322.77	6327.16	6327.16	6328.84	0.007772	11.21	445.47	137.40	0.97
Reach 1	120.3460	100-Year	5330.00	6322.77	6327.79	6327.79	6329.70	0.007456	12.07	533.79	143.46	0.98
Reach 1	120.3460	500-Year	8120.00	6322.77	6329.10	6329.10	6331.48	0.006893	13.66	727.09	150.54	0.98
Reach 1	120.3460	100-Developed	5898.00	6322.77	6328.11	6328.11	6330.09	0.007168	12.36	579.71	145.96	0.97
Reach 1	119.3423	10-Year	1940.00	6320.25	6323.90		6324.47	0.003471	6.49	352.15	136.84	0.63
Reach 1	119.3423	50-Year	4180.00	6320.25	6325.57		6326.51	0.003478	8.52	588.42	145.91	0.67
Reach 1	119.3423	100-Year	5330.00	6320.25	6326.22		6327.36	0.003585	9.40	684.88	149.69	0.70
Reach 1	119.3423	500-Year	8120.00	6320.25	6327.57		6329.18	0.003856	11.25	894.75	170.58	0.75
Reach 1	119.3423	100-Developed	5898.00	6320.25	6326.53		6327.75	0.003614	9.77	731.34	151.91	0.71
Reach 1	119.3421	10-Year	1940.00	6320.17	6323.20	6323.20	6324.32	0.008535	8.85	250.52	121.72	0.95
Reach 1	119.3421	50-Year	4180.00	6320.17	6324.74	6324.74	6326.35	0.007223	11.00	457.01	141.33	0.94
Reach 1	119.3421	100-Year	5330.00	6320.17	6325.32	6325.32	6327.19	0.007144	11.93	540.79	144.38	0.96
Reach 1	119.3421	500-Year	8120.00	6320.17	6326.56	6326.56	6328.99	0.007055	13.81	724.06	153.93	0.99
Reach 1	119.3421	100-Developed	5898.00	6320.17	6325.60	6325.60	6327.58	0.007084	12.33	580.60	145.81	0.96
Reach 1	119.3417	10-Year	1940.00	6317.05	6320.91		6321.68	0.003658	7.18	287.75	86.67	0.66
Reach 1	119.3417	50-Year	4180.00	6317.05	6322.07	6321.93	6324.04	0.006636	11.59	395.43	110.75	0.93
Reach 1	119.3417	100-Year	5330.00	6317.05	6323.03	6323.03	6325.11	0.005636	12.05	521.06	139.21	0.88
Reach 1	119.3417	500-Year	8120.00	6317.05	6324.50	6324.50	6327.02	0.005370	13.66	731.88	147.48	0.89
Reach 1	119.3417	100-Developed	5898.00	6317.05	6323.36	6323.36	6325.53	0.005569	12.42	566.81	141.31	0.88
Reach 1	119.3414	10-Year	1940.00	6316.71	6320.67		6321.55	0.004858	7.61	269.36	100.89	0.74
Reach 1	119.3414	50-Year	4180.00	6316.71	6322.08	6322.08	6323.77	0.006132	10.85	448.40	142.55	0.88
Reach 1	119.3414	100-Year	5330.00	6316.71	6322.73	6322.73	6324.64	0.006000	11.71	541.97	145.42	0.89
Reach 1	119.3414	500-Year	8120.00	6316.71	6324.00	6324.00	6326.45	0.006033	13.54	730.68	151.06	0.93
Reach 1	119.3414	100-Developed	5898.00	6316.71	6323.01	6323.01	6325.04	0.006006	12.12	583.12	146.67	0.90
Reach 1	119.3400	10-Year	1940.00	6316.38	6319.27	6319.27	6320.58	0.009338	9.31	217.54	86.76	1.00
Reach 1	119.3400	50-Year	4180.00	6316.38	6321.23	6321.23	6322.67	0.006067	10.78	461.31	149.55	0.88
Reach 1	119.3400	100-Year	5330.00	6316.38	6321.85	6321.85	6323.72	0.006029	11.68	554.43	152.46	0.89
Reach 1	119.3400	500-Year	8120.00	6316.38	6323.15	6323.15	6325.47	0.005855	13.32	756.18	157.88	0.91
Reach 1	119.3400	100-Developed	5898.00	6316.38	6322.14	6322.14	6324.10	0.005970	12.04	598.85	153.74	0.90
Reach 1	119.3382	10-Year	1940.00	6315.51	6317.37	6317.37	6318.23	0.011036	7.49	263.45	157.39	1.00
Reach 1	119.3382	50-Year	4180.00	6315.51	6318.52	6318.52	6319.92	0.009180	9.60	448.15	163.99	1.00
Reach 1	119.3382	100-Year	5330.00	6315.51	6319.02	6319.02	6320.65	0.008680	10.39	530.78	166.86	1.00
Reach 1	119.3382	500-Year	8120.00	6315.51	6320.09	6320.09	6322.22	0.007890	11.90	713.01	173.03	0.99
Reach 1	119.3382	100-Developed	5898.00	6315.51	6319.25	6319.25	6320.99	0.008500	10.74	569.31	168.19	1.00
Reach 1	119.3370	10-Year	1940.00	6314.30	6316.52		6317.09	0.005588	6.10	324.22	156.66	0.74
Reach 1	119.3370	50-Year	4180.00	6314.30	6317.28	6317.28	6318.69	0.009139	9.59	447.54	162.65	1.00
Reach 1	119.3370	100-Year	5330.00	6314.30	6317.77	6317.77	6319.42	0.008739	10.42	527.90	165.20	1.00
Reach 1	119.3370	500-Year	8120.00	6314.30	6318.85	6318.85	6321.00	0.007912	11.93	709.19	170.81	1.00
Reach 1	119.3370	100-Developed	5898.00	6314.30	6318.02	6318.02	6319.77	0.008416	10.72	569.04	166.49	0.99
Reach 1	119.3340	10-Year	1940.00	6312.79	6314.41	6314.41	6314.95	0.009170	5.91	328.16	309.81	1.01
Reach 1	119.3340	50-Year	4180.00	6312.79	6315.13	6315.13	6316.02	0.007719	7.55	553.72	318.27	1.01
Reach 1	119.3340	100-Year	5330.00	6312.79	6315.45	6315.45	6316.48	0.007300	8.14	654.54	321.98	1.01
Reach 1	119.3340	500-Year	8120.00	6312.79	6316.12	6316.12	6317.46	0.006703	9.30	873.05	329.92	1.01
Reach 1	119.3340	100-Developed	5898.00	6312.79	6315.59	6315.59	6316.69	0.007188	8.42	700.25	323.65	1.01
Reach 1	119	10-Year	1940.00	6304.30	6306.53	6306.53	6306.91	0.008836	5.23	411.84	525.29	0.97
Reach 1	119	50-Year	4180.00	6304.30	6307.04	6307.04	6307.66	0.008367	6.69	685.53	547.05	1.01
Reach 1	119	100-Year	5330.00	6304.30	6307.26	6307.26	6307.98	0.008149	7.23	805.99	554.33	1.02
Reach 1	119	500-Year	8120.00	6304.30	6307.74	6307.74	6308.67	0.007657	8.23	1073.11	570.13	1.03
Reach 1	119	100-Developed	5898.00	6304.30	6307.37	6307.37	6308.13	0.008006	7.45	864.10	557.80	1.02
Reach 1	118	10-Year	1940.00	6288.90	6291.89		6291.98	0.000607	2.41	803.93	401.82	0.29
Reach 1	118	50-Year	4180.00	6288.90	6292.94		6293.13	0.000738	3.45	1218.04	560.36	0.34
Reach 1	118	100-Year	5330.00	6288.90	6293.36		6293.59	0.000792	3.88	1389.64	596.29	0.36

HEC-RAS Plan: PR_MERRICK River: RIVER-1 Reach: Reach 1 (Continued)

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	118	500-Year	8120.00	6288.90	6294.19		6294.54	0.000902	4.75	1747.23	666.83	0.40
Reach 1	118	100-Developed	5898.00	6288.90	6293.55		6293.81	0.000813	4.07	1470.11	612.48	0.37
Reach 1	117.5	10-Year	1940.00	6285.50	6290.77	6290.55	6291.10	0.002489	7.17	488.66	341.26	0.55
Reach 1	117.5	50-Year	4180.00	6285.50	6291.55	6291.24	6292.06	0.002992	8.50	781.70	415.18	0.61
Reach 1	117.5	100-Year	5330.00	6285.50	6291.85	6291.52	6292.45	0.003144	9.00	910.97	445.83	0.63
Reach 1	117.5	500-Year	8120.00	6285.50	6292.44	6292.11	6293.25	0.003443	9.99	1192.93	506.28	0.67
Reach 1	117.5	100-Developed	5898.00	6285.50	6291.95	6291.64	6292.62	0.003364	9.40	955.67	455.95	0.65
Reach 1	117.25		Bridge									
Reach 1	117	10-Year	1940.00	6281.70	6290.53	6290.53	6291.07	0.002468	8.33	449.78	322.30	0.49
Reach 1	117	50-Year	4180.00	6281.70	6291.23	6291.23	6292.01	0.003839	10.69	695.37	382.39	0.61
Reach 1	117	100-Year	5330.00	6281.70	6291.47	6291.47	6292.39	0.004354	11.58	792.16	407.41	0.65
Reach 1	117	500-Year	8120.00	6281.70	6292.11	6292.11	6293.18	0.004432	12.19	1072.26	472.39	0.67
Reach 1	117	100-Developed	5898.00	6281.70	6291.65	6291.65	6292.56	0.004188	11.49	865.15	425.30	0.64
Reach 1	116	10-Year	1940.00	6273.80	6276.40	6276.40	6276.92	0.004972	7.20	422.47	396.07	0.84
Reach 1	116	50-Year	4180.00	6273.80	6277.12	6277.12	6277.77	0.005134	8.57	767.89	490.29	0.88
Reach 1	116	100-Year	5330.00	6273.80	6277.34	6277.34	6278.10	0.005665	9.37	874.60	491.94	0.94
Reach 1	116	500-Year	8120.00	6273.80	6277.82	6277.82	6278.83	0.006310	10.70	1112.32	495.59	1.01
Reach 1	116	100-Developed	5898.00	6273.80	6277.46	6277.46	6278.26	0.005652	9.56	935.91	492.68	0.94

Errors Warnings and Notes for Plan : PR_MERRICK

Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3789 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3785 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3752 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3750 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3746 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3720 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3685 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program

	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 122.3683 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3679 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3660 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3638 Profile: 10-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3636 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3633 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3602 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : PR_MERRICK (Continued)

Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3600 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3597 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 1 RS: 121.3585 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3562 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3560 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3557 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3527 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3525 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

Errors Warnings and Notes for Plan : PR_MERRICK (Continued)

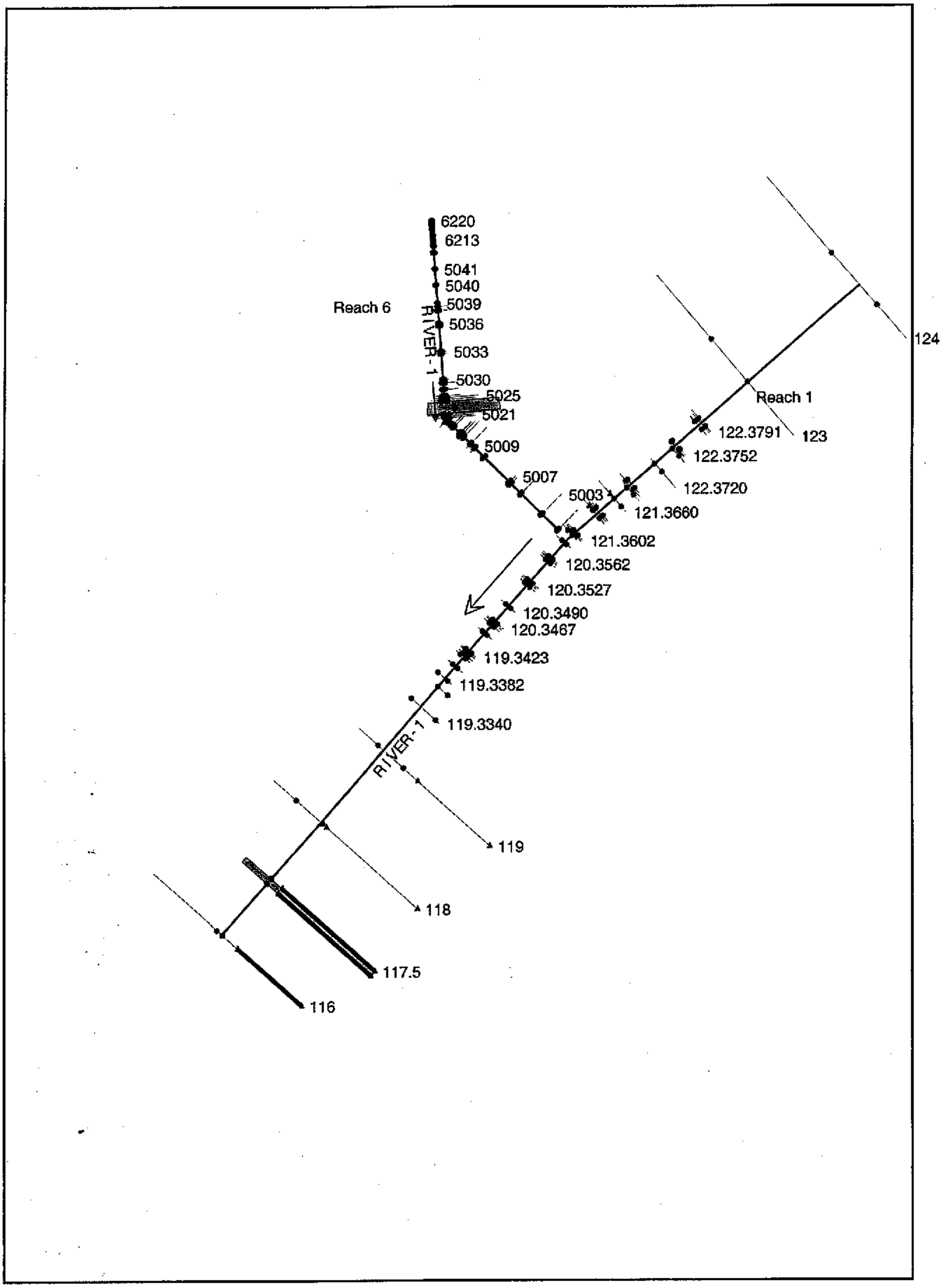
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3522 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3490 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3467 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3465 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3462 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 1 RS: 120.3450 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3423 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.

Errors Warnings and Notes for Plan : PR_MERRICK (Continued)

Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3421 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3414 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3400 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3382 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3370 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119.3340 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 119 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid

Errors Warnings and Notes for Plan : PR_MERRICK (Continued)

	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 118 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 117.25 Profile: 10-Year
Warning:	The pressure flow/weir flow answer did not converge within the given number of iterations.
	However, the error was small enough that the solution was treated as valid.
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The
	momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice
	flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 1 RS: 117.25 Profile: 10-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been
	projected from the upstream cross section. The selected bridge modeling method does not compute
	answers inside the bridge.
Location:	River: RIVER-1 Reach: Reach 1 RS: 117.25 Profile: 10-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have
	been projected from the downstream cross section. The selected bridge modeling method does not
	compute answers inside the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy
	was used.
Location:	River: RIVER-1 Reach: Reach 1 RS: 117 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 116 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too steep for slope area to converge during supercritical flow calculations (normal depth is
	below critical depth). Water surface set to critical depth.


6220
6213
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5003
Reach 6
RIVER-1
124
Reach 1
123
122.3791
122.3752
122.3720
121.3660
121.3602
120.3562
120.3527
120.3490
120.3467
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RIVER-1
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117.5
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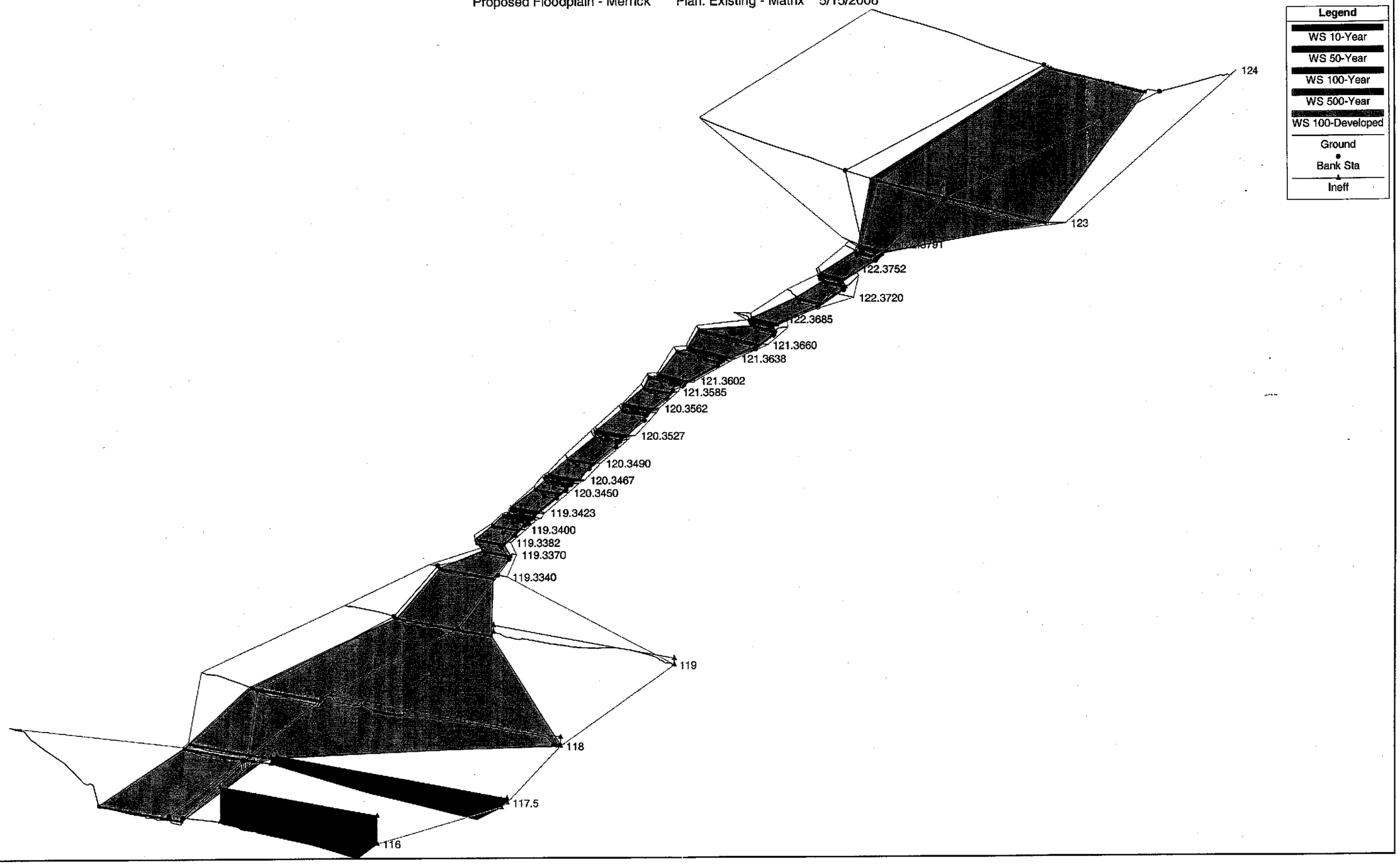

HEC-RAS

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6220	10-Year	EX_MATRIX	301.00	6424.00	6426.24	6426.24	6427.18	0.009398	8.21	40.58	22.31	0.97
Reach 6	6220	50-Year	EX_MATRIX	465.00	6424.00	6426.91	6426.91	6428.10	0.008555	9.33	56.44	24.81	0.96
Reach 6	6220	100-Year	EX_MATRIX	552.00	6424.00	6427.23	6427.23	6428.52	0.008220	9.80	64.46	25.98	0.96
Reach 6	6220	500-Year	EX_MATRIX	552.00	6424.00	6427.23	6427.23	6428.52	0.008220	9.80	64.46	25.98	0.96
Reach 6	6220	100-Developed	EX_MATRIX	1120.00	6424.00	6428.87	6428.87	6430.69	0.007054	11.95	112.27	32.10	0.95
Reach 6	6219	10-Year	EX_MATRIX	301.00	6423.00	6425.34	6425.34	6426.20	0.010326	7.54	41.44	25.14	0.98
Reach 6	6219	50-Year	EX_MATRIX	465.00	6423.00	6425.94	6425.94	6427.04	0.009238	8.60	57.06	26.99	0.97
Reach 6	6219	100-Year	EX_MATRIX	552.00	6423.00	6426.22	6426.22	6427.44	0.008897	9.07	64.70	27.85	0.97
Reach 6	6219	500-Year	EX_MATRIX	552.00	6423.00	6426.22	6426.22	6427.44	0.008897	9.07	64.70	27.85	0.97
Reach 6	6219	100-Developed	EX_MATRIX	1120.00	6423.00	6427.75	6427.75	6429.52	0.007403	11.15	110.95	32.57	0.95
Reach 6	6218.2	10-Year	EX_MATRIX	301.00	6422.00	6423.96	6423.96	6424.84	0.010010	7.76	41.46	24.30	0.98
Reach 6	6218.2	50-Year	EX_MATRIX	465.00	6422.00	6424.58	6424.58	6425.70	0.009109	8.88	57.00	26.28	0.98
Reach 6	6218.2	100-Year	EX_MATRIX	552.00	6422.00	6424.87	6424.87	6426.11	0.008744	9.35	64.81	27.21	0.97
Reach 6	6218.2	500-Year	EX_MATRIX	552.00	6422.00	6424.87	6424.87	6426.11	0.008744	9.35	64.81	27.21	0.97
Reach 6	6218.2	100-Developed	EX_MATRIX	1120.00	6422.00	6426.42	6426.42	6428.22	0.007456	11.52	110.91	32.20	0.97
Reach 6	6218.1	10-Year	EX_MATRIX	301.00	6421.00	6423.24		6423.91	0.006345	6.76	47.89	24.65	0.80
Reach 6	6218.1	50-Year	EX_MATRIX	465.00	6421.00	6424.24		6424.92	0.004114	6.95	73.79	27.59	0.68
Reach 6	6218.1	100-Year	EX_MATRIX	552.00	6421.00	6424.69		6425.39	0.003632	7.12	86.45	28.92	0.65
Reach 6	6218.1	500-Year	EX_MATRIX	552.00	6421.00	6424.69		6425.39	0.003632	7.12	86.45	28.92	0.65
Reach 6	6218.1	100-Developed	EX_MATRIX	1120.00	6421.00	6426.98		6427.86	0.002510	8.17	160.56	35.72	0.59
Reach 6	6218	10-Year	EX_MATRIX	301.00	6420.00	6423.48		6423.79	0.001848	4.65	70.81	26.50	0.48
Reach 6	6218	50-Year	EX_MATRIX	465.00	6420.00	6424.43		6424.83	0.001740	5.35	97.20	29.20	0.48
Reach 6	6218	100-Year	EX_MATRIX	552.00	6420.00	6424.87		6425.31	0.001704	5.66	110.24	30.45	0.48
Reach 6	6218	500-Year	EX_MATRIX	552.00	6420.00	6424.87		6425.31	0.001704	5.66	110.24	30.45	0.48
Reach 6	6218	100-Developed	EX_MATRIX	1120.00	6420.00	6427.13		6427.79	0.001578	7.11	186.46	36.91	0.48
Reach 6	6217.75	10-Year	EX_MATRIX	301.00	6419.75	6422.63	6422.63	6423.69	0.009277	8.45	38.12	19.07	0.96
Reach 6	6217.75	50-Year	EX_MATRIX	465.00	6419.75	6423.38	6423.38	6424.71	0.006348	9.61	53.08	21.08	0.96
Reach 6	6217.75	100-Year	EX_MATRIX	552.00	6419.75	6423.73	6423.73	6425.19	0.007959	10.08	60.73	22.04	0.95
Reach 6	6217.75	500-Year	EX_MATRIX	552.00	6419.75	6423.73	6423.73	6425.19	0.007959	10.08	60.73	22.04	0.95
Reach 6	6217.75	100-Developed	EX_MATRIX	1120.00	6419.75	6425.60	6425.60	6427.63	0.006642	12.26	106.91	28.25	0.93
Reach 6	6217.50	10-Year	EX_MATRIX	301.00	6419.50	6422.39	6422.39	6423.46	0.009366	8.50	37.74	18.61	0.97
Reach 6	6217.50	50-Year	EX_MATRIX	465.00	6419.50	6423.14	6423.14	6424.50	0.008380	9.66	52.53	20.49	0.96
Reach 6	6217.50	100-Year	EX_MATRIX	552.00	6419.50	6423.50	6423.50	6424.98	0.008015	10.15	60.02	21.45	0.96
Reach 6	6217.50	500-Year	EX_MATRIX	552.00	6419.50	6423.50	6423.50	6424.98	0.008015	10.15	60.02	21.45	0.96
Reach 6	6217.50	100-Developed	EX_MATRIX	1120.00	6419.50	6425.41	6425.41	6427.48	0.006607	12.32	105.98	27.36	0.93
Reach 6	6217.25	10-Year	EX_MATRIX	301.00	6419.25	6422.14	6422.14	6423.23	0.009413	8.53	37.45	18.23	0.97
Reach 6	6217.25	50-Year	EX_MATRIX	465.00	6419.25	6422.91	6422.91	6424.28	0.008388	9.69	52.10	19.95	0.96
Reach 6	6217.25	100-Year	EX_MATRIX	552.00	6419.25	6423.26	6423.26	6424.77	0.008103	10.22	59.27	20.84	0.96
Reach 6	6217.25	500-Year	EX_MATRIX	552.00	6419.25	6423.26	6423.26	6424.77	0.008103	10.22	59.27	20.84	0.96
Reach 6	6217.25	100-Developed	EX_MATRIX	1120.00	6419.25	6425.24	6425.19	6427.32	0.006452	12.30	105.81	26.58	0.92
Reach 6	6217	10-Year	EX_MATRIX	301.00	6419.00	6421.98	6421.90	6422.99	0.008395	8.25	38.70	18.08	0.92
Reach 6	6217	50-Year	EX_MATRIX	465.00	6419.00	6422.68	6422.66	6424.08	0.008504	9.76	51.51	19.49	0.97
Reach 6	6217	100-Year	EX_MATRIX	552.00	6419.00	6423.01	6423.01	6424.56	0.008259	10.32	58.42	20.22	0.97
Reach 6	6217	500-Year	EX_MATRIX	552.00	6419.00	6423.01	6423.01	6424.56	0.008259	10.32	58.42	20.22	0.97
Reach 6	6217	100-Developed	EX_MATRIX	1120.00	6419.00	6425.39		6427.19	0.005110	11.46	114.17	27.27	0.83
Reach 6	6216.5	10-Year	EX_MATRIX	301.00	6418.50	6421.77	6421.77	6422.74	0.007925	8.58	41.64	22.29	0.91
Reach 6	6216.5	50-Year	EX_MATRIX	465.00	6418.50	6422.48	6422.48	6423.55	0.007434	9.66	58.90	26.09	0.91
Reach 6	6216.5	100-Year	EX_MATRIX	552.00	6418.50	6422.92	6422.81	6424.07	0.006423	9.71	70.73	28.38	0.86
Reach 6	6216.5	500-Year	EX_MATRIX	552.00	6418.50	6422.92	6422.81	6424.07	0.006423	9.71	70.73	28.38	0.86
Reach 6	6216.5	100-Developed	EX_MATRIX	1120.00	6418.50	6426.07		6426.76	0.002041	8.11	186.52	45.38	0.54
Reach 6	6216.25	10-Year	EX_MATRIX	301.00	6418.25	6421.54	6421.54	6422.53	0.007967	8.63	41.03	21.47	0.91
Reach 6	6216.25	50-Year	EX_MATRIX	465.00	6418.25	6422.27	6422.27	6423.47	0.007490	9.76	57.96	25.16	0.92
Reach 6	6216.25	100-Year	EX_MATRIX	552.00	6418.25	6422.94		6423.94	0.005089	9.06	76.17	28.68	0.78
Reach 6	6216.25	500-Year	EX_MATRIX	552.00	6418.25	6422.94		6423.94	0.005099	9.06	76.17	28.68	0.78
Reach 6	6216.25	100-Developed	EX_MATRIX	1120.00	6418.25	6426.06		6426.73	0.001878	7.96	190.98	45.33	0.52
Reach 6	6216	10-Year	EX_MATRIX	301.00	6418.00	6421.30	6421.30	6422.32	0.008129	8.73	40.28	20.72	0.92
Reach 6	6216	50-Year	EX_MATRIX	465.00	6418.00	6422.26		6423.30	0.005974	9.11	62.28	25.31	0.83
Reach 6	6216	100-Year	EX_MATRIX	552.00	6418.00	6422.96		6423.84	0.004160	8.51	81.34	28.91	0.71
Reach 6	6216	500-Year	EX_MATRIX	552.00	6418.00	6422.96		6423.84	0.004160	8.51	81.34	28.91	0.71
Reach 6	6216	100-Developed	EX_MATRIX	1120.00	6418.00	6428.05		6428.69	0.001730	7.81	195.48	45.28	0.50
Reach 6	6215.5	10-Year	EX_MATRIX	301.00	6417.50	6421.10		6421.64	0.003361	6.40	55.23	22.91	0.62
Reach 6	6215.5	50-Year	EX_MATRIX	465.00	6417.50	6422.52		6423.00	0.002005	6.27	91.90	29.06	0.51
Reach 6	6215.5	100-Year	EX_MATRIX	552.00	6417.50	6423.14		6423.82	0.001726	6.31	110.89	32.28	0.48
Reach 6	6215.5	500-Year	EX_MATRIX	552.00	6417.50	6423.14		6423.82	0.001726	6.31	110.89	32.28	0.48
Reach 6	6215.5	100-Developed	EX_MATRIX	1120.00	6417.50	6426.12		6426.59	0.001069	6.66	230.82	48.25	0.41
Reach 6	6215	10-Year	EX_MATRIX	301.00	6417.00	6421.27		6421.47	0.000968	3.99	91.33	30.87	0.34
Reach 6	6215	50-Year	EX_MATRIX	465.00	6417.00	6422.67		6422.87	0.000729	4.20	137.48	35.33	0.31
Reach 6	6215	100-Year	EX_MATRIX	552.00	6417.00	6423.28		6423.49	0.000676	4.33	159.72	37.29	0.31
Reach 6	6215	500-Year	EX_MATRIX	552.00	6417.00	6423.28		6423.49	0.000676	4.33	159.72	37.29	0.31
Reach 6	6215	100-Developed	EX_MATRIX	1120.00	6417.00	6426.21		6426.50	0.000585	5.22	286.78	50.40	0.30
Reach 6	6214	10-Year	EX_MATRIX	301.00	6416.00	6421.19		6421.44	0.001046	4.43	82.30	25.94	0.36
Reach 6	6214	50-Year	EX_MATRIX	465.00	6416.00	6422.57		6422.85	0.000681	4.83	122.79	32.83	0.35
Reach 6	6214	100-Year	EX_MATRIX	552.00	6416.00	6423.18		6423.47	0.000827	4.98	143.83	35.69	0.34
Reach 6	6214	500-Year	EX_MATRIX	552.00	6416.00	6423.18		6423.47	0.000827	4.98	143.83	35.69	0.34
Reach 6	6214	100-Developed	EX_MATRIX	1120.00	6416.00	6426.14		6426.48	0.000673	5.74	272.55	51.94	0.33

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6213	10-Year	EX_MATRIX	301.00	6415.00	6421.09		6421.38	0.001029	4.87	80.02	24.13	0.36
Reach 6	6213	50-Year	EX_MATRIX	465.00	6415.00	6422.46		6422.79	0.000946	5.41	118.07	31.33	0.36
Reach 6	6213	100-Year	EX_MATRIX	552.00	6415.00	6423.07		6423.42	0.000905	5.60	138.22	34.63	0.36
Reach 6	6213	500-Year	EX_MATRIX	552.00	6415.00	6423.07		6423.42	0.000906	5.60	138.22	34.63	0.36
Reach 6	6213	100-Developed	EX_MATRIX	1120.00	6415.00	6426.07		6426.44	0.000727	6.27	271.47	54.35	0.34
Reach 6	6212	10-Year	EX_MATRIX	301.00	6415.00	6421.14		6421.32	0.000628	3.86	99.78	28.06	0.29
Reach 6	6212	50-Year	EX_MATRIX	465.00	6415.00	6422.52		6422.73	0.000592	4.34	142.12	33.58	0.29
Reach 6	6212	100-Year	EX_MATRIX	552.00	6415.00	6423.13		6423.36	0.000582	4.55	163.45	36.31	0.29
Reach 6	6212	500-Year	EX_MATRIX	552.00	6415.00	6423.13		6423.36	0.000582	4.55	163.45	36.31	0.29
Reach 6	6212	100-Developed	EX_MATRIX	1120.00	6415.00	6426.10		6426.39	0.000555	6.53	295.57	54.05	0.30
Reach 6	6211	10-Year	EX_MATRIX	301.00	6414.00	6419.64	6419.64	6421.12	0.011500	9.93	32.20	11.74	0.92
Reach 6	6211	50-Year	EX_MATRIX	465.00	6414.00	6420.78	6420.78	6422.52	0.009834	11.00	47.02	14.33	0.89
Reach 6	6211	100-Year	EX_MATRIX	552.00	6414.00	6421.26	6421.26	6423.13	0.009480	11.52	54.23	15.43	0.88
Reach 6	6211	500-Year	EX_MATRIX	552.00	6414.00	6421.26	6421.26	6423.13	0.009480	11.52	54.23	15.43	0.88
Reach 6	6211	100-Developed	EX_MATRIX	1120.00	6414.00	6423.65	6423.65	6426.12	0.008326	13.86	97.61	20.87	0.88
Reach 6	6210	10-Year	EX_MATRIX	301.00	6413.00	6416.26	6416.05	6417.08	0.007867	7.31	42.11	20.28	0.86
Reach 6	6210	50-Year	EX_MATRIX	465.00	6413.00	6416.75	6416.75	6418.04	0.009633	9.21	52.19	21.17	0.96
Reach 6	6210	100-Year	EX_MATRIX	552.00	6413.00	6417.07	6417.07	6418.50	0.009254	9.72	59.12	21.75	0.96
Reach 6	6210	500-Year	EX_MATRIX	552.00	6413.00	6417.07	6417.07	6418.50	0.009254	9.72	59.12	21.75	0.96
Reach 6	6210	100-Developed	EX_MATRIX	1120.00	6413.00	6418.84	6418.84	6420.98	0.007742	12.05	100.44	24.96	0.97
Reach 6	6137	10-Year	Existing	301.00	6406.00	6409.13		6409.69	0.005464	5.99	50.27	22.47	0.71
Reach 6	6137	50-Year	Existing	465.00	6406.00	6409.96		6410.64	0.005122	6.61	70.33	25.63	0.70
Reach 6	6137	100-Year	Existing	552.00	6406.00	6410.33		6411.07	0.004792	6.92	79.90	27.02	0.69
Reach 6	6137	500-Year	Existing	552.00	6406.00	6410.33		6411.07	0.004792	6.92	79.90	27.02	0.69
Reach 6	6136	10-Year	Existing	301.00	6405.22	6407.85	6407.85	6408.68	0.011956	8.09	37.22	18.56	1.01
Reach 6	6136	50-Year	Existing	465.00	6405.22	6408.55	6408.55	6409.86	0.010676	9.22	50.76	20.37	0.99
Reach 6	6136	100-Year	Existing	552.00	6405.22	6408.89	6408.89	6410.33	0.009987	9.67	57.92	21.33	0.98
Reach 6	6136	500-Year	Existing	552.00	6405.22	6408.89	6408.89	6410.33	0.009987	9.67	57.92	21.33	0.98
Reach 6	6135	10-Year	Existing	301.00	6402.00	6404.44	6404.44	6405.20	0.012116	7.00	43.01	28.50	1.00
Reach 6	6135	50-Year	Existing	465.00	6402.00	6404.96	6404.96	6405.95	0.011334	7.98	58.27	29.88	1.01
Reach 6	6135	100-Year	Existing	552.00	6402.00	6405.22	6405.22	6406.31	0.010871	8.35	66.12	30.58	1.00
Reach 6	6135	500-Year	Existing	552.00	6402.00	6405.22	6405.22	6406.31	0.010871	8.35	66.12	30.58	1.00
Reach 6	6134	10-Year	Existing	301.00	6400.00	6402.28	6402.28	6403.09	0.012183	7.23	41.65	28.09	1.01
Reach 6	6134	50-Year	Existing	465.00	6400.00	6402.84	6402.84	6403.88	0.011313	8.21	56.65	27.39	1.01
Reach 6	6134	100-Year	Existing	552.00	6400.00	6403.10	6403.10	6404.28	0.011053	8.64	63.91	27.97	1.01
Reach 6	6134	500-Year	Existing	552.00	6400.00	6403.10	6403.10	6404.26	0.011053	8.64	63.91	27.97	1.01
Reach 6	6133	10-Year	Existing	301.00	6398.00	6400.17	6400.17	6400.92	0.012239	6.96	43.31	29.50	1.01
Reach 6	6133	50-Year	Existing	465.00	6398.00	6400.70	6400.70	6401.67	0.010581	7.92	59.14	30.67	0.98
Reach 6	6133	100-Year	Existing	552.00	6398.00	6400.94	6400.94	6402.02	0.010198	8.38	68.59	31.39	0.98
Reach 6	6133	500-Year	Existing	552.00	6398.00	6400.94	6400.94	6402.02	0.010199	8.38	66.59	31.39	0.98
Reach 6	6132	10-Year	Existing	301.00	6393.45	6399.42		6399.42	0.000004	0.27	1109.31	262.19	0.02
Reach 6	6132	50-Year	Existing	465.00	6393.45	6399.81		6399.81	0.000008	0.38	1213.48	266.47	0.03
Reach 6	6132	100-Year	Existing	552.00	6393.45	6399.99		6400.00	0.000010	0.44	1262.31	268.45	0.04
Reach 6	6132	500-Year	Existing	552.00	6393.45	6399.99		6400.00	0.000010	0.44	1262.31	268.45	0.04
Reach 6	6130	10-Year	Existing	301.00	6390.00	6399.42		6399.42	0.000000	0.09	3520.27	434.62	0.01
Reach 6	6130	50-Year	Existing	465.00	6390.00	6399.81		6399.81	0.000000	0.13	3892.75	436.68	0.01
Reach 6	6130	100-Year	Existing	552.00	6390.00	6400.00		6400.00	0.000000	0.15	3773.04	440.56	0.01
Reach 6	6130	500-Year	Existing	552.00	6390.00	6400.00		6400.00	0.000000	0.15	3773.04	440.56	0.01
Reach 6	6128	10-Year	Existing	301.00	6388.00	6399.42		6399.42	0.000000	0.08	4325.88	486.17	0.00
Reach 6	6128	50-Year	Existing	465.00	6388.00	6399.81		6399.81	0.000000	0.11	4518.58	490.45	0.01
Reach 6	6128	100-Year	Existing	552.00	6388.00	6400.00		6400.00	0.000000	0.13	4606.33	492.41	0.01
Reach 6	6128	500-Year	Existing	552.00	6388.00	6400.00		6400.00	0.000000	0.13	4606.33	492.41	0.01
Reach 6	6127	10-Year	Existing	301.00	6390.11	6399.42		6399.42	0.000000	0.12	2681.15	466.65	0.01
Reach 6	6127	50-Year	Existing	465.00	6390.11	6399.81		6399.81	0.000001	0.18	2858.76	484.38	0.01
Reach 6	6127	100-Year	Existing	552.00	6390.11	6400.00		6400.00	0.000001	0.21	2958.67	500.25	0.01
Reach 6	6127	500-Year	Existing	552.00	6390.11	6400.00		6400.00	0.000001	0.21	2958.67	500.25	0.01
Reach 6	6125	10-Year	Existing	301.00	6390.00	6399.42	6390.80	6399.42	0.000001	0.18	1971.32	428.89	0.01
Reach 6	6125	50-Year	Existing	465.00	6390.00	6399.81	6391.05	6399.81	0.000002	0.26	2116.24	451.22	0.02
Reach 6	6125	100-Year	Existing	552.00	6390.00	6399.99	6391.17	6400.00	0.000002	0.29	2184.54	461.53	0.02
Reach 6	6125	500-Year	Existing	552.00	6390.00	6399.99	6391.17	6400.00	0.000002	0.29	2184.54	461.53	0.02
Reach 6	6124	10-Year	Existing	301.00	6397.14	6399.36	6398.51	6399.41	0.000985	1.78	169.33	249.19	0.28
Reach 6	6124	50-Year	Existing	465.00	6397.14	6399.74	6398.73	6399.81	0.001038	2.09	222.63	265.91	0.30
Reach 6	6124	100-Year	Existing	552.00	6397.14	6399.91	6398.84	6399.99	0.001053	2.22	248.72	272.48	0.31
Reach 6	6124	500-Year	Existing	552.00	6397.14	6399.91	6398.84	6399.99	0.001053	2.22	248.72	272.48	0.31
Reach 6	6123	10-Year	Existing	301.00	6399.25	6398.77	6398.77	6399.14	0.014382		61.83	83.08	0.00
Reach 6	6123	50-Year	Existing	465.00	6399.25	6399.02	6399.02	6399.51	0.013238		83.03	84.91	0.00
Reach 6	6123	100-Year	Existing	552.00	6399.25	6399.15	6399.15	6399.69	0.012762		93.45	85.80	0.00
Reach 6	6123	500-Year	Existing	552.00	6399.25	6399.15	6399.15	6399.69	0.012762		93.45	85.80	0.00
Reach 6	6120	10-Year	Existing	301.00	6392.00	6393.51	6393.51	6393.97	0.013490	5.46	55.15	59.55	1.00
Reach 6	6120	50-Year	Existing	465.00	6392.00	6393.85	6393.85	6394.41	0.013078	5.98	77.71	71.41	1.01
Reach 6	6120	100-Year	Existing	552.00	6392.00	6394.01	6394.01	6394.60	0.012679	6.18	89.34	78.41	1.01
Reach 6	6120	500-Year	Existing	552.00	6392.00	6394.01	6394.01	6394.60	0.012679	6.18	89.34	78.41	1.01
Reach 6	6118	10-Year	Existing	301.00	6390.00	6390.63	6390.63	6390.92	0.016048	4.32	69.68	121.94	1.01

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	6118	50-Year	Existing	465.00	6390.00	6390.84	6390.84	6391.21	0.014571	4.87	95.41	140.86	1.00
Reach 6	6118	100-Year	Existing	552.00	6390.00	6390.94	6390.94	6391.34	0.013617	5.05	109.22	155.59	0.98
Reach 6	6118	500-Year	Existing	552.00	6390.00	6390.94	6390.94	6391.34	0.013617	5.05	109.22	155.59	0.98
Reach 6	6117	10-Year	Existing	301.00	6388.00	6388.72	6388.58	6388.86	0.008036	3.04	99.00	174.58	0.71
Reach 6	6117	50-Year	Existing	465.00	6388.00	6388.88	6388.77	6389.08	0.009026	3.63	128.19	189.29	0.78
Reach 6	6117	100-Year	Existing	552.00	6388.00	6388.95	6388.84	6389.19	0.009346	3.91	141.21	191.30	0.80
Reach 6	6117	500-Year	Existing	552.00	6388.00	6388.95	6388.84	6389.19	0.009345	3.91	141.21	191.30	0.80
Reach 6	6116	10-Year	Existing	301.00	6386.64	6387.55	6387.55	6387.79	0.014686	3.95	80.12	186.40	0.95
Reach 6	6116	50-Year	Existing	465.00	6386.64	6387.73	6387.73	6388.00	0.013293	4.34	116.27	226.34	0.94
Reach 6	6116	100-Year	Existing	552.00	6386.64	6387.81	6387.81	6388.09	0.012685	4.48	134.92	242.14	0.93
Reach 6	6116	500-Year	Existing	552.00	6386.64	6387.81	6387.81	6388.09	0.012685	4.48	134.92	242.14	0.93
Reach 6	6114	10-Year	Existing	301.00	6384.00	6384.64	6384.48	6384.73	0.005819	2.37	126.62	254.68	0.59
Reach 6	6114	50-Year	Existing	465.00	6384.00	6384.80		6384.92	0.005793	2.78	167.20	263.85	0.62
Reach 6	6114	100-Year	Existing	552.00	6384.00	6384.87		6385.00	0.005963	2.97	185.97	272.00	0.63
Reach 6	6114	500-Year	Existing	552.00	6384.00	6384.87		6385.00	0.005963	2.97	185.97	272.00	0.63
Reach 6	6113	10-Year	Existing	301.00	6382.99	6383.86	6383.74	6384.02	0.008800	3.17	95.02	165.88	0.74
Reach 6	6113	50-Year	Existing	465.00	6382.99	6384.07	6383.92	6384.26	0.007388	3.47	141.98	320.00	0.71
Reach 6	6113	100-Year	Existing	552.00	6382.99	6384.16	6384.06	6384.35	0.006749	3.57	169.63	323.38	0.69
Reach 6	6113	500-Year	Existing	552.00	6382.99	6384.16	6384.06	6384.35	0.006749	3.57	169.63	323.38	0.69
Reach 6	6112	10-Year	Existing	301.00	6382.00	6382.82	6382.74	6383.04	0.010912	3.76	79.96	128.84	0.84
Reach 6	6112	50-Year	Existing	465.00	6382.00	6383.01	6382.95	6383.31	0.012036	4.42	105.13	143.13	0.91
Reach 6	6112	100-Year	Existing	552.00	6382.00	6383.09	6383.05	6383.43	0.012619	4.72	116.84	149.30	0.94
Reach 6	6112	500-Year	Existing	552.00	6382.00	6383.09	6383.05	6383.43	0.012619	4.72	116.84	149.30	0.94
Reach 6	6110	10-Year	Existing	301.00	6379.54	6380.12	6380.12	6380.28	0.019008	3.22	93.47	288.59	1.00
Reach 6	6110	50-Year	Existing	465.00	6379.54	6380.22	6380.22	6380.44	0.018038	3.73	124.61	296.58	1.01
Reach 6	6110	100-Year	Existing	552.00	6379.54	6380.28	6380.28	6380.52	0.017635	3.95	139.77	300.40	1.02
Reach 6	6110	500-Year	Existing	552.00	6379.54	6380.28	6380.28	6380.52	0.017635	3.95	139.77	300.40	1.02
Reach 6	6109	10-Year	Existing	301.00	6378.28	6379.26		6379.34	0.004610	2.33	129.05	223.44	0.54
Reach 6	6109	50-Year	Existing	465.00	6378.28	6379.46		6379.58	0.004597	2.65	175.71	251.19	0.56
Reach 6	6109	100-Year	Existing	552.00	6378.28	6379.53		6379.66	0.004717	2.81	196.52	261.91	0.57
Reach 6	6109	500-Year	Existing	552.00	6378.28	6379.53		6379.65	0.004753	2.82	196.01	261.66	0.57
Reach 6	6108	10-Year	Existing	301.00	6377.50	6378.27	6378.27	6378.52	0.017827	3.97	75.85	163.17	1.03
Reach 6	6108	50-Year	Existing	465.00	6377.50	6378.44	6378.44	6378.75	0.016347	4.41	105.38	181.07	1.02
Reach 6	6108	100-Year	Existing	552.00	6377.50	6378.53	6378.53	6378.85	0.015317	4.55	121.40	189.98	1.00
Reach 6	6108	500-Year	Existing	552.00	6377.50	6378.53	6378.53	6378.85	0.015317	4.55	121.40	189.99	1.00
Reach 6	6107	10-Year	Existing	301.00	6376.00	6376.90		6376.99	0.003997	2.40	125.56	187.42	0.52
Reach 6	6107	50-Year	Existing	465.00	6376.00	6377.04		6377.16	0.005475	3.06	151.99	199.26	0.62
Reach 6	6107	100-Year	Existing	552.00	6376.00	6377.11		6377.28	0.005787	3.30	167.15	203.68	0.64
Reach 6	6107	500-Year	Existing	552.00	6376.00	6377.24	6376.87	6377.37	0.003647	2.83	194.60	211.22	0.52
Reach 6	6106	10-Year	Existing	301.00	6376.00	6376.44	6376.31	6376.51	0.005750	2.14	140.75	327.51	0.57
Reach 6	6106	50-Year	Existing	465.00	6376.00	6376.69	6376.41	6376.75	0.003090	2.09	222.38	335.96	0.45
Reach 6	6106	100-Year	Existing	552.00	6376.00	6376.76	6376.45	6376.83	0.003151	2.25	245.76	338.34	0.46
Reach 6	6106	500-Year	Existing	552.00	6376.00	6376.48	6376.46	6376.68	0.017141	3.78	146.03	328.06	1.00
Reach 6	6102	10-Year	Existing	301.00	6374.00	6374.41	6374.28	6374.47	0.005886	1.97	152.44	406.97	0.57
Reach 6	6102	50-Year	Existing	465.00	6374.00	6374.38	6374.38	6374.55	0.018807	3.35	138.83	400.91	1.00
Reach 6	6102	100-Year	Existing	552.00	6374.00	6374.42	6374.42	6374.62	0.018126	3.52	156.82	408.91	1.00
Reach 6	6102	500-Year	Existing	552.00	6374.00	6375.13		6375.15	0.000561	1.12	492.36	527.27	0.20
Reach 6	6100	10-Year	Existing	301.00	6371.63	6372.30	6372.30	6372.48	0.020085	3.36	89.49	269.75	1.03
Reach 6	6100	50-Year	Existing	465.00	6371.63	6373.19	6372.42	6373.22	0.000697	1.32	351.33	322.58	0.22
Reach 6	6100	100-Year	Existing	552.00	6371.63	6373.74		6373.76	0.000251	1.01	545.78	372.84	0.15
Reach 6	6100	500-Year	Existing	552.00	6371.63	6375.13		6375.14	0.000025	0.49	1167.58	462.77	0.05
Reach 6	5042	10-Year	EX_MATRIX	301.00	6414.00	6415.42	6415.42	6416.09	0.011600	6.72	46.44	35.66	1.00
Reach 6	5042	50-Year	EX_MATRIX	465.00	6414.00	6415.88	6415.88	6416.76	0.010294	7.67	63.61	37.54	0.98
Reach 6	5042	100-Year	EX_MATRIX	552.00	6414.00	6416.11	6416.11	6417.07	0.009813	8.07	72.12	38.43	0.98
Reach 6	5042	500-Year	EX_MATRIX	552.00	6414.00	6416.11	6416.11	6417.07	0.009813	8.07	72.12	38.43	0.98
Reach 6	5042	100-Developed	EX_MATRIX	1120.00	6414.00	6417.29	6417.29	6418.74	0.008366	10.04	120.54	43.18	0.98
Reach 6	5041	10-Year	EX_MATRIX	301.00	6410.00	6411.95	6411.81	6412.65	0.008056	6.93	46.56	27.79	0.88
Reach 6	5041	50-Year	EX_MATRIX	465.00	6410.00	6412.41	6412.39	6413.43	0.008978	8.44	59.91	29.65	0.96
Reach 6	5041	100-Year	EX_MATRIX	552.00	6410.00	6412.66	6412.66	6413.80	0.008939	8.99	67.30	30.63	0.97
Reach 6	5041	500-Year	EX_MATRIX	552.00	6410.00	6412.66	6412.66	6413.80	0.008939	8.99	67.30	30.63	0.97
Reach 6	5041	100-Developed	EX_MATRIX	1120.00	6410.00	6414.10	6414.10	6415.75	0.007542	11.02	115.61	36.40	0.96
Reach 6	5040	10-Year	EX_MATRIX	301.00	6408.00	6408.96	6409.81	6410.65	0.007901	6.89	46.85	27.64	0.87
Reach 6	5040	50-Year	EX_MATRIX	465.00	6408.00	6410.63		6411.46	0.006597	7.66	66.42	30.52	0.83
Reach 6	5040	100-Year	EX_MATRIX	552.00	6408.00	6410.97		6411.85	0.005966	7.91	77.13	31.89	0.81
Reach 6	5040	500-Year	EX_MATRIX	552.00	6408.00	6410.97		6411.85	0.005966	7.91	77.13	31.89	0.81
Reach 6	5040	100-Developed	EX_MATRIX	1120.00	6408.00	6412.42		6413.78	0.005722	10.08	127.27	37.66	0.85
Reach 6	5039	10-Year	EX_MATRIX	301.00	6406.00	6408.33		6408.87	0.005006	6.17	53.57	27.92	0.71
Reach 6	5039	50-Year	EX_MATRIX	465.00	6406.00	6408.75		6409.62	0.006557	7.88	65.64	29.70	0.84
Reach 6	5039	100-Year	EX_MATRIX	552.00	6406.00	6408.92	6408.80	6409.97	0.007438	8.73	70.69	30.41	0.90
Reach 6	5039	500-Year	EX_MATRIX	552.00	6406.00	6408.92	6408.80	6409.97	0.007438	8.73	70.69	30.41	0.90
Reach 6	5039	100-Developed	EX_MATRIX	1120.00	6406.00	6410.28	6410.28	6411.94	0.007391	11.22	115.80	36.17	0.96
Reach 6	5038	10-Year	EX_MATRIX	301.00	6406.00	6407.76	6407.76	6408.50	0.010077	7.25	45.50	31.67	0.96
Reach 6	5038	50-Year	EX_MATRIX	465.00	6406.00	6408.29	6408.29	6409.22	0.009236	8.25	63.02	35.14	0.96

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	5038	100-Year	EX_MATRIX	552.00	6406.00	6408.53	6408.53	6409.55	0.008861	8.67	71.96	36.79	0.96
Reach 6	5038	500-Year	EX_MATRIX	552.00	6406.00	6408.53	6408.53	6409.55	0.008861	8.67	71.96	36.79	0.96
Reach 6	5038	100-Developed	EX_MATRIX	1120.00	6406.00	6409.85	6409.85	6411.25	0.007425	10.48	125.93	45.48	0.94
Reach 6	5037	10-Year	EX_MATRIX	301.00	6404.00	6405.26	6405.15	6405.68	0.008552	5.34	59.91	55.08	0.84
Reach 6	5037	50-Year	EX_MATRIX	465.00	6404.00	6405.58	6405.51	6406.17	0.009122	6.42	78.11	58.90	0.90
Reach 6	5037	100-Year	EX_MATRIX	552.00	6404.00	6405.72	6405.67	6406.40	0.009476	6.92	86.45	60.57	0.93
Reach 6	5037	500-Year	EX_MATRIX	552.00	6404.00	6405.72	6405.67	6406.40	0.009476	6.92	86.45	60.57	0.93
Reach 6	5037	100-Developed	EX_MATRIX	1120.00	6404.00	6406.58	6406.58	6407.63	0.008802	8.74	143.14	70.88	0.96
Reach 6	5036	10-Year	EX_MATRIX	301.00	6402.00	6403.09	6403.09	6403.61	0.012575	5.88	52.56	51.54	0.99
Reach 6	5036	50-Year	EX_MATRIX	465.00	6402.00	6403.44	6403.44	6404.13	0.011404	6.76	71.25	53.67	0.99
Reach 6	5036	100-Year	EX_MATRIX	552.00	6402.00	6403.62	6403.62	6404.37	0.010870	7.12	80.65	54.71	0.99
Reach 6	5036	500-Year	EX_MATRIX	552.00	6402.00	6403.62	6403.62	6404.37	0.010870	7.12	80.65	54.71	0.99
Reach 6	5036	100-Developed	EX_MATRIX	1120.00	6402.00	6404.55	6404.55	6405.69	0.009158	8.85	134.25	60.30	0.98
Reach 6	5035	10-Year	EX_MATRIX	301.00	6400.00	6401.10	6401.10	6401.63	0.012531	5.91	52.03	49.67	0.99
Reach 6	5035	50-Year	EX_MATRIX	465.00	6400.00	6401.46	6401.46	6402.16	0.011269	6.78	70.45	51.22	0.99
Reach 6	5035	100-Year	EX_MATRIX	552.00	6400.00	6401.63	6401.63	6402.41	0.010948	7.19	79.14	51.94	0.99
Reach 6	5035	500-Year	EX_MATRIX	552.00	6400.00	6401.63	6401.63	6402.41	0.010948	7.19	79.14	51.94	0.99
Reach 6	5035	100-Developed	EX_MATRIX	1120.00	6400.00	6402.58	6402.58	6403.78	0.009276	8.98	130.50	55.98	0.98
Reach 6	5034	10-Year	EX_MATRIX	301.00	6398.00	6399.65	6399.11	6399.88	0.003133	3.88	80.79	53.70	0.53
Reach 6	5034	50-Year	EX_MATRIX	465.00	6398.00	6400.09		6400.41	0.003344	4.67	104.49	56.23	0.57
Reach 6	5034	100-Year	EX_MATRIX	552.00	6398.00	6400.29		6400.66	0.003420	5.03	115.86	57.41	0.59
Reach 6	5034	500-Year	EX_MATRIX	552.00	6398.00	6400.29		6400.66	0.003420	5.03	115.86	57.41	0.59
Reach 6	5034	100-Developed	EX_MATRIX	1120.00	6398.00	6401.31		6401.97	0.003784	6.77	178.03	63.44	0.66
Reach 6	5033	10-Year	EX_MATRIX	301.00	6396.00	6397.08	6397.08	6397.61	0.012750	5.90	52.43	51.73	1.00
Reach 6	5033	50-Year	EX_MATRIX	465.00	6396.00	6397.44	6397.44	6398.13	0.011371	6.75	71.44	53.96	0.99
Reach 6	5033	100-Year	EX_MATRIX	552.00	6396.00	6397.61	6397.61	6398.37	0.010934	7.12	80.65	55.01	0.99
Reach 6	5033	500-Year	EX_MATRIX	552.00	6396.00	6397.61	6397.61	6398.37	0.010934	7.12	80.65	55.01	0.99
Reach 6	5033	100-Developed	EX_MATRIX	1120.00	6396.00	6398.55	6398.55	6399.68	0.009150	8.83	134.66	60.80	0.98
Reach 6	5032	10-Year	EX_MATRIX	301.00	6394.00	6395.09	6395.09	6395.61	0.012471	5.85	52.96	52.27	0.99
Reach 6	5032	50-Year	EX_MATRIX	465.00	6394.00	6395.44	6395.44	6396.12	0.011350	6.73	71.77	54.62	0.99
Reach 6	5032	100-Year	EX_MATRIX	552.00	6394.00	6395.62	6395.62	6396.36	0.010726	7.07	81.50	55.79	0.98
Reach 6	5032	500-Year	EX_MATRIX	552.00	6394.00	6395.62	6395.62	6396.36	0.010726	7.07	81.50	55.79	0.98
Reach 6	5032	100-Developed	EX_MATRIX	1120.00	6394.00	6396.53	6396.53	6397.66	0.009201	8.82	135.26	61.89	0.98
Reach 6	5031	10-Year	EX_MATRIX	301.00	6392.00	6393.60	6393.07	6393.81	0.003081	3.76	83.98	58.94	0.52
Reach 6	5031	50-Year	EX_MATRIX	465.00	6392.00	6393.86		6394.21	0.004410	4.96	99.06	60.97	0.64
Reach 6	5031	100-Year	EX_MATRIX	552.00	6392.00	6393.86		6394.37	0.006078	5.85	99.77	61.07	0.75
Reach 6	5031	500-Year	EX_MATRIX	552.00	6392.00	6393.86		6394.37	0.006078	5.85	99.77	61.07	0.75
Reach 6	5031	100-Developed	EX_MATRIX	1120.00	6392.00	6395.32		6395.87	0.003170	6.21	197.47	72.86	0.60
Reach 6	5030	10-Year	EX_MATRIX	301.00	6390.00	6391.07	6391.07	6391.58	0.012550	5.82	53.28	53.24	0.99
Reach 6	5030	50-Year	EX_MATRIX	465.00	6390.00	6391.71		6392.16	0.005996	5.49	88.58	57.55	0.74
Reach 6	5030	100-Year	EX_MATRIX	552.00	6390.00	6392.26		6392.60	0.003183	4.82	121.33	61.27	0.56
Reach 6	5030	500-Year	EX_MATRIX	552.00	6390.00	6392.26		6392.60	0.003183	4.82	121.33	61.27	0.56
Reach 6	5030	100-Developed	EX_MATRIX	1120.00	6390.00	6395.01		6395.23	0.000750	3.97	315.00	79.80	0.31
Reach 6	5029	10-Year	EX_MATRIX	301.00	6388.00	6391.00		6391.05	0.000371	1.98	161.13	61.58	0.20
Reach 6	5029	50-Year	EX_MATRIX	465.00	6388.00	6391.97		6392.04	0.000326	2.24	223.65	66.85	0.20
Reach 6	5029	100-Year	EX_MATRIX	552.00	6388.00	6392.44		6392.52	0.000307	2.35	255.69	69.10	0.20
Reach 6	5029	500-Year	EX_MATRIX	552.00	6388.00	6392.44		6392.52	0.000307	2.35	255.69	69.10	0.20
Reach 6	5029	100-Developed	EX_MATRIX	1120.00	6388.00	6395.09		6395.19	0.000230	2.77	458.50	82.85	0.18
Reach 6	5028	10-Year	EX_MATRIX	301.00	6388.00	6391.00		6391.03	0.000202	1.46	221.40	87.60	0.15
Reach 6	5028	50-Year	EX_MATRIX	465.00	6388.00	6391.98		6392.02	0.000173	1.64	311.90	96.64	0.14
Reach 6	5028	100-Year	EX_MATRIX	552.00	6388.00	6392.46		6392.50	0.000161	1.70	358.85	101.01	0.14
Reach 6	5028	500-Year	EX_MATRIX	552.00	6388.00	6392.46		6392.50	0.000161	1.70	358.85	101.01	0.14
Reach 6	5028	100-Developed	EX_MATRIX	1120.00	6388.00	6395.12		6395.17	0.000115	1.96	659.80	125.46	0.13
Reach 6	5027	10-Year	EX_MATRIX	301.00	6388.00	6390.98		6391.01	0.000205	1.47	221.31	88.55	0.15
Reach 6	5027	50-Year	EX_MATRIX	465.00	6388.00	6391.97		6392.00	0.000173	1.63	313.26	98.00	0.14
Reach 6	5027	100-Year	EX_MATRIX	552.00	6388.00	6392.44		6392.48	0.000161	1.70	361.06	102.57	0.14
Reach 6	5027	500-Year	EX_MATRIX	552.00	6388.00	6392.44		6392.48	0.000161	1.70	361.06	102.57	0.14
Reach 6	5027	100-Developed	EX_MATRIX	1120.00	6388.00	6395.10		6395.15	0.000114	1.96	670.97	133.24	0.13
Reach 6	5026	10-Year	EX_MATRIX	301.00	6388.00	6390.97		6390.99	0.000170	1.33	246.19	101.07	0.14
Reach 6	5026	50-Year	EX_MATRIX	465.00	6388.00	6391.96		6391.99	0.000141	1.47	352.24	118.12	0.13
Reach 6	5026	100-Year	EX_MATRIX	552.00	6388.00	6392.45		6392.48	0.000130	1.52	407.70	118.94	0.13
Reach 6	5026	500-Year	EX_MATRIX	552.00	6388.00	6392.43		6392.46	0.000130	1.52	407.70	118.94	0.13
Reach 6	5026	100-Developed	EX_MATRIX	1120.00	6388.00	6395.11		6395.14	0.000084	1.68	974.34	350.39	0.11
Reach 6	5025	10-Year	EX_MATRIX	301.00	6388.00	6390.97		6390.98	0.000098	1.01	296.73	165.50	0.10
Reach 6	5025	50-Year	EX_MATRIX	465.00	6388.00	6391.96		6391.98	0.000090	1.17	395.75	185.70	0.10
Reach 6	5025	100-Year	EX_MATRIX	552.00	6388.00	6392.44		6392.46	0.000087	1.24	443.61	294.02	0.10
Reach 6	5025	500-Year	EX_MATRIX	552.00	6388.00	6392.44		6392.46	0.000087	1.24	443.61	294.02	0.10
Reach 6	5025	100-Developed	EX_MATRIX	1120.00	6388.00	6395.10		6395.14	0.000074	1.58	708.77	685.50	0.10
Reach 6	5024	10-Year	EX_MATRIX	301.00	6388.00	6390.96		6390.98	0.000125	1.14	263.35	331.14	0.12
Reach 6	5024	50-Year	EX_MATRIX	465.00	6388.00	6391.95		6391.98	0.000114	1.32	351.39	412.10	0.12
Reach 6	5024	100-Year	EX_MATRIX	552.00	6388.00	6392.43		6392.46	0.000110	1.40	393.81	451.10	0.12
Reach 6	5024	500-Year	EX_MATRIX	552.00	6388.00	6392.43		6392.46	0.000110	1.40	393.81	451.10	0.12
Reach 6	5024	100-Developed	EX_MATRIX	1120.00	6388.00	6395.08		6395.13	0.000095	1.76	630.47	669.43	0.12
Reach 6	5023.1	10-Year	EX_MATRIX	301.00	6388.00	6389.93	6389.93	6390.87	0.010390	7.82	38.52	137.22	0.99
Reach 6	5023.1	50-Year	EX_MATRIX	465.00	6388.00	6390.58	6390.58	6391.84	0.009336	9.01	51.53	189.30	0.99

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	5023.1	100-Year	EX_MATRIX	552.00	6388.00	6390.89	6390.89	6392.31	0.008994	9.54	57.87	216.29	0.99
Reach 6	5023.1	500-Year	EX_MATRIX	552.00	6388.00	6390.89	6390.89	6392.31	0.008994	9.54	57.87	216.29	0.99
Reach 6	5023.1	100-Developed	EX_MATRIX	1120.00	6388.00	6392.53	6392.53	6394.90	0.007731	12.10	92.58	378.09	0.99
Reach 6	5023	10-Year	EX_MATRIX	301.00	6387.00	6388.93	6388.93	6389.67	0.010303	7.80	38.61	113.34	0.99
Reach 6	5023	50-Year	EX_MATRIX	465.00	6387.00	6389.58	6389.58	6390.84	0.009348	9.01	51.61	128.93	0.98
Reach 6	5023	100-Year	EX_MATRIX	552.00	6387.00	6389.90	6389.90	6391.31	0.008974	9.53	57.91	136.49	0.98
Reach 6	5023	500-Year	EX_MATRIX	552.00	6387.00	6389.90	6389.90	6391.31	0.008974	9.53	57.91	136.49	0.98
Reach 6	5023	100-Developed	EX_MATRIX	1120.00	6387.00	6391.63	6391.63	6393.90	0.007736	12.10	92.57	279.86	0.99
Reach 6	5022.5			Culvert									
Reach 6	5022	10-Year	EX_MATRIX	301.00	6386.00	6387.89	6387.70	6388.58	0.007627	8.62	45.46	431.78	0.85
Reach 6	5022	50-Year	EX_MATRIX	465.00	6386.00	6388.48	6388.29	6389.43	0.007441	7.82	59.45	480.63	0.88
Reach 6	5022	100-Year	EX_MATRIX	552.00	6386.00	6388.75	6388.54	6389.84	0.007418	8.37	65.95	498.31	0.89
Reach 6	5022	500-Year	EX_MATRIX	552.00	6386.00	6388.75	6388.54	6389.84	0.007418	8.37	65.95	498.31	0.89
Reach 6	5022	100-Developed	EX_MATRIX	1120.00	6386.00	6390.38	6390.07	6392.14	0.006453	10.65	105.14	659.98	0.90
Reach 6	5021.9	10-Year	EX_MATRIX	301.00	6386.00	6387.70	6387.70	6388.55	0.010951	7.38	40.78	399.19	1.00
Reach 6	5021.9	50-Year	EX_MATRIX	465.00	6386.00	6388.29	6388.29	6389.40	0.009708	8.47	54.89	466.23	0.99
Reach 6	5021.9	100-Year	EX_MATRIX	552.00	6386.00	6388.54	6388.54	6389.81	0.009594	9.04	61.05	484.99	1.00
Reach 6	5021.9	500-Year	EX_MATRIX	552.00	6386.00	6388.54	6388.54	6389.81	0.009594	9.04	61.05	484.99	1.00
Reach 6	5021.9	100-Developed	EX_MATRIX	1120.00	6386.00	6390.07	6390.07	6392.11	0.008264	11.47	97.62	694.16	1.00
Reach 6	5021	10-Year	EX_MATRIX	301.00	6386.00	6387.32		6387.59	0.004841	4.15	72.59	140.79	0.64
Reach 6	5021	50-Year	EX_MATRIX	465.00	6386.00	6387.65		6388.06	0.005458	5.12	90.91	162.43	0.70
Reach 6	5021	100-Year	EX_MATRIX	552.00	6386.00	6387.81		6388.29	0.005712	5.55	99.39	172.46	0.73
Reach 6	5021	500-Year	EX_MATRIX	552.00	6386.00	6387.81		6388.29	0.005712	5.55	99.39	172.46	0.73
Reach 6	5021	100-Developed	EX_MATRIX	1120.00	6386.00	6388.53		6389.64	0.007667	8.05	139.11	405.13	0.89
Reach 6	5020	10-Year	EX_MATRIX	301.00	6386.00	6386.93	6386.93	6387.38	0.012944	5.38	55.98	197.09	0.98
Reach 6	5020	50-Year	EX_MATRIX	465.00	6386.00	6387.25	6387.25	6387.85	0.011621	6.20	75.03	243.82	0.98
Reach 6	5020	100-Year	EX_MATRIX	552.00	6386.00	6387.40	6387.40	6388.07	0.011242	6.57	83.99	265.79	0.98
Reach 6	5020	500-Year	EX_MATRIX	552.00	6386.00	6387.40	6387.40	6388.07	0.011242	6.57	83.99	265.79	0.98
Reach 6	5020	100-Developed	EX_MATRIX	1120.00	6386.00	6388.23	6388.23	6389.32	0.009825	8.38	133.71	384.74	0.99
Reach 6	5019	10-Year	EX_MATRIX	301.00	6382.00	6383.13	6383.13	6383.66	0.012069	5.92	52.26	49.23	0.95
Reach 6	5019	50-Year	EX_MATRIX	465.00	6382.00	6383.48	6383.48	6384.20	0.011609	6.92	69.56	51.13	1.00
Reach 6	5019	100-Year	EX_MATRIX	552.00	6382.00	6383.69	6383.69	6384.45	0.010287	7.13	80.57	52.30	0.97
Reach 6	5019	500-Year	EX_MATRIX	552.00	6382.00	6383.69	6383.69	6384.45	0.010287	7.13	80.57	52.30	0.97
Reach 6	5019	100-Developed	EX_MATRIX	1120.00	6382.00	6384.65	6384.65	6385.81	0.008843	8.92	133.47	58.22	0.97
Reach 6	5018	10-Year	EX_MATRIX	301.00	6380.00	6381.07	6381.07	6381.55	0.012133	5.71	55.45	58.56	0.97
Reach 6	5018	50-Year	EX_MATRIX	465.00	6380.00	6381.41	6381.41	6382.03	0.011098	6.55	75.74	62.80	0.97
Reach 6	5018	100-Year	EX_MATRIX	552.00	6380.00	6381.57	6381.57	6382.25	0.010658	6.89	85.93	64.82	0.97
Reach 6	5018	500-Year	EX_MATRIX	552.00	6380.00	6381.57	6381.57	6382.25	0.010658	6.89	85.93	64.82	0.97
Reach 6	5018	100-Developed	EX_MATRIX	1120.00	6380.00	6382.41	6382.41	6383.42	0.009119	8.51	145.50	75.57	0.97
Reach 6	5017	10-Year	EX_MATRIX	301.00	6378.00	6379.08	6379.06	6379.53	0.012272	5.70	55.86	60.53	0.98
Reach 6	5017	50-Year	EX_MATRIX	465.00	6378.00	6379.39	6379.39	6380.00	0.011169	6.52	78.66	65.37	0.97
Reach 6	5017	100-Year	EX_MATRIX	552.00	6378.00	6379.55	6379.55	6380.22	0.010622	6.84	87.36	67.73	0.97
Reach 6	5017	500-Year	EX_MATRIX	552.00	6378.00	6379.55	6379.55	6380.22	0.010622	6.84	87.36	67.73	0.97
Reach 6	5017	100-Developed	EX_MATRIX	1120.00	6378.00	6380.38	6380.38	6381.35	0.009043	8.40	148.90	79.96	0.96
Reach 6	5016	10-Year	EX_MATRIX	301.00	6374.00	6375.30	6375.30	6375.94	0.011887	6.44	47.72	38.26	0.99
Reach 6	5016	50-Year	EX_MATRIX	465.00	6374.00	6375.73	6375.73	6376.57	0.010853	7.48	64.10	39.31	1.00
Reach 6	5016	100-Year	EX_MATRIX	552.00	6374.00	6375.94	6375.94	6376.87	0.010435	7.86	72.43	39.84	1.00
Reach 6	5016	500-Year	EX_MATRIX	552.00	6374.00	6375.94	6375.94	6376.87	0.010435	7.86	72.43	39.84	1.00
Reach 6	5016	100-Developed	EX_MATRIX	1120.00	6374.00	6377.08	6377.08	6378.52	0.008792	9.82	119.52	42.69	0.99
Reach 6	5015	10-Year	EX_MATRIX	301.00	6372.00	6373.10	6373.10	6373.63	0.012627	5.93	52.21	50.88	1.00
Reach 6	5015	50-Year	EX_MATRIX	465.00	6372.00	6373.47	6373.47	6374.15	0.011135	6.76	71.44	53.19	0.98
Reach 6	5015	100-Year	EX_MATRIX	552.00	6372.00	6373.63	6373.63	6374.40	0.010939	7.18	80.12	54.20	0.98
Reach 6	5015	500-Year	EX_MATRIX	552.00	6372.00	6373.63	6373.63	6374.40	0.010939	7.18	80.12	54.20	0.99
Reach 6	5015	100-Developed	EX_MATRIX	1120.00	6372.00	6374.57	6374.57	6375.73	0.009151	8.80	133.94	60.09	0.96
Reach 6	5014	10-Year	EX_MATRIX	301.00	6370.00	6371.08	6371.09	6371.61	0.012471	5.65	52.95	52.26	0.99
Reach 6	5014	50-Year	EX_MATRIX	465.00	6370.00	6371.44	6371.44	6372.12	0.011364	6.73	71.74	54.60	0.99
Reach 6	5014	100-Year	EX_MATRIX	552.00	6370.00	6371.61	6371.61	6372.36	0.010840	7.09	81.22	55.75	0.98
Reach 6	5014	500-Year	EX_MATRIX	552.00	6370.00	6371.61	6371.61	6372.36	0.010840	7.09	81.22	55.75	0.98
Reach 6	5014	100-Developed	EX_MATRIX	1120.00	6370.00	6372.54	6372.54	6373.66	0.009133	8.80	135.57	61.91	0.97
Reach 6	5013	10-Year	EX_MATRIX	301.00	6368.00	6369.17	6369.17	6369.72	0.012093	6.05	51.68	48.38	0.99
Reach 6	5013	50-Year	EX_MATRIX	465.00	6368.00	6369.55	6369.55	6370.26	0.010869	6.91	70.57	51.10	0.98
Reach 6	5013	100-Year	EX_MATRIX	552.00	6368.00	6369.72	6369.72	6370.51	0.010569	7.32	79.54	52.35	0.98
Reach 6	5013	500-Year	EX_MATRIX	552.00	6368.00	6369.72	6369.72	6370.51	0.010569	7.32	79.54	52.35	0.98
Reach 6	5013	100-Developed	EX_MATRIX	1120.00	6368.00	6370.69	6370.69	6371.86	0.008906	9.05	133.79	59.31	0.97
Reach 6	5012	10-Year	EX_MATRIX	301.00	6364.00	6366.20		6366.23	0.000308	1.47	207.77	97.76	0.17
Reach 6	5012	50-Year	EX_MATRIX	465.00	6364.00	6366.73		6366.79	0.000353	1.82	260.34	99.42	0.19
Reach 6	5012	100-Year	EX_MATRIX	552.00	6364.00	6366.98		6367.04	0.000372	1.98	284.86	100.18	0.20
Reach 6	5012	500-Year	EX_MATRIX	552.00	6364.00	6366.98		6367.04	0.000372	1.98	284.86	100.18	0.20
Reach 6	5012	100-Developed	EX_MATRIX	1120.00	6364.00	6368.37		6368.48	0.000415	2.70	427.40	104.47	0.23
Reach 6	5011	10-Year	EX_MATRIX	301.00	6364.00	6366.08		6366.20	0.001247	2.85	111.83	61.55	0.35
Reach 6	5011	50-Year	EX_MATRIX	465.00	6364.00	6366.57		6366.74	0.001416	3.49	142.59	65.18	0.38
Reach 6	5011	100-Year	EX_MATRIX	552.00	6364.00	6366.79		6366.99	0.001484	3.78	157.26	66.85	0.40
Reach 6	5011	500-Year	EX_MATRIX	552.00	6364.00	6366.79		6366.99	0.001484	3.78	157.26	66.85	0.40
Reach 6	5011	100-Developed	EX_MATRIX	1120.00	6364.00	6368.08		6368.42	0.001531	4.95	250.20	76.54	0.43

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 6	5010	10-Year	EX_MATRIX	301.00	6364.00	6365.82		6365.97	0.001887	3.20	99.24	62.24	0.42
Reach 6	5010	50-Year	EX_MATRIX	465.00	6364.00	6366.26		6366.46	0.002069	3.88	127.91	65.99	0.45
Reach 6	5010	100-Year	EX_MATRIX	552.00	6364.00	6366.47		6366.72	0.002136	4.18	141.72	67.72	0.47
Reach 6	5010	500-Year	EX_MATRIX	552.00	6364.00	6366.47		6366.72	0.002136	4.18	141.72	67.72	0.47
Reach 6	5010	100-Developed	EX_MATRIX	1195.00	6364.00	6367.66		6368.13	0.002415	5.78	228.17	77.70	0.53
Reach 6	5009	10-Year	EX_MATRIX	301.00	6364.00	6365.08	6365.08	6365.58	0.012432	5.80	53.91	55.06	0.99
Reach 6	5009	50-Year	EX_MATRIX	465.00	6364.00	6365.43	6365.43	6366.08	0.011182	6.64	73.68	58.31	0.98
Reach 6	5009	100-Year	EX_MATRIX	552.00	6364.00	6365.59	6365.59	6366.31	0.010765	7.00	83.34	59.84	0.98
Reach 6	5009	500-Year	EX_MATRIX	552.00	6364.00	6365.59	6365.59	6366.31	0.010765	7.00	83.34	59.84	0.98
Reach 6	5009	100-Developed	EX_MATRIX	1195.00	6364.00	6366.58	6366.58	6367.68	0.008985	8.82	147.24	69.09	0.97
Reach 6	5008	10-Year	EX_MATRIX	301.00	6362.00	6363.64		6363.80	0.002208	3.23	96.38	61.55	0.46
Reach 6	5008	50-Year	EX_MATRIX	465.00	6362.00	6364.06		6364.29	0.002425	3.94	121.48	63.22	0.48
Reach 6	5008	100-Year	EX_MATRIX	552.00	6362.00	6364.24		6364.52	0.002529	4.27	133.50	63.98	0.50
Reach 6	5008	500-Year	EX_MATRIX	552.00	6362.00	6364.24		6364.52	0.002529	4.27	133.50	63.98	0.50
Reach 6	5008	100-Developed	EX_MATRIX	1195.00	6362.00	6365.33		6365.88	0.003046	6.10	205.33	68.32	0.59
Reach 6	5007	10-Year	EX_MATRIX	301.00	6360.00	6360.68	6360.68	6361.31	0.013657	5.31	58.41	71.78	1.00
Reach 6	5007	50-Year	EX_MATRIX	465.00	6360.00	6361.17	6361.17	6361.72	0.012115	6.06	79.90	75.36	0.99
Reach 6	5007	100-Year	EX_MATRIX	552.00	6360.00	6361.31	6361.31	6361.91	0.011482	6.37	90.69	77.09	0.98
Reach 6	5007	500-Year	EX_MATRIX	552.00	6360.00	6361.31	6361.31	6361.91	0.011482	6.37	90.69	77.09	0.98
Reach 6	5007	100-Developed	EX_MATRIX	1195.00	6360.00	6362.13	6362.13	6363.08	0.009792	8.12	157.97	87.91	0.98
Reach 6	5006	10-Year	EX_MATRIX	301.00	6356.00	6356.98	6356.98	6357.47	0.013412	5.65	53.68	55.71	1.01
Reach 6	5006	50-Year	EX_MATRIX	465.00	6356.00	6357.31	6357.31	6357.96	0.012025	6.50	72.27	56.29	1.00
Reach 6	5006	100-Year	EX_MATRIX	552.00	6356.00	6357.47	6357.47	6358.20	0.011640	6.90	81.03	56.57	1.00
Reach 6	5006	500-Year	EX_MATRIX	552.00	6356.00	6357.47	6357.47	6358.20	0.011640	6.90	81.03	56.57	1.00
Reach 6	5006	100-Developed	EX_MATRIX	1195.00	6356.00	6358.45	6358.45	6359.65	0.009662	8.85	137.71	58.29	1.00
Reach 6	5005	10-Year	EX_MATRIX	301.00	6354.00	6355.06	6355.06	6355.56	0.012401	5.75	54.49	56.48	0.98
Reach 6	5005	50-Year	EX_MATRIX	465.00	6354.00	6355.41	6355.41	6356.04	0.011209	6.58	74.37	59.84	0.98
Reach 6	5005	100-Year	EX_MATRIX	552.00	6354.00	6355.94		6356.38	0.005022	5.47	108.03	65.15	0.69
Reach 6	5005	500-Year	EX_MATRIX	552.00	6354.00	6355.94		6356.38	0.005022	5.47	108.03	65.15	0.69
Reach 6	5005	100-Developed	EX_MATRIX	1195.00	6354.00	6356.70	6356.54	6357.64	0.007242	8.17	159.90	72.57	0.88
Reach 6	5004	10-Year	EX_MATRIX	301.00	6352.00	6353.99		6354.13	0.001564	3.10	101.80	57.20	0.39
Reach 6	5004	50-Year	EX_MATRIX	465.00	6352.00	6355.35		6355.45	0.000596	2.71	184.93	65.50	0.26
Reach 6	5004	100-Year	EX_MATRIX	552.00	6352.00	6355.93		6356.03	0.000474	2.69	224.03	69.06	0.24
Reach 6	5004	500-Year	EX_MATRIX	552.00	6352.00	6355.93		6356.03	0.000474	2.69	224.03	69.06	0.24
Reach 6	5004	100-Developed	EX_MATRIX	1195.00	6352.00	6356.55		6356.89	0.001320	4.94	268.49	75.03	0.41
Reach 6	5003	10-Year	EX_MATRIX	301.00	6350.00	6353.91		6353.95	0.000147	1.49	218.26	66.53	0.13
Reach 6	5003	50-Year	EX_MATRIX	465.00	6350.00	6355.29		6355.33	0.000119	1.64	317.70	77.99	0.13
Reach 6	5003	100-Year	EX_MATRIX	552.00	6350.00	6355.88		6355.92	0.000113	1.72	364.93	82.97	0.12
Reach 6	5003	500-Year	EX_MATRIX	552.00	6350.00	6355.88		6355.92	0.000113	1.72	364.93	82.97	0.12
Reach 6	5003	100-Developed	EX_MATRIX	1815.00	6350.00	6355.87		6356.31	0.001230	5.85	364.24	82.90	0.41
Reach 6	5002	10-Year	EX_MATRIX	301.00	6348.00	6353.91	6349.08	6353.92	0.000029	0.87	397.64	89.56	0.06
Reach 6	5002	50-Year	EX_MATRIX	465.00	6348.00	6355.29	6349.43	6355.30	0.000031	1.04	606.00	220.26	0.07
Reach 6	5002	100-Year	EX_MATRIX	552.00	6348.00	6355.88	6349.60	6355.89	0.000029	1.06	753.45	279.71	0.07
Reach 6	5002	500-Year	EX_MATRIX	552.00	6348.00	6355.88	6349.60	6355.89	0.000029	1.06	753.45	279.71	0.07
Reach 6	5002	100-Developed	EX_MATRIX	1815.00	6348.00	6355.88	6351.39	6356.02	0.000318	3.50	753.45	279.71	0.22
Reach 1	124	10-Year	EX_MATRIX	1890.00	6398.00	6400.12	6400.12	6400.54	0.010118	5.25	360.11	437.48	1.02
Reach 1	124	10-Year	Existing	1890.00	6398.00	6400.12	6400.12	6400.54	0.010118	5.25	360.11	437.48	1.02
Reach 1	124	50-Year	EX_MATRIX	4070.00	6398.00	6400.71	6400.71	6401.32	0.008786	6.26	649.77	544.54	1.01
Reach 1	124	50-Year	Existing	4070.00	6398.00	6400.71	6400.71	6401.32	0.008786	6.26	649.77	544.54	1.01
Reach 1	124	100-Year	EX_MATRIX	5190.00	6398.00	6400.95	6400.95	6401.62	0.008497	6.59	787.21	595.82	1.01
Reach 1	124	100-Year	Existing	5190.00	6398.00	6400.95	6400.95	6401.62	0.008497	6.59	787.21	595.82	1.01
Reach 1	124	500-Year	EX_MATRIX	7920.00	6398.00	6401.40	6401.40	6402.25	0.007715	7.38	1072.67	637.14	1.00
Reach 1	124	500-Year	Existing	7920.00	6398.00	6401.40	6401.40	6402.25	0.007715	7.38	1072.67	637.14	1.00
Reach 1	124	100-Developed	EX_MATRIX	5190.00	6398.00	6400.95	6400.85	6401.62	0.008497	6.59	787.21	595.82	1.01
Reach 1	123	10-Year	EX_MATRIX	1890.00	6380.80	6382.70	6382.70	6383.20	0.009321	5.67	333.49	977.13	1.01
Reach 1	123	10-Year	Existing	1890.00	6380.80	6382.70	6382.70	6383.20	0.009321	5.67	333.49	977.13	1.01
Reach 1	123	50-Year	EX_MATRIX	4070.00	6380.80	6383.39	6383.39	6384.12	0.008189	6.88	591.64	1069.20	1.01
Reach 1	123	50-Year	Existing	4070.00	6380.80	6383.39	6383.39	6384.12	0.008189	6.88	591.64	1069.20	1.01
Reach 1	123	100-Year	EX_MATRIX	5190.00	6380.80	6383.66	6383.66	6384.50	0.007851	7.33	708.18	1099.60	1.01
Reach 1	123	100-Year	Existing	5190.00	6380.80	6383.66	6383.66	6384.50	0.007851	7.33	708.18	1099.60	1.01
Reach 1	123	500-Year	EX_MATRIX	7920.00	6380.80	6384.24	6384.24	6385.27	0.007313	8.15	971.27	1161.21	1.01
Reach 1	123	500-Year	Existing	7920.00	6380.80	6384.24	6384.24	6385.27	0.007313	8.15	971.27	1161.21	1.01
Reach 1	123	100-Developed	EX_MATRIX	5190.00	6380.80	6383.66	6383.66	6384.50	0.007851	7.33	708.18	1099.60	1.01
Reach 1	122.3791	10-Year	EX_MATRIX	1890.00	6366.65	6369.23	6369.17	6370.13	0.009503	7.67	251.49	132.25	0.96
Reach 1	122.3791	50-Year	EX_MATRIX	4070.00	6366.65	6370.45	6370.45	6372.00	0.008716	10.10	419.14	141.56	0.99
Reach 1	122.3791	100-Year	EX_MATRIX	5190.00	6366.65	6371.01	6371.01	6372.80	0.008205	10.90	499.41	145.82	0.99
Reach 1	122.3791	500-Year	EX_MATRIX	7920.00	6366.65	6372.21	6372.21	6374.55	0.007516	12.53	682.74	170.08	0.99
Reach 1	122.3791	100-Developed	EX_MATRIX	5758.00	6366.65	6371.27	6371.27	6373.18	0.008014	11.26	538.12	147.82	0.99
Reach 1	122.3789	10-Year	EX_MATRIX	1890.00	6366.40	6368.97	6368.97	6369.93	0.010505	7.90	243.57	131.47	1.00
Reach 1	122.3789	50-Year	EX_MATRIX	4070.00	6366.40	6370.25	6370.25	6371.80	0.008732	10.10	418.04	140.77	0.99
Reach 1	122.3789	100-Year	EX_MATRIX	5190.00	6366.40	6370.81	6370.81	6372.60	0.008226	10.90	497.73	144.82	0.99
Reach 1	122.3789	500-Year	EX_MATRIX	7920.00	6366.40	6372.03	6372.03	6374.35	0.007395	12.46	682.05	163.85	0.98
Reach 1	122.3789	100-Developed	EX_MATRIX	5758.00	6366.40	6371.07	6371.07	6372.99	0.008035	11.27	536.17	146.73	0.99
Reach 1	122.3785	10-Year	EX_MATRIX	1890.00	6363.89	6366.55	6366.39	6367.36	0.007989	7.27	265.76	133.57	0.88
Reach 1	122.3785	50-Year	EX_MATRIX	4070.00	6363.89	6367.67	6367.67	6369.21	0.008733	10.09	419.28	141.86	0.99
Reach 1	122.3785	100-Year	EX_MATRIX	5190.00	6363.89	6368.24	6368.24	6370.01	0.008135	10.85	501.18	148.09	0.96
Reach 1	122.3785	500-Year	EX_MATRIX	7920.00	6363.89	6369.42	6369.42	6371.72	0.007428	12.43	679.08	154.87	0.98

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	122.3785	100-Developed	EX_MATRIX	5758.00	6383.89	6388.49	6388.49	6370.39	0.008023	11.25	538.29	147.96	0.99
Reach 1	122.3752	10-Year	EX_MATRIX	1890.00	6361.12	6363.41	6363.41	6364.35	0.010537	7.82	248.16	134.87	1.00
Reach 1	122.3752	50-Year	EX_MATRIX	4070.00	6361.12	6364.67	6364.67	6366.19	0.008771	10.00	421.22	143.05	0.99
Reach 1	122.3752	100-Year	EX_MATRIX	5190.00	6361.12	6365.21	6365.21	6366.98	0.008327	10.83	499.63	146.57	0.98
Reach 1	122.3752	500-Year	EX_MATRIX	7920.00	6361.12	6366.35	6368.35	6368.68	0.007720	12.47	671.41	153.99	1.00
Reach 1	122.3752	100-Developed	EX_MATRIX	5758.00	6361.12	6365.47	6365.47	6367.38	0.008129	11.19	538.00	148.26	0.99
Reach 1	122.3750	10-Year	EX_MATRIX	1890.00	6360.72	6363.11	6363.11	6364.05	0.010518	7.81	245.98	134.72	1.00
Reach 1	122.3750	50-Year	EX_MATRIX	4070.00	6360.72	6364.38	6364.38	6365.90	0.008712	9.98	421.57	142.96	0.99
Reach 1	122.3750	100-Year	EX_MATRIX	5190.00	6360.72	6364.91	6364.91	6366.69	0.008329	10.83	498.93	148.44	0.99
Reach 1	122.3750	500-Year	EX_MATRIX	7920.00	6360.72	6366.06	6366.06	6368.39	0.007722	12.47	670.51	153.88	1.00
Reach 1	122.3750	100-Developed	EX_MATRIX	5758.00	6360.72	6365.19	6365.19	6367.07	0.008025	11.15	539.61	148.23	0.98
Reach 1	122.3746	10-Year	EX_MATRIX	1890.00	6358.45	6361.18	6361.04	6362.02	0.008372	7.41	252.17	131.44	0.90
Reach 1	122.3746	50-Year	EX_MATRIX	4070.00	6358.45	6362.41	6362.33	6363.89	0.008120	9.93	428.33	139.36	0.96
Reach 1	122.3746	100-Year	EX_MATRIX	5190.00	6358.45	6362.91	6362.89	6364.70	0.008130	10.92	499.80	142.66	0.98
Reach 1	122.3746	500-Year	EX_MATRIX	7920.00	6358.45	6364.09	6364.09	6366.44	0.007548	12.58	671.93	150.26	0.99
Reach 1	122.3746	100-Developed	EX_MATRIX	5758.00	6358.45	6363.15	6363.15	6365.09	0.008127	11.37	534.19	144.21	0.99
Reach 1	122.3720	10-Year	EX_MATRIX	1890.00	6357.18	6359.63	6359.19	6360.24	0.005284	5.33	308.01	139.35	0.73
Reach 1	122.3720	50-Year	EX_MATRIX	4070.00	6357.18	6360.88		6362.03	0.005724	8.77	488.55	147.21	0.82
Reach 1	122.3720	100-Year	EX_MATRIX	5190.00	6357.18	6361.40		6362.81	0.005840	9.70	564.40	150.51	0.84
Reach 1	122.3720	500-Year	EX_MATRIX	7920.00	6357.18	6362.37	6362.04	6364.47	0.006649	11.91	713.24	162.79	0.93
Reach 1	122.3720	100-Developed	EX_MATRIX	5758.00	6357.18	6361.65		6363.18	0.005894	10.13	601.41	152.06	0.86
Reach 1	122.3685	10-Year	EX_MATRIX	1890.00	6354.10	6356.71	6356.71	6357.67	0.010527	7.89	243.29	131.01	1.00
Reach 1	122.3685	50-Year	EX_MATRIX	4070.00	6354.10	6358.00	6358.00	6359.55	0.008734	10.09	416.37	138.85	0.99
Reach 1	122.3685	100-Year	EX_MATRIX	5190.00	6354.10	6358.55	6358.55	6360.38	0.008259	10.91	494.40	142.25	0.99
Reach 1	122.3685	500-Year	EX_MATRIX	7920.00	6354.10	6359.91	6359.91	6362.11	0.006767	12.12	701.62	168.81	0.94
Reach 1	122.3685	100-Developed	EX_MATRIX	5758.00	6354.10	6358.82	6358.82	6360.74	0.008054	11.27	532.47	143.88	0.99
Reach 1	122.3683	10-Year	EX_MATRIX	1940.00	6353.37	6356.11	6356.11	6357.08	0.010245	7.94	247.85	129.95	0.99
Reach 1	122.3683	50-Year	EX_MATRIX	4180.00	6353.37	6357.41	6357.41	6359.00	0.008669	10.22	422.25	138.41	0.99
Reach 1	122.3683	100-Year	EX_MATRIX	5330.00	6353.37	6357.98	6357.98	6359.83	0.008165	11.03	502.81	142.15	0.99
Reach 1	122.3683	500-Year	EX_MATRIX	8120.00	6353.37	6359.15	6359.15	6361.59	0.007673	12.74	672.91	149.74	1.00
Reach 1	122.3683	100-Developed	EX_MATRIX	5898.00	6353.37	6358.25	6358.25	6360.21	0.007981	11.39	540.44	143.86	0.99
Reach 1	121.3679	10-Year	EX_MATRIX	1940.00	6351.60	6353.91	6353.91	6354.93	0.010217	8.20	243.66	122.53	1.00
Reach 1	121.3679	50-Year	EX_MATRIX	4180.00	6351.60	6355.29	6355.29	6356.94	0.008532	10.49	418.15	131.16	0.99
Reach 1	121.3679	100-Year	EX_MATRIX	5330.00	6351.60	6355.88	6355.88	6357.80	0.008080	11.34	497.13	134.88	0.99
Reach 1	121.3679	500-Year	EX_MATRIX	8120.00	6351.60	6357.15	6357.15	6359.63	0.007370	12.98	673.00	143.00	0.99
Reach 1	121.3679	100-Developed	EX_MATRIX	5898.00	6351.60	6356.16	6356.16	6358.20	0.007894	11.72	534.64	136.61	0.99
Reach 1	121.3660	10-Year	EX_MATRIX	1940.00	6349.23	6351.78	6351.37	6352.24	0.004725	5.84	383.20	322.10	0.69
Reach 1	121.3660	50-Year	EX_MATRIX	4180.00	6349.23	6353.26	6352.36	6353.91	0.003488	7.03	684.51	376.44	0.64
Reach 1	121.3660	100-Year	EX_MATRIX	5330.00	6349.23	6353.95	6352.83	6354.68	0.003082	7.41	828.68	382.12	0.62
Reach 1	121.3660	500-Year	EX_MATRIX	8120.00	6349.23	6355.58	6353.74	6356.42	0.002379	8.02	1174.61	400.55	0.57
Reach 1	121.3660	100-Developed	EX_MATRIX	5898.00	6349.23	6354.28	6353.04	6355.04	0.002925	7.57	897.68	384.82	0.61
Reach 1	121.3638	10-Year	EX_MATRIX	1940.00	6347.63	6350.17	6349.93	6350.94	0.007105	7.13	280.03	230.05	0.64
Reach 1	121.3638	50-Year	EX_MATRIX	4180.00	6347.63	6351.67	6351.26	6352.89	0.006694	9.00	485.30	245.91	0.82
Reach 1	121.3638	100-Year	EX_MATRIX	5330.00	6347.63	6352.32	6351.84	6353.73	0.005352	9.70	577.25	252.74	0.82
Reach 1	121.3638	500-Year	EX_MATRIX	8120.00	6347.63	6353.47	6353.06	6355.52	0.005705	11.71	750.32	288.73	0.88
Reach 1	121.3638	100-Developed	EX_MATRIX	5898.00	6347.63	6352.63	6352.11	6354.12	0.005176	9.99	622.24	255.63	0.81
Reach 1	121.3636	10-Year	EX_MATRIX	1940.00	6347.43	6349.80	6349.80	6350.76	0.009871	7.90	248.61	191.11	0.98
Reach 1	121.3636	50-Year	EX_MATRIX	4180.00	6347.43	6351.12	6351.12	6352.72	0.006472	10.21	419.88	212.86	0.98
Reach 1	121.3636	100-Year	EX_MATRIX	5330.00	6347.43	6351.72	6351.72	6353.56	0.007879	10.98	500.49	220.60	0.97
Reach 1	121.3636	500-Year	EX_MATRIX	8120.00	6347.43	6352.96	6352.96	6355.36	0.007188	12.60	673.26	236.66	0.97
Reach 1	121.3636	100-Developed	EX_MATRIX	5898.00	6347.43	6351.98	6351.98	6353.95	0.007769	11.39	535.95	223.95	0.98
Reach 1	121.3633	10-Year	EX_MATRIX	1940.00	6344.35	6347.11	6346.87	6347.90	0.007053	7.18	276.56	156.40	0.84
Reach 1	121.3633	50-Year	EX_MATRIX	4180.00	6344.35	6348.50	6348.25	6349.85	0.006457	9.44	461.46	182.78	0.87
Reach 1	121.3633	100-Year	EX_MATRIX	5330.00	6344.35	6349.02	6348.82	6350.67	0.006640	10.46	534.72	192.78	0.90
Reach 1	121.3633	500-Year	EX_MATRIX	8120.00	6344.35	6350.07	6350.03	6352.44	0.007141	12.60	686.68	213.59	0.97
Reach 1	121.3633	100-Developed	EX_MATRIX	5898.00	6344.35	6349.28	6349.08	6351.05	0.006742	10.93	568.06	197.47	0.92
Reach 1	121.3602	10-Year	EX_MATRIX	1940.00	6342.13	6345.75		6346.29	0.003664	6.38	384.47	149.04	0.64
Reach 1	121.3602	50-Year	EX_MATRIX	4180.00	6342.13	6347.27		6348.19	0.003873	8.55	515.02	177.48	0.70
Reach 1	121.3602	100-Year	EX_MATRIX	5330.00	6342.13	6347.85		6348.93	0.003980	9.36	718.28	191.54	0.72
Reach 1	121.3602	500-Year	EX_MATRIX	8120.00	6342.13	6349.07		6350.50	0.004098	10.95	944.91	191.24	0.76
Reach 1	121.3602	100-Developed	EX_MATRIX	5898.00	6342.13	6348.11		6349.27	0.004019	9.74	766.48	183.41	0.73
Reach 1	121.3600	10-Year	EX_MATRIX	1940.00	6342.10	6345.10	6345.10	6346.12	0.010144	8.77	260.51	137.34	1.01
Reach 1	121.3600	50-Year	EX_MATRIX	4180.00	6342.10	6346.51	6346.51	6348.02	0.008421	10.94	476.28	168.26	1.00
Reach 1	121.3600	100-Year	EX_MATRIX	5330.00	6342.10	6347.11	6347.11	6348.77	0.007746	11.59	579.59	174.95	0.98
Reach 1	121.3600	500-Year	EX_MATRIX	8120.00	6342.10	6348.21	6348.21	6350.33	0.007520	13.28	776.98	183.92	1.00
Reach 1	121.3600	100-Developed	EX_MATRIX	5898.00	6342.10	6347.35	6347.35	6349.11	0.007699	11.98	621.77	178.90	0.99
Reach 1	121.3597	10-Year	EX_MATRIX	1940.00	6339.78	6343.48		6344.11	0.003287	6.64	342.78	137.92	0.62
Reach 1	121.3597	50-Year	EX_MATRIX	4180.00	6339.78	6345.24		6346.16	0.003175	8.53	621.95	169.97	0.65
Reach 1	121.3597	100-Year	EX_MATRIX	5330.00	6339.78	6345.98		6347.03	0.003051	9.11	748.90	173.95	0.65
Reach 1	121.3597	500-Year	EX_MATRIX	8120.00	6339.78	6347.55		6348.81	0.002835	10.23	1028.12	183.19	0.65
Reach 1	121.3597	100-Developed	EX_MATRIX	5898.00	6339.78	6346.31		6347.41	0.003021	9.39	806.36	175.73	0.65
Reach 1	121.3585	10-Year	EX_MATRIX	1940.00	6338.90	6343.10		6343.72	0.003065	6.61	339.29	131.04	0.60
Reach 1	121.3585	50-Year	EX_MATRIX	4180.00	6338.90	6344.55		6345.73	0.003991	9.39	548.16	151.64	0.73
Reach 1	121.3585	100-Year	EX_MATRIX	5330.00	6338.90	6345.17		6346.57	0.004170	10.34	642.69	156.15	0.76
Reach 1	121.3585	500-Year	EX_MATRIX	8120.00	6338.90	6346.47		6348.34	0.004395	12.15	853.30	169.30	0.80

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	121.3585	100-Developed	EX_MATRIX	5898.00	6338.90	6345.42		6346.94	0.004303	10.81	683.11	158.04	0.77
Reach 1	120.3562	10-Year	EX_MATRIX	1940.00	6338.33	6341.52	6341.52	6342.61	0.007934	8.95	265.37	134.73	0.93
Reach 1	120.3562	50-Year	EX_MATRIX	4180.00	6338.33	6343.01	6343.01	6344.52	0.006949	11.05	487.18	155.81	0.93
Reach 1	120.3562	100-Year	EX_MATRIX	5330.00	6338.33	6343.54	6343.54	6345.31	0.007117	12.07	571.03	159.27	0.96
Reach 1	120.3562	500-Year	EX_MATRIX	8120.00	6338.33	6344.68	6344.68	6347.01	0.007328	14.07	758.04	173.64	1.01
Reach 1	120.3562	100-Developed	EX_MATRIX	5898.00	6338.33	6343.82	6343.82	6345.67	0.006995	12.41	615.53	161.08	0.96
Reach 1	120.3560	10-Year	EX_MATRIX	1940.00	6337.20	6341.00	6341.00	6342.08	0.007680	8.89	266.56	134.28	0.91
Reach 1	120.3560	50-Year	EX_MATRIX	4180.00	6337.20	6342.49	6342.49	6344.01	0.006885	11.06	484.72	154.14	0.93
Reach 1	120.3560	100-Year	EX_MATRIX	5330.00	6337.20	6343.04	6343.04	6344.81	0.006968	12.04	570.45	158.01	0.95
Reach 1	120.3560	500-Year	EX_MATRIX	8120.00	6337.20	6344.16	6344.16	6346.51	0.007271	14.09	752.96	170.74	1.01
Reach 1	120.3560	100-Developed	EX_MATRIX	5898.00	6337.20	6343.29	6343.29	6345.18	0.006982	12.46	611.03	159.81	0.96
Reach 1	120.3557	10-Year	EX_MATRIX	1940.00	6334.27	6337.50	6337.35	6338.72	0.007641	8.96	226.01	82.39	0.91
Reach 1	120.3557	50-Year	EX_MATRIX	4180.00	6334.27	6339.27	6339.27	6341.34	0.007172	11.83	381.80	104.39	0.96
Reach 1	120.3557	100-Year	EX_MATRIX	5330.00	6334.27	6340.28	6340.28	6342.43	0.005863	12.17	504.96	135.64	0.89
Reach 1	120.3557	500-Year	EX_MATRIX	8120.00	6334.27	6341.86	6341.86	6344.39	0.005274	13.58	735.90	155.87	0.88
Reach 1	120.3557	100-Developed	EX_MATRIX	5898.00	6334.27	6340.63	6340.63	6342.87	0.005715	12.50	553.43	140.13	0.89
Reach 1	120.3527	10-Year	EX_MATRIX	1940.00	6332.45	6336.71		6337.27	0.002630	5.18	354.29	132.59	0.56
Reach 1	120.3527	50-Year	EX_MATRIX	4180.00	6332.45	6338.38		6339.35	0.003055	8.49	597.25	155.09	0.64
Reach 1	120.3527	100-Year	EX_MATRIX	5330.00	6332.45	6339.04		6340.20	0.003175	9.34	701.50	159.59	0.67
Reach 1	120.3527	500-Year	EX_MATRIX	8120.00	6332.45	6340.22		6341.93	0.003806	11.51	904.69	189.62	0.75
Reach 1	120.3527	100-Developed	EX_MATRIX	5898.00	6332.45	6339.39		6340.60	0.003134	9.63	757.39	161.95	0.67
Reach 1	120.3525	10-Year	EX_MATRIX	1940.00	6332.66	6335.93	6335.93	6337.12	0.007995	8.99	238.12	121.42	0.93
Reach 1	120.3525	50-Year	EX_MATRIX	4180.00	6332.66	6337.60	6337.60	6339.21	0.006432	10.93	470.67	150.16	0.90
Reach 1	120.3525	100-Year	EX_MATRIX	5330.00	6332.66	6338.18	6338.18	6340.04	0.006525	11.92	556.75	155.49	0.93
Reach 1	120.3525	500-Year	EX_MATRIX	8120.00	6332.66	6339.52	6339.52	6341.79	0.006120	13.47	786.84	183.57	0.93
Reach 1	120.3525	100-Developed	EX_MATRIX	5898.00	6332.66	6338.42	6338.42	6340.43	0.006706	12.46	596.79	160.28	0.95
Reach 1	120.3522	10-Year	EX_MATRIX	1940.00	6329.40	6332.91		6333.73	0.004230	7.40	280.33	90.20	0.70
Reach 1	120.3522	50-Year	EX_MATRIX	4180.00	6329.40	6334.44		6336.14	0.005546	10.60	424.36	97.97	0.85
Reach 1	120.3522	100-Year	EX_MATRIX	5330.00	6329.40	6335.00	6334.76	6337.18	0.006233	12.28	479.61	100.54	0.92
Reach 1	120.3522	500-Year	EX_MATRIX	8120.00	6329.40	6336.60	6336.60	6339.37	0.005855	14.09	672.81	142.70	0.93
Reach 1	120.3522	100-Developed	EX_MATRIX	5898.00	6329.40	6335.25	6335.10	6337.66	0.006523	12.95	505.33	101.71	0.95
Reach 1	120.3490	10-Year	EX_MATRIX	1940.00	6327.55	6330.62	6330.62	6331.81	0.008656	8.96	234.42	104.54	0.86
Reach 1	120.3490	50-Year	EX_MATRIX	4180.00	6327.55	6332.27	6332.27	6334.09	0.007340	11.33	422.86	124.49	0.96
Reach 1	120.3490	100-Year	EX_MATRIX	5330.00	6327.55	6332.96	6332.96	6335.03	0.006990	12.18	512.03	134.00	0.96
Reach 1	120.3490	500-Year	EX_MATRIX	8120.00	6327.55	6334.53	6334.53	6336.92	0.005866	13.38	738.33	160.66	0.92
Reach 1	120.3490	100-Developed	EX_MATRIX	5898.00	6327.55	6333.28	6333.28	6335.46	0.006815	12.55	555.99	138.45	0.95
Reach 1	120.3467	10-Year	EX_MATRIX	1940.00	6326.19	6329.88		6330.48	0.003238	6.60	351.37	131.67	0.61
Reach 1	120.3467	50-Year	EX_MATRIX	4180.00	6326.19	6331.48		6332.52	0.003626	8.94	576.47	144.96	0.69
Reach 1	120.3467	100-Year	EX_MATRIX	5330.00	6326.19	6332.14		6333.37	0.003763	9.85	671.18	148.47	0.72
Reach 1	120.3467	500-Year	EX_MATRIX	8120.00	6326.19	6333.37		6335.16	0.004342	12.01	871.31	186.60	0.80
Reach 1	120.3467	100-Developed	EX_MATRIX	5898.00	6326.19	6332.44		6333.76	0.003804	10.24	716.15	150.10	0.73
Reach 1	120.3465	10-Year	EX_MATRIX	1940.00	6326.00	6329.18	6329.18	6330.32	0.009113	9.13	250.62	121.29	0.98
Reach 1	120.3465	50-Year	EX_MATRIX	4180.00	6326.00	6330.73	6330.73	6332.36	0.007613	11.29	457.32	141.58	0.97
Reach 1	120.3465	100-Year	EX_MATRIX	5330.00	6326.00	6331.34	6331.34	6333.21	0.007416	12.19	544.71	146.39	0.98
Reach 1	120.3465	500-Year	EX_MATRIX	8120.00	6326.00	6332.45	6332.45	6334.96	0.007800	14.36	713.05	154.59	1.04
Reach 1	120.3465	100-Developed	EX_MATRIX	5898.00	6326.00	6331.61	6331.61	6333.59	0.007334	12.59	585.90	148.61	0.98
Reach 1	120.3462	10-Year	EX_MATRIX	1940.00	6323.20	6326.52	6326.36	6327.65	0.005961	8.34	253.58	103.12	0.84
Reach 1	120.3462	50-Year	EX_MATRIX	4180.00	6323.20	6328.09	6328.09	6329.95	0.007143	11.48	420.72	121.84	0.95
Reach 1	120.3462	100-Year	EX_MATRIX	5330.00	6323.20	6328.80	6328.80	6330.91	0.006790	12.33	510.82	131.26	0.95
Reach 1	120.3462	500-Year	EX_MATRIX	8120.00	6323.20	6330.36	6330.36	6332.84	0.005896	13.67	730.84	148.79	0.92
Reach 1	120.3462	100-Developed	EX_MATRIX	5898.00	6323.20	6329.13	6329.13	6331.34	0.006825	12.69	554.93	135.63	0.95
Reach 1	120.3450	10-Year	EX_MATRIX	1940.00	6322.77	6325.63	6325.63	6326.73	0.009083	8.88	249.14	117.31	0.97
Reach 1	120.3450	50-Year	EX_MATRIX	4180.00	6322.77	6327.16	6327.16	6328.84	0.007772	11.21	445.47	137.40	0.97
Reach 1	120.3450	100-Year	EX_MATRIX	5330.00	6322.77	6327.79	6327.79	6329.70	0.007456	12.07	533.79	143.46	0.96
Reach 1	120.3450	500-Year	EX_MATRIX	8120.00	6322.77	6329.10	6329.10	6331.48	0.006893	13.66	727.09	150.54	0.96
Reach 1	120.3450	100-Developed	EX_MATRIX	5898.00	6322.77	6328.11	6328.11	6330.09	0.007168	12.56	579.71	145.96	0.97
Reach 1	119.3423	10-Year	EX_MATRIX	1940.00	6320.25	6323.90		6324.47	0.003471	6.49	352.15	136.84	0.63
Reach 1	119.3423	50-Year	EX_MATRIX	4180.00	6320.25	6325.57		6326.51	0.003478	8.52	586.42	145.91	0.67
Reach 1	119.3423	100-Year	EX_MATRIX	5330.00	6320.25	6326.22		6327.36	0.003585	9.40	684.68	149.69	0.70
Reach 1	119.3423	500-Year	EX_MATRIX	8120.00	6320.25	6327.57		6329.18	0.003856	11.25	894.75	170.58	0.75
Reach 1	119.3423	100-Developed	EX_MATRIX	5898.00	6320.25	6326.53		6327.75	0.003614	9.77	731.34	151.91	0.71
Reach 1	119.3421	10-Year	EX_MATRIX	1940.00	6320.17	6323.20	6323.20	6324.32	0.008535	8.85	250.52	121.72	0.85
Reach 1	119.3421	50-Year	EX_MATRIX	4180.00	6320.17	6324.74	6324.74	6326.35	0.007223	11.00	457.01	141.33	0.94
Reach 1	119.3421	100-Year	EX_MATRIX	5330.00	6320.17	6325.32	6325.32	6327.19	0.007144	11.93	540.79	144.36	0.96
Reach 1	119.3421	500-Year	EX_MATRIX	8120.00	6320.17	6326.56	6326.56	6328.89	0.007055	13.81	724.06	153.93	0.99
Reach 1	119.3421	100-Developed	EX_MATRIX	5898.00	6320.17	6325.60	6325.60	6327.58	0.007064	12.33	580.60	145.81	0.96
Reach 1	119.3417	10-Year	EX_MATRIX	1940.00	6317.05	6320.91		6321.68	0.009858	7.18	287.76	86.67	0.66
Reach 1	119.3417	50-Year	EX_MATRIX	4180.00	6317.05	6322.07	6321.93	6324.04	0.006636	11.59	395.43	110.75	0.93
Reach 1	119.3417	100-Year	EX_MATRIX	5330.00	6317.05	6323.03	6323.03	6325.11	0.005636	12.05	521.06	139.21	0.88
Reach 1	119.3417	500-Year	EX_MATRIX	8120.00	6317.05	6324.50	6324.50	6327.02	0.005370	13.66	731.88	147.48	0.89
Reach 1	119.3417	100-Developed	EX_MATRIX	5898.00	6317.05	6323.36	6323.36	6325.53	0.005569	12.42	566.81	141.31	0.88
Reach 1	119.3414	10-Year	EX_MATRIX	1940.00	6316.71	6320.67		6321.55	0.004858	7.61	269.36	100.89	0.74
Reach 1	119.3414	50-Year	EX_MATRIX	4180.00	6316.71	6322.08	6322.08	6323.77	0.006132	10.85	448.40	142.55	0.88
Reach 1	119.3414	100-Year	EX_MATRIX	5330.00	6316.71	6322.73	6322.73	6324.64	0.006000	11.71	541.97	145.42	0.89
Reach 1	119.3414	500-Year	EX_MATRIX	8120.00	6316.71	6324.00	6324.00	6326.45	0.006033	13.54	730.68	151.06	0.93

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 1	119.3414	100-Developed	EX_MATRIX	5898.00	6316.71	6323.01	6323.01	6325.04	0.006006	12.12	583.12	146.67	0.90
Reach 1	119.3400	10-Year	EX_MATRIX	1940.00	6316.38	6319.27	6319.27	6320.58	0.009338	9.91	217.54	88.76	1.00
Reach 1	119.3400	50-Year	EX_MATRIX	4180.00	6316.38	6321.23	6321.23	6322.87	0.006067	10.78	461.31	149.55	0.88
Reach 1	119.3400	100-Year	EX_MATRIX	5330.00	6316.38	6321.85	6321.85	6323.72	0.006029	11.58	554.43	152.46	0.89
Reach 1	119.3400	500-Year	EX_MATRIX	8120.00	6316.38	6323.15	6323.15	6325.47	0.005855	13.32	758.18	157.88	0.91
Reach 1	119.3400	100-Developed	EX_MATRIX	5898.00	6316.38	6322.14	6322.14	6324.10	0.005970	12.04	598.85	153.74	0.90
Reach 1	119.3382	10-Year	EX_MATRIX	1940.00	6315.51	6317.37	6317.37	6318.23	0.011036	7.49	263.45	157.39	1.00
Reach 1	119.3382	50-Year	EX_MATRIX	4180.00	6315.51	6318.52	8318.52	6319.92	0.009180	9.60	446.15	163.98	1.00
Reach 1	119.3382	100-Year	EX_MATRIX	5330.00	6315.51	6319.02	6319.02	6320.65	0.008680	10.39	530.78	166.86	1.00
Reach 1	119.3382	500-Year	EX_MATRIX	8120.00	6315.51	6320.09	6320.09	6322.22	0.007890	11.90	713.01	173.03	0.99
Reach 1	119.3382	100-Developed	EX_MATRIX	5898.00	6315.51	6319.25	6319.25	6320.89	0.008500	10.74	569.31	168.19	1.00
Reach 1	119.3370	10-Year	EX_MATRIX	1940.00	6314.30	6316.52		6317.09	0.005588	5.10	324.22	158.66	0.74
Reach 1	119.3370	50-Year	EX_MATRIX	4180.00	6314.30	6317.28	6317.28	6318.89	0.009139	9.59	447.54	162.65	1.00
Reach 1	119.3370	100-Year	EX_MATRIX	5330.00	6314.30	6317.77	6317.77	6319.42	0.008739	10.42	527.90	165.20	1.00
Reach 1	119.3370	500-Year	EX_MATRIX	8120.00	6314.30	6318.85	6318.85	6321.00	0.007912	11.93	709.19	170.81	1.00
Reach 1	119.3370	100-Developed	EX_MATRIX	5898.00	6314.30	6318.02	6318.02	6319.77	0.008416	10.72	569.04	166.49	0.99
Reach 1	119.3340	10-Year	EX_MATRIX	1940.00	6312.79	6314.41	6314.41	6314.96	0.009170	5.91	328.16	309.81	1.01
Reach 1	119.3340	50-Year	EX_MATRIX	4180.00	6312.79	6315.13	6315.13	6316.02	0.007719	7.55	553.72	318.27	1.01
Reach 1	119.3340	100-Year	EX_MATRIX	5330.00	6312.79	6315.45	6315.45	6316.48	0.007300	8.14	654.54	321.98	1.01
Reach 1	119.3340	500-Year	EX_MATRIX	8120.00	6312.79	6316.12	6316.12	6317.46	0.006703	9.30	873.05	329.92	1.01
Reach 1	119.3340	100-Developed	EX_MATRIX	5898.00	6312.79	6315.59	6315.59	6316.89	0.007188	8.42	700.25	323.65	1.01
Reach 1	119	10-Year	EX_MATRIX	1940.00	6304.30	6306.53	6306.53	6306.91	0.008836	5.23	411.84	525.29	0.97
Reach 1	119	50-Year	EX_MATRIX	4180.00	6304.30	6307.04	6307.04	6307.66	0.008967	6.89	685.53	547.05	1.01
Reach 1	119	100-Year	EX_MATRIX	5330.00	6304.30	6307.26	6307.26	6307.98	0.008149	7.23	805.99	554.33	1.02
Reach 1	119	500-Year	EX_MATRIX	8120.00	6304.30	6307.74	6307.74	6308.57	0.007657	8.23	1073.11	570.13	1.03
Reach 1	119	100-Developed	EX_MATRIX	5898.00	6304.30	6307.37	6307.37	6308.13	0.008006	7.45	864.10	557.80	1.02
Reach 1	118	10-Year	EX_MATRIX	1940.00	6288.90	6291.69		6291.98	0.000606	2.41	804.11	401.84	0.29
Reach 1	118	50-Year	EX_MATRIX	4180.00	6288.90	6292.94		6293.13	0.000739	3.45	1217.84	560.32	0.34
Reach 1	118	100-Year	EX_MATRIX	5330.00	6288.90	6293.36		6293.60	0.000789	3.87	1391.07	596.58	0.36
Reach 1	118	500-Year	EX_MATRIX	8120.00	6288.90	6294.19		6294.54	0.000902	4.75	1747.23	666.83	0.40
Reach 1	118	100-Developed	EX_MATRIX	5898.00	6288.90	6293.55		6293.81	0.000815	4.07	1469.08	612.28	0.37
Reach 1	117.5	10-Year	EX_MATRIX	1940.00	6285.50	6290.77	6290.55	6291.10	0.002498	7.18	488.16	341.14	0.55
Reach 1	117.5	50-Year	EX_MATRIX	4180.00	6285.50	6291.58	6291.24	6292.06	0.002963	8.48	784.33	415.83	0.61
Reach 1	117.5	100-Year	EX_MATRIX	5330.00	6285.50	6291.82	6291.52	6292.44	0.003284	9.17	897.09	442.64	0.64
Reach 1	117.5	500-Year	EX_MATRIX	8120.00	6285.50	6292.44	6292.11	6293.25	0.003443	9.99	1192.93	506.28	0.67
Reach 1	117.5	100-Developed	EX_MATRIX	5898.00	6285.50	6291.97	6291.84	6292.62	0.003284	9.31	963.92	457.79	0.65
Reach 1	117.25			Bridge									
Reach 1	117	10-Year	EX_MATRIX	1940.00	6281.70	6290.52	6290.52	6291.07	0.002506	8.39	446.79	321.58	0.50
Reach 1	117	50-Year	EX_MATRIX	4180.00	6281.70	6291.23	6291.23	6292.01	0.003850	10.71	694.62	382.19	0.61
Reach 1	117	100-Year	EX_MATRIX	5330.00	6281.70	6291.48	6291.48	6292.39	0.004327	11.55	793.98	407.66	0.65
Reach 1	117	500-Year	EX_MATRIX	8120.00	6281.70	6292.11	6292.11	6293.18	0.004432	12.19	1072.26	472.39	0.67
Reach 1	117	100-Developed	EX_MATRIX	5898.00	6281.70	6291.64	6291.64	6292.56	0.004252	11.57	860.38	424.15	0.65
Reach 1	116	10-Year	EX_MATRIX	1940.00	6273.80	6276.40	6276.40	6276.92	0.004933	7.17	423.83	396.54	0.83
Reach 1	116	50-Year	EX_MATRIX	4180.00	6273.80	6277.11	6277.11	6277.77	0.005283	8.67	760.47	490.17	0.90
Reach 1	116	100-Year	EX_MATRIX	5330.00	6273.80	6277.35	6277.35	6278.10	0.005554	9.29	880.37	492.03	0.93
Reach 1	116	500-Year	EX_MATRIX	8120.00	6273.80	6277.82	6277.82	6278.83	0.006310	10.70	1112.92	495.59	1.01
Reach 1	116	100-Developed	EX_MATRIX	5898.00	6273.80	6277.46	6277.46	6278.26	0.005732	9.61	931.58	492.61	0.95
Reach 2	122.3791	10-Year	Existing	1890.00	6366.65	6369.23	6369.17	6370.13	0.009508	7.67	251.49	132.25	0.96
Reach 2	122.3791	50-Year	Existing	4070.00	6366.65	6370.45	6370.45	6372.00	0.008716	10.10	419.14	141.56	0.99
Reach 2	122.3791	100-Year	Existing	5190.00	6366.65	6371.01	6371.01	6372.80	0.008205	10.90	499.41	145.82	0.99
Reach 2	122.3791	500-Year	Existing	7920.00	6366.65	6372.21	6372.21	6374.55	0.007516	12.53	682.74	170.08	0.99
Reach 2	122.3789	10-Year	Existing	1890.00	6366.40	6368.97	6368.97	6369.93	0.010506	7.90	243.57	131.47	1.00
Reach 2	122.3789	50-Year	Existing	4070.00	6366.40	6370.25	6370.25	6371.80	0.008732	10.10	416.04	140.77	0.99
Reach 2	122.3789	100-Year	Existing	5190.00	6366.40	6370.81	6370.81	6372.60	0.008226	10.90	497.73	144.82	0.99
Reach 2	122.3789	500-Year	Existing	7920.00	6366.40	6372.03	6372.03	6374.35	0.007395	12.48	682.05	163.85	0.98
Reach 2	122.3785	10-Year	Existing	1890.00	6363.89	6366.55	6366.39	6357.36	0.007989	7.27	265.76	133.57	0.88
Reach 2	122.3785	50-Year	Existing	4070.00	6363.89	6367.67	6367.67	6369.21	0.008733	10.09	419.28	141.85	0.99
Reach 2	122.3785	100-Year	Existing	5190.00	6363.89	6368.24	6368.24	6370.01	0.008135	10.85	501.18	146.09	0.98
Reach 2	122.3785	500-Year	Existing	7920.00	6363.89	6369.42	6369.42	6371.72	0.007428	12.43	678.06	154.87	0.98
Reach 2	122.3752	10-Year	Existing	1890.00	6361.12	6363.41	6363.41	6364.35	0.010537	7.82	246.18	134.87	1.00
Reach 2	122.3752	50-Year	Existing	4070.00	6361.12	6364.67	6364.67	6366.19	0.008771	10.00	421.22	143.05	0.99
Reach 2	122.3752	100-Year	Existing	5190.00	6361.12	6365.21	6365.21	6366.98	0.008327	10.83	499.63	146.57	0.99
Reach 2	122.3752	500-Year	Existing	7920.00	6361.12	6366.35	6366.35	6368.68	0.007720	12.47	671.41	153.99	1.00
Reach 2	122.3750	10-Year	Existing	1890.00	6360.72	6363.11	6363.11	6364.05	0.010518	7.81	245.98	134.72	1.00
Reach 2	122.3750	50-Year	Existing	4070.00	6360.72	6364.38	6364.38	6365.90	0.008712	9.98	421.57	142.96	0.99
Reach 2	122.3750	100-Year	Existing	5190.00	6360.72	6364.91	6364.91	6366.69	0.008329	10.83	498.93	146.44	0.99
Reach 2	122.3750	500-Year	Existing	7920.00	6360.72	6366.06	6366.06	6368.39	0.007722	12.47	670.51	153.88	1.00
Reach 2	122.3746	10-Year	Existing	1890.00	6358.45	6361.18	6361.04	6362.02	0.009372	7.41	262.17	131.44	0.90
Reach 2	122.3746	50-Year	Existing	4070.00	6358.45	6362.41	6362.33	6363.89	0.008120	9.93	428.33	139.38	0.96
Reach 2	122.3746	100-Year	Existing	5190.00	6358.45	6362.91	6362.89	6364.70	0.008130	10.92	499.80	142.66	0.98
Reach 2	122.3746	500-Year	Existing	7920.00	6358.45	6364.09	6364.09	6366.44	0.007548	12.58	671.93	150.26	0.99
Reach 2	122.3720	10-Year	Existing	1890.00	6357.18	6359.63	6359.19	6360.24	0.005284	6.33	308.01	139.35	0.73
Reach 2	122.3720	50-Year	Existing	4070.00	6357.18	6360.86		6362.03	0.005724	8.77	486.55	147.21	0.82

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	122.3720	100-Year	Existing	5190.00	6357.18	6361.40		6362.81	0.005840	9.70	564.40	150.51	0.84
Reach 2	122.3720	500-Year	Existing	7920.00	6357.18	6362.37	6362.04	6364.47	0.006649	11.91	713.24	162.79	0.98
Reach 2	122.3685	10-Year	Existing	1890.00	6354.10	6356.71	6356.71	6357.67	0.010527	7.89	243.29	131.01	1.00
Reach 2	122.3685	50-Year	Existing	4070.00	6354.10	6358.00	6358.00	6359.55	0.008734	10.09	416.37	138.85	0.99
Reach 2	122.3685	100-Year	Existing	5190.00	6354.10	6358.55	6358.55	6360.38	0.008259	10.91	494.40	142.25	0.99
Reach 2	122.3685	500-Year	Existing	7920.00	6354.10	6359.91	6359.91	6362.11	0.006767	12.12	701.62	166.81	0.94
Reach 2	122.3683	10-Year	Existing	1940.00	6353.37	6356.11	6356.11	6357.08	0.010245	7.94	247.85	129.95	0.99
Reach 2	122.3683	50-Year	Existing	4180.00	6353.37	6357.41	6357.41	6359.00	0.008889	10.22	422.25	138.41	0.99
Reach 2	122.3683	100-Year	Existing	5330.00	6353.37	6357.98	6357.98	6359.83	0.008166	11.03	502.81	142.15	0.99
Reach 2	122.3683	500-Year	Existing	8120.00	6353.37	6359.15	6359.15	6361.59	0.007673	12.74	672.91	149.74	1.00
Reach 2	121.3679	10-Year	Existing	1940.00	6351.60	6353.91	6353.91	6354.93	0.010217	8.20	243.56	122.53	1.00
Reach 2	121.3679	50-Year	Existing	4180.00	6351.60	6355.29	6355.29	6356.94	0.008532	10.49	418.16	131.16	0.99
Reach 2	121.3679	100-Year	Existing	5330.00	6351.60	6355.88	6355.88	6357.80	0.008080	11.34	497.13	134.68	0.99
Reach 2	121.3679	500-Year	Existing	8120.00	6351.60	6357.15	6357.15	6359.63	0.007370	12.98	673.00	143.00	0.98
Reach 2	121.3660	10-Year	Existing	1940.00	6349.23	6351.78	6351.37	6352.24	0.004725	5.84	383.20	322.10	0.69
Reach 2	121.3660	50-Year	Existing	4180.00	6349.23	6353.26	6352.38	6353.91	0.003488	7.03	884.51	376.44	0.64
Reach 2	121.3660	100-Year	Existing	5330.00	6349.23	6353.85	6352.83	6354.68	0.003082	7.41	828.68	382.12	0.62
Reach 2	121.3660	500-Year	Existing	8120.00	6349.23	6355.58	6353.74	6356.42	0.002379	8.02	1174.81	400.55	0.57
Reach 2	121.3638	10-Year	Existing	1940.00	6347.63	6350.17	6349.93	6350.94	0.007105	7.13	280.03	230.05	0.84
Reach 2	121.3638	50-Year	Existing	4180.00	6347.63	6351.67	6351.26	6352.89	0.005694	9.00	485.30	245.91	0.82
Reach 2	121.3638	100-Year	Existing	5330.00	6347.63	6352.32	6351.84	6353.73	0.005352	9.70	577.25	252.74	0.82
Reach 2	121.3638	500-Year	Existing	8120.00	6347.63	6353.47	6353.06	6355.52	0.005705	11.71	750.32	268.73	0.88
Reach 2	121.3636	10-Year	Existing	1940.00	6347.43	6349.80	6349.80	6350.76	0.009871	7.90	248.61	191.11	0.96
Reach 2	121.3636	50-Year	Existing	4180.00	6347.43	6351.12	6351.12	6352.72	0.008472	10.21	419.88	212.66	0.98
Reach 2	121.3636	100-Year	Existing	5330.00	6347.43	6351.72	6351.72	6353.56	0.007879	10.99	500.49	220.60	0.97
Reach 2	121.3636	500-Year	Existing	8120.00	6347.43	6352.96	6352.96	6355.36	0.007188	12.60	673.26	236.66	0.97
Reach 2	121.3633	10-Year	Existing	1940.00	6344.35	6347.11	6346.87	6347.90	0.007053	7.18	276.56	156.40	0.84
Reach 2	121.3633	50-Year	Existing	4180.00	6344.35	6348.50	6348.25	6349.85	0.006467	9.44	481.46	182.78	0.87
Reach 2	121.3633	100-Year	Existing	5330.00	6344.35	6349.02	6348.82	6350.67	0.006640	10.48	534.72	192.78	0.90
Reach 2	121.3633	500-Year	Existing	8120.00	6344.35	6350.07	6350.03	6352.44	0.007141	12.60	686.68	213.59	0.97
Reach 2	121.3602	10-Year	Existing	1940.00	6342.13	6345.75		6346.29	0.003664	6.38	364.47	149.04	0.64
Reach 2	121.3602	50-Year	Existing	4180.00	6342.13	6347.27		6348.19	0.003873	8.55	615.02	177.48	0.70
Reach 2	121.3602	100-Year	Existing	5330.00	6342.13	6347.85		6348.93	0.003960	9.38	718.28	181.54	0.72
Reach 2	121.3602	500-Year	Existing	8120.00	6342.13	6349.07		6350.60	0.004098	10.95	944.91	191.24	0.76
Reach 2	121.3600	10-Year	Existing	1940.00	6342.10	6345.10	6345.10	6346.12	0.010144	8.77	260.51	137.34	1.01
Reach 2	121.3600	50-Year	Existing	4180.00	6342.10	6346.51	6346.51	6348.02	0.008421	10.94	476.26	168.26	1.00
Reach 2	121.3600	100-Year	Existing	5330.00	6342.10	6347.11	6347.11	6348.77	0.007746	11.59	578.59	174.95	0.98
Reach 2	121.3600	500-Year	Existing	8120.00	6342.10	6348.21	6348.21	6350.33	0.007520	13.28	776.96	183.92	1.00
Reach 2	121.3597	10-Year	Existing	1940.00	6339.78	6343.48		6344.11	0.003287	6.64	342.78	137.92	0.62
Reach 2	121.3597	50-Year	Existing	4180.00	6339.78	6345.24		6346.18	0.003175	8.53	621.95	169.97	0.65
Reach 2	121.3597	100-Year	Existing	5330.00	6339.78	6345.96		6347.03	0.003051	9.11	748.90	173.95	0.65
Reach 2	121.3597	500-Year	Existing	8120.00	6339.78	6347.55		6348.81	0.002835	10.23	1028.12	183.19	0.65
Reach 2	121.3585	10-Year	Existing	1940.00	6338.90	6343.10		6343.72	0.003065	6.61	339.29	131.04	0.60
Reach 2	121.3585	50-Year	Existing	4180.00	6338.90	6344.55		6345.73	0.003991	9.39	548.16	151.64	0.73
Reach 2	121.3585	100-Year	Existing	5330.00	6338.90	6345.17		6346.57	0.004170	10.34	642.69	158.15	0.76
Reach 2	121.3585	500-Year	Existing	8120.00	6338.90	6346.47		6348.34	0.004395	12.15	853.30	169.30	0.80
Reach 2	120.3562	10-Year	Existing	1940.00	6338.33	6341.52	6341.52	6342.61	0.007934	8.95	265.37	134.73	0.93
Reach 2	120.3562	50-Year	Existing	4180.00	6338.33	6343.01	6343.01	6344.52	0.006949	11.05	487.18	155.81	0.93
Reach 2	120.3562	100-Year	Existing	5330.00	6338.33	6343.54	6343.54	5345.31	0.007117	12.07	571.03	159.27	0.96
Reach 2	120.3562	500-Year	Existing	8120.00	6338.33	6344.68	6344.68	6347.01	0.007328	14.07	758.04	173.84	1.01
Reach 2	120.3560	10-Year	Existing	1940.00	6337.20	6341.00	6341.00	6342.08	0.007680	8.89	266.56	134.28	0.91
Reach 2	120.3560	50-Year	Existing	4180.00	6337.20	6342.49	6342.49	6344.01	0.006865	11.06	484.72	154.14	0.93
Reach 2	120.3560	100-Year	Existing	5330.00	6337.20	6343.04	6343.04	6344.81	0.006966	12.04	570.45	158.01	0.95
Reach 2	120.3560	500-Year	Existing	8120.00	6337.20	6344.16	6344.16	6346.51	0.007271	14.09	762.96	170.74	1.01
Reach 2	120.3557	10-Year	Existing	1940.00	6334.27	6337.50	6337.35	6338.72	0.007641	8.96	228.01	82.39	0.91
Reach 2	120.3557	50-Year	Existing	4180.00	6334.27	6339.27	6339.27	6341.34	0.007172	11.83	381.60	104.39	0.96
Reach 2	120.3557	100-Year	Existing	5330.00	6334.27	6340.28	6340.28	6342.43	0.005853	12.17	504.96	135.64	0.89
Reach 2	120.3557	500-Year	Existing	8120.00	6334.27	6341.86	6341.86	6344.39	0.005274	13.58	735.90	155.97	0.88
Reach 2	120.3527	10-Year	Existing	1940.00	6332.45	6336.71		6337.27	0.002630	6.18	354.29	132.59	0.56
Reach 2	120.3527	50-Year	Existing	4180.00	6332.45	6338.38		6339.35	0.003055	8.49	597.25	155.09	0.64
Reach 2	120.3527	100-Year	Existing	5330.00	6332.45	6339.04		6340.20	0.003175	9.34	701.50	159.59	0.67
Reach 2	120.3527	500-Year	Existing	8120.00	6332.45	6340.22		6341.93	0.003806	11.51	904.69	189.62	0.75
Reach 2	120.3525	10-Year	Existing	1940.00	6332.66	6335.93	6335.93	6337.12	0.007995	8.99	238.12	121.42	0.93
Reach 2	120.3525	50-Year	Existing	4180.00	6332.66	6337.60	6337.60	6339.21	0.006432	10.93	470.67	150.16	0.90
Reach 2	120.3525	100-Year	Existing	5330.00	6332.66	6338.18	6338.18	6340.04	0.006525	11.92	558.75	155.49	0.93
Reach 2	120.3525	500-Year	Existing	8120.00	6332.66	6339.52	6339.52	6341.79	0.006120	13.47	785.84	183.57	0.93
Reach 2	120.3522	10-Year	Existing	1940.00	6329.40	6332.91		6333.73	0.004230	7.40	280.83	90.20	0.70
Reach 2	120.3522	50-Year	Existing	4180.00	6329.40	6334.44		6336.14	0.005546	10.80	424.36	97.97	0.85
Reach 2	120.3522	100-Year	Existing	5330.00	6329.40	6335.00	6334.78	6337.18	0.006233	12.28	479.61	100.54	0.92
Reach 2	120.3522	500-Year	Existing	8120.00	6329.40	6336.60	6336.60	6339.37	0.005855	14.09	672.81	142.70	0.93
Reach 2	120.3490	10-Year	Existing	1940.00	6327.55	6330.62	6330.62	6331.81	0.008656	8.96	234.42	104.54	0.96
Reach 2	120.3490	50-Year	Existing	4180.00	6327.55	6332.27	6332.27	6334.09	0.007340	11.33	422.65	124.49	0.96

HEC-RAS (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach 2	120.3490	100-Year	Existing	5330.00	6327.55	6332.96	6332.96	6335.03	0.006990	12.19	512.03	134.00	0.96
Reach 2	120.3490	500-Year	Existing	8120.00	6327.55	6334.53	6334.53	6336.92	0.005866	13.38	738.33	150.88	0.92
Reach 2	120.3487	10-Year	Existing	1940.00	6326.19	6329.88		6330.48	0.003238	6.60	351.37	131.67	0.61
Reach 2	120.3487	50-Year	Existing	4180.00	6326.19	6331.49		6332.52	0.003626	8.94	576.47	144.96	0.69
Reach 2	120.3487	100-Year	Existing	5330.00	6326.19	6332.14		6333.37	0.003763	9.85	671.18	148.47	0.72
Reach 2	120.3487	500-Year	Existing	8120.00	6326.19	6333.37		6335.16	0.004342	12.01	871.31	186.60	0.80
Reach 2	120.3465	10-Year	Existing	1940.00	6326.00	6329.18	6329.18	6330.32	0.009113	9.13	250.62	121.29	0.98
Reach 2	120.3465	50-Year	Existing	4180.00	6326.00	6330.73	6330.73	6332.36	0.007613	11.28	457.32	141.58	0.97
Reach 2	120.3465	100-Year	Existing	5330.00	6326.00	6331.34	6331.34	6333.21	0.007416	12.19	544.71	146.39	0.98
Reach 2	120.3465	500-Year	Existing	8120.00	6326.00	6332.45	6332.45	6334.98	0.007800	14.36	719.05	154.59	1.04
Reach 2	120.3462	10-Year	Existing	1940.00	6323.20	6326.62	6326.38	6327.65	0.006361	8.34	253.58	109.12	0.84
Reach 2	120.3462	50-Year	Existing	4180.00	6323.20	6328.09	6328.09	6329.95	0.007143	11.48	420.72	121.84	0.95
Reach 2	120.3462	100-Year	Existing	5330.00	6323.20	6328.80	6328.80	6330.91	0.006790	12.33	510.82	131.26	0.95
Reach 2	120.3462	500-Year	Existing	8120.00	6323.20	6330.36	6330.36	6332.84	0.005896	13.67	730.84	148.79	0.92
Reach 2	120.3450	10-Year	Existing	1940.00	6322.77	6325.63	6325.63	6326.73	0.009083	8.86	249.14	117.31	0.97
Reach 2	120.3450	50-Year	Existing	4180.00	6322.77	6327.16	6327.16	6328.84	0.007772	11.21	445.47	137.40	0.97
Reach 2	120.3450	100-Year	Existing	5330.00	6322.77	6327.79	6327.79	6329.70	0.007456	12.07	533.79	143.46	0.98
Reach 2	120.3450	500-Year	Existing	8120.00	6322.77	6329.10	6329.10	6331.48	0.006893	13.66	727.09	150.54	0.98
Reach 2	119.3423	10-Year	Existing	1940.00	6320.25	6323.90		6324.47	0.003471	5.49	352.15	136.84	0.63
Reach 2	119.3423	50-Year	Existing	4180.00	6320.25	6325.57		6326.51	0.003476	8.52	588.42	145.91	0.67
Reach 2	119.3423	100-Year	Existing	5330.00	6320.25	6326.22		6327.36	0.003585	9.40	664.88	149.69	0.70
Reach 2	119.3423	500-Year	Existing	8120.00	6320.25	6327.57		6329.18	0.003856	11.25	894.75	170.58	0.75
Reach 2	119.3421	10-Year	Existing	1940.00	6320.17	6323.20	6323.20	6324.32	0.008535	8.85	250.52	121.72	0.95
Reach 2	119.3421	50-Year	Existing	4180.00	6320.17	6324.74	6324.74	6326.35	0.007223	11.00	457.01	141.33	0.94
Reach 2	119.3421	100-Year	Existing	5330.00	6320.17	6325.32	6325.32	6327.19	0.007144	11.93	540.79	144.38	0.96
Reach 2	119.3421	500-Year	Existing	8120.00	6320.17	6326.56	6326.56	6328.99	0.007055	13.81	724.06	153.93	0.99
Reach 2	119.3417	10-Year	Existing	1940.00	6317.05	6320.91		6321.68	0.003658	7.18	287.75	86.67	0.55
Reach 2	119.3417	50-Year	Existing	4180.00	6317.05	6322.07	6321.93	6324.04	0.006636	11.59	395.43	110.75	0.93
Reach 2	119.3417	100-Year	Existing	5330.00	6317.05	6323.03	6323.03	6325.11	0.005636	12.05	521.06	139.21	0.88
Reach 2	119.3417	500-Year	Existing	8120.00	6317.05	6324.50	6324.50	6327.02	0.005370	13.88	731.88	147.48	0.89
Reach 2	119.3414	10-Year	Existing	1940.00	6316.71	6320.67		6321.55	0.004858	7.61	269.36	100.89	0.74
Reach 2	119.3414	50-Year	Existing	4180.00	6316.71	6322.08	6322.08	6323.77	0.008132	10.85	448.40	142.55	0.88
Reach 2	119.3414	100-Year	Existing	5330.00	6316.71	6322.73	6322.73	6324.64	0.006000	11.71	541.97	145.42	0.89
Reach 2	119.3414	500-Year	Existing	8120.00	6316.71	6324.00	6324.00	6326.45	0.005033	13.54	730.68	151.06	0.93
Reach 2	119.3400	10-Year	Existing	1940.00	6316.38	6319.27	6319.27	6320.58	0.009338	9.31	217.54	88.76	1.00
Reach 2	119.3400	50-Year	Existing	4180.00	6316.38	6321.23	6321.23	6322.87	0.006067	10.78	481.31	149.55	0.88
Reach 2	119.3400	100-Year	Existing	5330.00	6316.38	6321.85	6321.85	6323.72	0.006029	11.68	554.43	152.46	0.89
Reach 2	119.3400	500-Year	Existing	8120.00	6316.38	6323.15	6323.15	6325.47	0.005855	13.32	756.18	157.88	0.91
Reach 2	119.3382	10-Year	Existing	1940.00	6315.51	6317.37	6317.37	6318.23	0.011036	7.49	263.45	157.39	1.00
Reach 2	119.3382	50-Year	Existing	4180.00	6315.51	6318.52	6318.52	6319.92	0.009180	9.60	448.15	163.99	1.00
Reach 2	119.3382	100-Year	Existing	5330.00	6315.51	6319.02	6319.02	6320.65	0.008690	10.39	530.78	166.86	1.00
Reach 2	119.3382	500-Year	Existing	8120.00	6315.51	6320.09	6320.09	6322.22	0.007890	11.90	713.01	173.03	0.99
Reach 2	119.3370	10-Year	Existing	1940.00	6314.30	6316.52		6317.09	0.005588	6.10	324.22	158.66	0.74
Reach 2	119.3370	50-Year	Existing	4180.00	6314.30	6317.26	6317.26	6318.89	0.009139	9.59	447.54	162.65	1.00
Reach 2	119.3370	100-Year	Existing	5330.00	6314.30	6317.77	6317.77	6319.42	0.008739	10.42	527.90	165.20	1.00
Reach 2	119.3370	500-Year	Existing	8120.00	6314.30	6318.85	6318.85	6321.00	0.007912	11.93	709.19	170.81	1.00
Reach 2	119.3340	10-Year	Existing	1940.00	6312.79	6314.41	6314.41	6314.96	0.009170	5.91	328.16	309.81	1.01
Reach 2	119.3340	50-Year	Existing	4180.00	6312.79	6315.13	6315.13	6316.02	0.007719	7.55	553.72	318.27	1.01
Reach 2	119.3340	100-Year	Existing	5330.00	6312.79	6315.45	6315.45	6316.46	0.007300	8.14	654.54	321.98	1.01
Reach 2	119.3340	500-Year	Existing	8120.00	6312.79	6316.12	6316.12	6317.46	0.006703	9.30	873.05	329.92	1.01
Reach 2	119	10-Year	Existing	1940.00	6304.30	6306.53	6306.53	6306.91	0.008836	5.23	411.84	525.29	0.97
Reach 2	119	50-Year	Existing	4180.00	6304.30	6307.04	6307.04	6307.66	0.008387	6.69	685.53	547.06	1.01
Reach 2	119	100-Year	Existing	5330.00	6304.30	6307.26	6307.26	6307.98	0.008149	7.23	805.99	554.33	1.02
Reach 2	119	500-Year	Existing	8120.00	6304.30	6307.74	6307.74	6308.67	0.007657	8.23	1073.11	570.13	1.03
Reach 2	118	10-Year	Existing	1940.00	6288.90	6291.89		6291.98	0.000606	2.41	804.11	401.84	0.29
Reach 2	118	50-Year	Existing	4180.00	6288.90	6292.94		6293.13	0.000738	3.45	1218.24	560.41	0.34
Reach 2	118	100-Year	Existing	5330.00	6288.90	6293.36		6293.59	0.000790	3.88	1390.46	417.97	0.36
Reach 2	118	500-Year	Existing	8120.00	6288.90	6294.19		6294.54	0.000903	4.75	1747.02	439.62	0.40
Reach 2	117.5	10-Year	Existing	1940.00	6285.50	6290.77	6290.55	6291.10	0.002496	7.18	486.16	341.14	0.55
Reach 2	117.5	50-Year	Existing	4180.00	6285.50	6291.54	6291.24	6292.06	0.003010	8.52	780.07	414.78	0.61
Reach 2	117.5	100-Year	Existing	5330.00	6285.50	6291.83	6291.52	6292.44	0.003222	9.09	908.15	444.03	0.64
Reach 2	117.5	500-Year	Existing	8120.00	6285.50	6292.44	6292.11	6293.25	0.003433	9.98	1194.17	506.53	0.67
Reach 2	117	10-Year	Existing	1940.00	6281.70	6290.52	6290.52	6291.07	0.002506	8.38	446.79	321.58	0.50
Reach 2	117	50-Year	Existing	4180.00	6281.70	6291.23	6291.23	6292.01	0.003836	10.69	695.55	382.44	0.61
Reach 2	117	100-Year	Existing	5330.00	6281.70	6291.49	6291.49	6292.39	0.004224	11.43	800.94	409.60	0.64
Reach 2	117	500-Year	Existing	8120.00	6281.70	6292.12	6292.12	6293.18	0.004401	12.15	1075.03	472.99	0.66
Reach 2	116	10-Year	Existing	1940.00	6273.80	6276.40	6276.40	6276.92	0.004933	7.17	423.83	396.54	0.83
Reach 2	116	50-Year	Existing	4180.00	6273.80	6277.13	6277.13	6277.77	0.005111	8.55	789.08	490.31	0.88
Reach 2	116	100-Year	Existing	5330.00	6273.80	6277.35	6277.35	6278.10	0.005540	9.29	881.09	492.04	0.93
Reach 2	116	500-Year	Existing	8120.00	6273.80	6277.83	6277.83	6278.83	0.006255	10.67	1115.47	495.64	1.00

Errors Warnings and Notes for Plan : Existing

Location:	River: RIVER-1 Reach: Reach 6 RS: 6137 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6137 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6137 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6137 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6136 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6136 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6136 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6136 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6135 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.

Errors Warnings and Notes for Plan : Existing (Continued)

Location:	River: RIVER-1 Reach: Reach 6 RS: 6134 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6133 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6132 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6128 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6127 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : Existing (Continued)

Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6125 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6124 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow
	into the channel, a levee or ineffective flow may have to be added or the Manning's n of the
	overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

Errors Warnings and Notes for Plan : Existing (Continued)

	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow
	into the channel, a levee or ineffective flow may have to be added or the Manning's n of the
	overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow
	into the channel, a levee or ineffective flow may have to be added or the Manning's n of the
	overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6123 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Warning:	There is no flow in the channel. Check that the channel stations are correctly coded. To force flow
	into the channel, a levee or ineffective flow may have to be added or the Manning's n of the
	overbank could be increased.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid

Errors Warnings and Notes for Plan : Existing (Continued)

	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6120 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6118 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 10-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6117 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6116 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6112 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6110 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7

Errors Warnings and Notes for Plan : Existing (Continued)

	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6109 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6108 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6107 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 50-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6106 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6102 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid

Errors Warnings and Notes for Plan : Existing (Continued)

	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 6 RS: 6100 Profile: 500-Year
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 124 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

Errors Warnings and Notes for Plan : Existing (Continued)

	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 1 RS: 123 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3791 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,

Errors Warnings and Notes for Plan : Existing (Continued)

	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3789 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,

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	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3785 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3752 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3750 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3750 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,

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	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3750 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3746 Profile: 10-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3746 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3746 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3746 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3720 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3685 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 122.3683 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.

Errors Warnings and Notes for Plan : Existing (Continued)

Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3679 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water

Errors Warnings and Notes for Plan : Existing (Continued)

	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3660 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 10-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 50-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 100-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3638 Profile: 500-Year
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 100-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3636 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3633 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, water
	surface was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

Errors Warnings and Notes for Plan : Existing (Continued)

	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3602 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step Iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step Iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step Iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3600 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

Errors Warnings and Notes for Plan : Existing (Continued)

	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3597 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 121.3585 Profile: 500-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3562 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3560 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 10-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program

Errors Warnings and Notes for Plan : Existing (Continued)

	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3557 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3527 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid

Errors Warnings and Notes for Plan : Existing (Continued)

	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3525 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 10-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 50-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 100-Year
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3522 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	Divided flow computed for this cross-section.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program

Errors Warnings and Notes for Plan : Existing (Continued)

	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3490 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3467 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step Iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3465 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3462 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 120.3450 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 10-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 100-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3423 Profile: 500-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3421 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 50-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3417 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3414 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.

Errors Warnings and Notes for Plan : Existing (Continued)

Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3400 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3382 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	selected the water surface that had the least amount of error between computed and assumed
	values.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 10-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 50-Year
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3370 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119.3340 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program

Errors Warnings and Notes for Plan : Existing (Continued)

	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 119 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
	additional cross sections.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 10-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	The cross-section end points had to be extended vertically for the computed water surface.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 100-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 118 Profile: 500-Year
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 10-Year
Warning:	The pressure flow/weir flow answer did not converge within the given number of iterations.
	However, the error was small enough that the solution was treated as valid.
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The
	momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice
	flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 10-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been
	projected from the upstream cross section. The selected bridge modeling method does not compute
	answers inside the bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 10-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have
	been projected from the downstream cross section. The selected bridge modeling method does not
	compute answers inside the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy
	was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 50-Year
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The
	momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice
	flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 50-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been
	projected from the upstream cross section. The selected bridge modeling method does not compute
	answers inside the bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 50-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have
	been projected from the downstream cross section. The selected bridge modeling method does not
	compute answers inside the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy
	was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Year

Errors Warnings and Notes for Plan : Existing (Continued)

Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The
	momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice
	flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been
	projected from the upstream cross section. The selected bridge modeling method does not compute
	answers inside the bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 100-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the water surface and energy have
	been projected from the downstream cross section. The selected bridge modeling method does not
	compute answers inside the bridge.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy
	was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 500-Year
Note:	Momentum answer is not valid if the water surface is above the low chord or if there is weir flow. The
	momentum answer has been disregarded.
Note:	The downstream water surface is above the minimum elevation required for orifice flow. The orifice
	flow equation was used for pressure flow.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 500-Year Upstream
Note:	For the cross section inside the bridge at the upstream end, the water surface and energy have been
	projected from the upstream cross section. The selected bridge modeling method does not compute
	answers inside the bridge.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117.25 Profile: 500-Year Downstream
Note:	For the cross section inside the bridge at the downstream end, the energy is based on critical depth
	over the weir. The water surface has been projected.
Note:	Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy
	was used.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 10-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	Divided flow computed for this cross-section.
Warning:	The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7
	or greater than 1.4. This may indicate the need for additional cross sections.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 50-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 100-Year
Warning:	The energy equation could not be balanced within the specified number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,

Errors Warnings and Notes for Plan : Existing (Continued)

	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 117 Profile: 500-Year
Warning:	The energy equation could not be balanced within the specifled number of iterations. The program
	used critical depth for the water surface and continued on with the calculations.
Warning:	The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
	This may indicate the need for additional cross sections.
Warning:	During the standard step iterations, when the assumed water surface was set equal to critical depth,
	the calculated water surface came back below critical depth. This indicates that there is not a valid
	subcritical answer. The program defaulted to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 10-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too steep for slope area to converge during supercritical flow calculations (normal depth is
	below critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 50-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too steep for slope area to converge during supercritical flow calculations (normal depth is
	below critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 100-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too steep for slope area to converge during supercritical flow calculations (normal depth is
	below critical depth). Water surface set to critical depth.
Location:	River: RIVER-1 Reach: Reach 2 RS: 116 Profile: 500-Year
Warning:	Divided flow computed for this cross-section.
Warning:	Slope too steep for slope area to converge during supercritical flow calculations (normal depth is
	below critical depth). Water surface set to critical depth.

CHECK-RAS Program: Structure Check

Project File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.prj
Plan File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.p01
Geometry File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.g05
Flow File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.f05
Report File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.br
Selected profiles: 100-Developed
Date: 5/15/2006
Time: 4:57:35 PM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
RIVER-1,Reach 1						
124			6401.62	6400.95	6398	
123			6384.5	6383.66	6380.8	
122.3791			6373.18	6371.27	6366.65	
122.3789			6372.99	6371.07	6366.4	
122.3785			6370.39	6368.49	6363.89	
122.3752			6367.36	6365.47	6361.12	
122.375			6367.07	6365.19	6360.72	
122.3746			6365.09	6363.15	6358.45	
122.372			6363.18	6361.65	6357.18	
122.3685			6360.74	6358.82	6354.1	
122.3683			6360.21	6358.25	6353.37	
121.3679			6358.2	6356.16	6351.6	
121.366			6355.04	6354.28	6349.23	
121.3638			6354.12	6352.63	6347.63	
121.3636			6353.95	6351.98	6347.43	
121.3633			6351.05	6349.26	6344.35	
121.3602			6349.27	6348.11	6342.13	
121.36			6349.11	6347.35	6342.1	
121.3597			6347.41	6346.31	6339.78	
121.3585			6346.94	6345.42	6338.9	
120.3562			6345.67	6343.82	6338.33	
120.356			6345.18	6343.29	6337.2	
120.3557			6342.87	6340.63	6334.27	
120.3527			6340.6	6339.39	6332.45	
120.3525			6340.43	6338.42	6332.66	
120.3522			6337.66	6335.25	6329.4	
120.349			6335.46	6333.28	6327.55	
120.3467			6333.76	6332.44	6326.19	
120.3465			6333.59	6331.61	6326	
120.3462			6331.34	6329.13	6323.2	
120.345			6330.09	6328.11	6322.77	
119.3423			6327.75	6326.53	6320.25	
119.3421			6327.58	6325.6	6320.17	
119.3417			6325.53	6323.36	6317.05	
119.3414			6325.04	6323.01	6316.71	
119.34			6324.1	6322.14	6316.38	
119.3382			6320.99	6319.25	6315.51	
119.337			6319.77	6318.02	6314.3	
119.334			6316.69	6315.59	6312.79	
119			6308.13	6307.37	6304.3	
118			6293.81	6293.55	6288.9	
117.5			6292.62	6291.97	6285.5	
117.25	6291	6274	6292.61	6291.97	6285.5	Bridge #1-Up
117.25	6291	6274	6292.56	6291.64	6281.7	Bridge #1-Dn
117			6292.56	6291.64	6281.7	
116			6278.26	6277.46	6273.8	
RIVER-1,Reach 6						
6220			6430.69	6428.87	6424	
6219			6429.52	6427.75	6423	

6218.2			6428.22	6426.42	6422	
6218.1			6427.86	6426.98	6421	
6218			6427.79	6427.13	6420	
6217.75			6427.63	6425.6	6419.75	
6217.5			6427.48	6425.41	6419.5	
6217.25			6427.32	6425.24	6419.25	
6217			6427.19	6425.39	6419	
6216.5			6426.76	6426.07	6418.5	
6216.25			6426.73	6426.06	6418.25	
6216			6426.69	6426.05	6418	
6215.5			6426.59	6426.12	6417.5	
6215			6426.5	6426.21	6417	
6214			6426.48	6426.14	6416	
6213			6426.44	6426.07	6415	
6212			6426.39	6426.1	6415	
6211			6426.12	6423.65	6414	
6210			6420.98	6418.84	6413	
5042			6418.74	6417.29	6414	
5041			6415.75	6414.1	6410	
5040			6413.78	6412.42	6408	
5039			6411.94	6410.28	6406	
5038			6411.25	6409.85	6406	
5037			6407.63	6406.58	6404	
5036			6405.69	6404.55	6402	
5035			6403.78	6402.58	6400	
5034			6401.97	6401.31	6398	
5033			6399.68	6398.55	6396	
5032			6397.66	6396.53	6394	
5031			6395.87	6395.32	6392	
5030			6395.23	6395.01	6390	
5029			6395.19	6395.09	6388	
5028			6395.17	6395.12	6388	
5027			6395.15	6395.1	6388	
5026			6395.14	6395.11	6388	
5025			6395.14	6395.1	6388	
5024			6395.13	6395.08	6388	
5023.1			6394.9	6392.63	6388	
5023			6393.9	6391.63	6387	
5022.5	6393	6393.3	0	6391.07	6387	Culvert #1-Up
5022.5	6392.5	6396	0	6390.29	6386.5	Culvert #1-Dn
5022			6392.14	6390.38	6386	
5021.9			6392.11	6390.07	6386	
5021			6389.54	6388.53	6386	
5020			6389.32	6388.23	6386	
5019			6385.81	6384.65	6382	
5018			6383.42	6382.41	6380	
5017			6381.35	6380.38	6378	
5016			6378.52	6377.08	6374	
5015			6375.73	6374.57	6372	
5014			6373.66	6372.54	6370	
5013			6371.86	6370.69	6368	
5012			6368.48	6368.37	6364	
5011			6368.42	6368.08	6364	
5010			6368.13	6367.66	6364	
5009			6367.68	6366.58	6364	
5008			6365.88	6365.33	6362	
5007			6363.08	6362.13	6360	
5006			6359.65	6358.45	6356	
5005			6357.64	6356.7	6354	
5004			6356.89	6356.55	6352	
5003			6356.31	6355.87	6350	
5002			6356.02	6355.88	6348	

RIVER/REACH: RIVER-1, Reach 1
RIVER STATION: 117.25
TYPE OF STRUCTURE: Bridge

Description:	Bridge #2
Distance from Upstream XS:	1
Deck/Roadway Width:	70
Weir Coefficient:	3.1
Maximum allowable submergence for weir flow:	0.95
Elevation at which weir flow begins:	6291
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	118	850.00	6293.55		6293.81	422.84	
3	117.5	72.00	6291.97		6292.62	457.79	
	117.25	70.00	6291.97		6292.61	457.79	Bridge #1-Up
	117.25	1.00	6291.64		6292.56	424.15	Bridge #1-Dn
2	117	770.00	6291.64		6292.56	424.15	
1	116	0.00	6277.46		6278.26	492.81	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	200	1607	6296	200	1607	6300

BRIDGE:
Bridge Name: Bridge #1
LowFlowMethod: Energy
Momentum Cd: 2
HighFlowMethod: Pressure and Weir flow
SluiceGate Cd: 0 Submerged Cd: 0.8164966

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

MaxLowChord: 6287.2 MinTopRd: 6291 MinElPrs: 6287.2

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
Bridge					1607		U
					1607		D

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Bridge #1	1771.00	1782.00	6274.00	6288.70	6274.00	6291.00	U
	1771.00	1782.00	6274.00	6288.70	6274.00	6291.00	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Bridge #1	5898	193.38	5704.62	Press/Weir	Submerged Pressure and Weir Flow

GEOMETRIC CHECK

TYPE OF FLOW CHECK

RS: 117.25 This is Bridge #1
BR PW 02 Type of flow is submerged pressure and weir flow because,
1. EGEL 3 of 6292.62 is greater than MinTopRd of 6291.00.
2. EGEL 3 of 6292.62 is equal to or greater than MxLoCdU of 6291.00.
3. WSEL 2 of 6291.64 is equal to or greater than MxLoCdD of 6291.00.

DISTANCE CHECK

RS: 117.25 This is Bridge #1
ST DT 01 'Distance from Upstream XS' of 1.00 is less than the height of the bridge opening of 5.50
Section 3 should be placed at the foot of the road embankment or wing walls.
Distances at Sections 4 & 3, and 'Distance from Upstream XS' should be adjusted.

RS: 117.25 This is Bridge #1
ST DT 02 The channel distance of 1 at Downstream Internal Section is less than the height of the bridge opening of 9.30
Section 2 should be placed at the foot of the road embankment or wing walls.
Distances at Sections 4, 3 & 2 should be adjusted.

INEFFECTIVE FLOW CHECK

RS: 117.5 This is Section 3
ST IF 02 Weir flow occurs at Bridge
However, the ineffective flow elevation of 6296 between stations 200 and 1607 is equal to or greater than the WSEL of 6291.97
The LMnTpRdU is 6274
The ineffective flow elevation should be equal to or lower than the MnTpRd
It should also be less than the WSEL.

RS: 117 This is Section 2
ST IF 02 Weir flow occurs at Bridge
However, the ineffective flow elevation of 6300 between stations 200 and 1607 is equal to or greater than the WSEL of 6291.64
The LMnTpRdD is 6274 and the MxLoCdD is 6291
The ineffective flow elevation should be between the LMnTpRdD and the MxLoCdD if LMnTpRdD is greater than MxLoCdD. Otherwise, It should be equal to LMnTpRdD.
It should also be less than the WSEL.

RS: 118 This is Section 4
ST IF 07 Ineffective flow option was considered at this section.
However, it should be a fully expanded cross section.
Ineffective flow stations and elevations should be cleared from this section, unless the areas beyond the ineffective flow stations are not within the flow path of the stream.
This message should be ignored if this section is Section 2 of the upstream structure.

RS: 116 This is Section 1
ST IF 07 Ineffective flow option was considered at this section.
However, it should be a fully expanded cross section.
Ineffective flow stations and elevations should be cleared from this section, unless the ares beyond the ineffective flow stations are not within the flow path of the stream.
This message should be ignored if this section is Section 3 of the downstream structure.

RS: 117.5 This is Section 3

```
ST IF 09  'Permanent Ineffective Flow Areas' option is used.
          HEC-RAS version 3.0.1 will compute higher water-surface elevation
          than it should be computed if weir flow occurs at the structure.
          Please disable this option.

RS:       117 This is Section 2
ST IF 09  'Permanent Ineffective Flow Areas' option is used.
          HEC-RAS version 3.0.1 will compute higher water-surface elevation
          than it should be computed if weir flow occurs at the structure.
          Please disable this option.
```

RIVER/REACH: RIVER-1, Reach 6
RIVER STATION: 5022.5
TYPE OF STRUCTURE: Culvert

Description:
Distance from Upstream XS: 1
Deck/Roadway Width: 180
Weir Coefficient: 2.6
Maximum allowable submergence for weir flow: 0.95
Elevation at which weir flow begins: 0
Weir crest shape: Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	5023.1	1.00	6392.63		6394.9	20	
3	5023	200.00	6391.63		6393.9	20	
	5022.5	180.00	6391.07		0	0	Culvert #1-Up
	5022.5	19.00	6390.29		0	0	Culvert #1-Dn
2	5022	1.00	6390.38		6392.14	24	
1	5021.9	25.00	6390.07		6392.11	24	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	0	830	6396	550	1418	6393
2	850	1107	6396	1442	1700	6393

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
Culvert Group					830	850	U
					1418	1442	D

CULVERT:
Culvert Name: Culvert #1
Shape: Box Rise: 6 Span: 12 Barrels: 2
FHWA Chart #: # 8 - flared wingwalls
FHWA Scale #: # 1 - Wingwall flared 30 to 75 deg.
Solution Crit:Highest U.S. EG

UpstrmDist: 1 Length: 180 n-Value: 0.011
EntLossCoef: 0.2 ExtLossCoef: 1 CulvInvElU 6387 CulvInvElD 6386.5
LCntStaU: 833.5 RCntStaU: 846.5 LCntStaD 1423.5 RCntStaD 1436.5
Culvert Depth Blocked: 0

Culv Area: 144 CulvQ: 1120 MinTopRd: 6396.01

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #1	827.5	852.5	6393.6	6393.3	6393.3	6393	U
	1417.5	1442.5	6396	6396	6396	6392.5	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Culvert #1		1120	0	Highest U.S. EG	Low Flow

GEOMETRIC CHECK

TYPE OF FLOW CHECK

RS: 5022.5 This is Culvert #1
CV LF 01 Type of flow is low flow because,
1. EGEL 3 of 6393.9 is less than or equal to MinTopRd of 6396.01.
2. CulvWSIn of 6391.07 is less than MxLoCdU of 6393.00.
3. CulvWSout of 6390.29 is less than MxLoCdD of 6392.50.
4. Q/AD^0.5 of 3.18 is less than 4.0.

DISTANCE CHECK

RS: 5022.5 This is Culvert #1
ST DT 01 'Culvert Upstrm Dist' of 1 is less than the height of the culvert opening of 6 .
Section 3 should be placed at the foot of the road embankment or wing walls.
Distances at Sections 4 & 3, and 'Distance from Upstream XS' should be adjusted.

CULVERT COEFFICIENT CHECK

RS: 5022.5 This is Culvert #1
CV CF 01 Culvert Chart # is 8 and Scale # is 1
Culvert entrance shape is Wingwall flared 30 to 75 deg.
Culvert entrance loss coefficient is 0.2 It should be equal to 0.4
Please refer to Table 6.3 on page 6-22 and Tabble 6.4 on page 6-23 of HEC-RAS Hydraulic Reference Manual, September 1998.

CULVERT CRITERIA CHECK

INEFFECTIVE FLOW CHECK

RS: 5023 This is Section 3.
ST IF 05 Low flow occurs at Culvert Group 1
The left ineffective flow station of 830 is greater than the left abutment station of 827.50
The left ineffective flow station should be adjusted

RS: 5023 This is Section 3.
ST IF 05 Low flow occurs at Culvert Group 1
The right ineffective flow station of 850 is less than the right abutment station of 852.50
The right ineffective flow station should be adjusted.

```
RS:         5022 This is Section 2.
ST IF 05    Low flow occurs at Culvert Group 1
            The left ineffective flow station of 1418 is greater than
            the left abutment station of 1417.50
            The left ineffective flow station should be adjusted.

RS:         5022 This is Section 2.
ST IF 05    Low flow occurs at Culvert Group 1
            The right ineffective flow station of 1442 is less than
            the right abutment station of 1442.50
            The right ineffective flow station should be adjusted.

RS:         5023 This is Section 3
ST IF 06    Low flow occurs at Culvert Group 1
            The velocity head at Section 3 is more than 0.5
            The computed left ineffective flow station of 821.50 is less than
            the selected left ineffective flow station of 830
            The left ineffective flow station should be adjusted.

RS:         5023 This is Section 3.
ST IF 06    Low flow occurs at Culvert Group 1
            The velocity head at Section 3 is more than 0.5
            The computed right ineffective flow station of 858.50 is greater than
            the selected right ineffective flow station of 850
            The right ineffective flow station should be adjusted.

RS:         5022 This is Section 2
ST IF 06    Low flow occurs at Culvert Group 1
            The velocity head at Section 2 is more than 0.5
            The computed left ineffective flow station of 1411.50 is less than
            the selected left ineffective flow station of 1418
            The left ineffective flow station should be adjusted.

RS:         5022 This is Section 2.
ST IF 06    Low flow occurs at Culvert Group 1
            The velocity head at Section 2 is more than 0.5
            The computed right ineffective flow station of 1448.50 is greater than
            the selected right ineffective flow station of 1442
            The right ineffective flow station should be adjusted.

RS:         5023.1 This is Section 4
ST IF 07    Ineffective flow option was considered at this section.
            However, it should be a fully expanded cross section.
            Ineffective flow stations and elevations should be cleared from
            this section, unless the areas beyond the ineffective flow stations
            are not within the flow path of the stream.
            This message should be ignored if this section is Section 2 of
            the upstream structure.

RS:         5021.9 This is Section 1
ST IF 07    Ineffective flow option was considered at this section.
            However, it should be a fully expanded cross section.
            Ineffective flow stations and elevations should be cleared from
            this section, unless the ares beyond the ineffective flow stations
            are not within the flow path of the stream.
            This message should be ignored if this section is Section 3 of the downstream
            structure.

---END
```

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.prj
Plan File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.p01
Geometry File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.g05
Flow File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.f05
Report File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.xs
Selected profiles: 100-Developed
Date: 5/15/2006
Time: 5:30:24 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
RIVER-1,Reach 1						
124	1870	1670	1400	595.82	5190	D,C
123	700	690	680	431.38	5190	D,C
122.3791	20	20	20	147.82	5758	C
122.3789	40	40	40	146.73	5758	C
122.3785	330	330	330	147.96	5758	C
122.3752	20	20	20	148.26	5758	C
122.375	40	40	40	148.23	5758	C
122.3746	260	260	260	144.21	5758	C
122.372	350	350	350	152.06	5758	
122.3685	20	20	20	143.88	5758	C
122.3683	40	40	40	143.86	5898	C
121.3679	190	190	190	136.61	5898	C
121.366	220	220	220	210	5898	
121.3638	20	20	20	144.98	5898	
121.3636	30	30	30	137.12	5898	C
121.3633	300	310	320	143.15	5898	
121.3602	20	20	20	183.41	5898	
121.36	30	30	30	176.9	5898	C
121.3597	128	120	116	175.73	5898	
121.3585	235	230	225	158.04	5898	
120.3562	20	20	20	161.08	5898	C
120.356	30	30	30	159.81	5898	C
120.3557	310	300	290	140.13	5898	C
120.3527	20	20	20	161.95	5898	
120.3525	30	30	30	160.28	5898	C
120.3522	310	320	330	101.71	5898	
120.349	223	230	238	138.45	5898	C
120.3467	20	20	20	150.1	5898	
120.3465	29	30	31	148.61	5898	C
120.3462	116	120	124	135.63	5898	C
120.345	265	270	275	145.96	5898	C
119.3423	20	20	20	151.91	5898	
119.3421	40	40	40	145.81	5898	C
119.3417	30	30	30	141.31	5898	C
119.3414	135	140	145	146.67	5898	C
119.34	180	180	190	153.74	5898	C
119.3382	125	120	113	168.19	5898	C
119.337	337	300	275	166.49	5898	C
119.334	690	650	600	323.65	5898	C
119	1050	1080	1020	557.8	5898	D,C
118	850	850	720	422.84	5898	E
117.5	72	72	72	457.79	5898	E,B
117.25	Bridge #1-Up					
117.25	Bridge #1-Dn					
117	750	770	780	424.15	5898	C,B
116	0	0	0	492.81	5898	D,C,B
RIVER-1,Reach 6						

6220	40	40	40	32.1	1120	C
6219	8	8	8	32.57	1120	C
6218.2	2	2	2	32.2	1120	C
6218.1	2	2	2	35.72	1120	
6218	8	8	8	36.91	1120	
6217.75	8	8	8	28.25	1120	C
6217.5	8	8	8	27.36	1120	C
6217.25	8	8	8	26.58	1120	
6217	30	30	30	27.27	1120	
6216.5	15	15	15	45.38	1120	
6216.25	15	15	15	45.33	1120	
6216	41	40	39	45.28	1120	
6215.5	41	40	39	48.25	1120	
6215	20	20	20	50.4	1120	
6214	55	55	55	51.94	1120	
6213	35	35	35	54.35	1120	
6212	35	40	45	54.05	1120	
6211	25	25	25	20.87	1120	C
6210	80	100	120	24.96	1120	C
5042	250	250	250	43.18	1120	C
5041	230	250	270	36.4	1120	C
5040	280	280	280	37.66	1120	
5039	69	50	38	36.17	1120	C
5038	66	66	66	45.48	1120	C
5037	180	200	220	70.89	1120	C
5036	1	1	1	60.3	1120	C
5035	34	34	34	55.98	1120	C
5034	400	400	400	63.44	1120	
5033	1	1	1	60.8	1120	C
5032	35	35	35	61.89	1120	C
5031	400	400	400	72.86	1120	
5030	1	1	1	79.8	1120	
5029	54	54	54	82.85	1120	
5028	100	100	100	125.46	1120	
5027	100	100	100	133.24	1120	
5026	30	30	30	350.39	1120	E
5025	30	30	30	100	1120	
5024	30	30	30	89	1120	
5023.1	1	1	1	20	1120	C
5023	200	200	200	20	1120	C
5022.5	Culvert #1-Up					
5022.5	Culvert #1-Dn					
5022	1	1	1	24	1120	
5021.9	25	25	25	24	1120	C
5021	25	25	25	55	1120	
5020	40	40	40	60	1120	C
5019	40	40	40	58.22	1120	C
5018	80	80	80	75.57	1120	C
5017	1	1	1	79.96	1120	C
5016	35	35	35	42.69	1120	C
5015	135	135	135	60.09	1120	C
5014	6	6	6	61.91	1120	C
5013	30	30	30	59.31	1120	C
5012	55	50	45	104.47	1120	
5011	160	150	140	76.54	1120	
5010	90	90	90	77.7	1195	
5009	210	210	210	69.09	1195	C
5008	530	550	570	68.32	1195	
5007	2	2	2	87.91	1195	C
5006	35	35	35	58.29	1195	C
5005	210	220	230	72.57	1195	
5004	450	450	450	75.03	1195	
5003	330	350	370	82.9	1815	
5002	330	350	370	279.71	1815	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02

K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 119
XS DC 04 There is no flow on the left overbank at the downstream
cross section. There is no flow on the right overbank at this section.

LOCATION CHECK

RS: 123
XS LC 01 Lenchl Up/TopwdthAct Dn = 4.67
MaxChlDpth Up/MaxChlDpth Dn = 1.16
TopwdthAct Up/TopwdthAct Dn = 2.92
This cross section is located too far upstream from the
critical depth cross section.

RS: 6212
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.92
MaxChlDpth Up/MaxChlDpth Dn = 1.15
TopwdthAct Up/TopwdthAct Dn = 2.59
This cross section is located too far upstream from the
critical depth cross section.

RS: 5024
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.50
MaxChlDpth Up/MaxChlDpth Dn = 1.53
TopwdthAct Up/TopwdthAct Dn = 4.45
This cross section is located too far upstream from the
critical depth cross section.

RS: 5010
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.30
MaxChlDpth Up/MaxChlDpth Dn = 1.42
TopwdthAct Up/TopwdthAct Dn = 1.12
This cross section is located too far upstream from the
critical depth cross section.

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is RIVER-1,Reach 1
Normal S = 0.007 is specified as the downstream boundary
for profile 100-Developed

XS BC 02 The name of the stream is RIVER-1,Reach 1
Normal S = 0.007 is specified as the upstream boundary
for profile 100-Developed

XS BC 02 The name of the stream is RIVER-1,Reach 6
Known WS = 6355.88 is specified as the downstream boundary

```
          for profile 100-Developed

XS BC 02 The name of the stream is RIVER-1,Reach 6
          Normal S = 0.007 is specified as the upstream boundary
          for profile 100-Developed

XS BC 03 Maximum number of iterations is 0
          It should not be less than 20.


LATERAL WEIRS CHECK
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---END---
```

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.prj
Plan File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.p01
Geometry File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.g05
Flow File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.f05
Report File: S:\Land Dev\4674-Marksheffel 340 lot Sub\Construction\C-CLOMR\HEC-RAS\Merrick-proposed\EX_FP_MERRICK.nt
Selected profiles: 100-Developed
Date: 5/15/2006
Time: 5:32:20 PM

SECNO STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
RIVER-1,Reach 1					
124	0.03	0.025	0.03	0.1	0.3
123	0.03	0.025	0.03	0.1	0.3
122.3791	0.04	0.03	0.04	0.1	0.3
122.3789	0.04	0.03	0.04	0.1	0.3
122.3785	0.04	0.03	0.04	0.1	0.3
122.3752	0.04	0.03	0.04	0.1	0.3
122.375	0.04	0.03	0.04	0.1	0.3
122.3746	0.04	0.03	0.04	0.1	0.3
122.372	0.04	0.03	0.04	0.1	0.3
122.3685	0.04	0.03	0.04	0.1	0.3
122.3683	0.04	0.03	0.04	0.1	0.3
121.3679	0.04	0.03	0.04	0.1	0.3
121.366	0.04	0.03	0.04	0.1	0.3
121.3638	0.04	0.03	0.04	0.1	0.3
121.3636	0.04	0.03	0.04	0.1	0.3
121.3633	0.04	0.03	0.04	0.1	0.3
121.3602	0.04	0.03	0.04	0.1	0.3
121.36	0.04	0.03	0.04	0.1	0.3
121.3597	0.04	0.03	0.04	0.1	0.3
121.3585	0.04	0.03	0.04	0.1	0.3
120.3562	0.04	0.03	0.04	0.1	0.3
120.356	0.04	0.03	0.04	0.1	0.3
120.3557	0.04	0.03	0.04	0.1	0.3
120.3527	0.04	0.03	0.04	0.1	0.3
120.3525	0.04	0.03	0.04	0.1	0.3
120.3522	0.04	0.03	0.04	0.1	0.3
120.349	0.04	0.03	0.04	0.1	0.3
120.3467	0.04	0.03	0.04	0.1	0.3
120.3465	0.04	0.03	0.04	0.1	0.3
120.3462	0.04	0.03	0.04	0.1	0.3
120.345	0.04	0.03	0.04	0.1	0.3
119.3423	0.04	0.03	0.04	0.1	0.3
119.3421	0.04	0.03	0.04	0.1	0.3
119.3417	0.04	0.03	0.04	0.1	0.3
119.3414	0.04	0.03	0.04	0.1	0.3
119.34	0.04	0.03	0.04	0.1	0.3
119.3382	0.04	0.03	0.04	0.1	0.3
119.337	0.04	0.03	0.04	0.1	0.3
119.334	0.03	0.025	0.03	0.1	0.3
119	0.03	0.025	0.03	0.1	0.3
118	0.03	0.025	0.03	0.1	0.3
117.5	0.025	0.02	0.025	0.3	0.5
117.25 Bridge-Up	0.025	0.02	0.025	0.3	0.5
117.25 Bridge-Dn	0.025	0.02	0.025	0.3	0.5
117	0.025	0.02	0.025	0.3	0.5
RIVER-1,Reach 6					
116	0.03	0.025	0.03	0.1	0.3
6220	0.03	0.03	0.03	0.1	0.3

6219		0.03	0.03	0.03	0.1	0.3
6218.2		0.03	0.03	0.03	0.1	0.3
6218.1		0.03	0.03	0.03	0.1	0.3
6218		0.03	0.03	0.03	0.1	0.3
6217.75		0.03	0.03	0.03	0.1	0.3
6217.5		0.03	0.03	0.03	0.1	0.3
6217.25		0.03	0.03	0.03	0.1	0.3
6217		0.03	0.03	0.03	0.1	0.3
6216.5		0.03	0.03	0.03	0.1	0.3
6216.25		0.03	0.03	0.03	0.1	0.3
6216		0.03	0.03	0.03	0.1	0.3
6215.5		0.03	0.03	0.03	0.1	0.3
6215		0.03	0.03	0.03	0.1	0.3
6214		0.03	0.03	0.03	0.1	0.3
6213		0.03	0.03	0.03	0.1	0.3
6212		0.03	0.03	0.03	0.1	0.3
6211		0.03	0.03	0.03	0.1	0.3
6210		0.03	0.03	0.03	0.1	0.3
5042		0.03	0.03	0.03	0.1	0.3
5041		0.03	0.03	0.03	0.1	0.3
5040		0.03	0.03	0.03	0.1	0.3
5039		0.03	0.03	0.03	0.1	0.3
5038		0.03	0.03	0.03	0.1	0.3
5037		0.03	0.03	0.03	0.1	0.3
5036		0.03	0.03	0.03	0.1	0.3
5035		0.03	0.03	0.03	0.1	0.3
5034		0.03	0.03	0.03	0.1	0.3
5033		0.03	0.03	0.03	0.1	0.3
5032		0.03	0.03	0.03	0.1	0.3
5031		0.03	0.03	0.03	0.1	0.3
5030		0.03	0.03	0.03	0.1	0.3
5029		0.03	0.03	0.03	0.1	0.3
5028		0.03	0.03	0.03	0.1	0.3
5027		0.03	0.03	0.03	0.1	0.3
5026		0.03	0.03	0.03	0.1	0.3
5025		0.03	0.03	0.03	0.1	0.3
5024		0.03	0.03	0.03	0.1	0.3
5023.1		0.03	0.03	0.03	0.1	0.3
5023		0.03	0.03	0.03	0.1	0.3
5022.5	Culvert-Up	0.03	0.03	0.03	0.1	0.3
5022.5	Culvert-Dn	0.03	0.03	0.03	0.1	0.3
5022		0.03	0.03	0.03	0.1	0.3
5021.9		0.03	0.03	0.03	0.1	0.3
5021		0.03	0.03	0.03	0.1	0.3
5020		0.03	0.03	0.03	0.1	0.3
5019		0.03	0.03	0.03	0.1	0.3
5018		0.03	0.03	0.03	0.1	0.3
5017		0.03	0.03	0.03	0.1	0.3
5016		0.03	0.03	0.03	0.1	0.3
5015		0.03	0.03	0.03	0.1	0.3
5014		0.03	0.03	0.03	0.1	0.3
5013		0.03	0.03	0.03	0.1	0.3
5012		0.03	0.03	0.03	0.1	0.3
5011		0.03	0.03	0.03	0.1	0.3
5010		0.03	0.03	0.03	0.1	0.3
5009		0.03	0.03	0.03	0.1	0.3
5008		0.03	0.03	0.03	0.1	0.3
5007		0.03	0.03	0.03	0.1	0.3
5006		0.03	0.03	0.03	0.1	0.3
5005		0.03	0.03	0.03	0.1	0.3
5004		0.03	0.03	0.03	0.1	0.3
5003		0.03	0.03	0.03	0.1	0.3
5002		0.03	0.03	0.03	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.025	0.04
Right Overbank n Value:	0.025	0.04

Channel n Value:	0.02	0.03
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK

RS: 124
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 124
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 124
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 123
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 123
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 123
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 119.334
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 119.334
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 119.334
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 119
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 119
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 119
NT RC 03 Channel n value is equal to or less than 0.025

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          The n value of the channel is usually larger than 0.025.
          The n value should be reevaluated it if is not representing a
          concrete lined channel.

RS:       118
NT RC 01 Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       118
NT RC 01 Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       118
NT RC 03 Channel n value is equal to or less than 0.025
          The n value of the channel is usually larger than 0.025.
          The n value should be reevaluated it if is not representing a
          concrete lined channel.

RS:       117.5
NT RC 01 Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       117.5
NT RC 01 Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       117.5
NT RC 03 Channel n value is equal to or less than 0.025
          The n value of the channel is usually larger than 0.025.
          The n value should be reevaluated it if is not representing a
          concrete lined channel.

RS:       117.25
NT RC 01 Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       117.25
NT RC 01 Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       117.25
NT RC 03 Channel n value is equal to or less than 0.025
          The n value of the channel is usually larger than 0.025.
          The n value should be reevaluated it if is not representing a
          concrete lined channel.

RS:       117.25
NT RC 01 Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       117.25
NT RC 01 Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       117.25
NT RC 03 Channel n value is equal to or less than 0.025
          The n value of the channel is usually larger than 0.025.
          The n value should be reevaluated it if is not representing a
          concrete lined channel.

RS:       117
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NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      117
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       117
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      116
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      116
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       116
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      6220
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      6220
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      6220
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:      6219
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      6219
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      6219
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:      6218.2
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      6218.2
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
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The n value should be reevaluated.

RS: 6218.2
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6218.1
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6218.1
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6218.1
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6218
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6218
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6218
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6217.75
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6217.75
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6217.75
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6217.5
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6217.5
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6217.5
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6217.25
NT RC 01 Left overbank n value is less than 0.035

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          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6217.25
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6217.25
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       6217
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6217
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6217
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       6216.5
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6216.5
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6216.5
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       6216.25
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6216.25
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6216.25
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       6216
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6216
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       6216
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NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6215.5
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6215.5
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6215.5
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6215
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6215
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6215
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6214
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6214
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6214
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6213
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6213
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 6213
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 6212
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

```
RS:       6212
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       6212
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       6211
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       6211
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       6211
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       6210
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       6210
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       6210
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5042
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5042
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5042
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5041
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5041
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5041
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.
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RS:       5040
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5040
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5040
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5039
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5039
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5039
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5038
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5038
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5038
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5037
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5037
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5037
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5036
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5036
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
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```
          The n value should be reevaluated.

RS:       5036
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5035
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5035
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5035
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5034
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5034
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5034
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5033
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5033
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5033
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5032
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5032
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5032
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5031
NT RC 01  Left overbank n value is less than 0.035
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The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5031
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5031
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5030
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5030
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5030
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5029
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5029
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5029
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5028
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5028
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5028
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5027
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5027
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5027

NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5026
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5026
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5026
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5025
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5025
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5025
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5024
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5024
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5024
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5023.1
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5023.1
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5023.1
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5023
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

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RS:       5023
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5023
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5022.5
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5022.5
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5022.5
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5022.5
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5022.5
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5022.5
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5022
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5022
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5022
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5021.9
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5021.9
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5021.9
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.
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RS:       5021
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5021
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5021
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5020
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5020
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5020
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5019
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5019
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5019
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5018
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5018
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5018
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

RS:       5017
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5017
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
```

The n value should be reevaluated.

RS: 5017
NT RC 05 The left overbank n value of 0.03 and the right overbank n value of 0.03 are less than or equal to the channel n value of 0.03 The overbank n values should be reevaluated.

RS: 5016
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5016
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5016
NT RC 05 The left overbank n value of 0.03 and the right overbank n value of 0.03 are less than or equal to the channel n value of 0.03 The overbank n values should be reevaluated.

RS: 5015
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5015
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5015
NT RC 05 The left overbank n value of 0.03 and the right overbank n value of 0.03 are less than or equal to the channel n value of 0.03 The overbank n values should be reevaluated.

RS: 5014
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5014
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5014
NT RC 05 The left overbank n value of 0.03 and the right overbank n value of 0.03 are less than or equal to the channel n value of 0.03 The overbank n values should be reevaluated.

RS: 5013
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5013
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5013
NT RC 05 The left overbank n value of 0.03 and the right overbank n value of 0.03 are less than or equal to the channel n value of 0.03 The overbank n values should be reevaluated.

RS: 5012
NT RC 01 Left overbank n value is less than 0.035

```
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5012
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5012
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5011
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5011
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5011
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5010
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5010
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5010
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5009
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5009
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5009
NT RC 05  The left overbank n value of 0.03 and the right overbank n value
          of 0.03 are less than or equal to the channel n value of 0.03
          The overbank n values should be reevaluated.

RS:       5008
NT RC 01  Left overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5008
NT RC 01  Right overbank n value is less than 0.035
          The n value for overbank is usually larger then 0.035.
          The n value should be reevaluated.

RS:       5008
```

NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5007
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5007
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5007
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5006
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5006
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5006
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5005
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5005
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5005
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5004
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5004
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 5004
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
of 0.03 are less than or equal to the channel n value of 0.03
The overbank n values should be reevaluated.

RS: 5003
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

```
RS:       5003
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       5003
NT RC 05 The left overbank n value of 0.03 and the right overbank n value
         of 0.03 are less than or equal to the channel n value of 0.03
         The overbank n values should be reevaluated.

TRANSITION LOSS COEFFICIENT CHECK
---------------------------------

RS:       118
NT TL 01 This is section 4
         Contraction and expansion loss coefficients are 0.1 and 0.3
         Width ratio is 0.03
         Contraction loss coefficient is 0.1
         It is outside the range of 0.3 and 0.5 from
         the Table B.4 of HEC-RAS hydraulics Reference Manual.

RS:       5023.1
NT TL 01 This is section 4
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

RS:       5023
NT TL 01 This is section 3
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

RS:       5022
NT TL 01 This is section 2
         Contraction and expansion loss coefficients are 0.1 and 0.3
         They should be equal to 0.3 and 0.5 respectively.

ROUGHNESS COEFFICIENT AT STRUCTURES
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RS:       117.25
NT RS 02 The channel n value of 0.02 for the upstream internal bridge opening
         section is equal or larger than the channel n value of 0.02 at Section 3.
         Usually, the channel n value of the bridge opening section is
         less than the channel n value of Section 3.
         The selection of the n value(s) should be reevaluated.

RS:       117.25
NT RS 02 The channel n value of 0.02 for the downstream internal bridge opening
         section is equal or larger than the channel n value of 0.02 at Section 2
         Usually, the channel n value of the bridge opening section is
         less than the channel n value of Section 2.
         The selection of the n value(s) should be reevaluated.

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MERRICK®
BUILDING QUALITY SOLUTIONS

Merrick & Company
NorthCreek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919

719.260.8874 / 800.544.1714 / Fax 719.260.6098

May 19, 2006

Advanced R V & Self Storage, LLP
4360 Ruby Drive
Colorado Springs, CO 80918-5021

Re: Notification of increases in 1% (100-year) annual chance water-surface elevations

Ladies and Gentlemen,

The Flood Insurance Rate Map (FIRM) for a community depicts land which has been determined to be subject to a 1% (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

Merrick & Company is applying for a Conditional Letter of Map Revision from the Federal Emergency Management Agency (FEMA) on behalf of Marksheffel Business Center, LLC to revise FIRM 08041C 0756F and FIRM 08041C 0752F for El Paso County, Colorado along the East Ford of Sand Creek. Marksheffel Business Center, LLC is proposing to construct an approximate 5,800 LF channel reaching from 500' South of Construction Avenue, running parallel to Marksheffel Road and connecting to the East Fork of Sand Creek. The purpose of this project is to chanelize the 100-years floodplain, thus reducing the surface area of the flood and maximizing developable area.

The proposed project will result in increasing and decreasing in the 1% annual chance water-surface elevations for East Fork of Sand Creek with a maximum increase of 7 feet at a point approximately just north of Palmer Park Boulevard and a maximum decrease in the 1% annual chance water surface elevation of 13 feet at a point approximately just south of the proposed continuation of Colorado Tech Drive.

This letter is to inform you of the proposed change in the 1% annual chance water-surface elevations on your property at Lot 0 05-14-65, Parcel No. 5405000040.

If you have any questions or concerns about the proposed project or its affect on your property, you may contact Kevin Stilson of El Paso County at 2880 International Circle, Colorado Springs, CO 80910, or (719) 327-2906 from 7:30 AM to 4:30 PM Monday through Friday.

Sincerely,
Merrick & Company

Sac Ayala, P.E.
Project Manager

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Merrick & Company
NorthCreek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919

719.260.8874 / 800.544.1714 / Fax 719.260.6098

May 19, 2006

Perkey Family, LLC
15565 Timberside Ct.
Colorado Springs, CO 80921

Re: Notification of increases in 1% (100-year) annual chance water-surface elevations

Ladies and Gentlemen,

The Flood Insurance Rate Map (FIRM) for a community depicts land which has been determined to be subject to a 1% (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

Merrick & Company is applying for a Conditional Letter of Map Revision from the Federal Emergency Management Agency (FEMA) on behalf of Marksheffel Business Center, LLC to revise FIRM 08041C 0756F and FIRM 08041C 0752F for El Paso County, Colorado along the East Ford of Sand Creek. Marksheffel Business Center, LLC is proposing to construct an approximate 5,800 LF channel reaching from 500' South of Construction Avenue, running parallel to Marksheffel Road and connecting to the East Fork of Sand Creek. The purpose of this project is to chanelize the 100-years floodplain, thus reducing the surface area of the flood and maximizing developable area.

The proposed project will result in increasing and decreasing in the 1% annual chance water-surface elevations for East Fork of Sand Creek with a maximum increase of 7 feet at a point approximately just north of Palmer Park Boulevard and a maximum decrease in the 1% annual chance water surface elevation of 13 feet at a point approximately just south of the proposed continuation of Colorado Tech Drive.

This letter is to inform you of the proposed change in the 1% annual chance water-surface elevations on your property on Marksheffel Road.

If you have any questions or concerns about the proposed project or its affect on your property, you may contact Kevin Stilson of El Paso County at 2880 International Circle, Colorado Springs, CO 80910, or (719) 327-2906 from 7:30 AM to 4:30 PM Monday through Friday.

Sincerely,
Merrick & Company

Emily Kalsbeek for

Sac Ayala, P.E.
Project Manager

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Merrick & Company
NorthCreek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919

719.260.8874 / 800.544.1714 / Fax 719.260.6098

May 19, 2006

Real Estate Works, LLC
90 S. Cascade Avenue Ste 1500
Colorado Springs, CO 80903-1639

Re: Notification of increases in 1% (100-year) annual chance water-surface elevations

Ladies and Gentlemen,

The Flood Insurance Rate Map (FIRM) for a community depicts land which has been determined to be subject to a 1% (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

Merrick & Company is applying for a Conditional Letter of Map Revision from the Federal Emergency Management Agency (FEMA) on behalf of Marksheffel Business Center, LLC to revise FIRM 08041C 0756F and FIRM 08041C 0752F for El Paso County, Colorado along the East Ford of Sand Creek. Marksheffel Business Center, LLC is proposing to construct an approximate 5,800 LF channel reaching from 500' South of Construction Avenue, running parallel to Marksheffel Road and connecting to the East Fork of Sand Creek. The purpose of this project is to chanelize the 100-years floodplain, thus reducing the surface area of the flood and maximizing developable area.

The proposed project will result in increasing and decreasing in the 1% annual chance water-surface elevations for East Fork of Sand Creek with a maximum increase of 7 feet at a point approximately just north of Palmer Park Boulevard and a maximum decrease in the 1% annual chance water surface elevation of 13 feet at a point approximately just south of the proposed continuation of Colorado Tech Drive.

This letter is to inform you of the proposed change in the 1% annual chance water-surface elevations on your property at 0 Sec 05-14-65, Parcel No. 5405000035.

If you have any questions or concerns about the proposed project or its affect on your property, you may contact Kevin Stilson of El Paso County at 2880 International Circle, Colorado Springs, CO 80910, or (719) 327-2906 from 7:30 AM to 4:30 PM Monday through Friday.

Sincerely,
Merrick & Company

Sac Ayala, P.E.
Project Manager

MERRICK®
BUILDING QUALITY SOLUTIONS

Merrick & Company
NorthCreek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919

719.260.8874 / 800.544.1714 / Fax 719.260.6098

May 19, 2006

RichFamFive LLLP
1825 Lawrence Street Ste 112
Denver, CO 80202-1817

Re: Notification of increases in 1% (100-year) annual chance water-surface elevations

Ladies and Gentlemen,

The Flood Insurance Rate Map (FIRM) for a community depicts land which has been determined to be subject to a 1% (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

Merrick & Company is applying for a Conditional Letter of Map Revision from the Federal Emergency Management Agency (FEMA) on behalf of Marksheffel Business Center, LLC to revise FIRM 08041C 0756F and FIRM 08041C 0752F for El Paso County, Colorado along the East Ford of Sand Creek. Marksheffel Business Center, LLC is proposing to construct an approximate 5,800 LF channel reaching from 500' South of Construction Avenue, running parallel to Marksheffel Road and connecting to the East Fork of Sand Creek. The purpose of this project is to chanelize the 100-years floodplain, thus reducing the surface area of the flood and maximizing developable area.

The proposed project will result in increasing and decreasing in the 1% annual chance water-surface elevations for East Fork of Sand Creek with a maximum increase of 7 feet at a point approximately just north of Palmer Park Boulevard and a maximum decrease in the 1% annual chance water surface elevation of 13 feet at a point approximately just south of the proposed continuation of Colorado Tech Drive.

This letter is to inform you of the proposed change in the 1% annual chance water-surface elevations on your property on Marksheffel Road, Parcel No. 5405000033.

If you have any questions or concerns about the proposed project or its affect on your property, you may contact Kevin Stilson of El Paso County at 2880 International Circle, Colorado Springs, CO 80910, or (719) 327-2906 from 7:30 AM to 4:30 PM Monday through Friday.

Sincerely,
Merrick & Company

Emily Stalsby for

Sac Ayala, P.E.
Project Manager

MERRICK®
BUILDING QUALITY SOLUTIONS

Merrick & Company
NorthCreek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919

719.260.8874 / 800.544.1714 / Fax 719.260.6098

May 19, 2006

Sand Creek Investments North, LLC
90 S. Cascade Avenue Ste 1500
Colorado Springs, CO 80903-1639

Re: Notification of increases in 1% (100-year) annual chance water-surface elevations

Ladies and Gentlemen,

The Flood Insurance Rate Map (FIRM) for a community depicts land which has been determined to be subject to a 1% (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

Merrick & Company is applying for a Conditional Letter of Map Revision from the Federal Emergency Management Agency (FEMA) on behalf of Marksheffel Business Center, LLC to revise FIRM 08041C 0756F and FIRM 08041C 0752F for El Paso County, Colorado along the East Ford of Sand Creek. Marksheffel Business Center, LLC is proposing to construct an approximate 5,800 LF channel reaching from 500' South of Construction Avenue, running parallel to Marksheffel Road and connecting to the East Fork of Sand Creek. The purpose of this project is to chanelize the 100-years floodplain, thus reducing the surface area of the flood and maximizing developable area.

The proposed project will result in increasing and decreasing in the 1% annual chance water-surface elevations for East Fork of Sand Creek with a maximum increase of 7 feet at a point approximately just north of Palmer Park Boulevard and a maximum decrease in the 1% annual chance water surface elevation of 13 feet at a point approximately just south of the proposed continuation of Colorado Tech Drive.

This letter is to inform you of the proposed change in the 1% annual chance water-surface elevations on your property on Marksheffel Road, Parcel No. 5405000036.

If you have any questions or concerns about the proposed project or its affect on your property, you may contact Kevin Stilson of El Paso County at 2880 International Circle, Colorado Springs, CO 80910, or (719) 327-2906 from 7:30 AM to 4:30 PM Monday through Friday.

Sincerely,
Merrick & Company

Emily Kalsky for

Sac Ayala, P.E.
Project Manager

MERRICK®
BUILDING QUALITY SOLUTIONS

Merrick & Company
NorthCreek Office Complex, Building II
5755 Mark Dabling, Suite 350
Colorado Springs, CO 80919

719.260.8874 / 800.544.1714 / Fax 719.260.6098

May 19, 2006

US Waste Industries, Inc.
7770 Palmer Park Blvd.
Colorado Springs, CO 80915

Re: Notification of increases in 1% (100-year) annual chance water-surface elevations

Ladies and Gentlemen,

The Flood Insurance Rate Map (FIRM) for a community depicts land which has been determined to be subject to a 1% (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

Merrick & Company is applying for a Conditional Letter of Map Revision from the Federal Emergency Management Agency (FEMA) on behalf of Marksheffel Business Center, LLC to revise FIRM 08041C 0756F and FIRM 08041C 0752F for El Paso County, Colorado along the East Ford of Sand Creek. Marksheffel Business Center, LLC is proposing to construct an approximate 5,800 LF channel reaching from 500' South of Construction Avenue, running parallel to Marksheffel Road and connecting to the East Fork of Sand Creek. The purpose of this project is to chanelize the 100-years floodplain, thus reducing the surface area of the flood and maximizing developable area.

The proposed project will result in increasing and decreasing in the 1% annual chance water-surface elevations for East Fork of Sand Creek with a maximum increase of 7 feet at a point approximately just north of Palmer Park Boulevard and a maximum decrease in the 1% annual chance water surface elevation of 13 feet at a point approximately just south of the proposed continuation of Colorado Tech Drive.

This letter is to inform you of the proposed change in the 1% annual chance water-surface elevations on your property at 7770 Palmer Park Boulevard, Parcel No. 5405000023.

If you have any questions or concerns about the proposed project or its affect on your property, you may contact Kevin Stilson of El Paso County at 2880 International Circle, Colorado Springs, CO 80910, or (719) 327-2906 from 7:30 AM to 4:30 PM Monday through Friday.

Sincerely,
Merrick & Company

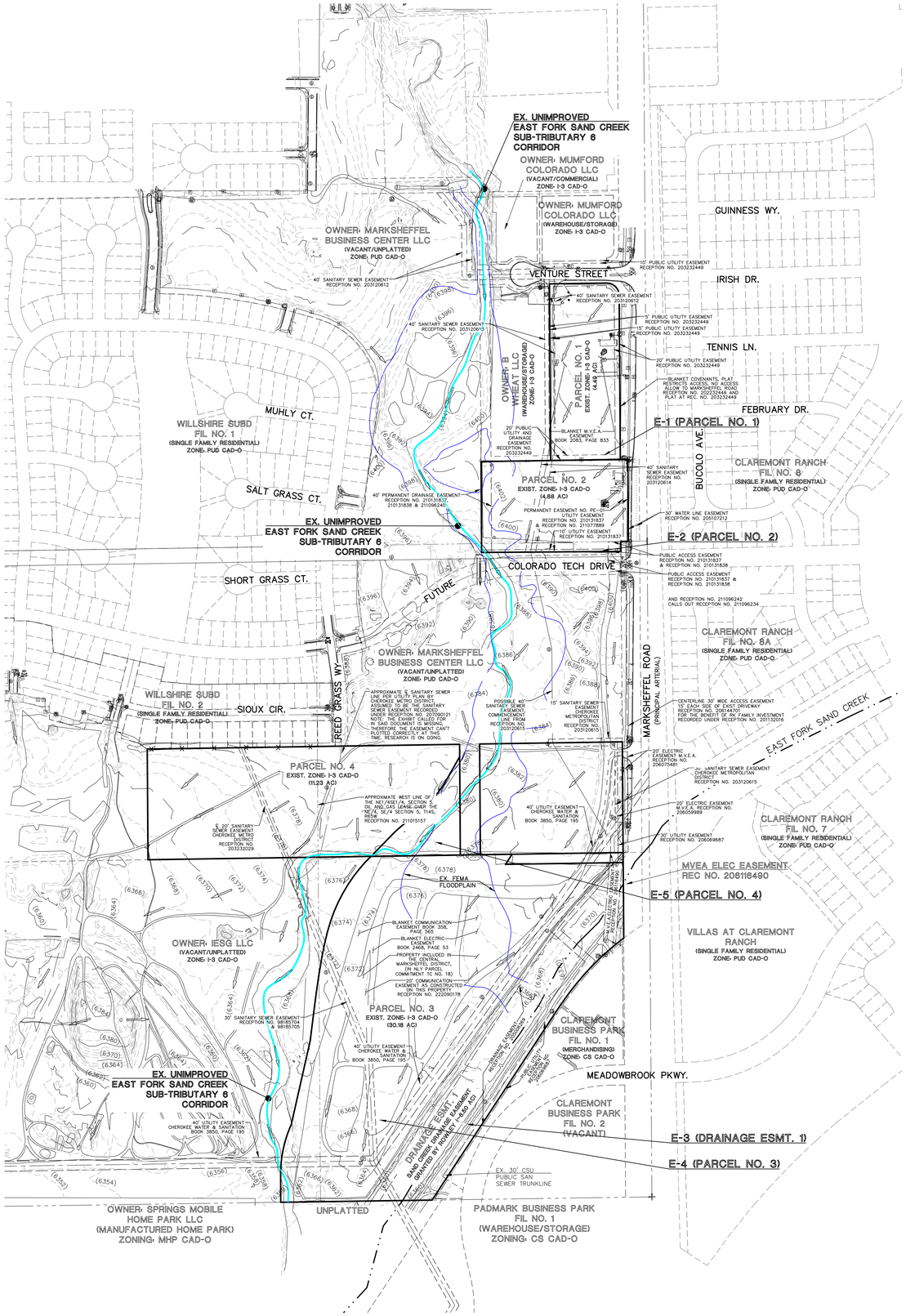
Emily Stalsberg for

Sac Ayala, P.E.
Project Manager

PRE-DEVELOPMENT CONDITIONS

DRAINAGE MAP

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS



- Label all roads collector and above in classification.
- Include floodplain BFE's
- Label Design Points
- Clearly identify drainage basins
- Include any offsite basins tributary to site

LEGEND

DESCRIPTION	SYMBOL
UNIMPROVED EAST FORK SAND CREEK SUB-TRIBUTARY 6 CORRIDOR	
EXISTING FEMA FLOODPLAIN	
EXISTING GROUND CONTOUR	(6910)
EXISTING DIRECTION OF FLOW	
EXISTING STORM SEWER	

Where? Did not see any

200 100 0 200 400

SCALE: 1" = 200'

Check scale

CLASSIC CONSULTING

619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)

MARKSHEFFEL CROSSING
SKETCH PLAN
MASTER DEVELOPMENT DRAINAGE PLAN
PRE-DEVELOPED CONDITIONS

CLASSIC CONSULTING

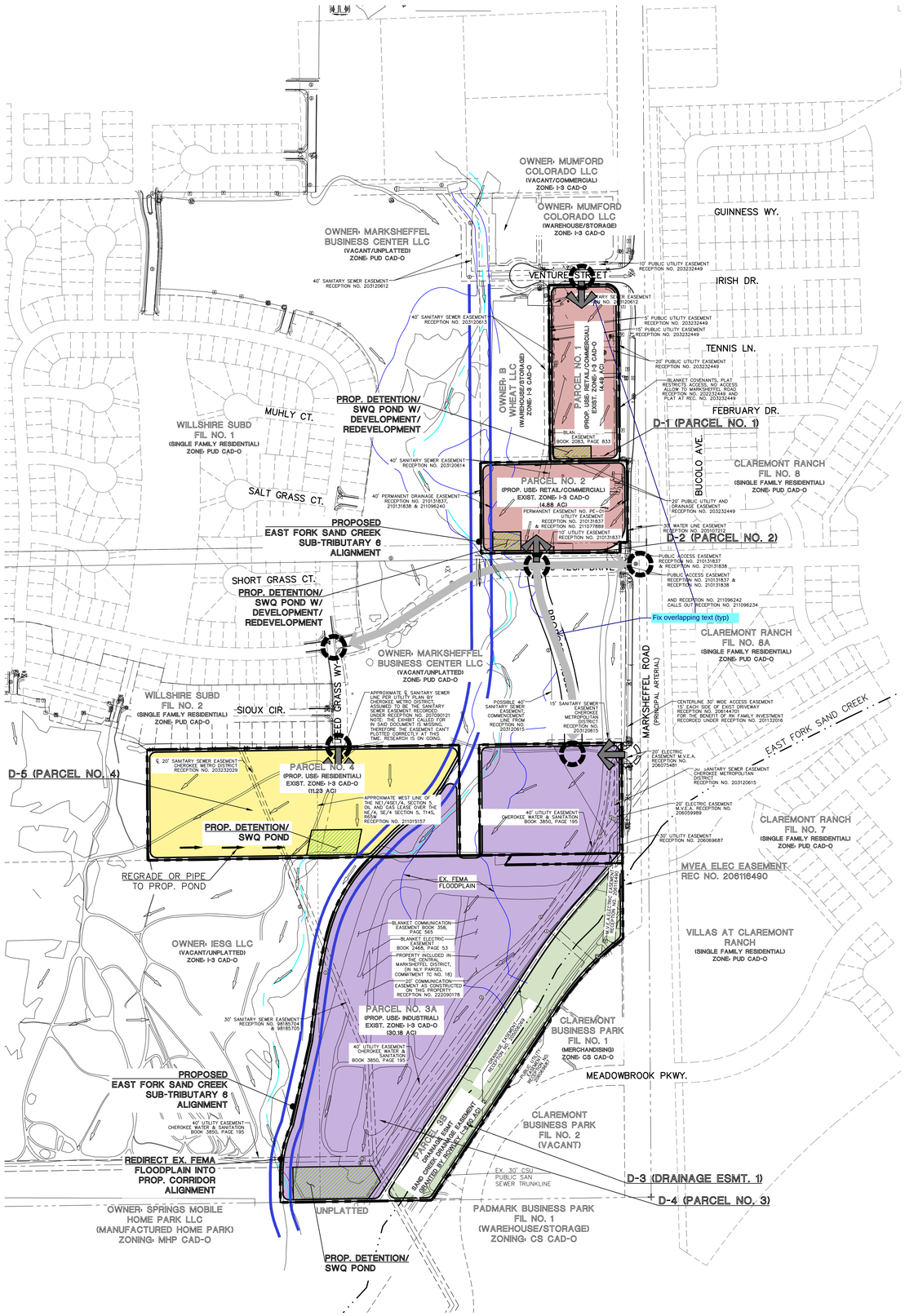
DESIGNED BY	KRC	SCALE		DATE	06/15/2026
DRAWN BY	KES	(H) 1"= 200'		SHEET	1 OF 1
CHECKED BY		(V) 1"= N/A		JOB NO.	2630.01

N:\2630\01\REPORT\MSDP\2630101MSDP EX DM.dwg, 6/16/2026 12:45:12 PM, 1:1, KS

DEVELOPED CONDITIONS

DRAINAGE MAP

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS



CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)

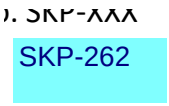
MARKSHEFFEL CROSSING
SKETCH PLAN
MASTER DEVELOPMENT DRAINAGE PLAN
DEVELOPED CONDITIONS

DESIGNED BY	KRC	SCALE		DATE	06/15/2026
DRAWN BY	KES	(H) 1"= 200'		SHEET	1 OF 1
CHECKED BY		(V) 1"= N/A		JOB NO.	2630.01

N:\2630\01\REPORT\SWDDP\2630101MDDP DM.dwg, 6/16/2026 12:45:04 PM, 1:1, KS

V1_Master Development Drainage Plan (MDDP).pdf Markup Summary

CDurham (12)



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Page Label: 1
Author: CDurham
Date: 7/17/2026 11:40:37 AM
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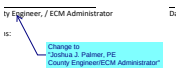
SKP-262

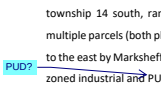


Subject: Callout
Page Label: 2
Author: CDurham
Date: 7/17/2026 11:48:06 AM
Status:
Color:
Layer:
Space:

Change to
"Joshua J. Palmer, PE
County Engineer/ECM Administrator"

Subject: Highlight
Page Label: 4
Author: CDurham
Date: 7/17/2026 11:58:28 AM
Status:
Color:
Layer:
Space:

PUP



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Page Label: 4
Author: CDurham
Date: 7/17/2026 11:58:49 AM
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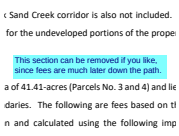
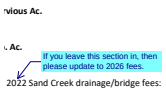
PUD?



Subject: Text Box
Page Label: 14
Author: CDurham
Date: 7/17/2026 12:12:30 PM
Status:
Color:
Layer:
Space:

This section can be removed if you like, since fees are much later down the path.



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Page Label: 14
Author: CDurham
Date: 7/17/2026 12:12:58 PM
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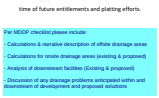
If you leave this section in, then please update to 2026 fees.



Subject: Text Box
Page Label: 15
Author: CDurham
Date: 7/17/2026 12:18:08 PM
Status:
Color:
Layer:
Space:

Per MDDP checklist please include:

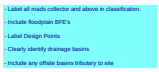
- Calculations & narrative description of offsite drainage areas

- Calculations for onsite drainage areas (existing & proposed)

- Analysis of downstream facilities (Existing & proposed)

- Discussion of any drainage problems anticipated within and downstream of development and proposed soluttions

---



Subject: Text Box
Page Label: [1] Layout1
Author: CDurham
Date: 7/17/2026 12:22:22 PM
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Color:
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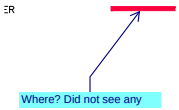
- Label all roads collector and above in classification.

- Include floodplain BFE's

- Label Design Points

- Clearly identify drainage basins

- Include any offsite basins tributary to site



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Author: CDurham
Date: 7/17/2026 12:20:38 PM
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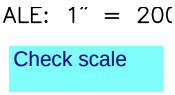
Where? Did not see any



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Page Label: [1] Layout1
Author: CDurham
Date: 7/17/2026 12:21:18 PM
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Space:

Check scale

Subject: Text Box
Page Label: [1] Layout1
Author: CDurham
Date: 7/17/2026 12:24:31 PM
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Color:
Layer:
Space:

Please see comments on previous page

Subject: Callout
Page Label: [1] Layout1
Author: CDurham
Date: 7/17/2026 12:25:39 PM
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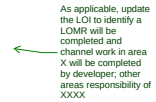
Color:
Layer:
Space:

Fix overlapping text (typ)

dsdparsons (2)



Subject: Callout
Page Label: 1
Author: dsdparsons
Date: 7/20/2026 1:59:51 PM
Status:
Color:
Layer:
Space:

As applicable, update the LOI to identify a LOMR will be completed and channel work in area X will be completed by developer; other areas responsibility of XXXX

Subject: Planner
Page Label: 29
Author: dsdparsons
Date: 7/20/2026 1:57:02 PM
Status:
Color:
Layer:
Space:

Please depict and substantial ponds on the Sketch Plan drawing when updating Sketch Plan

Mikayla Hartford (2)

Subject: Stamp - Stormwater Comment Legend
Page Label: 1
Author: Mikayla Hartford
Date: 7/21/2026 12:10:31 PM
Status:
Color:
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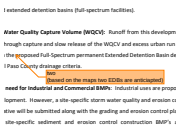
Space:



Subject: SW - Textbox with Arrow
Page Label: 13
Author: Mikayla Hartford
Date: 7/21/2026 12:10:01 PM
Status:
Color:
Layer:
Space:

two
(based on the maps two EDBs are anticiapted)