THE STERLING CO.

785 BISMARK AVE.
No-Rise Analysis

Prepared for:
NJL Custom Homes
556 Leffingwell Ave.
Kirkwood, MO 63122

Date:
April 29, 2026
Prepared by:
The Sterling Company
5055 New Baumgartner Rd.
St. Louis, Missouri 63129
(314) 487-0440
(314) 487-7234

Sterling Project No.: 25-03-063
MSD P#

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INTRODUCTION

The purpose of this report is to determine the effects to the 100-year high water elevations of drainage area associated with 785 Bismark Ave. The development consists of a single home. No regulatory floodplain exists within the development area. Rock Hill Creek runs through the rear of the property. Currently FEMA Firm maps indicate 100-year flood plain does not impact subject property.

ANALYSIS APPROACH:

The peak discharge rate was obtained from the FEMA FIS report for St. Louis County. Per table 9 of the report the 1% Plus Annual Chance discharge rate for Rock Hill Creek at the culvert under Berry Rd is 690 cfs. HEC-RAS steady flow analysis models were ran pre and post development to determine if water surface elevations for subject and adjoining properties would be affected by the proposed construction.

The computation analysis contained herein will model the existing and proposed condition though the site and adjacent properties. The peak discharge rate of 690 cfs was used and summaries of the results are included in this report.

The following guidelines were considered while preparing this study.
1. Obtain copy of current Flood Insurance Map
2. Obtain discharge rate from FEMA FIS report
3. Create an existing HEC-RAS model from the existing conditions and survey topographic data.
4. Create a proposed effective HEC-RAS model from proposed topography.
5. Compare the post-developed data to the existing effective data,
6. Compare the channel elevation data for the effective and proposed conditions models.

EXISTING

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)	
Rock Hil Cr.	289.15	PF 1	690	524.3	529.2	529.2	530.7	0.012	10.1	74.7	26.5	0.92
Rock Hil Cr.	225.24	PF 1	690	523.1	529.1		529.6	0.003	5.4	139.4	52.2	0.46
Rock Hil Cr.	175.23	PF 1	690	523.2	529.0	528.1	529.4	0.004	6.2	152.4	71.0	0.56
Rock Hil Cr.	125.84	PF 1	690	522.9	527.6	527.6	528.8	0.008	9.5	98.4	45.3	0.81
Rock Hil Cr.	76.34	PF 1	690	522.0	527.8		528.2	0.003	6.0	172.0	82.5	0.49
Rock Hil Cr.	34.44	PF 1	690	522.5	526.8	526.8	527.9	0.008	8.6	95.7	60.9	0.79
Rock Hil Cr.	0	PF 1	690	522.0	526.1	526.1	527.3	0.010	8.8	88.1	48.0	0.87

PROPOSED

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)	
Rock Hil Cr.	289.15	PF 1	690	524.3	529.2	529.2	530.7	0.012	10.1	74.7	26.5	0.92
Rock Hil Cr.	225.24	PF 1	690	523.1	529.1		529.6	0.003	5.4	139.4	52.2	0.46
Rock Hil Cr.	175.23	PF 1	690	523.2	529.0	528.1	529.4	0.004	6.2	152.4	71.0	0.56
Rock Hil Cr.	125.84	PF 1	690	522.9	527.6	527.6	528.8	0.008	9.5	98.4	45.3	0.81
Rock Hil Cr.	76.34	PF 1	690	522.0	527.8		528.2	0.003	6.0	172.0	82.5	0.49
Rock Hil Cr.	34.44	PF 1	690	522.5	526.8	526.8	527.9	0.008	8.6	95.7	60.9	0.79
Rock Hil Cr.	0	PF 1	690	522.0	526.1	526.1	527.3	0.010	8.8	88.1	48.0	0.87

Summary

Reach	River Sta	Profile	Existing W.S. Elev	Proposed W.S. Elev	W.S. Elev Change	Existing Flow Area	Proposed Flow Area	Flow Area Change
			(ft)	(ft)	(ft)	(sq ft)	(sq ft)	(sq ft)
Rock Hil Cr.	289.15	PF 1	529.2	529.2	0.0	74.7	74.7	0.0
Rock Hil Cr.	225.24	PF 1	529.1	529.1	0.0	139.4	139.4	0.0
Rock Hil Cr.	175.23	PF 1	529.0	529.0	0.0	152.4	152.4	0.0
Rock Hil Cr.	125.84	PF 1	527.6	527.6	0.0	98.4	98.4	0.0
Rock Hil Cr.	76.34	PF 1	527.8	527.8	0.0	172.0	172.0	0.0
Rock Hil Cr.	34.44	PF 1	526.8	526.8	0.0	95.7	95.7	0.0
Rock Hil Cr.	0	PF 1	526.1	526.1	0.0	88.1	88.1	0.0

Summary

The hydraulic analysis was performed on pre and post development conditions using HEC-RAS through the proposed development. The models indicate that the proposed grading for the lot improvements do not encroach into the peak discharge flow pat for Rock Hill Creek.

Overall, the analysis confirms that there is no measurable impact to the water surface elevations on upstream or downstream properties and system performance remains effectively unchanged within the property limits and beyond the subject site,

Appendix

A

Pre-Developed Model

HEC-RAS HEC-RAS 6.6 September 2024
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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

PROJECT DATA
Project Title: HEC RUN ex3
Project File : HECRUNex3.prj
Run Date and Time: 4/29/2026 10:17:11 AM

Project in English units

PLAN DATA

Plan Title: EX HEC 2
Plan File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC RAS\HECRUNex3.p02

Geometry Title: EX GEOM 2
Geometry File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC RAS\HECRUNex3.g02

Flow Title : Flow 06
Flow File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC RAS\HECRUNex3.f06

Plan Summary Information:
Number of: Cross Sections = 7 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01

```
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow



FLOW DATA

Flow Title: Flow 06
Flow File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC
RAS\HECRUNex3.f06

Flow Data (cfs)

  River           Reach           RS                    PF 1
  CREEK CL        creek cl 2      289.15                 690


Boundary Conditions


  River           Reach           Profile                       Upstream
     Downstream


  CREEK CL        creek cl 2      PF 1
   Normal S = 0.01




GEOMETRY DATA

Geometry Title: EX GEOM 2
Geometry File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC
RAS\HECRUNex3.g02

CROSS SECTION


RIVER: CREEK CL
REACH: creek cl 2         RS: 289.15
```

INPUT
Description:
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	536.34	.7	536.31	3.57	536	6.7	535.31	8.3	535
9.01	534.83	12.53	534	14.44	533.54	16.83	533	21.29	532.1
21.82	532	22.52	531.92	22.77	531.92	22.95	531.91	30.48	531.33
32.12	531.33	32.82	531.32	34.75	531.26	37.65	531.15	38	531.13
38.51	531.1	38.55	531.1	38.97	531.08	39.15	531.07	39.88	531.07
43.26	530.96	44.84	530.94	46.24	530.94	46.95	530.93	47.04	530.94
49.08	530.92	50.52	530.91	50.76	530.91	50.92	530.93	55.91	530.69
65.35	530.68	73.47	530.53	78.24	530.58	83.44	530.5	88.45	530.45
98.56	529.62	106.92	529.29	112.81	525.08	115.26	524.46	117.94	524.39
122.19	524.27	123.38	524.47	123.83	526.5	124.22	527.04	124.26	527.05
130.9	528.42	132.62	528.88	138.49	530.65	139.72	531.38	140.41	532.16
140.66	532.26	140.92	532.24	141.98	532.36	144.99	532.52	145.23	532.68
145.32	532.76	146.02	533.15	146.94	533.58	147.1	533.51	147.66	533.76
148.15	533.99	148.17	534	152.47	534.35				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	106.92	.035	124.26	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
106.92	124.26	59.81	63.91	75.27	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	530.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.51	Wt. n-Val.		0.035	0.045
W.S. Elev (ft)	529.17	Reach Len. (ft)	59.81	63.91	75.27
Crit W.S. (ft)	529.17	Flow Area (sq ft)		64.16	10.57
E.G. Slope (ft/ft)	0.012370	Area (sq ft)		64.16	10.57
Q Total (cfs)	690.00	Flow (cfs)		648.54	41.46
Top Width (ft)	26.50	Top Width (ft)		17.17	9.32
Vel Total (ft/s)	9.23	Avg. Vel. (ft/s)		10.11	3.92
Max Chl Dpth (ft)	4.90	Hydr. Depth (ft)		3.74	1.13
Conv. Total (cfs)	6204.0	Conv. (cfs)		5831.3	372.8

Length Wtd. (ft)	64.20	Wetted Per. (ft)			20.49
9.57					
Min Ch El (ft)	524.27	Shear (lb/sq ft)			2.42
0.85					
Alpha	1.14	Stream Power (lb/ft s)			24.45
3.35					
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	0.14		0.66
0.15					
C & E Loss (ft)	0.31	Cum SA (acres)	0.15		0.17
0.10					

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 225.24

INPUT
Description:
Station Elevation Data num= 66

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	536.26	3.66	536	6.9	535.51	9.75	535	11.73	534.58
14.64	534	15.75	533.78	19.54	533	21.68	532.59	23.48	532.37
23.82	532.32	25.68	532	28.79	531.57	29.19	531.54	29.42	531.51
29.66	531.47	30.02	531.43	32.99	531	34.85	530.97	39.03	530.9
40.51	530.88	42.43	530.86	43.45	530.85	45.22	530.82	58.89	530.2
67.14	529.96	80.04	529.59	84.84	529.61	107.55	528.08	107.78	528.07
107.82	528.07	109.54	528.03	111.34	528.1	112.68	527.92	113.22	527.83
113.25	527.81	113.38	527.73	118.24	526.02	123.22	524.57	127.11	523.62
129.43	523.12	129.49	523.11	131.53	523.46	135.4	524.1	135.77	524.56

137.68	524.49	141.93	526.35	143	528.35	143.32	528.95	148.17	530.08
152.31	531.03	156.66	531.56	169.51	533.01	170.51	533.18	180.56	535.85
182.99	536.28	193.13	537.93	193.78	537.97	194.65	538.18	196.3	539.14
202.65	540.8	202.98	541.42	203.01	541.42	203.27	541.23	203.63	541.1
212.49	542.39								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	113.25	.035	143	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
113.25	143	45.51	50.01	55.15	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	529.52	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.46	Wt. n-Val.	0.045	0.035
0.045				
W.S. Elev (ft)	529.06	Reach Len. (ft)	45.51	50.01
55.15				
Crit W.S. (ft)		Flow Area (sq ft)	12.99	122.32
0.16				
E.G. Slope (ft/ft)	0.002849	Area (sq ft)	12.99	122.32
0.16				
Q Total (cfs)	690.00	Flow (cfs)	17.01	672.92
0.07				
Top Width (ft)	50.78	Top Width (ft)	20.24	29.75
0.79				
Vel Total (ft/s)	5.09	Avg. Vel. (ft/s)	1.31	5.50
0.46				
Max Chl Dpth (ft)	5.95	Hydr. Depth (ft)	0.64	4.11
0.20				
Conv. Total (cfs)	12928.2	Conv. (cfs)	318.7	12608.1
1.4				
Length Wtd. (ft)	49.78	Wetted Per. (ft)	20.30	32.33
1.16				
Min Ch El (ft)	523.11	Shear (lb/sq ft)	0.11	0.67
0.02				
Alpha	1.14	Stream Power (lb/ft s)	0.15	3.70
0.01				
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	0.13	0.53
0.14				
C & E Loss (ft)	0.01	Cum SA (acres)	0.14	0.14
0.09				

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 175.23

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	536.32	2.52	536.16	4.65	536	9.86	535.36	13.31	535.1
13.91	535.03	15.12	535.03	15.82	535.06	16.48	535.09	19.61	535
21.87	534.65	24.32	534	25.13	533.85	25.97	533.71	27.72	533.62
29.1	533.3	29.52	533.23	29.93	533	29.94	533	29.95	532.99
31.95	532	33.05	531.63	34.21	531.33	35.6	531	37.83	530.66
39.4	530.51	41.14	530	45.77	529.92	55.56	529.75	55.59	529.75
56.78	529.76	57.7	529.76	58.6	529.75	59.73	529.74	61.91	529.7
65.01	529.64	65.4	529.64	67.9	529.59	68.15	529.59	68.45	529.58
69.82	529.57	73.35	529.49	79.25	529.29	84.05	528.58	101.6	527.17
107.13	527.14	111.41	526.43	114.79	526.13	118.51	525.37	121.73	524.28
122.06	524.17	125.9	523.66	126.55	523.44	126.9	523.3	127.26	523.33
127.8	523.31	129.42	523.23	130.17	523.36	130.9	523.84	134.07	525.83
134.09	525.84	134.5	527.19	135.91	527.34	141.03	527.9	144.95	528.34
146.34	528.48	150.1	528.54	159.74	529.21	168.26	529.83	177.94	530.54
186.04	531.66	190.76	532.2	191.1	532.26				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	107.13	.035	141.03	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
107.13	141.03	109.56	98.89	95.96	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	529.35	Element	Left OB	Channel
Right OB				
Vel Head (ft)	0.42	Wt. n-Val.	0.045	0.035
0.045				
W.S. Elev (ft)	528.93	Reach Len. (ft)	109.56	98.89
95.96				
Crit W.S. (ft)	527.93	Flow Area (sq ft)	28.85	115.00
6.63				
E.G. Slope (ft/ft)	0.003461	Area (sq ft)	28.85	115.00
6.63				
Q Total (cfs)	690.00	Flow (cfs)	60.76	621.69
7.55				
Top Width (ft)	74.12	Top Width (ft)	25.47	33.90
14.74				
Vel Total (ft/s)	4.59	Avg. Vel. (ft/s)	2.11	5.41

1.14					
Max Chl Dpth (ft)	5.70	Hydr. Depth (ft)	1.13	3.39	
0.45					
Conv. Total (cfs)	11728.9	Conv. (cfs)	1032.8	10567.8	
128.3					
Length Wtd. (ft)	99.44	Wetted Per. (ft)	25.56	36.12	
14.79					
Min Ch El (ft)	523.23	Shear (lb/sq ft)	0.24	0.69	
0.10					
Alpha	1.27	Stream Power (lb/ft s)	0.51	3.72	
0.11					
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	0.11	0.39	
0.14					
C & E Loss (ft)	0.07	Cum SA (acres)	0.12	0.10	
0.08					

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 125.84

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	533.18	4.73	532.34	7.61	532.01	17.42	530.65	32.67	529.54
41.08	528.66	41.28	528.62	44.9	528.69	49.25	528.65	60.8	527.85
65.46	526.99	72.06	525.61	73.43	525.16	73.46	525.11	74.5	523.66
74.58	523.54	74.8	523.2	77.88	523.24	79.09	523.03	79.72	522.93
81.28	523.11	85.39	523.08	85.43	523.34	86.16	524.28	86.72	524.37
93.44	525.48	94.22	526.52	104.08	527.02	110.22	528.12	114.25	528.17
144.95	528.34	146.34	528.48	150.1	528.54	159.74	529.21	168.26	529.83
177.94	530.54	186.04	531.66	190.76	532.2	191.1	532.26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	73.46	.035	86.72	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
73.46	86.72	43.81	49.66	63.06	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	528.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	527.61	Reach Len. (ft)	43.81	49.66	63.06
Crit W.S. (ft)	527.61	Flow Area (sq ft)	12.82	56.97	28.56
E.G. Slope (ft/ft)	0.008487	Area (sq ft)	12.82	56.97	28.56
Q Total (cfs)	690.00	Flow (cfs)	41.52	542.93	105.56
Top Width (ft)	45.28	Top Width (ft)	11.36	13.26	20.66
Vel Total (ft/s)	7.02	Avg. Vel. (ft/s)	3.24	9.53	3.70
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)	1.13	4.30	1.38
Conv. Total (cfs)	7489.9	Conv. (cfs)	450.7	5893.5	1145.8
Length Wtd. (ft)	52.38	Wetted Per. (ft)	11.66	14.98	21.33
Min Ch El (ft)	522.93	Shear (lb/sq ft)	0.58	2.02	0.71
Alpha	1.51	Stream Power (lb/ft s)	1.89	19.20	2.62
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.06	0.20	0.10
C & E Loss (ft)	0.23	Cum SA (acres)	0.07	0.05	0.04

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: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 76.34

INPUT
Description:
Station Elevation Data num= 83

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	531.39	3.68	531	22.76	530.11	23.97	530.06	24.16	530.05
24.3	530.04	24.64	530.03	25.27	530	28.18	529.79	39.88	529
41.87	528.8	45.02	528.6	47.05	528.47	48.05	528.43	48.61	528.4
52.06	528.26	53.43	528.18	53.52	528.17	54.24	528.13	55.36	528.12
57.33	528.12	61.81	528.03	62.89	528	66.82	527.9	69.04	527.85
70.47	527.82	71.96	527.81	73.5	527.78	76.66	527.66	79.27	527.58
88.96	527.19	91.59	527.13	94.88	526.83	109.33	526.67	114.31	525.78
116.79	525.1	118.94	524.83	119.72	524.74	120.32	524.27	121.17	523.7
121.51	523.43	123.67	522.65	126.05	522.04	126.86	522.25	127.92	522.52
131.95	523.58	132.41	524.14	132.76	525.02	132.82	525.01	138.92	523.73
138.98	523.72	139.15	523.76	140.95	524.67	143.15	524.84	145.08	525
145.22	525	148.32	525.1	150.91	525.18	152.65	525.27	153.21	525.67
153.98	526.2	155.27	527.09	164.76	534.07	165.9	534.48	167.31	534.92
167.58	535	168.14	535.2	170.49	536	173.8	536.97	173.9	537
173.96	537.02	175.91	537.61	178.4	537.87	178.84	538	182.26	538.91
182.59	539	182.69	539.08	183.64	539.22	188.1	540	191.53	540.8
192.15	541	192.34	541.06	192.78	541.22				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	118.94	.035	132.82	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
118.94	132.82	42.54	41.9	41.59	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	528.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	527.77	Reach Len. (ft)	42.54	41.90	41.59
Crit W.S. (ft)		Flow Area (sq ft)	42.77	64.44	64.75
E.G. Slope (ft/ft)	0.003054	Area (sq ft)	42.77	64.44	64.75

Q Total (cfs)	690.00	Flow (cfs)	74.98	389.43 225.58
Top Width (ft)	82.45	Top Width (ft)	45.20	13.88 23.38
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)	1.75	6.04 3.48
Max Chl Dpth (ft)	5.73	Hydr. Depth (ft)	0.95	4.64 2.77
Conv. Total (cfs)	12485.5	Conv. (cfs)	1356.8	7046.8 4081.9
Length Wtd. (ft)	41.90	Wetted Per. (ft)	45.41	15.59 24.54
Min Ch El (ft)	522.04	Shear (lb/sq ft)	0.18	0.79 0.50
Alpha	1.55	Stream Power (lb/ft s)	0.31	4.76 1.75
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.03	0.13 0.03
C & E Loss (ft)	0.07	Cum SA (acres)	0.04	0.03 0.01

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 34.44

INPUT
Description:
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	531.12	1.78	531	5.45	530.59	6.24	530.51	10.8	530
15.29	529.69	15.93	529.66	23.66	529.15	25.44	529.03	26.04	529
26.49	528.99	32.81	528.78	35.08	528.71	36.46	528.7	38.89	528.61
41.51	528.5	43.05	528.45	44.89	528.39	46.54	528.33	54.64	528
54.74	527.99	63.8	527.41	69.03	527	71.6	526.89	75.02	526.77
76.62	526.71	77.03	526.7	78.75	526.63	79.22	526.6	80.33	526.57
82.14	526.5	91.71	526.22	107.74	526.21	109.78	526.21	109.91	526.2
109.96	526.19	110.04	526.17	110.14	526	111.02	525.02	111.07	525
111.3	524.71	111.77	524	112.15	523.74	112.61	523	112.66	522.87
119.43	522.59	119.63	522.58	119.99	522.56	120.69	522.54	120.9	522.55

```
   121.2  522.55  121.31  522.56  121.46  522.57  126.67     523  127.23  523.17
  127.96  523.43  129.36   523.5  129.82     524  130.54  524.77   130.7     525
  130.84  525.19  130.86  525.22  130.98   525.2  132.51  525.82  134.03  526.44
   135.2  526.92  138.62  528.79  140.66  529.73  142.47  530.57  147.36  532.83
  147.48     533  148.86  533.43  149.41  533.45  150.66     534  153.14  534.94
  153.29     535  153.33  535.02  156.64     536  159.38  536.63  161.06     537
  162.98  537.42  165.87     538  168.15  538.48  170.42     539  171.58  539.29
  174.87     540  175.39  540.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .045  109.96    .035  130.84    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        109.96  130.84             3.32   34.44     .25             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1


  E.G. Elev (ft)           527.89    Element                  Left OB    Channel
 Right OB
  Vel Head (ft)              1.08    Wt. n-Val.                0.045      0.035
   0.045
  W.S. Elev (ft)           526.80    Reach Len. (ft)            3.32      34.44
    0.25
  Crit W.S. (ft)           526.80    Flow Area (sq ft)         16.26      76.00
    3.39
  E.G. Slope (ft/ft)      0.008488   Area (sq ft)              16.26      76.00
    3.39
  Q Total (cfs)            690.00    Flow (cfs)                29.15     652.18
    8.66
  Top Width (ft)            60.89    Top Width (ft)            35.94      20.88
    4.08
  Vel Total (ft/s)           7.21    Avg. Vel. (ft/s)           1.79       8.58
    2.55
  Max Chl Dpth (ft)          4.26    Hydr. Depth (ft)           0.45       3.64
    0.83
  Conv. Total (cfs)        7489.4    Conv. (cfs)               316.4     7078.9
    94.0
  Length Wtd. (ft)           32.89   Wetted Per. (ft)          35.95      23.39
    4.41
  Min Ch El (ft)           522.54    Shear (lb/sq ft)           0.24       1.72
    0.41
  Alpha                      1.34    Stream Power (lb/ft s)     0.43      14.78
    1.04
  Frctn Loss (ft)            0.30    Cum Volume (acre-ft)       0.00       0.06
    0.00
  C & E Loss (ft)            0.01    Cum SA (acres)             0.00       0.02
    0.00
```

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2   RS: 0

INPUT
Description:
Station Elevation Data   num=   101

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	531	4.19	530.57	6.59	530.27	7.52	530.16	8.53	530
9.75	529.89	11.2	529.76	19.61	529	22.55	528.88	28.87	528.67
29.25	528.66	29.72	528.66	31.34	528.63	31.78	528.62	34.17	528.51
38.04	528.25	41.84	528	47.22	527.72	51.12	527.52	57.2	527.2
59.63	527.07	61.02	527	67.69	526.67	70.53	526.57	70.67	526.56
74.33	526.35	75.21	526.31	75.97	526.28	77.01	526.24	80.62	526
85.76	525.72	89.58	525.52	89.67	525.51	90.26	525.48	92.02	525.39
93.06	525.4	94.13	525.41	94.31	525.41	94.7	525.6	94.91	525.6
94.96	525.61	95.86	525.52	97.03	525.38	98.62	525.3	100.02	525.15
101.24	525	102.12	524.42	102.78	524	104.21	523	104.22	523
104.27	522.98	105.29	522.5	106.47	522	107.85	522	109.33	521.99
110.55	521.99	112.81	522	114.65	522	117.08	522.57	117.9	522.75
117.96	522.77	118.93	523	120.3	523.5	121.51	524	122.25	524.37
123.98	525	124.95	525.39	126.54	526	127.57	526.48	128.94	527
131.06	527.93	131.2	528	131.36	528.08	131.57	528.16	132.36	528.59
133.08	529	133.39	529.13	134.96	530	136.48	530.87	136.77	531
137.02	531.11	139.13	532	140.7	532.6	141.88	533	143.49	533.54
144.92	534	146.48	534.52	147.97	535	150.42	535.88	150.76	536
151.04	536.08	154.44	537	156.82	537.47	160.12	538	162.93	538.34
164.07	538.41	166.29	538.71	167.79	539	168.77	539.26	171.97	540
173.64	540.34								

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	101.24	.035	123.98	.045

Bank Sta: Left   Right   Coeff Contr.   Expan.
        101.24 123.98   .1   .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	527.30	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.17	Wt. n-Val.	0.045	0.035
0.045				
W.S. Elev (ft)	526.13	Reach Len. (ft)		
Crit W.S. (ft)	526.13	Flow Area (sq ft)	12.30	74.64
1.62				
E.G. Slope (ft/ft)	0.009595	Area (sq ft)	12.30	74.64
1.62				
Q Total (cfs)	690.00	Flow (cfs)	26.46	660.12
3.43				
Top Width (ft)	48.17	Top Width (ft)	22.59	22.74
2.84				
Vel Total (ft/s)	7.79	Avg. Vel. (ft/s)	2.15	8.84
2.12				
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)	0.54	3.28
0.57				
Conv. Total (cfs)	7044.3	Conv. (cfs)	270.1	6739.2
35.0				
Length Wtd. (ft)		Wetted Per. (ft)	22.69	24.07
3.06				
Min Ch El (ft)	521.99	Shear (lb/sq ft)	0.32	1.86
0.32				
Alpha	1.24	Stream Power (lb/ft s)	0.70	16.43
0.67				
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

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.

SUMMARY OF MANNING'S N VALUES

River:CREEK CL

Reach	River Sta.	n1	n2	n3
creek cl 2	289.15	.045	.035	.045
creek cl 2	225.24	.045	.035	.045

creek cl 2	175.23	.045	.035	.045
creek cl 2	125.84	.045	.035	.045
creek cl 2	76.34	.045	.035	.045
creek cl 2	34.44	.045	.035	.045
creek cl 2	0	.045	.035	.045

SUMMARY OF REACH LENGTHS

River: CREEK CL

Reach	River Sta.	Left	Channel	Right
creek cl 2	289.15	59.81	63.91	75.27
creek cl 2	225.24	45.51	50.01	55.15
creek cl 2	175.23	109.56	98.89	95.96
creek cl 2	125.84	43.81	49.66	63.06
creek cl 2	76.34	42.54	41.9	41.59
creek cl 2	34.44	3.32	34.44	.25
creek cl 2	0			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: CREEK CL

Reach	River Sta.	Contr.	Expan.
creek cl 2	289.15	.1	.3
creek cl 2	225.24	.1	.3
creek cl 2	175.23	.1	.3
creek cl 2	125.84	.1	.3
creek cl 2	76.34	.1	.3
creek cl 2	34.44	.1	.3
creek cl 2	0	.1	.3

Profile Output Table - Standard Table 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)		

creek cl 2	289.15	PF 1	690.00	524.27	529.17	529.17
530.68	0.012370	10.11	74.73	26.50	0.92	
creek cl 2	225.24	PF 1	690.00	523.11	529.06	
529.52	0.002849	5.50	135.47	50.78	0.48	
creek cl 2	175.23	PF 1	690.00	523.23	528.93	527.93
529.35	0.003461	5.41	150.49	74.12	0.52	
creek cl 2	125.84	PF 1	690.00	522.93	527.61	527.61
528.76	0.008487	9.53	98.35	45.28	0.81	
creek cl 2	76.34	PF 1	690.00	522.04	527.77	
528.16	0.003054	6.04	171.95	82.45	0.49	
creek cl 2	34.44	PF 1	690.00	522.54	526.80	526.80
527.89	0.008488	8.58	95.66	60.89	0.79	
creek cl 2	0	PF 1	690.00	521.99	526.13	526.13
527.30	0.009595	8.84	88.56	48.17	0.86	

Appendix

B

POST DEVELOPED MODEL

HEC-RAS HEC-RAS 6.6 September 2024
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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

PROJECT DATA
Project Title: HEC RUN PR W IMP
Project File : HECRUNPRWIMP.prj
Run Date and Time: 4/29/2026 7:27:06 AM

Project in English units

PLAN DATA

Plan Title: EX HEC 2
Plan File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC RAS\HECRUNPRWIMP.p02

Geometry Title: EX GEOM 2
Geometry File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC RAS\HECRUNPRWIMP.g02

Flow Title : Flow 08
Flow File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC RAS\HECRUNPRWIMP.f08

Plan Summary Information:
Number of: Cross Sections = 7 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01

```
    Maximum number of iterations         =  20
    Maximum difference tolerance         =  0.3
    Flow tolerance factor                =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow



FLOW DATA

Flow Title: Flow 08
Flow File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC
RAS\HECRUNPRWIMP.f08

Flow Data (cfs)

  River           Reach           RS                    PF 1
  CREEK CL        creek cl 2      289.15                 690
  CREEK CL        creek cl 2      225.24              691.01


Boundary Conditions


  River           Reach           Profile                       Upstream
     Downstream


  CREEK CL        creek cl 2      PF 1
   Normal S = 0.01




GEOMETRY DATA

Geometry Title: EX GEOM 2
Geometry File : v:\2503063 785 Bismark Ave\Documents\Engineering\Hydraulics\HEC
RAS\HECRUNPRWIMP.g02

CROSS SECTION


RIVER: CREEK CL
```

REACH: creek cl 2 RS: 289.15

INPUT
Description:
Station Elevation Data num= 68

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	536.34	.7	536.31	3.57	536	6.7	535.31	8.3	535
9.01	534.83	12.53	534	14.44	533.54	16.83	533	21.29	532.1
21.82	532	22.52	531.92	22.77	531.92	22.95	531.91	30.48	531.33
32.12	531.33	32.82	531.32	34.75	531.26	37.65	531.15	38	531.13
38.51	531.1	38.55	531.1	38.97	531.08	39.15	531.07	39.88	531.07
43.26	530.96	44.84	530.94	46.24	530.94	46.95	530.93	47.04	530.94
49.08	530.92	50.52	530.91	50.76	530.91	50.92	530.93	55.91	530.69
65.35	530.68	73.47	530.53	78.24	530.58	83.44	530.5	88.45	530.45
98.56	529.62	106.92	529.29	112.81	525.08	115.26	524.46	117.94	524.39
122.19	524.27	123.38	524.47	123.83	526.5	124.22	527.04	124.26	527.05
130.9	528.42	132.62	528.88	138.49	530.65	139.72	531.38	140.41	532.16
140.66	532.26	140.92	532.24	141.98	532.36	144.99	532.52	145.23	532.68
145.32	532.76	146.02	533.15	146.94	533.58	147.1	533.51	147.66	533.76
148.15	533.99	148.17	534	152.47	534.35				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	106.92	.035	124.26	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
106.92	124.26	59.81	63.91	75.27	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	530.68	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.51	Wt. n-Val.		0.035
0.045				
W.S. Elev (ft)	529.17	Reach Len. (ft)	59.81	63.91
75.27				
Crit W.S. (ft)	529.17	Flow Area (sq ft)		64.16
10.57				
E.G. Slope (ft/ft)	0.012370	Area (sq ft)		64.16
10.57				
Q Total (cfs)	690.00	Flow (cfs)		648.54
41.46				
Top Width (ft)	26.50	Top Width (ft)		17.17
9.32				
Vel Total (ft/s)	9.23	Avg. Vel. (ft/s)		10.11
3.92				
Max Chl Dpth (ft)	4.90	Hydr. Depth (ft)		3.74
1.13				
Conv. Total (cfs)	6204.0	Conv. (cfs)		5831.3

372.8					
Length Wtd. (ft)	64.19	Wetted Per. (ft)			20.49
9.57					
Min Ch El (ft)	524.27	Shear (lb/sq ft)			2.42
0.85					
Alpha	1.14	Stream Power (lb/ft s)			24.45
3.35					
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	0.22	0.60	
0.15					
C & E Loss (ft)	0.32	Cum SA (acres)	0.18	0.15	
0.10					

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 225.24

INPUT
Description:
Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	536.26	3.66	536	6.9	535.51	9.75	535	11.73	534.58
14.64	534	15.75	533.78	19.54	533	21.68	532.59	23.48	532.37
23.82	532.32	25.68	532	28.79	531.57	29.19	531.54	29.42	531.51
29.66	531.47	30.02	531.43	32.99	531	34.85	530.97	39.03	530.9
40.51	530.88	42.43	530.86	43.45	530.85	45.22	530.82	58.89	530.2
67.14	529.96	80.04	529.59	84.84	529.61	107.55	528.08	107.78	528.07
107.82	528.07	109.54	528.03	111.34	528.1	112.68	527.92	113.22	527.83
113.25	527.81	113.38	527.73	118.24	526.02	123.22	524.57	127.11	523.62

```
  129.43  523.12  129.49  523.11  131.53  523.46   135.4   524.1  135.77  524.56
  137.68  524.49  141.93  526.35     143  528.35  143.32  528.95  148.17  530.08
  152.31  531.03  156.66  531.56  164.76     533  170.13     534   175.5     535

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .045  113.25    .035     143    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        113.25     143            45.51   50.01   55.15             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1


  E.G. Elev (ft)            529.58    Element                   Left OB    Channel
 Right OB
  Vel Head (ft)               0.44    Wt. n-Val.                 0.045      0.035
  0.045
  W.S. Elev (ft)            529.14    Reach Len. (ft)           45.51      50.01
  55.15
  Crit W.S. (ft)                      Flow Area (sq ft)          14.62     124.64
    0.23
  E.G. Slope (ft/ft)      0.002665    Area (sq ft)               14.62     124.64
    0.23
  Q Total (cfs)             691.01    Flow (cfs)                 19.29     671.61
    0.11
  Top Width (ft)             52.27    Top Width (ft)             21.40      29.75
    1.12
  Vel Total (ft/s)            4.95    Avg. Vel. (ft/s)            1.32       5.39
    0.49
  Max Chl Dpth (ft)           6.03    Hydr. Depth (ft)            0.68       4.19
    0.21
  Conv. Total (cfs)        13385.2    Conv. (cfs)                373.7    13009.3
     2.2
  Length Wtd. (ft)           49.23    Wetted Per. (ft)           21.46      32.33
    1.51
  Min Ch El (ft)             523.11    Shear (lb/sq ft)            0.11       0.64
    0.03
  Alpha                       1.15    Stream Power (lb/ft s)      0.15       3.46
    0.01
  Frctn Loss (ft)             0.16    Cum Volume (acre-ft)        0.21       0.46
    0.14
  C & E Loss (ft)             0.00    Cum SA (acres)              0.17       0.11
    0.09


CROSS SECTION
```

RIVER: CREEK CL
REACH: creek cl 2 RS: 175.23

INPUT
Description:
Station Elevation Data num= 73

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	536.32	2.52	536.16	4.65	536	9.86	535.36	13.31	535.1
13.91	535.03	15.12	535.03	15.82	535.06	16.48	535.09	19.61	535
21.87	534.65	24.32	534	25.13	533.85	25.97	533.71	27.72	533.62
29.1	533.3	29.52	533.23	29.93	533	29.94	533	29.95	532.99
31.95	532	33.05	531.63	34.21	531.33	35.6	531	37.83	530.66
39.4	530.51	41.14	530	45.77	529.92	55.56	529.75	55.59	529.75
56.78	529.76	57.7	529.76	58.6	529.75	59.73	529.74	61.91	529.7
65.01	529.64	65.4	529.64	67.9	529.59	68.15	529.59	68.45	529.58
69.82	529.57	73.35	529.49	79.25	529.29	84.05	528.58	101.6	527.17
107.13	527.14	111.41	526.43	114.79	526.13	118.51	525.37	121.73	524.28
122.06	524.17	125.9	523.66	126.55	523.44	126.9	523.3	127.26	523.33
127.8	523.31	129.42	523.23	130.17	523.36	130.9	523.84	134.07	525.83
134.09	525.84	134.5	527.19	135.91	527.34	141.03	527.9	144.95	528.34
146.34	528.48	150.1	528.54	152.52	529	156.05	530	159.58	531
163.11	532	166.64	533	170.17	534				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	121.73	.035	141.03	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
121.73	141.03	109.56	98.89	95.96	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	529.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	528.97	Reach Len. (ft)	109.56	98.89	95.96
Crit W.S. (ft)	528.10	Flow Area (sq ft)	73.71	72.53	6.37
E.G. Slope (ft/ft)	0.004132	Area (sq ft)	73.71	72.53	6.37
Q Total (cfs)	691.01	Flow (cfs)	232.23	449.61	9.17
Top Width (ft)	71.00	Top Width (ft)	40.35	19.30	11.35
Vel Total (ft/s)	4.53	Avg. Vel. (ft/s)	3.15	6.20	1.44
Max Chl Dpth (ft)	5.74	Hydr. Depth (ft)	1.83	3.76	

0.56					
Conv. Total (cfs)	10749.8	Conv. (cfs)	3612.7	6994.5	142.6
Length Wtd. (ft)	100.76	Wetted Per. (ft)	40.76	21.19	11.43
Min Ch El (ft)	523.23	Shear (lb/sq ft)	0.47	0.88	0.14
Alpha	1.38	Stream Power (lb/ft s)	1.47	5.47	0.21
Frctn Loss (ft)	0.58	Cum Volume (acre-ft)	0.17	0.34	0.14
C & E Loss (ft)	0.07	Cum SA (acres)	0.14	0.09	0.08

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 125.84

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	533.18	4.73	532.34	7.61	532.01	17.42	530.65	32.67	529.54
41.08	528.66	41.28	528.62	44.9	528.69	49.25	528.65	60.8	527.85
65.46	526.99	72.06	525.61	73.43	525.16	73.46	525.11	74.5	523.66
74.58	523.54	74.8	523.2	77.88	523.24	79.09	523.03	79.72	522.93
81.28	523.11	85.39	523.08	85.43	523.34	86.16	524.28	86.72	524.37
93.44	525.48	94.22	526.52	104.08	527.02	110.22	528.12	114.25	528.17
144.95	528.34	146.34	528.48	150.1	528.54	152.52	529	156.05	530
159.58	531	163.11	532	166.64	533	170.17	534		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	73.46	.035	86.72	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
73.46	86.72	43.81	49.66	63.06	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	528.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	527.61	Reach Len. (ft)	43.81	49.66	63.06
Crit W.S. (ft)	527.61	Flow Area (sq ft)	12.85	57.02	28.63
E.G. Slope (ft/ft)	0.008481	Area (sq ft)	12.85	57.02	28.63
Q Total (cfs)	691.01	Flow (cfs)	41.67	543.46	105.89
Top Width (ft)	45.32	Top Width (ft)	11.38	13.26	20.67
Vel Total (ft/s)	7.01	Avg. Vel. (ft/s)	3.24	9.53	3.70
Max Chl Dpth (ft)	4.68	Hydr. Depth (ft)	1.13	4.30	1.38
Conv. Total (cfs)	7503.3	Conv. (cfs)	452.4	5901.1	1149.8
Length Wtd. (ft)	52.38	Wetted Per. (ft)	11.68	14.98	21.35
Min Ch El (ft)	522.93	Shear (lb/sq ft)	0.58	2.02	0.71
Alpha	1.51	Stream Power (lb/ft s)	1.89	19.21	2.63
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	0.06	0.20	0.10
C & E Loss (ft)	0.23	Cum SA (acres)	0.07	0.05	0.05

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: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 76.34

INPUT
Description:
Station Elevation Data num= 83

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	531.39	3.68	531	22.76	530.11	23.97	530.06	24.16	530.05
24.3	530.04	24.64	530.03	25.27	530	28.18	529.79	39.88	529
41.87	528.8	45.02	528.6	47.05	528.47	48.05	528.43	48.61	528.4
52.06	528.26	53.43	528.18	53.52	528.17	54.24	528.13	55.36	528.12
57.33	528.12	61.81	528.03	62.89	528	66.82	527.9	69.04	527.85
70.47	527.82	71.96	527.81	73.5	527.78	76.66	527.66	79.27	527.58
88.96	527.19	91.59	527.13	94.88	526.83	109.33	526.67	114.31	525.78
116.79	525.1	118.94	524.83	119.72	524.74	120.32	524.27	121.17	523.7
121.51	523.43	123.67	522.65	126.05	522.04	126.86	522.25	127.92	522.52
131.95	523.58	132.41	524.14	132.76	525.02	132.82	525.01	138.92	523.73
138.98	523.72	139.15	523.76	140.95	524.67	143.15	524.84	145.08	525
145.22	525	148.32	525.1	150.91	525.18	152.65	525.27	153.21	525.67
153.98	526.2	155.27	527.09	164.76	534.07	165.9	534.48	167.31	534.92
167.58	535	168.14	535.2	170.49	536	173.8	536.97	173.9	537
173.96	537.02	175.91	537.61	178.4	537.87	178.84	538	182.26	538.91
182.59	539	182.69	539.08	183.64	539.22	188.1	540	191.53	540.8
192.15	541	192.34	541.06	192.78	541.22				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	118.94	.035	132.82	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
118.94	132.82	42.54	41.9	41.59	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	528.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	527.77	Reach Len. (ft)	42.54	41.90	41.59
Crit W.S. (ft)		Flow Area (sq ft)	42.86	64.47	64.79
E.G. Slope (ft/ft)	0.003057	Area (sq ft)	42.86	64.47	64.79
Q Total (cfs)	691.01	Flow (cfs)	75.22	389.87	225.93

Top Width (ft)	82.51	Top Width (ft)	45.25	13.88 23.38
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)	1.76	6.05 3.49
Max Chl Dpth (ft)	5.73	Hydr. Depth (ft)	0.95	4.64 2.77
Conv. Total (cfs)	12498.9	Conv. (cfs)	1360.5	7051.9 4086.5
Length Wtd. (ft)	41.90	Wetted Per. (ft)	45.47	15.59 24.55
Min Ch El (ft)	522.04	Shear (lb/sq ft)	0.18	0.79 0.50
Alpha	1.55	Stream Power (lb/ft s)	0.32	4.77 1.76
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	0.03	0.13 0.03
C & E Loss (ft)	0.07	Cum SA (acres)	0.04	0.03 0.01

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2 RS: 34.44

INPUT
Description:
Station Elevation Data num= 87

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	531.12	1.78	531	5.45	530.59	6.24	530.51	10.8	530
15.29	529.69	15.93	529.66	23.66	529.15	25.44	529.03	26.04	529
26.49	528.99	32.81	528.78	35.08	528.71	36.46	528.7	38.89	528.61
41.51	528.5	43.05	528.45	44.89	528.39	46.54	528.33	54.64	528
54.74	527.99	63.8	527.41	69.03	527	71.6	526.89	75.02	526.77
76.62	526.71	77.03	526.7	78.75	526.63	79.22	526.6	80.33	526.57
82.14	526.5	91.71	526.22	107.74	526.21	109.78	526.21	109.91	526.2
109.96	526.19	110.04	526.17	110.14	526	111.02	525.02	111.07	525
111.3	524.71	111.77	524	112.15	523.74	112.61	523	112.66	522.87
119.43	522.59	119.63	522.58	119.99	522.56	120.69	522.54	120.9	522.55
121.2	522.55	121.31	522.56	121.46	522.57	126.67	523	127.23	523.17
127.96	523.43	129.36	523.5	129.82	524	130.54	524.77	130.7	525

130.84	525.19	130.86	525.22	130.98	525.2	132.51	525.82	134.03	526.44
135.2	526.92	138.62	528.79	140.66	529.73	142.47	530.57	147.36	532.83
147.48	533	148.86	533.43	149.41	533.45	150.66	534	153.14	534.94
153.29	535	153.33	535.02	156.64	536	159.38	536.63	161.06	537
162.98	537.42	165.87	538	168.15	538.48	170.42	539	171.58	539.29
174.87	540	175.39	540.13						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	109.96	.035	130.84	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
109.96	130.84	3.32	34.44	.25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	527.89	Element	Left OB	Channel
Right OB				
Vel Head (ft)	1.08	Wt. n-Val.	0.045	0.035
0.045				
W.S. Elev (ft)	526.81	Reach Len. (ft)	3.32	34.44
0.25				
Crit W.S. (ft)	526.81	Flow Area (sq ft)	16.52	76.15
3.42				
E.G. Slope (ft/ft)	0.008443	Area (sq ft)	16.52	76.15
3.42				
Q Total (cfs)	691.01	Flow (cfs)	29.73	652.54
8.74				
Top Width (ft)	61.11	Top Width (ft)	36.14	20.88
4.10				
Vel Total (ft/s)	7.19	Avg. Vel. (ft/s)	1.80	8.57
2.55				
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)	0.46	3.65
0.84				
Conv. Total (cfs)	7520.5	Conv. (cfs)	323.5	7101.9
95.1				
Length Wtd. (ft)	32.93	Wetted Per. (ft)	36.15	23.39
4.43				
Min Ch El (ft)	522.54	Shear (lb/sq ft)	0.24	1.72
0.41				
Alpha	1.35	Stream Power (lb/ft s)	0.43	14.70
1.04				
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	0.00	0.06
0.00				
C & E Loss (ft)	0.01	Cum SA (acres)	0.00	0.02
0.00				

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.

CROSS SECTION

RIVER: CREEK CL
REACH: creek cl 2   RS: 0

INPUT
Description:
Station Elevation Data   num=   101

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	531	4.19	530.57	6.59	530.27	7.52	530.16	8.53	530
9.75	529.89	11.2	529.76	19.61	529	22.55	528.88	28.87	528.67
29.25	528.66	29.72	528.66	31.34	528.63	31.78	528.62	34.17	528.51
38.04	528.25	41.84	528	47.22	527.72	51.12	527.52	57.2	527.2
59.63	527.07	61.02	527	67.69	526.67	70.53	526.57	70.67	526.56
74.33	526.35	75.21	526.31	75.97	526.28	77.01	526.24	80.62	526
85.76	525.72	89.58	525.52	89.67	525.51	90.26	525.48	92.02	525.39
93.06	525.4	94.13	525.41	94.31	525.41	94.7	525.6	94.91	525.6
94.96	525.61	95.86	525.52	97.03	525.38	98.62	525.3	100.02	525.15
101.24	525	102.12	524.42	102.78	524	104.21	523	104.22	523
104.27	522.98	105.29	522.5	106.47	522	107.85	522	109.33	521.99
110.55	521.99	112.81	522	114.65	522	117.08	522.57	117.9	522.75
117.96	522.77	118.93	523	120.3	523.5	121.51	524	122.25	524.37
123.98	525	124.95	525.39	126.54	526	127.57	526.48	128.94	527
131.06	527.93	131.2	528	131.36	528.08	131.57	528.16	132.36	528.59
133.08	529	133.39	529.13	134.96	530	136.48	530.87	136.77	531
137.02	531.11	139.13	532	140.7	532.6	141.88	533	143.49	533.54
144.92	534	146.48	534.52	147.97	535	150.42	535.88	150.76	536
151.04	536.08	154.44	537	156.82	537.47	160.12	538	162.93	538.34
164.07	538.41	166.29	538.71	167.79	539	168.77	539.26	171.97	540
173.64	540.34								

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
0	.045	101.24	.035	124.95	.045

Bank Sta: Left   Right   Coeff Contr.   Expan.
        101.24 124.95   .1   .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	527.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.	0.045	0.035	0.045
W.S. Elev (ft)	526.12	Reach Len. (ft)			
Crit W.S. (ft)	526.12	Flow Area (sq ft)	12.13	75.37	0.70
E.G. Slope (ft/ft)	0.009929	Area (sq ft)	12.13	75.37	0.70
Q Total (cfs)	691.01	Flow (cfs)	26.40	663.47	1.14
Top Width (ft)	48.04	Top Width (ft)	22.48	23.71	1.85
Vel Total (ft/s)	7.83	Avg. Vel. (ft/s)	2.18	8.80	1.63
Max Chl Dpth (ft)	4.13	Hydr. Depth (ft)	0.54	3.18	0.38
Conv. Total (cfs)	6934.7	Conv. (cfs)	264.9	6658.3	11.4
Length Wtd. (ft)		Wetted Per. (ft)	22.57	25.11	2.00
Min Ch El (ft)	521.99	Shear (lb/sq ft)	0.33	1.86	0.22
Alpha	1.22	Stream Power (lb/ft s)	0.72	16.38	0.35
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

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.

SUMMARY OF MANNING'S N VALUES

River:CREEK CL

Reach	River Sta.	n1	n2	n3
creek cl 2	289.15	.045	.035	.045
creek cl 2	225.24	.045	.035	.045
creek cl 2	175.23	.045	.035	.045
creek cl 2	125.84	.045	.035	.045

creek cl 2	76.34	.045	.035	.045
creek cl 2	34.44	.045	.035	.045
creek cl 2	0	.045	.035	.045

SUMMARY OF REACH LENGTHS

River: CREEK CL

Reach	River Sta.	Left	Channel	Right
creek cl 2	289.15	59.81	63.91	75.27
creek cl 2	225.24	45.51	50.01	55.15
creek cl 2	175.23	109.56	98.89	95.96
creek cl 2	125.84	43.81	49.66	63.06
creek cl 2	76.34	42.54	41.9	41.59
creek cl 2	34.44	3.32	34.44	.25
creek cl 2	0			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: CREEK CL

Reach	River Sta.	Contr.	Expan.
creek cl 2	289.15	.1	.3
creek cl 2	225.24	.1	.3
creek cl 2	175.23	.1	.3
creek cl 2	125.84	.1	.3
creek cl 2	76.34	.1	.3
creek cl 2	34.44	.1	.3
creek cl 2	0	.1	.3

Profile Output Table - Standard Table 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)		
creek cl 2	289.15	PF 1	690.00	524.27	529.17	529.17
530.68	0.012370	10.11	74.73	26.50	0.92	

creek cl 2	225.24	PF 1	691.01	523.11	529.14	
529.58	0.002665	5.39	139.49	52.27	0.46	
creek cl 2	175.23	PF 1	691.01	523.23	528.97	528.10
529.42	0.004132	6.20	152.62	71.00	0.56	
creek cl 2	125.84	PF 1	691.01	522.93	527.61	527.61
528.77	0.008481	9.53	98.51	45.32	0.81	
creek cl 2	76.34	PF 1	691.01	522.04	527.77	
528.16	0.003057	6.05	172.12	82.51	0.49	
creek cl 2	34.44	PF 1	691.01	522.54	526.81	526.81
527.89	0.008443	8.57	96.09	61.11	0.79	
creek cl 2	0	PF 1	691.01	521.99	526.12	526.12
527.28	0.009929	8.80	88.20	48.04	0.87	

Appendix

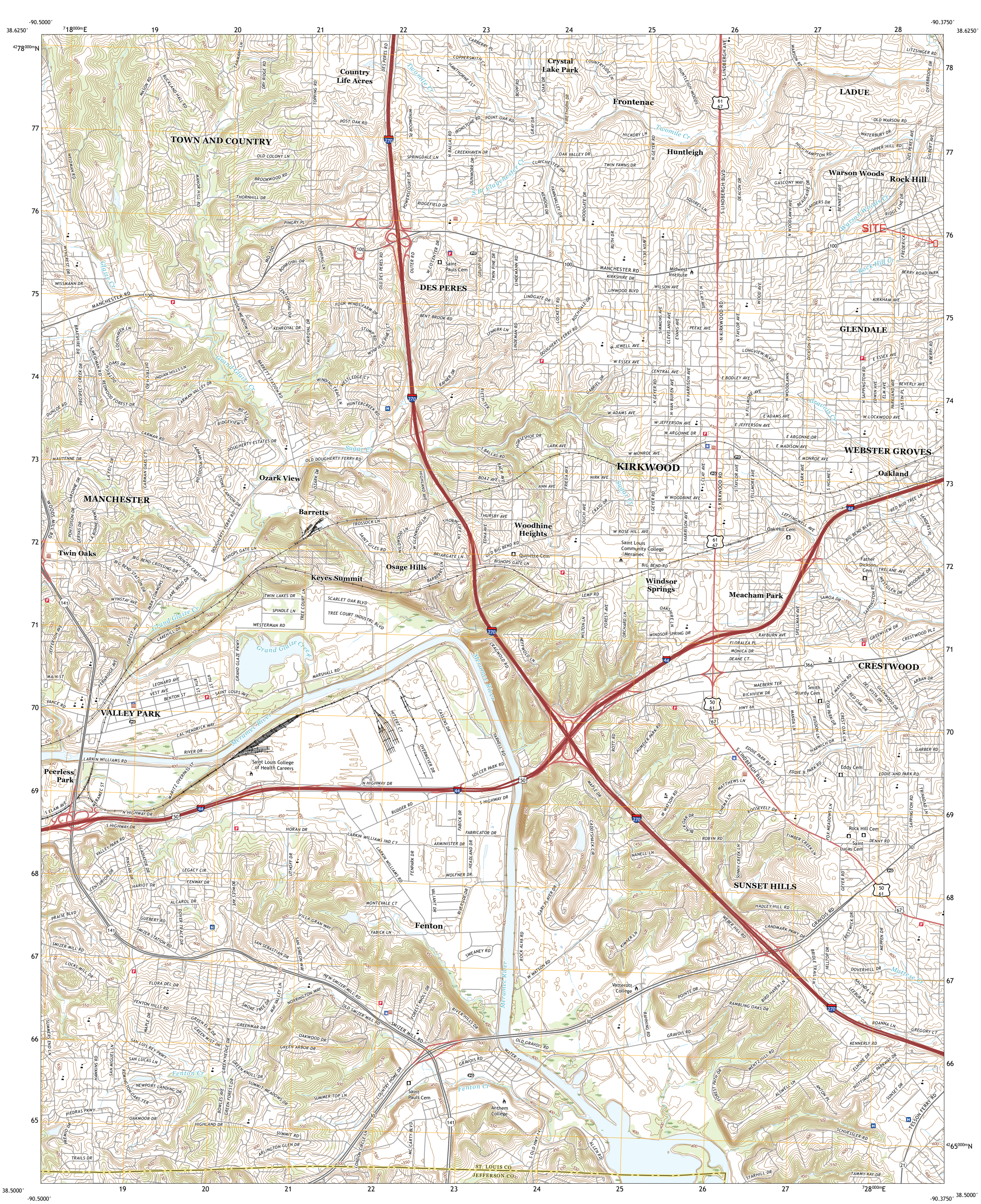
C

FIRMET CURRENT/PROPOSED

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

KIRKWOOD QUADRANGLE
MISSOURI
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid:Universal Transverse Mercator, Zone 15S
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery....NAIP, July 2020 - July 2020
Roads.... U.S. Census Bureau, 2016
Names....GNIS, 1980 - 2020
Hydrography....National Hydrography Dataset, 2002 - 2019
Contours....National Elevation Dataset, 2018
Boundaries....Multiple sources; see metadata file 2018 - 2019
Public Land Survey System....BLM, 2020
Wetlands....FWS National Wetlands Inventory Not Available

MN
GN
1°24´ 25 MILS
1°36´ 28 MILS

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
YC
Grid Zone Designation 15S

SCALE 1:24 000

KILOMETERS: 1 0.5 0 1 2
METERS: 1000 500 0 1000 2000
MILES: 1 0.5 0 1
FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

MISSOURI
QUADRANGLE LOCATION

1 Chesterfield
2 Creve Coeur
3 Clayton
4 Manchester
5 Webster Groves
6 House Springs
7 Maxville
8 Oakville

ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

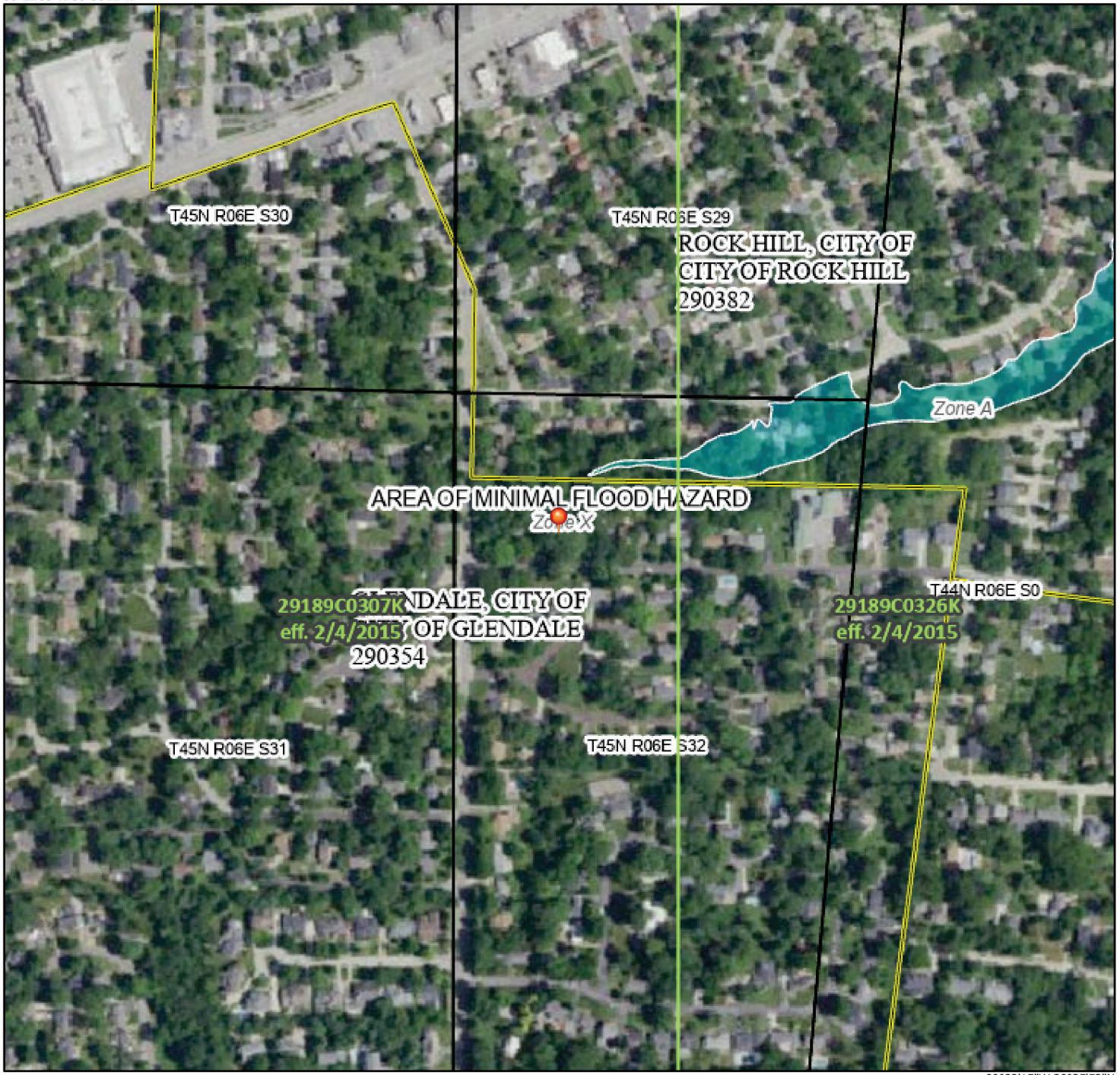
KIRKWOOD, MO
2021

NSN. 7643016374203
NGA REF NO. USGSX24K23762

National Flood Hazard Layer FIRMette

FEMA

90°22'53"W 38°36'21"N



90°22'15"W 38°35'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

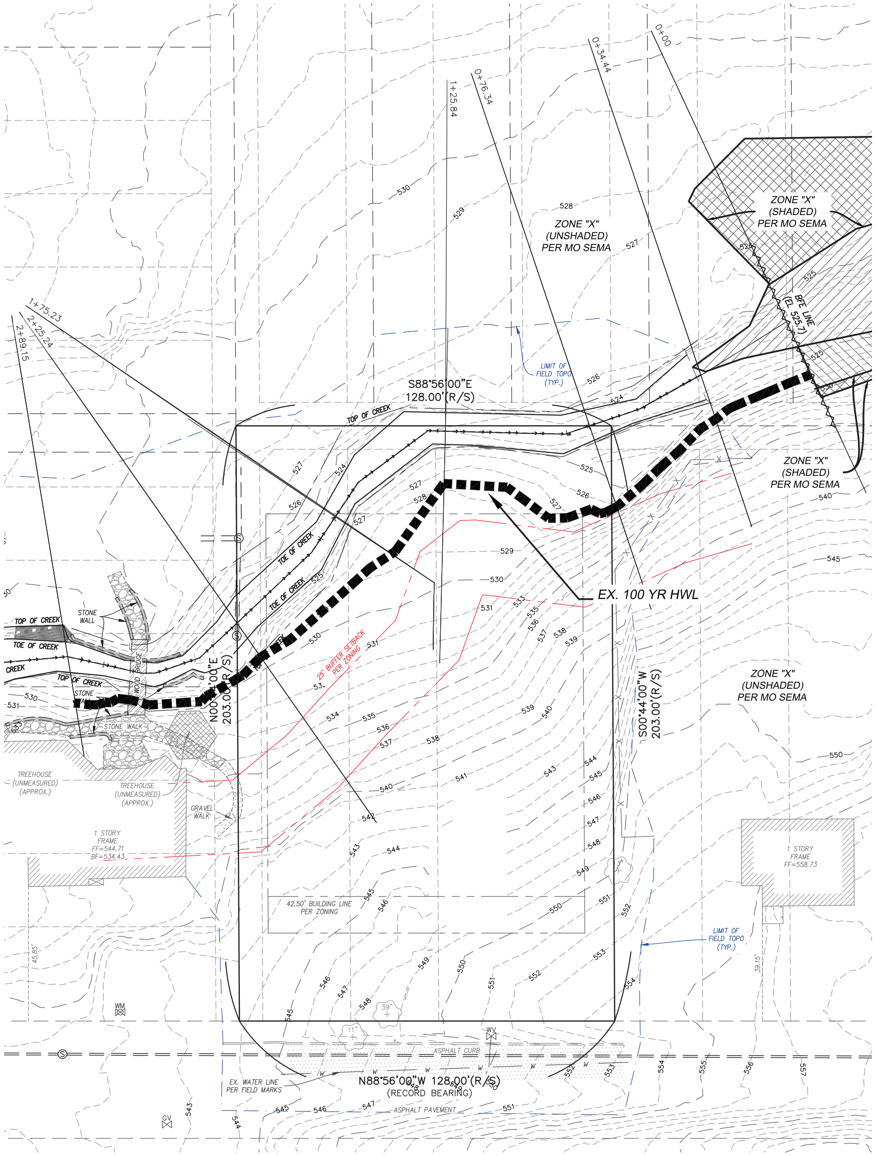
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/29/2026 at 3:44 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

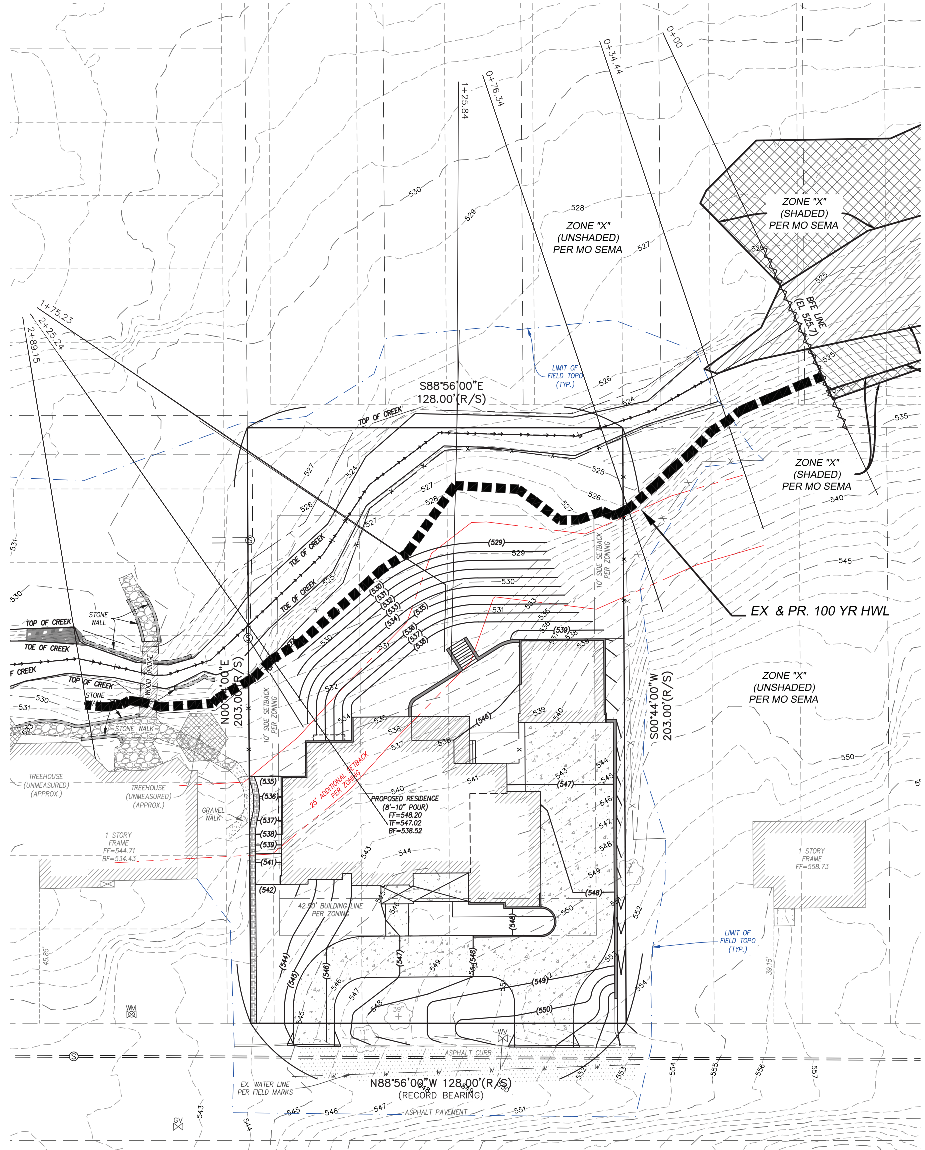
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix

D

DEVELOPMENT CROSS SETIONS





THE UNDERGROUND UTILITIES SHOWN HEREON WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NONEXISTENCE, SIZE, TYPE, NUMBER OR LOCATION OF THESE OR OTHER UTILITIES. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, AND SAID UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY GRADING, EXCAVATION OR CONSTRUCTION OF IMPROVEMENTS. THESE PROVISIONS SHALL IN NO WAY ABSOLVE ANY PARTY FROM COMPLYING WITH THE UNDERGROUND FACILITY SAFETY AND DAMAGE PREVENTION ACT, CHAPTER 319, RSMo.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Drawing name: V:\2503063 785 Bismark Ave\Drawings\Surveying\Plot Plan\2503063 Site Plan - Option 1 No Rise_recover.dwg Plotted on: Apr 29, 2026 - 11:18am Plotted by: bbrueggemann

ISSUE	REMARKS/DATE
1	

NJL Custom Homes
#556 Leffingwell Ave.
Kirkwood, MO 63122
(314) 575-7481

THE STERLING CO.
ENGINEERS & SURVEYORS
5055 New Baumgartner Road
St. Louis, Missouri 63129
Ph 314-487-0440 Fax 314-487-8944
www.sterling-eng-sur.com
Corporate Certificate of Authority #001348

#785 BISMARK AVENUE
GLENDALE, MISSOURI 63122

CREEK CROSS SECTIONS

The Professional Engineer's seal and signature affixed to this sheet applies only to the material and items shown on this sheet. All drawings, instruments or other documents not exhibiting the seal and signature shall not be considered prepared by this engineer, and this engineer expressly disclaims any and all responsibility for such plans, drawings or documents not exhibiting this seal and signature.

NOT APPROVED FOR CONSTRUCTION! FOR REVIEW ONLY

Date:
Brad Brueggemann, PE
License # PE-2009018696
Professional Engineer

Job Number: 25-03-063
Date: 04/29/2026
Designed: BAB
Drawn: BAB
Checked: MGB
Sheet: 1.1
IMP

Appendix

E

NO RISE CERTIFICATION

To be complete by community: Floodplain Development Permit No. _____

ENGINEERING "NO-RISE" CERTIFICATION

Community: Glendale, Mo County: St. Louis State:MO

Applicant: NJL Custom Homes Date: 4/28/26

Address: 555 Leffingwell Ave. Kirkwood MO, 63122

Telephone: 314-575-7481

Engineer: TheSterlingCompany

Address: 5055 New Baumbartner Rd. St. Louis, MO 63129

Telephone: 314-487-0440

SITE DATA:

1. Location: ____ 1/4; ____ 1/4; Section ____ ; Township 45N ; Range 6E

Street address: 785 Bismark Ave

2. Panel(s) No. of NFIP map(s) affected: 29189CO307K effective 2/4/15

3. Type of development: ☐ Filling ☑ Grading ☐ Excavation ☐ Minor-Improv ☐ Substantial-Imporv
☑ New Construction ☐ Other

4. Description of development: Grading for construction of new single family home

5. Name of flooding source: Rock Hill Creek

COMMENTS: _____

This is to certify that I am a duly qualified engineer licensed to practice in the State of Missouri. It is to further certify that the attached technical data supports the fact that the proposed development described above will not create any increase to the 100-year elevations on said flooding source above at published cross sections in the Flood Insurance Study for the above community dated 2/4/15 and will not create any increase to the 100-year flood elevations at unpublished cross-section in the vicinity of the proposed development.

Name: Brad Brueggemann

Signature: Brad Brueggemann Date: 4/28/26

Title: Project Engineer License No.: 2009018696