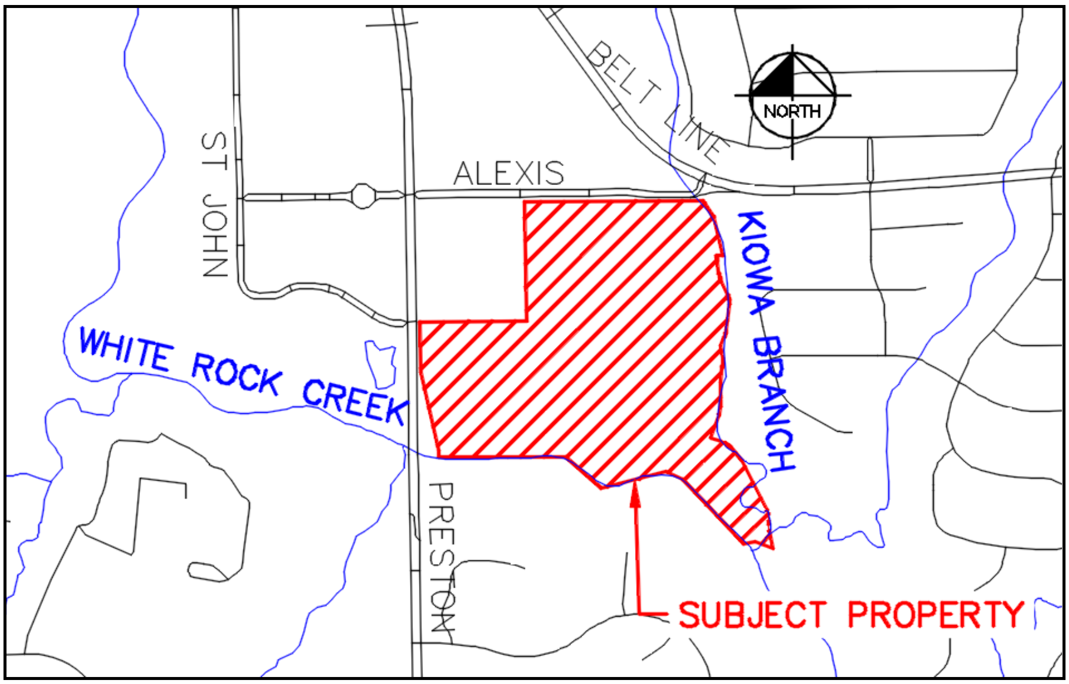
Floodplain Fill Permit Application FP 23-04

For 6050 Belt Line Road

City of Dallas, Texas



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ENGINEERING FIRM REGISTRATION NUMBER F-928

List of Tables

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Appendices

Appendix A **General**
Effective FEMA FIRM Panels

Appendix B **Duplicate Effective Hydraulics**
HEC-RAS Output
Stream Profile
Affected Cross-Sections

Appendix C **Revised Existing Condition Hydraulics**
HEC-RAS Output
Stream Profile
Affected Cross-Sections

Appendix D **Proposed Condition Hydraulics**
HEC-RAS Output
Stream Profile
Affected Cross-Sections

Appendix E **Engineering Exhibits**
100-Year Floodplain Workmap
Landscape and Tree Preservation Plan
Environmental impact Study

Appendix F **Supplemental Information**
Preliminary Landscape Plans
Structural Retaining Wall Details
Digital Files (GIS shapefiles – streamlines, existing topography, proposed grading, property boundary, cross sections, floodplain limits)

Appendix G **Digital Models**
HEC-RAS v 3.1.1
HEC-RAS v 4.1.0

Executive Summary

Mike Tonti is proposing improvements to the existing greenfield property located at 6050 Belt Line Rd. A portion of the property is located within the effective 100-year Federal Emergency Management Agency (FEMA) floodplain associated with White Rock Creek and Kiowa Branch.

This report proposes alterations within the floodplain of White Rock Creek and Kiowa Branch including proposed grading, a wall, and park amenities. The modifications will reclaim area currently delineated as floodplain.

The purpose of this study is to report that the proposed modifications outlined above do not adversely affect the regulatory floodplain in White Rock Creek and Kiowa Branch. The modifications have been designed in accordance with the City's Ten Point Engineering Criteria. This report is being submitted as a supporting document to the Floodplain Fill Permit Application associated with the proposed 6050 Belt Line Rd site.

1.0 Introduction

1.1 AUTHORITY

Mike Tonti has retained the services of Kimley-Horn and Associates, Inc. (Kimley-Horn) to submit a Floodplain Fill Permit Application on his behalf to the City of Dallas for proposed modifications within the floodplain associated with White Rock Creek and Kiowa Branch. This report describes the existing characteristics of the subject site, the proposed modifications within the floodplain, and contains technical documentation of the hydraulic methods used for the study. Acting on behalf of the client, the contacts for this study are as follows:

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1.2 PURPOSE OF STUDY

Mike Tonti has proposed a multifamily development elevated by a wall to be located at 6050 Belt Line Rd in the City of Dallas, Texas. See exhibit in **Appendix E** for the location and finished floor elevations of the proposed buildings. Due to flooding effects from White Rock Creek and Kiowa Branch, a portion of the subject site is located within an area currently designated by FEMA as Zone AE, which is a studied area of 100-year floodplain where base flood elevations have been established.

The City of Dallas provided the following for White Rock Creek:

- HEC-RAS v 3.1.3 White Rock Creek hydraulic model.

The City of Dallas provided the FY11 study of Kiowa Branch, which included:

- the TSDN report;
- HEC-HMS v 3.5 Kiowa Branch Watershed hydrologic model; and
- HEC-RAS v 4.1.0 Kiowa Branch hydraulic model.

The White Rock Creek model was last updated October 2007. For the purpose of this study, the October 2007 model will be referred to as the White Rock Duplicate Effective Model, and its execution in HEC-RAS v 3.1.3 will be used as the basis for the proposed floodplain modifications.

The Kiowa Branch model was last updated June 2012. For the purpose of this study, the June 2012 model will be referred to as the Kiowa Duplicate Effective Model, and its execution in HEC-RAS v 4.1.0 will be used as the basis for the proposed floodplain modifications.

Proposed modifications within the floodplain of White Rock Creek and Kiowa Branch include areas of proposed grading, a retaining wall, and park amenities. The improvements are intended to reclaim area currently delineated as floodplain.

The purpose of this submittal is to obtain a Floodplain Fill Permit from the City of Dallas for the proposed improvements within the subject site. The results of the Proposed Condition hydraulic modeling confirm that the proposed alterations will not increase 100-year water surface elevations, cause or increase erosive velocities, or conflict with any other City of Dallas Floodplain Alteration criteria.

1.3 DESCRIPTION OF PROJECT AREA

The total area to be disturbed consists of approximately 4.76 acres located at 6050 Belt Line Rd in the City of Dallas, Texas. White Rock Creek flows along the south side of the property, while Kiowa Branch flows along the east side until eventually intersecting with White Rock Creek. A portion of the subject site is encompassed by Zone AE FEMA floodplain. See the cover of this report for a Vicinity Map and **Appendix A** for the effective FIRM panel.

The existing site is vacant (“greenfield”). Short grasses, light brush, and trees make up the site in existing conditions.

1.4 METHODOLOGY

This study was completed using standard hydraulic methods. Flow change location through the area were slightly modified from the effective model for White Rock Creek and Kiowa Branch to better simulate storm outfalls for the proposed site. An error was found in the Effective HMS model for Kiowa Branch where reach KIO_R04 was assigned the Mod Puls rating table meant for KIO_R03. The only modification made to the White Rock Creek flow file was an additional flow change location.

White Rock Creek flow file 2015 WRC was used. Hydraulic conditions of the subject site were modeled using standard methods within the U.S. Army Corps of Engineers HEC-RAS hydraulic computer modeling softwares. More details regarding the methodologies employed are provided in the following sections.

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1.5 RESULTS

The limits of flooding for the 100-year event are shown on the workmaps in **Appendix E.** HEC-RAS output has been included in **Appendices B, C, and D.**

2.0 Survey and Mapping Information

2.1 Field Survey Information

Spiars Engineering & Surveying produced an on-ground field survey of the subject property in February 2023. The on-ground topographic survey for the site has been used to model the revised existing condition. Topographic information obtained from this survey is based on City of Dallas benchmarks, is consistent with NAVD 88, and was used for floodplain mapping and modeling within the site. Aerial topography obtained from Texas Natural Resources Information Service (TNRIS, 2019) was used to supplement the on-ground survey.

2.2 Mapping

Both City of Dallas' Effective Floodplain Hazard Layer and FEMA's National Floodplain Hazard Layer (NFHL) for FIRM panel number 48113C0185K was used to determine the limits of the FEMA effective floodplains. The effective FEMA floodplain limits can be found on the FEMA FIRM panel included in **Appendix A**, while the City of Dallas' limits are included on the workmaps found in **Appendix E**. More detailed floodplain limits delineated in the course of this study can be found in **Appendix E.**

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3.0 Hydrologic Analysis

The regulatory 100-year discharges for White Rock Creek and Kiowa Branch were taken from their respective effective models. The following table shows the flows used through the subject reach of White Rock Creek and Kiowa Branch.

Table 1: 100-year Discharges in White Rock Creek

Flow Change Location	Effective 100-Year Discharge (WRC Connectivity Q's 2015) (cfs)	Revised Existing/Proposed 100-Year Discharge (cfs)
1469+61	34400	34400
1434+88	34500	34500
1395+45	35000	35000
1337+58	35100	35100
1310+87	35300	35300
1309+05	35300	35300
1292+48	37400	37400
1253+24	37600	37600
1210+83	37600	37700
1198+85	-	37700
1192+98	38900	38800
1176+95	39500	39500
1163+10	39500	39500
1129+23	39700	39700
1122+81	39700	39700
1114+15	39800	39800
1092+62	40000	40000
1078+34	40100	40100
1074+06	40100	40100
1010+82	40800	40800
974+76	40800	40800
959+66	53100	53100
941+91	53800	53800
933+79	53800	53800
908+05	54100	54100
896+50	54000	54000
883+09	54300	54300
826+95	53800	53800
774+08	49700	49700

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Table 2: 100-year Discharges in Kiowa Branch

Flow Change Location	Effective 100-Year Discharge (KIOWA_BRANCH_ MULTIPLE_PROFILE) (cfs)	Revised Existing/Proposed 100-Year Discharge (cfs)
165+98	1550	1550
148+32	1700	1700
146+93	2500	2500
137+67	2500	2500
132+44	3200	3200
129+30	3100	3100
111+13	3600	3300
101+98	4700	4300
80+87	5000	4500
72+32	5900	5400
66+82	6000	5500
35+16	6400	5900
27+67	6400	6000
25+22	6500	6100
9+88	6400	6100

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4.0 Hydraulic Analysis

4.1 HISTORY AND METHODOLOGY

The following describes the hydraulic models submitted with this report:

Duplicate Effective:

Kimley-Horn obtained the effective White Rock Creek model and the effective Kiowa Branch model from the City of Dallas, made no changes, and executed them in HEC-RAS v 3.1.3 and HEC-RAS v 4.1.0, respectively.

Revised Existing Condition Hydraulic Model:

The following changes were made to the White Rock Duplicate Effective model:

- Cross sections 1207+33, 1208+73, and 1194+52 were moved to stations 1207+71, 1208+28, 1194+04
- Cross sections 1198+85, 1201+25, and 1204+03 were updated with 2019 TNRIS LiDAR and on-ground survey topography when available.
- Cross sections 1195+26, 1195+91, 1196+64, 1202+13, 1202+61, 1203+33, 1205+52, and 1206+81 were added with 2019 TNRIS LiDAR and on-ground survey topography when available.
- Roughness coefficients (Manning's "n" values) for cross-sections were assigned based on aerial imagery (Nearmap 2023).
    - Trees – n = 0.05
    - Grass – n = 0.03

The following changes were made to the Kiowa Duplicate Effective Model:

- Cross sections 16+26, 20+20, and 23+91 were updated with 2019 TNRIS LiDAR and on-ground survey topography when available.
- Cross section 22+10 was added with 2019 TNRIS LiDAR and on-ground survey topography when available.
- Manning's values matched those found in the effective model.

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Proposed Condition Hydraulic Model:

The following changes were made to the White Rock Revised Existing model:

- The geometry of cross-section 1194+04, 1195+26, 1195+91, 1196+64, 1198+85, 1201+25, 1202+13, 1202+61, 1203+33, 1204+03, 1205+52, 1206+81, 1207+71, and 1208+28 was updated based on proposed grading. The changes include grading the retaining wall and park amenities. Park fencing was represented with a blocked obstruction and permanent ineffective flow area (assuming worst-case scenario of the openings in the fence being blocked by debris).
- Roughness coefficients (Manning's "n" values) for cross-sections were modified based on proposed improvements.
    - Stone Retaining Wall – n = 0.025
    - Grass – n = 0.03 – 0.04
        - Areas with proposed trail (to match grade) see n = 0.035 – 0.04
    - Trees – n = 0.05

The following changes were made to the Kiowa Revised Existing model:

- The geometry of cross-sections 16+26, 20+20, 22+10, and 23+91 were updated based on proposed grading. The changes include grading the retaining wall.
- Roughness coefficients (Manning's "n" values) for cross-sections were modified based on proposed improvements.
    - Stone Retaining Wall – n = 0.025
    - Grass – n = 0.03

4.2 WORKMAPS

Cross-section locations, proposed site plan, proposed grading, and 100-year floodplain limits are shown on the 100-Year Floodplain Workmap in **Appendix E.**

4.3 PARAMETER ESTIMATION

Roughness coefficients (Manning's "n" Values) for were modified for White Rock Creek cross sections based on recent aerial imagery and proposed improvements. Roughness coefficients for Kiowa Branch remained the same between Effective to Revised Existing models. Kimley-Horn assigned roughness coefficients for cross-sections based on "Open Channel Hydraulics" (Chow, 1959), engineering judgment, and site visit.

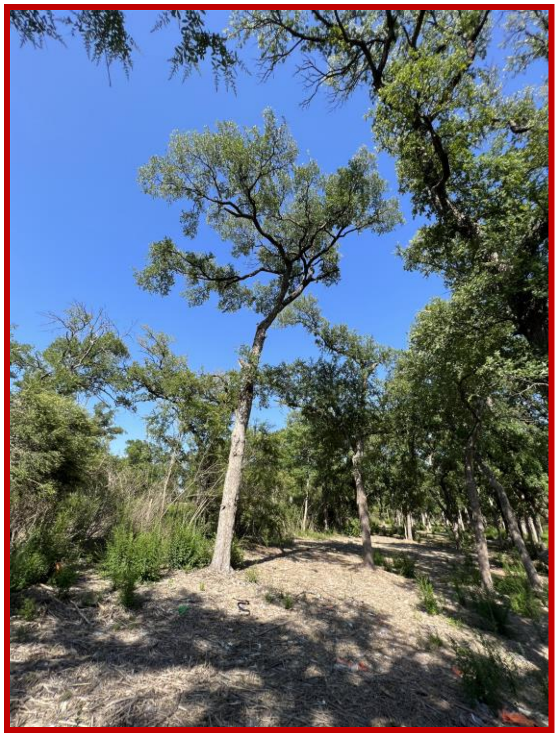

Figure 1: Photograph from Site Visit near Kiowa Branch

Figure 2: Additional Photograph from Site Visit new White Rock Creek

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5.0 City of Dallas Ten-Point Engineering Criteria

5.1 WATER SURFACE PROFILE COMPARISON

Tables 3 and 4 shows the 100-year Revised Existing and Proposed condition water surface elevations at cross-sections in the vicinity of the subject property. **Table 5** shows the 100-year Revised Existing and Proposed Condition water surface elevations with the inclusion of the future pedestrian crossing. There are no increases in water surface elevations because of the proposed development.

Table 3: Comparison of White Rock Creek 100-Year Water Surface Elevations

Stream Cross-Section	Duplicate Effective (1)	Revised Existing (2)	Proposed (3)	Difference (ft) (3)-(2)
1214+19	553.17	551.40	551.40	0.00
1213+17	553.04	551.18	551.18	0.00
1212+81	553.03	551.16	551.16	0.00
1212+20	552.94	551.02	551.02	0.00
1211+23	552.76	550.80	550.80	0.00
1210+83	552.80	550.86	550.86	0.00
1208+28	-	549.31	549.31	0.00
1207+71	-	549.35	549.35	0.00
1206+81	-	549.36	549.36	0.00
1205+52	-	549.40	549.40	0.00
1204+03	550.55	549.11	549.10	-0.01
1203+33	-	549.11	549.11	0.00
1202+61	-	548.95	548.95	0.00
1202+13	-	548.83	548.83	0.00
1201+25	549.45	548.75	548.75	0.00
1198+85	549.08	548.73	548.73	0.00
1196+64	548.83	548.73	548.73	0.00
1195+91	548.69	548.73	548.73	0.00
1195+26	548.26	548.71	548.71	0.00
1194+04	-	548.70	548.69	-0.01

Table 4: Comparison of Kiowa Branch 100-Year Water Surface Elevations

Stream Cross-Section	Duplicate Effective (1)	Revised Existing (2)	Proposed (3)	Difference (ft) (3)-(2)
26+05	558.13	562.26	562.26	0
25+52	558.07	562.27	562.27	0
25+22	557.22	562.07	562.07	0
23+91	553.29	552.56	552.51	-0.05
22+10	-	550.96	550.93	-0.03
20+20	550.13	549.6	549.6	0.00
16+26	546.8	546.59	546.56	-0.03

The tables above indicates that the proposed development causes no increase in 100-year WSE.

Table 5: Comparison of White Rock Creek 100-Year Water Surface Elevations with Pedestrian Bridge

Stream Cross-Section	Duplicate Effective (1)	Revised Existing (2)	Proposed (3)	Difference (ft) (3)-(2)
1214+19	553.17	551.40	551.40	0.00
1213+17	553.04	551.18	551.18	0.00
1212+81	553.03	551.16	551.16	0.00
1212+20	552.94	551.02	551.02	0.00
1211+23	552.76	550.80	550.80	0.00
1210+83	552.80	550.86	550.86	0.00
1208+28	-	549.31	549.31	0.00
1207+71	-	549.35	549.35	0.00
1206+81	-	549.36	549.36	0.00
1205+52	-	549.40	549.40	0.00
1204+03	550.55	549.11	549.10	-0.01
1203+33	-	549.11	549.11	0.00
1202+61	-	548.96	548.95	-0.01
1202+13	-	548.83	548.83	0.00
1201+25	549.45	548.75	548.75	0.00
1198+85	549.08	548.73	548.73	0.00
1196+64	548.83	548.74	548.74	0.00
1195+26	548.26	548.71	548.70	-0.01
1194+04	-	548.70	548.66	-0.04

5.2 EVALUATION OF EROSIVE VELOCITIES

Tables 6 and 7 show the 100-year Revised Existing and Proposed Condition channel velocities from the hydraulic models in the vicinity of the subject property. Existing channel velocities are high (greater than 6 fps) or throughout the subject reach. **Table 8** shows the 100-year Revised Existing and Proposed Condition channel velocities with the inclusion of the future pedestrian crossing. The proposed modifications result in no increases in erosive channel velocities upstream of the proposed development.

Table 6: Comparison of White Rock Creek 100-Year Channel Velocities

Stream Cross-Section	Duplicate Effective (1)	Revised Existing (2)	Proposed (3)	Difference (fps) (3)-(2)
1214+19	9.10	10.48	10.48	0.00
1213+17	9.05	10.55	10.55	0.00
1212+81	8.41	9.80	9.80	0.00
1212+20	7.94	9.27	9.27	0.00
1211+23	7.47	8.46	8.46	0.00
1210+83	5.31	5.93	5.93	0.00
1208+28	-	10.60	10.60	0.00
1207+71	-	9.30	9.30	0.00
1206+81	-	8.72	8.72	0.00
1205+52	-	7.41	7.31	-0.10
1204+03	9.57	8.43	8.38	-0.05
1203+33	-	7.45	7.41	-0.04
1202+61	-	8.14	8.09	-0.05
1202+13	-	8.58	8.56	-0.02
1201+25	11.09	8.43	8.42	-0.01
1198+85	9.39	6.58	6.58	0.00
1196+64	7.39	4.84	4.84	0.00
1195+91	7.40	4.69	4.73	0.04
1195+26	9.14	4.71	4.69	-0.02
1194+04	-	4.34	4.45	0.11

Table 7: Comparison of Kiowa Branch 100-Year Channel Velocities

Stream Cross-Section	Duplicate Effective (1)	Revised Existing (2)	Proposed (3)	Difference (fps) (3)-(2)
26+05	4.06	2.67	2.67	0
25+52	4.42	2.66	2.66	0
25+22	7.86	4.35	4.35	0
23+91	15.22	10.51	10.47	-0.04
22+10	-	9.56	9.48	-0.08
20+20	8.68	8.44	8.33	-0.11
16+26	9.93	8.93	8.92	-0.01

Table 8: Comparison of White Rock Creek 100-Year Channel Velocities with Pedestrian Bridge

Stream Cross-Section	Duplicate Effective (1)	Revised Existing (2)	Proposed (3)	Difference (fps) (3)-(2)
1214+19	9.10	10.48	10.48	0.00
1213+17	9.05	10.55	10.55	0.00
1212+81	8.41	9.80	9.80	0.00
1212+20	7.94	9.27	9.27	0.00
1211+23	7.47	8.46	8.46	0.00
1210+83	5.31	5.93	5.93	0.00
1208+28	-	10.60	10.60	0.00
1207+71	-	9.30	9.30	0.00
1206+81	-	8.72	8.72	0.00
1205+52	-	7.41	7.31	-0.10
1204+03	9.57	8.43	8.38	-0.05
1203+33	-	7.45	7.41	-0.04
1202+61	-	8.14	8.09	-0.05
1202+13	-	8.58	8.56	-0.02
1201+25	11.09	8.43	8.42	-0.01
1198+85	9.39	6.58	6.58	0.00
1196+64	7.39	4.84	4.30	-0.54
1195+26	9.14	4.71	4.55	-0.16
1194+04	-	4.34	4.67	0.33

5.3 EFFECTS OF PROPOSED PUBLIC AND PRIVATE IMPROVEMENTS

Kimley-Horn does not know of any committed public or private floodplain alterations in the area surrounding the proposed improvements.

5.4 EVALUATION OF EQUAL CONVEYANCE AND AVAILABLE VALLEY STORAGE

5.4.1 Equal Conveyance Reduction

Tables 9, 10, and 11 contain results from HEC-RAS showing that total conveyance across the property was not reduced because of this development in either Kiowa Branch or White Rock Creek.

Table 9: Comparison of White Rock Creek 100-Year Conveyance

Stream Cross-Section	Left Conveyance			Right Conveyance			Total Conveyance		
	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)
1208+28	196847	196860.6	13.6	143201.7	143210	8.3	865506.3	865539.8	33.5
1207+71	261808.1	253635.3	-8172.8	166575	166699.8	124.8	1016723	1016499	-224
1206+81	253149.7	256351.1	3201.4	205965.7	208423.2	2457.5	1063434	1067948	4514
1205+52	288105.2	303942.2	15837	230754.8	231230.4	475.6	1219827	1236662	16835
1204+03	192563.3	200040.7	7477.4	289691.2	289514.8	-176.4	1124202	1131363	7161
1203+33	160676.1	167321.1	6645	299357.5	299515.8	158.3	1198491	1205455	6964
1202+61	167431.3	174548.8	7117.5	313781.3	313849.9	68.6	1109171	1116414	7243
1202+13	160231.5	162524.6	2293.1	339589.1	339480.8	-108.3	1090629	1092738	2109
1201+25	155240.8	155841.7	600.9	356823.1	356719	-104.1	1109743	1110165	422
1198+85	462803.7	462139.5	-664.2	166019.9	166051.4	31.5	1428628	1428057	-571
1196+64	376589.6	375887.9	-701.7	687614.9	687586.1	-28.8	1876832	1876086	-746
1195+91	441943.4	459780.3	17836.9	784787.5	784764.4	-23.1	2059675	2073589	13914
1195+26	497839	505206.1	7367.1	874124.8	874680.6	555.8	2054361	2062468	8107
1194+04	629738.5	575766.5	-53972	749732.8	749015.8	-717	2194231	2139183	-55048
		Σ	4879.2		Σ	2722.7		Σ	10713.5

Table 10: Comparison of Kiowa Branch 100-Year Conveyance

Stream Cross-Section	Left Conveyance			Right Conveyance			Total Conveyance		
	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)
23+91	239.6	232.8	-6.8	399.9	892.9	493	58878.8	58912.9	34.1
22+10	172.9	168.3	-4.6	646.7	1357.8	711.1	65099.1	65527.5	428.4
20+20	130.3	130.4	0.1	1485.8	2340.1	854.3	68796	69659.5	863.5
16+26	431.2	423.4	-7.8	12185.9	12424.8	238.9	69299.2	69238.3	-60.9
		Σ	-19.1		Σ	2297.3		Σ	1,265.1

Table 11: Comparison of White Rock Creek 100-Year Conveyance with Bridge

Stream Cross-Section	Left Conveyance			Right Conveyance			Total Conveyance		
	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)	Revised Existing (cfs)	Proposed (cfs)	Difference (cfs)
1208+28	196894.5	196858.4	-36.1	143237.9	143208.3	-29.6	865641.8	865533.6	-108.2
1207+71	261875.3	253632.4	-8242.9	166618.7	166697.8	79.1	1016892	1016492	-400
1206+81	253227.3	256348	3120.7	206022.1	208420.7	2398.6	1063632	1067939	4307
1205+52	288209.3	303938.8	15729.5	230829.1	231227.5	398.4	1220087	1236653	16566
1204+03	192621.6	200038.4	7416.8	289782.7	289511.1	-271.6	1124425	1131354	6929
1203+33	160732.9	167318.6	6585.7	299450.9	299512.3	61.4	1198737	1205446	6709
1202+61	167502.6	174546.2	7043.6	313882.5	313846.1	-36.4	1109427	1116405	6978
1202+13	160303.8	162521.9	2218.1	339697.9	339477.3	-220.6	1090887	1092729	1842
1201+25	155315.9	155838.9	523	356934.6	356715.4	-219.2	1110010	1110156	146
1198+85	462991.2	462133.8	-857.4	166075.4	166049.6	-25.8	1428980	1428046	-934
1196+64	376771.8	1041638	664866.2	687832	480969.4	-206862.6	1877348	2278275	400927
1195+26	497839	890502.3	392663.3	874124.8	615466.9	-258657.9	2054361	2182558	128197
1194+04	629738.5	477216.1	-152522.4	749732.8	745002.7	-4730.1	2194231	2034613	-159618
		Σ	938508.1		Σ	-468116.3		Σ	411540.8

Conveyance is calculated by taking the sum of the values from the upstream-most cross section to the downstream-most cross-section along the proposed development using HEC-RAS.

5.4.2 Preservation of Valley Storage

The March 2019 FIS report shows that the contributing watershed of White Rock Creek is approximately 38.96 mi^2. Because the contributing drainage area exceeds 3 mi^2, no valley storage loss is allowable on a site-by-site basis. The March 2019 FIS report states the contributing watershed to Kiowa Branch is 2.83 mi^2. Because the watershed size is between 130 acreas and 3 mi^2, there is a 15% allowable loss in valley storage within the property limits of the Kiowa Branch. Below is a valley storage summary for both channels.

White Rock Creek:

- Available valley storage in the subject property is approximately 246.01 AC-ft in existing conditions (HEC-RAS Revised Existing net volume between cross-section 1194+04 to cross-section 1208+28).
- The proposed development results in an increase of approximately 0.62 AC-ft of available valley storage (HEC-RAS Proposed net volume between cross-section 1194+04 to cross-section 1208+28 is 246.63 AC-FT).

Kiowa Branch:

- Available valley storage in the subject property is approximately 14.23 AC-ft in existing conditions (HEC-RAS Revised Existing net volume from cross-section 16+26 to cross-section 23+91).
- The proposed development results in a loss of 1.43 AC-FT of available valley storage (HEC-RAS Proposed net volume between cross-section 16+26 to cross-section 23+91 is 12.80 AC-FT).
- Results in a 10.05% loss in valley storage, which is within the acceptable limits.

Net volume is calculated by taking the volume difference between the upper and lower bounding cross sections in HEC-RAS.

According to the Effective Flood Insurance Study, the first 1,000 FT of Kiowa Branch is all backwater from White Rock Creek. Any valley storage loss from the confluence of White Rock Creek with Kiowa Branch, 1,000 ft upstream of the confluence (STA: 4+72 to STA: 16+26) would therefore affect the White Rock Creek valley storage calculation. White Rock Creek valley storage cannot be reduced due to the size of the watershed.

The valley storage loss from STA: 4+72 to STA: 16+26 was calculated in the following manner:

1. A surface was made in CAD to calculate volume from the 100-year water surface elevation (478.07 ft down to the ground elevation) from STA: 1192+98/9+88 to STA: 16+26 to represent the backwater effects in Kiowa Branch.
    a. The surface doesn't extend down to STA: 4+72 because there were no changes to grading, thus no impacts to valley storage.
2. A comparison surface between this water surface elevation and the Existing Grade was generated to measure the volume of water at elevation 478.07 FT.
    a. This volume is 38,797.14 CY (24.05 AC-FT) in pre-project condition.
3. A comparison surface between the water surface elevation and the Combined Proposed Grade was generated to measure the volume of water at elevation 478.07 FT following development.
    a. This volume is 38200.88 CY (23.68 AC-FT) in post-project condition.
4. This results in a loss of 0.37 AC-FT of valley storage within Kiowa Branch due to backwater effects, but this loss is negated by the surplus previously stated to

have been achieved in White Rock Creek (STA: 1192+98 to STA: 1208+28) of 0.62 AC-FT.

5. Development still yields a surplus of valley storage equaling 0.25 AC-FT, thus meeting the City of Dallas' 10-Point Criteria.

5.5 ENVIRONMENTAL IMPACT STUDY

An Environmental Impact Study is included in **Appendix E** of this report.

5.6 PROPOSED LOCATION OF FILL SLOPE

The purpose of the proposed fill is to elevate the proposed multifamily development to above the base flood elevation. As shown in the grading plan in **Appendix E**, the proposed improvements are oriented parallel to the natural channel. Retaining walls are proposed parallel to the natural channel.

5.7 PROPOSED FILL AND EXCAVATION SLOPES

Cut and fill slopes do not exceed 4:1 except where there is a proposed retaining wall. More details regarding the location and characteristics of the proposed fill and excavation can be seen on the attached grading plan in **Appendix E**.

5.8 ELEVATION OF EXCAVATED AREAS

No excavation is proposed in the overbanks. Excavation is proposed from the proposed retaining wall to the channel to promote positive drainage.

5.9 LANDSCAPE AND EROSION CONTROL PLAN

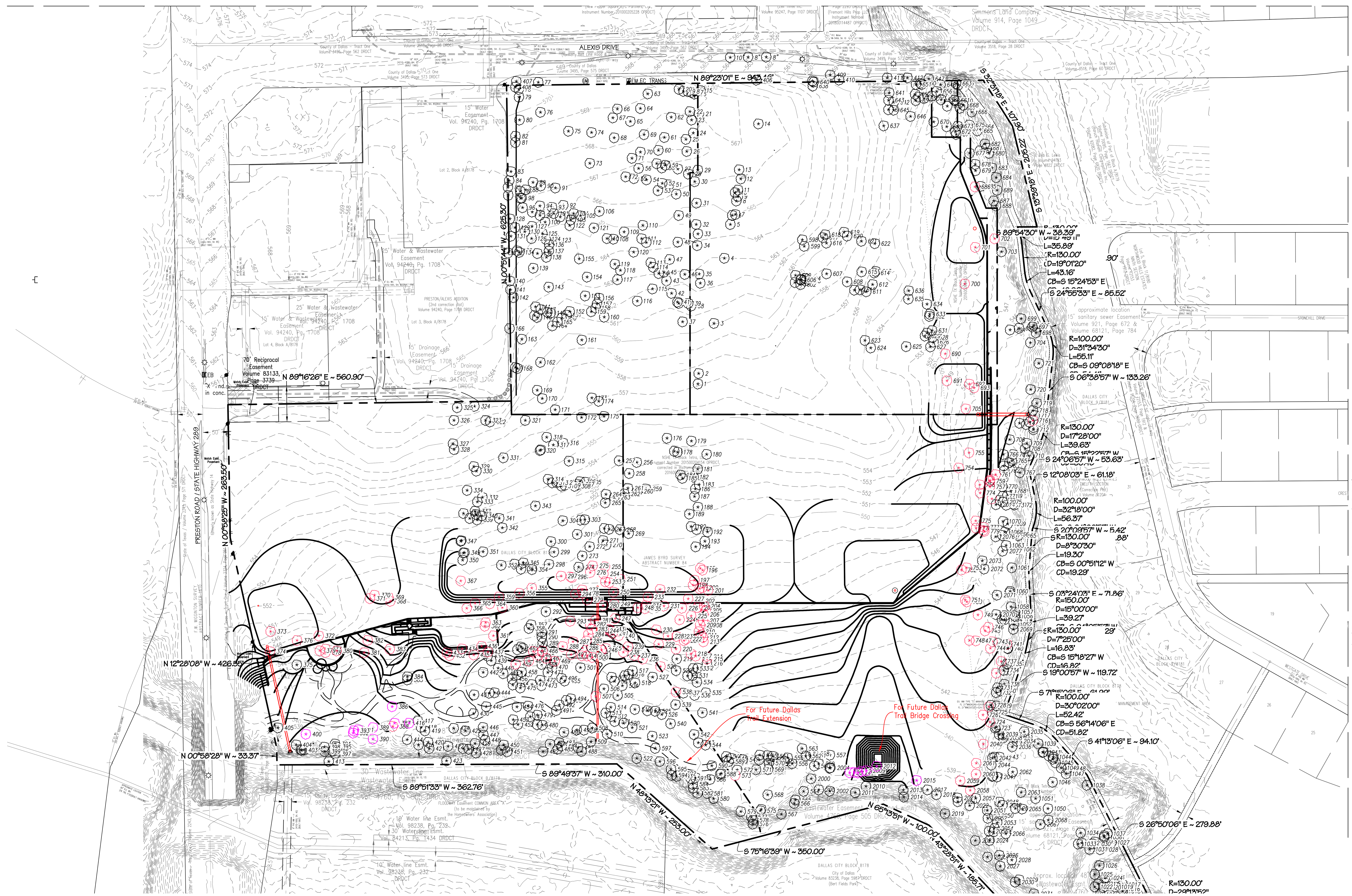
A Landscape Plan and Erosion Control Plan are included in **Appendix F** of this report.

5.10 PROJECT EFFECT ON EXPENSE OF CURRENT OR PROJECTED PUBLIC IMPROVEMENTS

Kimley-Horn does not anticipate that the expense of current or projected public improvements will be affected by the proposed improvements.

6.0 Tree Inventory and Mitigation Plan

MATCHLINE SEE SHEET C07.03



MATCHLINE SEE SHEET C07.04

N
W E
S

0 20 40 80

1 inch = 40 ft.

THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

GRADING GENERAL NOTES:

1. All materials and construction shall conform to the City of Dallas Plans and Specifications, except as noted herein and approved by the City.
2. Contractor shall be responsible for maintaining trench safety requirements in accordance with City Standards, Texas State Law, and O.S.H.A. Standards for all excavation in excess of five feet in depth.
3. The location of all utilities located on these plans are taken from existing public records. The exact location and elevation of all public utilities must be determined by the Contractor. It shall be the duty of the Contractor to ascertain whether any additional facilities other than those shown on the plans may be present.
4. Drainage should be maintained away from the foundations, both during and after construction.
5. Backfill for utility lines should be carefully placed so that they will be stable. Where utility lines pass through the parking lot, the top 6" should be compacted similarly to the remainder of the lot. Utility ditches should be visually inspected during the excavation process to ensure that undesirable fill is not used.
6. If rock is encountered in the trench, rock spoil shall not be used in the upper 1.5 feet of the trench.
7. All earthwork operations shall conform to the recommendations per the Geotechnical Report.
8. Proposed spot elevations located at the curb are finished gutter elevations. Add 0.50 feet to elevation for proposed top of curb.
9. Prior to final installation of all structures, Contractor shall verify correct final grade elevations.
10. Traffic Control Plan (TCP) must be submitted to the Department of Public Works for review and approval by Traffic Safety Coordinators prior to start of construction. No traffic lane or sidewalk along any public street or alley is to be closed without first obtaining the appropriate permit(s). Closure of any traffic lane must be restricted to the hours of 9:30 a.m. to 3:30 p.m. workdays (hours may differ in school zones). Contractor must call (214) 948–4290 to request approval of TCP and to obtain a right–of–way permit.

GRADING LEGEND

Tree To Remain

Tree To Be Removed

Tree To Be Removed For City Trail

29.50 Proposed Gutter Spot Elevation

429 Proposed Contour

429 Existing Contour

TC=429.50 Existing Spot Elevation

Direction Of Flow

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Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ____________ DATE ______

CONTRACTOR ____________

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

SPIARS
ENGINEERING & SURVEYING
765 Custer Road, Suite 100 • Plano, TX 75075 • 972.422.0077
TBPE No F-2121 • TBLPS No. F-10043100 • www.spiarseng.com

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

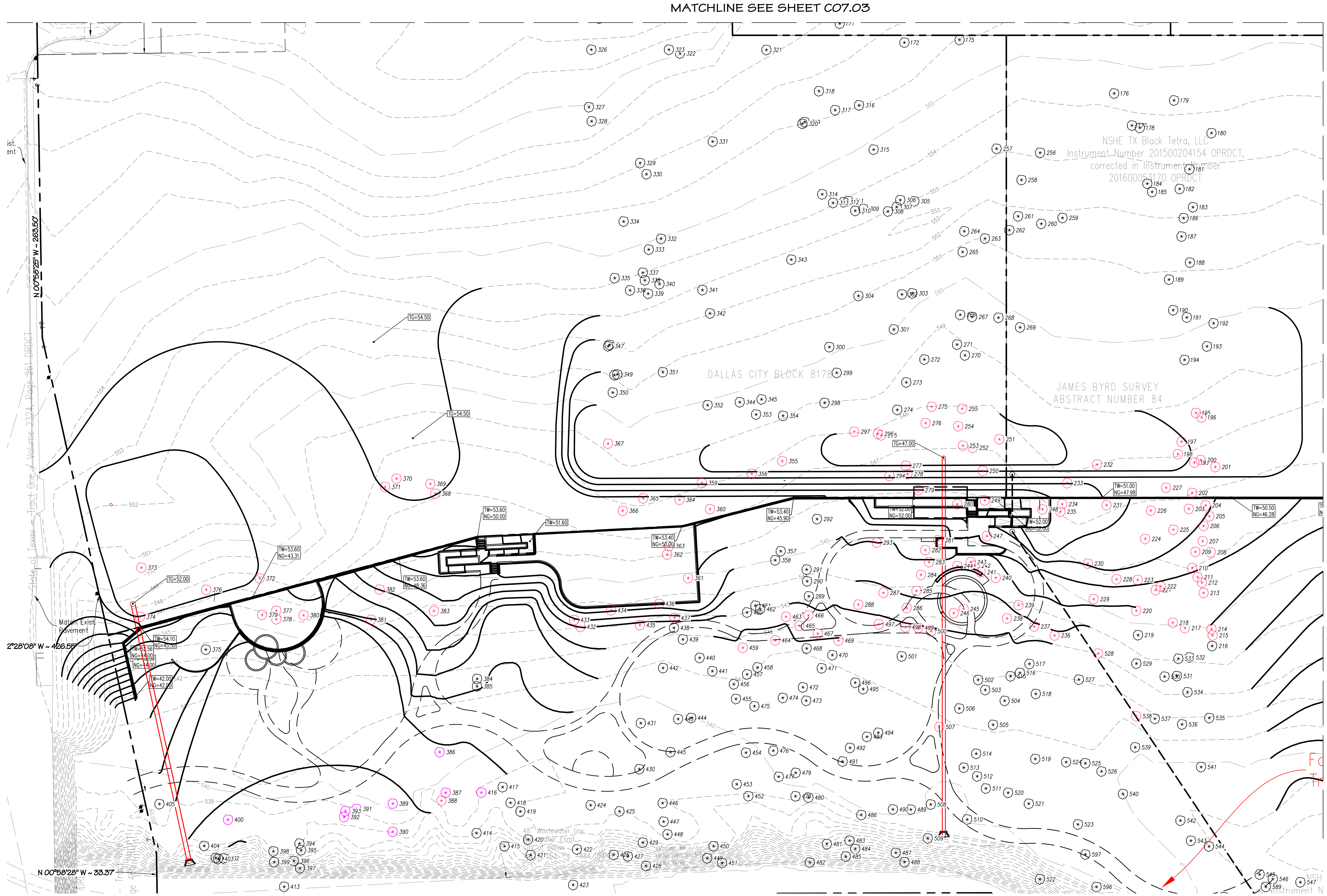
TONTI ALEXIS

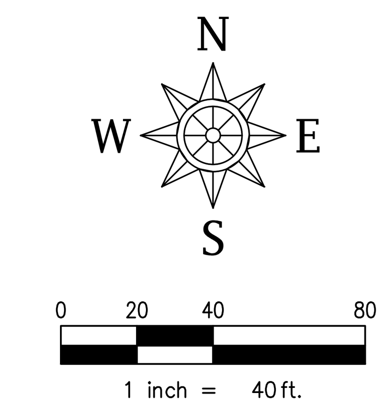
PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	01





THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

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GRADING LEGEND

29.50	Proposed Gutter Spot Elevation
429	Proposed Contour
429	Existing Contour
TC=429.50	Existing Spot Elevation
	Direction Of Flow

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Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ____________ DATE ________

CONTRACTOR ____________

REVISIONS

REV NO.	DATE	DESCRIPTION	BY

SPIARS ENGINEERING & SURVEYING

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

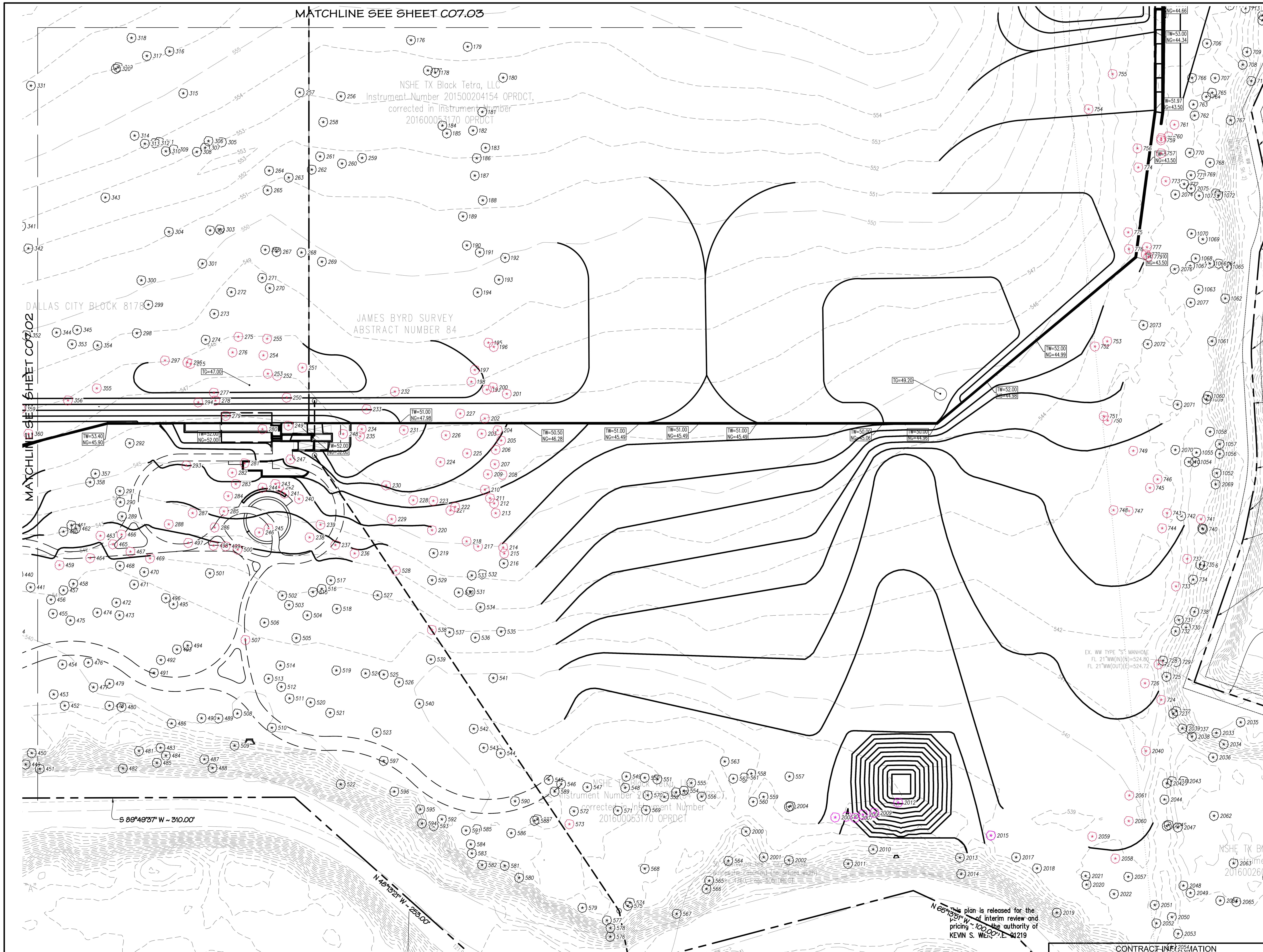
TONTI ALEXIS

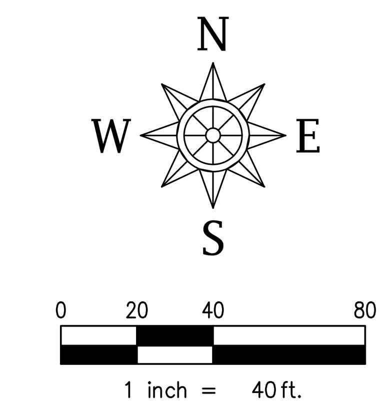
PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	02





THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

GRADING LEGEND

29.50	Proposed Gutter Spot Elevation
429	Proposed Contour
429	Existing Contour
TC=429.50	Existing Spot Elevation
	Direction Of Flow

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CONTRACTOR ____________

REVISIONS

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PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

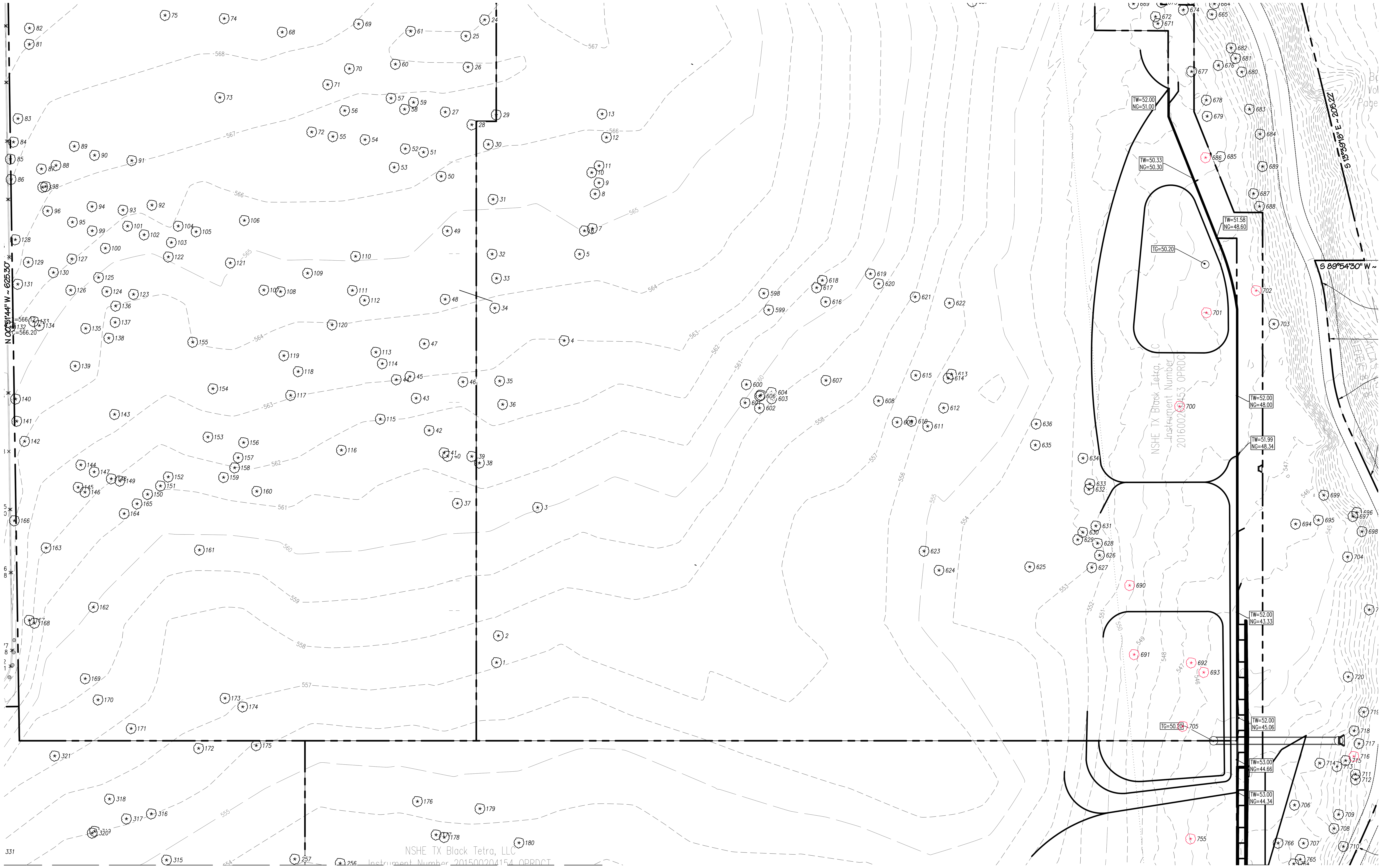
TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

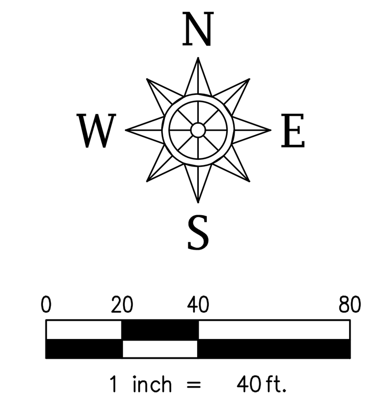
DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	03



MATCHLINE SEE SHEET C07.02



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S223-070	-	WW23-206	DP23-087

Tree Survey

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	04

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
254	16.7	cedar elm	17	No	Dead	7031696	2489652.55	Dead
255	12.7	cedar elm	13	No	Leaning Severe Hazard	7031710	2489655.72	Leaning Severe Hazard
275	13.1	cedar elm	13	No	Stressed	7031712	2489631.21	Stressed
276	11.2	cedar elm	11	No	Stressed	7031699	2489626.27	Flushed Out
277	16.9	cedar elm	17	No	Stressed	7031664	2489610.32	Stressed
278	11.0	cedar elm	11	No	Leaning Moderate/ Broken Top	7031658	2489611.63	Moderate Lean broken top
279	22.5	cedar elm	23	Yes	Stressed	7031645	2489620.47	Stressed
280	11.4	cedar elm	11	No	Stressed	7031633	2489651.73	Stressed
281	12.8	cedar elm	13	No	Declining/rot	7031604	2489636.52	Declining w Rot
282	11.4	cedar elm	11	No	Stressed/ Broken top	7031596	2489625.97	Stressed/ Broken top
283	10.9	cedar elm	11	No	Healthy	7031587	2489629.02	Healthy
284	8.3	cedar elm	8	No	Dead	7031576	2489622.55	Dead
285	13.0	cedar elm	13	No	Declining/Broken Top	7031563	2489618.86	Declining/Broken Top
286	8.6	cedar elm	9	No	Stressed/Broken Top	7031550	2489610.99	Stressed/Broken Top
287	8.7	cedar elm	9	No	Leaning Severe Hazard	7031562	2489592.23	Leaning Severe (Hazard)
288	16.9	cedar elm	10	No	Dead	7031552	2489571.9	Dead
293	10.9	cedar elm	11	No	Leaning Severe Hazard	7031602	2489586.82	Leaning Severe Hazard
294	10.4	cedar elm	10	No	Stressed	7031656	2489597.06	Stressed
295	12.7	cedar elm	13	No	Broken Top/ Some Rot	7031689	2489590.48	Broken Top, Some Rot
296	9.2	cedar elm	9	No	Rot and Leaning Hazard	7031690	2489587.71	Rot and Leaning Hazard
297	12.6	cedar elm	13	No	Stressed	7031692	2489568.67	Stressed
355	12.2	cedar elm	12	No	Healthy	7031668	2489510.61	Healthy. Broken top
356	12.0	cedar elm	12	No	Dead	7031658	2489486.03	Dead
359	16.8	cedar elm	17	No	Healthy	7031651	2489445.72	Healthy, broken top
360	12.6	cedar elm	13	No	Declining Severe	7031629	2489452.31	Declining Severe
361	22.0	cedar elm	22	Yes	Declining, Broken top	7031574	2489434.67	Declining, Broken top
362	9.4	cedar elm	9	No	Declining Severe	7031593	2489417.76	Declining Severe
363	13.5	cedar elm	14	No	Declining	7031600	2489419.28	Declining
364	15.8	cedar elm	16	No	Rotten	7031637	2489427.78	Rot
365	12.8	cedar elm	13	No	Healthy	7031638	2489398.45	Healthy
366	17.2	cedar elm	17	No	Healthy	7031628	2489381.92	Healthy
367	14.0	cedar elm	14	No	Diseased	7031682	2489370.05	Beetle Damage
368	13.6	sugarberry	14	Yes	Damaged Severe	7031642	2489230.74	Damaged Severe
369	17.9	eastern red ceda	18	No	Damaged Severe	7031650	2489226.71	Damaged Severe
370	8.4	green ash	8	No	Leaning Severe Hazard	7031654	2489199.42	Leaning Severe Hazard
371	23.2	eastern red ceda	23	No	Healthy	7031647	2489190.27	Healthy
372	27.9	Osage-orange	28	Yes	Declining Rot	7031574	2489089	Declining w Rot
373	19.7	post oak	20	No	On Storm Line and Broken Top	7031582	2488993.61	On Storm Line and Broken Top
374	18.1	cedar elm	18	No	Healthy	7031542	2488992.49	Healthy
376	8.3	cedar elm	8	No	Healthy	7031564	2489045.95	Healthy
377	11.6	cedar elm	12	No	Healthy	7031547	2489102.45	Healthy
378	14.3	cedar elm	14	No	Leaning Severe Hazard	7031541	2489102.49	Leaning Severe Hazard
379	10.4	cedar elm	10	No	Healthy	7031544	2489091.06	Healthy
380	15.5	cedar elm	16	No	Leaning Severe Hazard	7031544	2489124.48	Leaning Severe Hazard
381	10.0	sugarberry	10	No	Dead	7031540	2489178.87	Dead
382	13.3	cedar elm	13	No	Leaning Severe Hazard	7031565	2489185.83	Leaning Severe Hazard
383	15.7	sugarberry	16	Yes	Dead	7031547	2489229.66	Dead
386	24.6	pecan	24	Yes	Damaged, Rot on Trunk + Dallas Trail	7031433	2489234.27	Damaged, Rot on Trunk + Dallas Trail
387	13.1	cedar elm	13	No	Declining + Dallas Trail	7031401	2489239.1	Declining + Dallas Trail
388	9.2	cedar elm	3	No	Declining Severe + Dallas Trail	7031394	2489235.66	Declining Severe + Dallas Trail
389	12.6	cedar elm	13	No	Stressed + Dallas Trail	7031392	2489196.43	Stressed + Dallas Trail
390	14.6	Chinaberry	5	No	Gone	7031369	2489196.39	Gone, Fell over and was removed (storm clean up)
391	9.9	cedar elm	10	No	For Dallas Trail	7031387	2489167.07	Removed for Dallas Trail
392	9.3	cedar elm	9	No	Stressed + Dallas Trail	7031381	2489157.18	Stressed & Removed for Dallas Trail
393	8.9	cedar elm	9	No	Dallas Trail and Declining/ Leaning Severe Hazard	7031386	2489158.2	Declining, Leaning Severe Hazard & Removed for Dallas Trail

THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

N W E S

0 20 40 80

1 inch = 40 ft.

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Date: November 3, 2023
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CONTRACT INFORMATION

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CONTRACTOR ____________

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SPIARS ENGINEERING & SURVEYING

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	06

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
400	8.0	pecan	8	No	For Dallas Trail	7031379	2489063.54	Removed for Dallas Trail
416	10.0	pecan	10	No	Damaged Severe	7031401	2489267.93	Damaged Severe
432	15.1	Osage-orange	15	No	Rot	7031534	2489347.85	Rot
433	11.2	sugarberry	11	No	Healthy	7031540	2489342.67	Healthy, broken top
434	19.7	cedar elm	20	No	Rot	7031548	2489372.58	Rot
435	16.9	cedar elm	17	No	Healthy	7031536	2489395.77	Healthy
436	17.0	cedar elm	17	No	Healthy	7031553	2489411.26	Healthy, broken top
437	14.3	cedar elm	14	No	Declining	7031542	2489423.74	Declining
459	16.0	cedar elm	16	No	Rotten	7031518	2489478.8	has Rot
463	11.7	cedar elm	12	No	Healthy	7031543	2489513.66	Healthy, Leaning
464	12.7	cedar elm	13	No	Healthy	7031524	2489505.03	Healthy
465	11.5	cedar elm	12	No	Healthy	7031535	2489524.41	Healthy
466	12.6	cedar elm	13	No	Healthy	7031544	2489531.67	Healthy
467	12.0	cedar elm	12	No	Healthy	7031529	2489539.22	Healthy, broken top
469	15.2	cedar elm	15	No	Declining, Rot	7031523	2489555.95	Declining, Rot
497	16.1	cedar elm	16	No	Healthy	7031537	2489588.54	Healthy
498	10.5	cedar elm	11	No	Healthy	7031534	2489610.05	Healthy
499	15.4	cedar elm	15	No	Damaged Severe	7031534	2489620.38	Damaged Severe
500	11.9	cedar elm	12	No	Healthy	7031531	2489630.59	Healthy, broken top
538	20.9	cedar elm	21	No	On Storm Line	7031462	2489796.09	ON Storm Line
573	10.9	green ash	11	No	On Storm Line	7031297	2489913.26	ON Storm Line
686	10.6	honey-locust	11	No	?	7032463	2490387.75	Could not Access
690	8.9	cedar elm	9	No	?	7032132	2490329.01	Could not Access
691	11.3	cedar elm	11	No	?	7032079	2490332.51	Could not Access
692	9.5	cedar elm	10	No	?	7032072	2490376.61	Could not Access
693	9.3	green ash	9	No	?	7032065	2490386.3	Could not Access
705	8.0	cedar elm	8	No	?	7032023	2490370	Could not Access
716	12.3	astern red ceda	12	No	?	7032000	2490502.38	Could not Access
724	15.6	cedar elm	16	No	?	7031403	2490417.55	Could not Access
726	11.1	astern red ceda	11	No	?	7031417	2490403.68	Could not Access
727	8.7	cedar elm	9	No	?	7031433	2490415.18	Could not Access
733	12.4	chinqapin oak	12	No	?	7031499	2490430.11	Could not Access
735	9.0	astern red ceda	9	No	?	7031518	2490450.79	Could not Access
736	22.5	green ash	23	Yes	?	7031517	2490453.89	Could not Access
737	9.2	chinqapin oak	9	No	?	7031523	2490439.63	Could not Access
741	9.8	Osage-orange	10	No	?	7031557	2490451.33	Could not Access
743	9.0	sugarberry	9	No	?	7031562	2490422.47	Could not Access
744	8.1	sugarberry	8	No	?	7031549	2490418.32	Could not Access
745	8.0	green ash	8	No	?	7031583	2490407.92	Could not Access
746	9.3	astern red ceda	9	No	?	7031591	2490414.43	Could not Access
747	8.2	astern red ceda	8	No	?	7031564	2490389.85	Could not Access
748	9.0	pecan	9	No	?	7031564	2490376.9	Could not Access
749	8.4	Bradford pear	8	No	?	7031615	2490393.72	Could not Access
750	8.6	astern red ceda	9	No	?	7031641	2490371.86	Could not Access
751	10.9	astern red ceda	11	No	?	7031644	2490368.51	Could not Access
752	8.2	astern red ceda	8	No	?	7031704	2490361.06	Could not Access
753	8.0	astern red ceda	8	No	?	7031708	2490371.5	Could not Access
754	15.5	astern red ceda	16	Yes	?	7031906	2490355.63	Could not Access
755	8.0	astern red ceda	8	No	?	7031936	2490376.14	Could not Access
756	9.6	astern red ceda	10	No	?	7031873	2490397.29	Could not Access
757	11.0	astern red ceda	11	No	?	7031869	2490417.38	Could not Access
758	8.6	astern red ceda	9	No	?	7031881	2490417.48	Could not Access

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
759	8.3	astern red ceda	8	No	?	7031880	2490417.42	Could not Access
760	10.8	astern red ceda	11	No	?	7031883	2490423.66	Could not Access
761	11.2	astern red ceda	11	No	?	7031893	2490428.77	Could not Access
773	9.1	green ash	9	No	?	7031845	2490421.38	Could not Access
774	13.2	astern red ceda	13	No	?	7031856	2490397.97	Could not Access
775	8.6	astern red ceda	9	No	?	7031801	2490389.39	Could not Access
776	11.0	astern red ceda	11	No	?	7031787	2490390.01	Could not Access
777	8.9	astern red ceda	9	No	?	7031788	2490405.38	Could not Access
778	8.5	astern red ceda	9	No	?	7031782	2490404.36	Could not Access
779	9.1	astern red ceda	9	No	?	7031780	2490406.45	Could not Access
1000	10.7	black willow	11	No	?	7030847	2490721.8	Could not Access
2005	14.1	American elm	14	No	For Dallas Trail	7031303	2490139.76	Being Removed for Future Dallas trail
2006	15.1	astern red ceda	15	No	For Dallas Trail	7031303	2490149.38	Being Removed for Future Dallas trail
2007	21.7	green ash	22	No	For Dallas Trail +Damaged Severe	7031302	2490156.67	Being Removed for Future Dallas trail
2008	14.2	green ash	14	No	For Dallas Trail	7031305	2490163.21	Removed for Dallas Trail- also has Barb Wire Cutting through it.
2009	13.6	American elm	14	No	For Dallas Trail	7031306	2490172.9	Being Removed for Future Dallas trail
2012	8.6	American elm	9	No	For Dallas Trail	7031315	2490193.32	Being Removed for Future Dallas trail
2015	11.1	astern red ceda	11	No	For Dallas Trail	7031287	2490272.36	Being Removed for Future Dallas trail
2016	8.5	astern red ceda	9	No	For Dallas Trail	7031287	2490272.43	Being Removed for Future Dallas trail
2040	12.3	astern red ceda	12	No	?	7031359	2490404.5	Could not Access
2058	11.2	astern red ceda	11	No	?	7031268	2490378.43	Could not Access
2059	18.8	green ash	19	No	?	7031286	2490358.75	Could not Access
2060	11.4	astern red ceda	11	No	?	7031299	2490389.87	Could not Access
2061	9.5	astern red ceda	10	No	?	7031321	2490390.33	Could not Access

THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

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0 20 40 80

1 inch = 40 ft.

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Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ____________ DATE ________

CONTRACTOR ____________

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

SPIARS ENGINEERING & SURVEYING
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TBPE No F-2121 • TBLPS No. F-10043100 • www.spiarseng.com

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	07

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
195	20.2	cedar elm	20	No	Dead	7031707	2489844.24	Rotten/ Hollow
196	10.7	cedar elm	11	No	Leaning Severe Hazard	7031704	2489848.83	Leaning Severe
197	9.2	cedar elm	9	No	Leaning Severe Hazard	7031684	2489832.68	Leaning Severe
198	21.9	cedar elm	22	No	Healthy	7031674	2489829.72	Healthy
199	12.1	cedar elm	12	No	Healthy	7031667	2489842.97	Healthy
200	14.5	cedar elm	15	No	Leaning Moderate	7031669	2489848.12	Leaning Moderate
201	17.8	cedar elm	18	No	Declining	7031663	2489859.93	Declining
202	14.3	cedar elm	14	No	Healthy	7031643	2489841.2	Healthy
203	12.1	cedar elm	12	No	Healthy	7031630	2489838.54	Healthy
204	15.6	cedar elm	16	No	Leaning	7031632	2489852.09	Leaning Moderate
205	9.7	cedar elm	10	No	Dead	7031624	2489855.13	Rotten
206	16.1	cedar elm	16	No	Healthy	7031616	2489850.49	Healthy
207	15.1	cedar elm	15	No	Diseased	7031604	2489849.73	Beetle Damage
208	15.7	cedar elm	16	No	Healthy	7031595	2489856.24	Healthy
209	8.9	cedar elm	9	No	Declining & Leaning	7031595	2489843.81	Declining & Leaning
210	10.8	cedar elm	11	No	Healthy	7031582	2489841.24	Healthy
211	10.8	cedar elm	11	No	Declining Broken Top	7031575	2489845.61	Broken Top (severe)
212	13.9	cedar elm	14	No	Leaning Severe Hazard	7031570	2489849.11	Leaning Severe
213	15.6	cedar elm	16	No	Healthy	7031562	2489850.46	Healthy
214	20.9	cedar elm	21	No	Dead	7031533	2489856.81	Rotten
215	10.6	cedar elm	11	No	Healthy	7031528	2489857.74	Healthy
217	15.2	cedar elm	15	No	Healthy	7031533	2489835.46	Healthy
218	11.8	cedar elm	12	No	Healthy	7031538	2489825.66	Healthy
220	18.2	cedar elm	18	Yes	Declining Broken Top	7031547	2489796.16	Declining/Broken Top
221	8.4	cedar elm	8	No	Healthy	7031564	2489811.83	Heathy/Broken Top (minor)
222	14.9	cedar elm	15	No	Healthy	7031567	2489815.88	Healthy
223	11.0	cedar elm	11	No	Declining	7031572	2489797.33	Declining
224	14.6	cedar elm	15	No	Declining/Broken Top/ Rot	7031605	2489803.37	Declining/minor Rot, Broken Top (labeled as second 226 in field)
225	10.5	cedar elm	11	No	Declining	7031613	2489826.09	Declining
226	19.6	cedar elm	20	No	Declining	7031628	2489807.95	Declining/ Some Rot
227	12.8	cedar elm	13	No	Declining	7031647	2489820.24	Declining/ Some Rot
228	14.2	cedar elm	14	No	Healthy	7031573	2489780.22	Healthy
229	12.4	cedar elm	4	No	Dead	7031557	2489761.81	Dead Stump
230	11.8	cedar elm	12	No	Declining	7031586	2489757.11	Declining
231	12.6	cedar elm	13	No	Declining Severe	7031633	2489772.2	Declining Severe
232	10.5	cedar elm	11	No	Healthy	7031665	2489764.54	Healthy
233	12.0	cedar elm	12	No	Healthy	7031650	2489740.46	Healthy
234	8.5	green ash	9	No	Healthy	7031633	2489736.35	Healthy
235	12.0	cedar elm	12	No	Declining Severe	7031627	2489734.96	Declining Severe
236	12.9	cedar elm	13	No	Healthy	7031528	2489730.3	Healthy
237	15.4	cedar elm	13	No	Declining Severe	7031535	2489713.83	Declining Severe
238	11.3	cedar elm	11	No	Healthy	7031541	2489691.91	Healthy
239	16.5	cedar elm	17	Yes	Stressed	7031552	2489701.18	Flushed out/Stresed
240	10.6	cedar elm	11	No	Stressed	7031574	2489682.88	Flushed Out, Broken Top
241	8.6	cedar elm	9	No	Declining/ Stressed	7031579	2489670.61	Flushed out/Stresed
242	12.2	cedar elm	12	No	Dead	7031584	2489666.01	Gone, Fell over and was removed (storm clean up)
243	8.7	cedar elm	9	No	Declining/ Rot	7031587	2489662.62	Declining w Rot
244	10.5	cedar elm	11	No	Declining Broken Top	7031584	2489651.77	Declining w/ Broken Top
245	11.3	cedar elm	11	No	Healthy	7031549	2489656.88	Healthy
246	9.2	cedar elm	9	No	Declining/Broken top	7031545	2489648.92	Declining/Broken top
247	15.0	cedar elm	15	No	Stressed	7031608	2489675.59	Stressed/ Flushed Out
248	14.5	cedar elm	15	No	Damaged Severe	7031629	2489720.53	Trunk severely damaged at ground
249	13.0	cedar elm	13	No	Healthy	7031636	2489673.9	Healthy, broken top
250	10.6	cedar elm	11	No	Stressed	7031660	2489672.38	Stressed
251	19.8	cedar elm	20	No	Damaged Moderate	7031686	2489685.72	Damaged Moderate
252	16.3	cedar elm	16	No	Declining	7031679	2489664.26	Declining
253	13.2	cedar elm	13	No	Broken Top	7031681	2489656.31	Broken Top

THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

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0 20 40 80

1 inch = 40 ft.

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Date: November 3, 2023
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CONTRACT INFORMATION

CONTRACT NO. ____________________ DATE ________

CONTRACTOR ____________________

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

SPIARS ENGINEERING & SURVEYING

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

TONTI ALEXIS

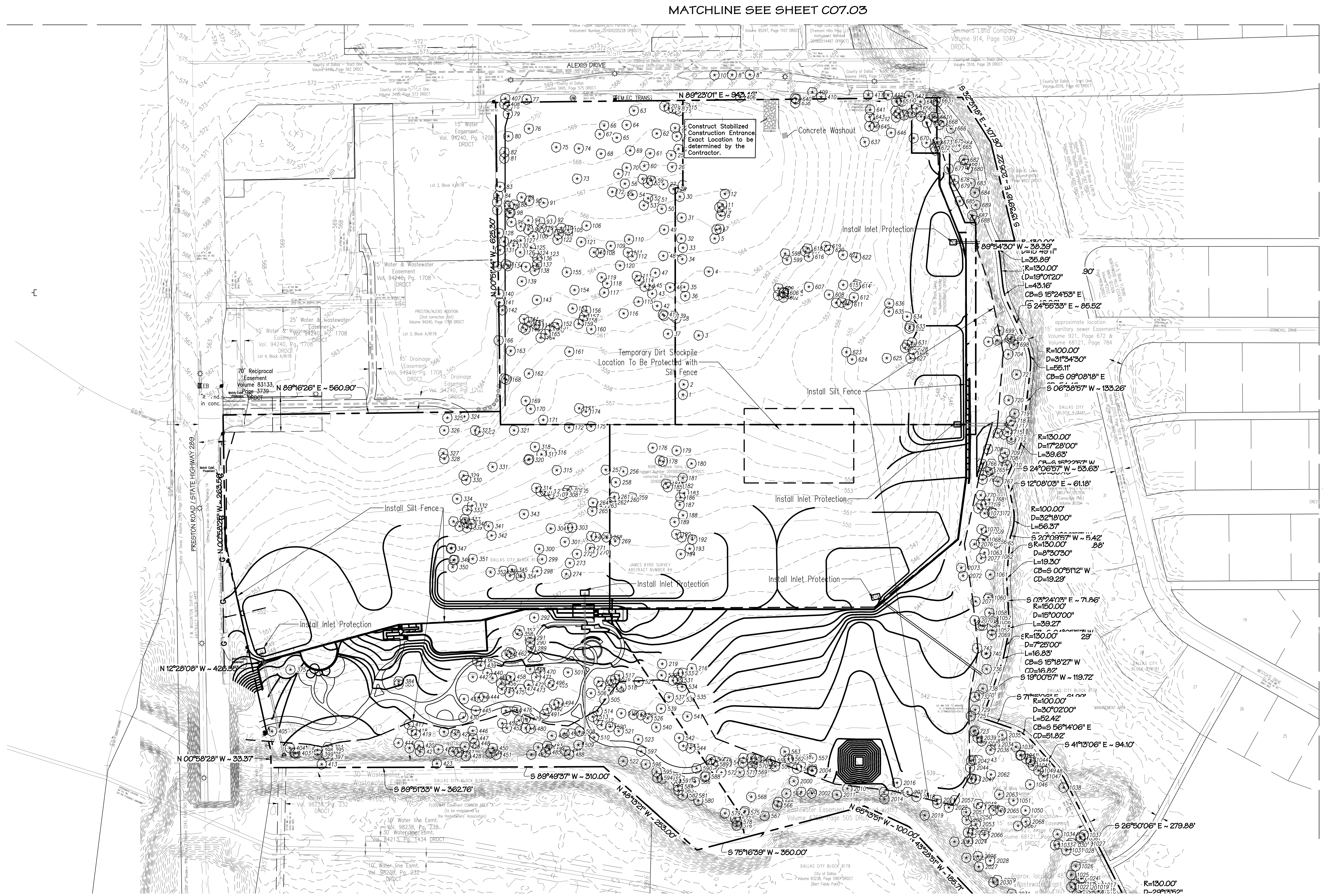
PRESTON ROAD & ALEXIS DRIVE

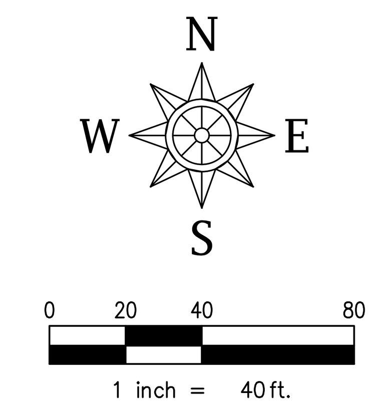
DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	

7.0 Erosion Control Plan





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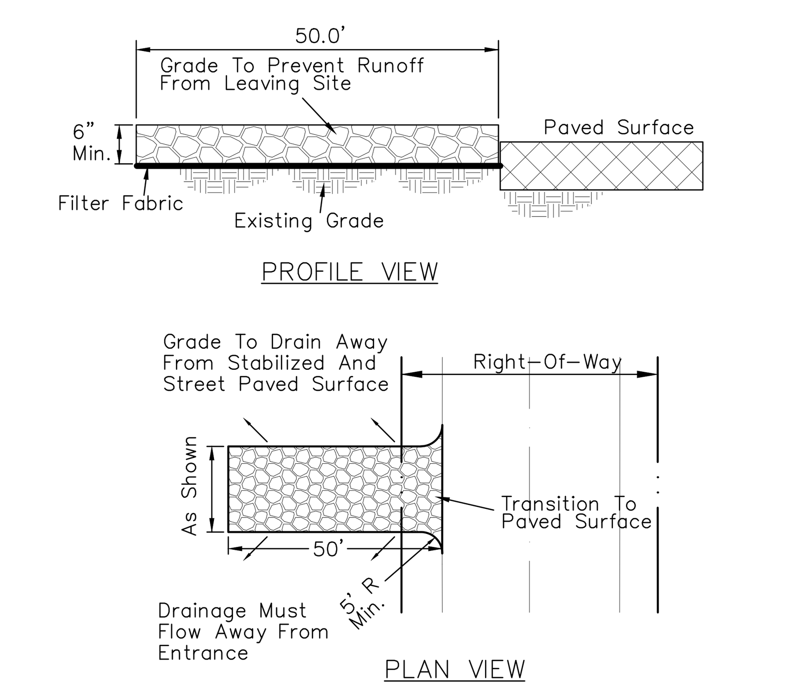
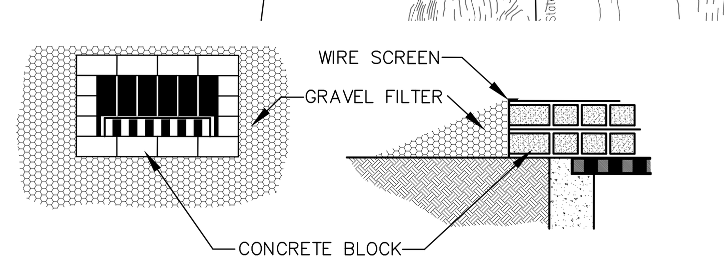
THIS SPACE RESERVED - ENGINEERING



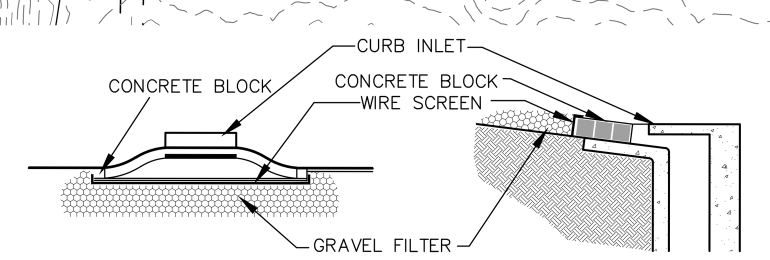
STABILIZED CONSTRUCTION ENTRANCE

CONSTRUCTION ENTRANCE NOTES

1. Stone shall be 3 to 5 inch diameter crushed rock or acceptable crushed Portland Cement Concrete.
2. When necessary, vehicles shall be cleaned to remove sediment prior to entrance onto a public roadway. When washing is required, it shall be done on a area stabilized with crushed stone, with drainage flowing away from both the street and the stabilized entrance. All sediment shall be prevented from entering any storm drain, ditch, or watercourse using approved methods.
3. The entrance shall maintained in a condition which will prevent tracking or flowing of sediment onto paved surfaces. This may require periodic top dressing with additional stone as conditions demand. All sediment spilled, dropped, washed, or tracked onto paved surfaces must be removed immediately.
4. The entrance must be properly graded, or incorporate a drainage swale to prevent runoff from leaving the construction site.



DROP INLET PROTECTION



CURB INLET PROTECTION

Note:
All sidewalks (existing and proposed) shall comply with Texas Accessibility Standards (TAS) and Americans with Disabilities Act (ADA).

This plan is released for the purpose of interim review and pricing under the authority of KEVIN S. WIER, P.E. 91219

Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ______________ DATE ________

CONTRACTOR ______________

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

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TBPE No F-2121 • TBLPS No. F-10043100 • www.spiarseng.com

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Erosion Control Plan

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	07

8.0 References

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

Hydrologic Engineering Center. HEC-RAS v. 4.1.0 (*software package*). U.S. Army Corps of Engineers, March 2008.

Hydrologic Engineering Center. HEC-RAS v. 3.1.3 (*software package*). U.S. Army Corps of Engineers, 2005.

City of Dallas Floodplain Management. *Kiowa Branch Hydraulic Model*. Halff Associates, Inc., June 2012.

City of Dallas Floodplain Management. *Upper White Rock Creek Hydraulic Model*. Halff Associates, Inc., October 2007.

City of Dallas Floodplain Management. *FEMA FY11 Risk Map Project—City of Dallas, Cooperating Technical Partner*. Halff Associates, Inc., June 2012.

Appendix A:

General

Effective FEMA FIRM Panels

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 (NAVD 88). 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 Texas State Plane North Central Zone (FIPS zone 4202). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM 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. 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, Maryland 20910-3282
(301) 713-3242

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 the North Central Texas Council of Governments (NCTCOG). This information was photogrammetrically compiled at a scale of at least 1:24,000 from aerial photography dated 2001.

This map reflects more detailed and up-to-date **stream channel configurations** 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 for multiple streams 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.

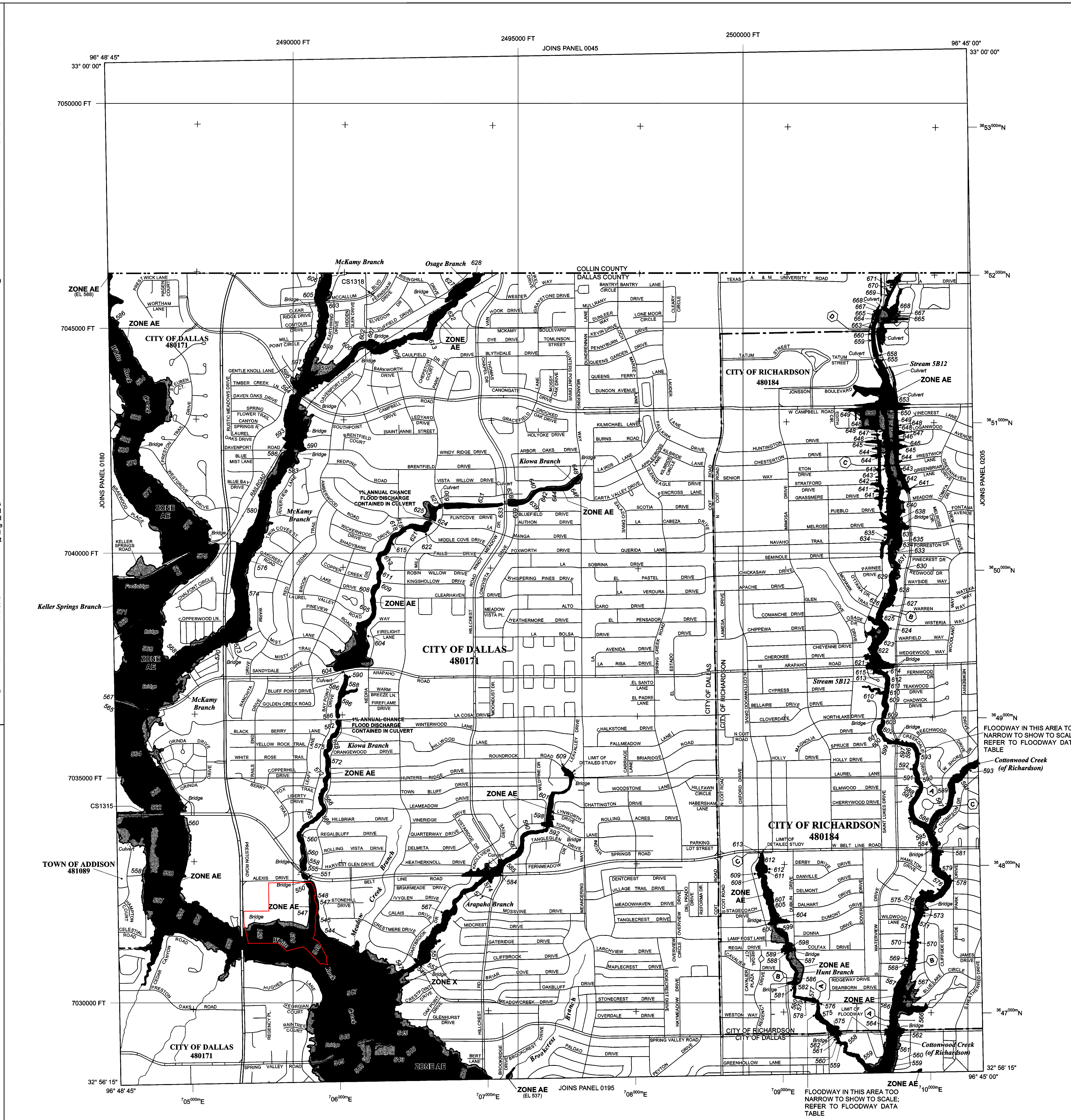
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

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

SUBJECT PROPERTY



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 Areas 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.

	1% Annual Chance Floodplain Boundary
	0.2% Annual Chance Floodplain Boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and 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

A — A	Cross section line
23 - - - - - 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: Texas State Plane North Central Zone (FIPS Zone 4202), Lambert Conformal Conic projection
$^{49}89^{000m}$ N	1000-meter Universal Transverse Mercator grid values, zone 14
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
August 23, 2001

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
July 7, 2014 - to change Base Flood Elevations, to change Special Flood Hazard Areas, to change floodway, to change zone designations, to reflect updated topographic information, to update map format, to update corporate limits, 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" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0185K

FIRM
FLOOD INSURANCE RATE MAP
DALLAS COUNTY, TEXAS
AND INCORPORATED AREAS

PANEL 185 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ADDISON, TOWN OF	481089	0185	K
DALLAS, CITY OF	480171	0185	K
RICHARDSON, CITY OF	480184	0185	K

REVISED JUNE 23, 2023

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.

U.S. DEPARTMENT OF HOMELAND SECURITY

MAP NUMBER
48113C0185K

MAP REVISED
JULY 7, 2014

Federal Emergency Management Agency

Appendix B:

Duplicate Effective Hydraulics

HEC-RAS Output
Stream Profile
Affected Cross-Sections

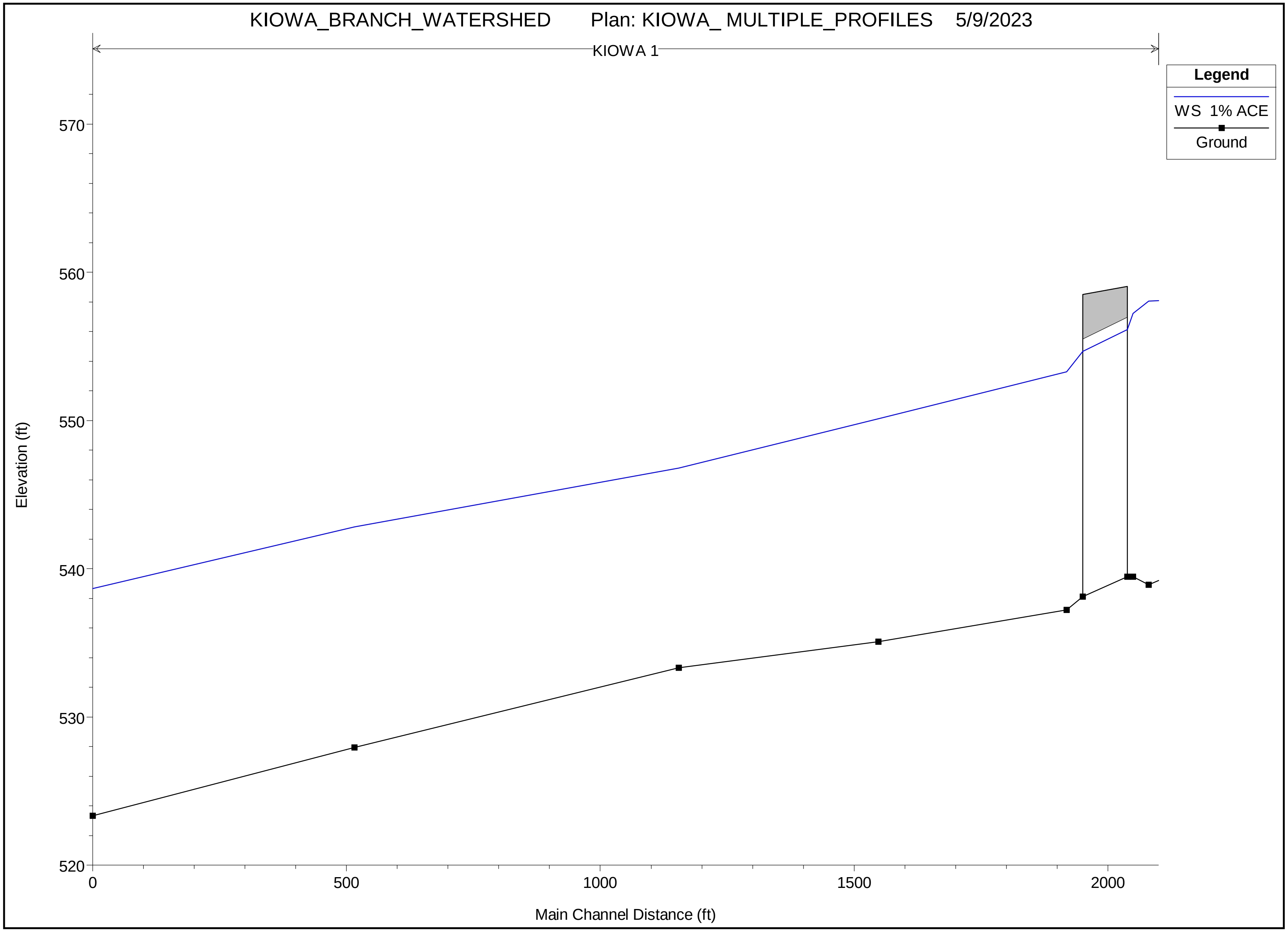
kimley-horn.com 13455 Noel Road, Suite 700 Dallas, TX 75240 972 770 1300

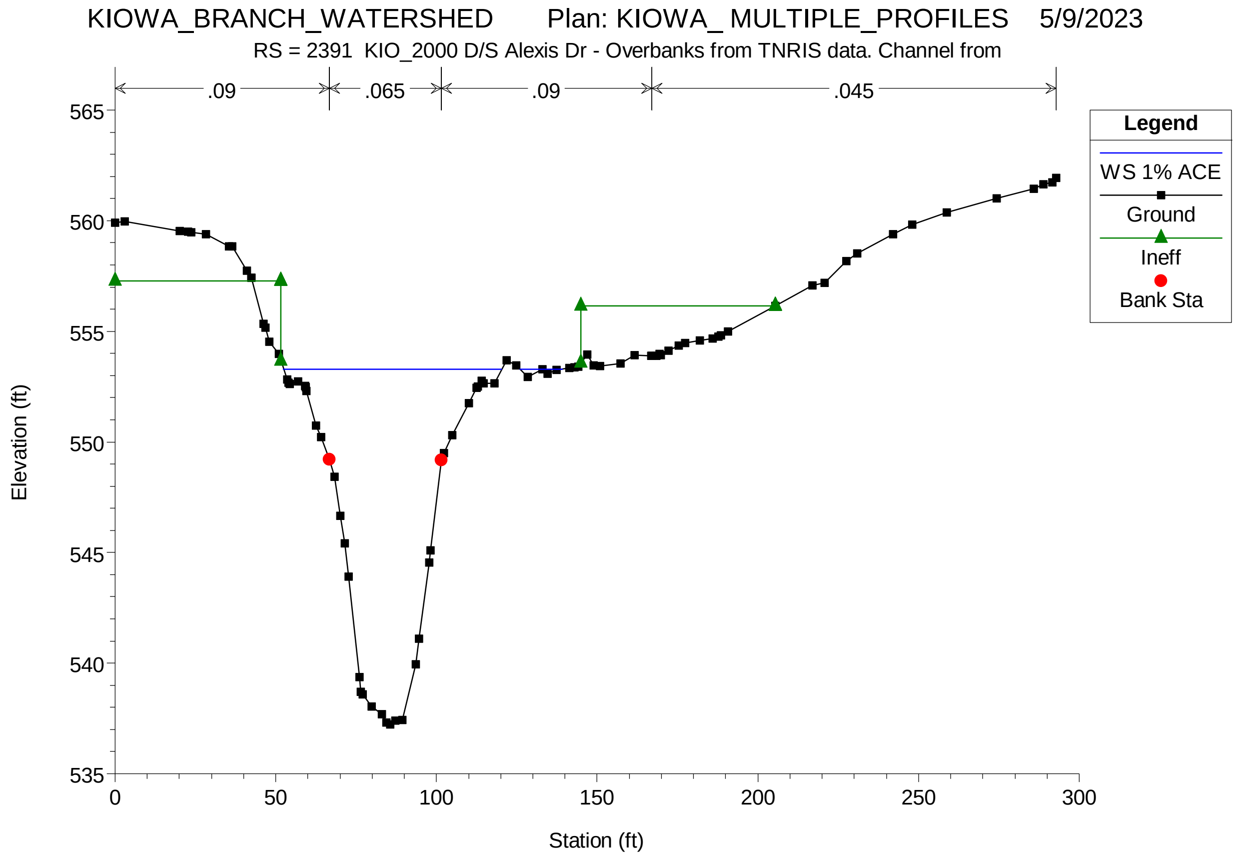
HEC-RAS Plan: KIO_MP River: KIOWA Reach: 1 Profile: 1% ACE

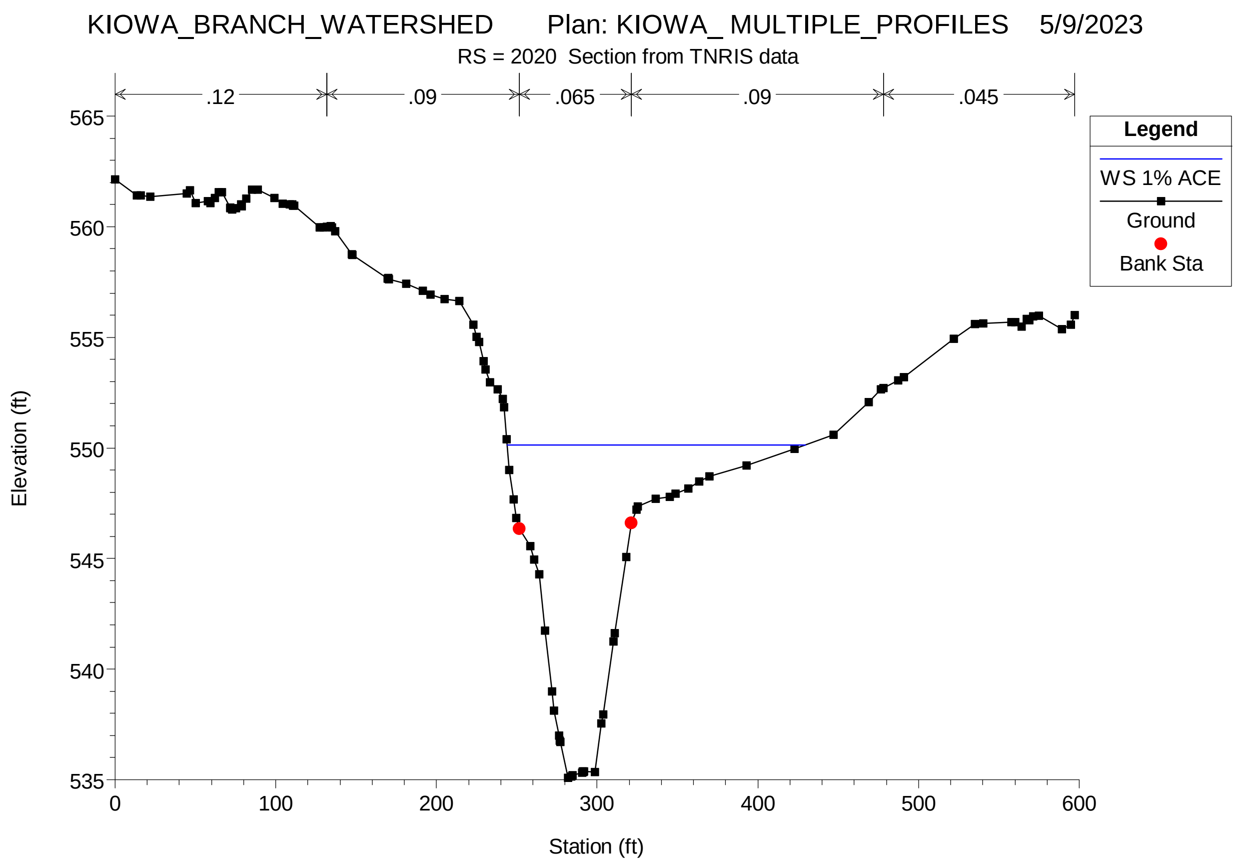
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	16598	1% ACE	1550.00	640.79	647.80		648.18	0.000811	4.96	312.40	58.91	0.38
1	16564	1% ACE	1550.00	639.71	646.19	646.19	647.98	0.006541	10.72	144.57	41.15	1.01
1	16380	1% ACE	1550.00	638.52	645.31	644.82	646.74	0.004703	9.60	161.46	41.82	0.86
1	16131	1% ACE	1550.00	637.19	643.58	643.58	645.34	0.006492	10.64	145.70	41.52	1.00
1	15671	1% ACE	1550.00	634.12	641.44	640.71	642.56	0.003733	8.51	184.78	66.21	0.77
1	15430	1% ACE	1550.00	632.85	639.68	639.68	641.35	0.006395	10.38	150.69	50.94	0.99
1	15296	1% ACE	1550.00	631.59	638.86		639.63	0.002292	7.07	219.28	55.46	0.61
1	15156	1% ACE	1550.00	630.75	638.17		639.24	0.003089	8.27	189.54	53.30	0.71
1	15096	1% ACE	1550.00	629.98	638.08		639.04	0.002473	7.87	202.84	60.18	0.65
1	15044	1% ACE	1550.00	629.53	637.67		638.86	0.003308	8.79	181.04	54.15	0.74
1	14912	1% ACE	1550.00	628.87	637.83		638.43	0.001219	6.33	302.04	118.67	0.47
1	14845	1% ACE	1550.00	628.66	637.97	634.73	638.29	0.000600	4.66	411.01	238.38	0.35
1	14832	1% ACE	1700.00	627.54	638.05	631.78	638.21	0.000323	3.27	708.46	285.43	0.20
1	14746 Hillcrest		Culvert									
1	14693	1% ACE	2500.00	626.69	635.58	632.06	636.23	0.000808	6.53	415.47	201.51	0.42
1	14668	1% ACE	2500.00	625.77	633.84	633.46	635.80	0.004956	11.23	222.60	47.37	0.91
1	14607	1% ACE	2500.00	625.04	633.27	633.27	635.44	0.006039	11.82	211.66	50.01	1.00
1	14236	1% ACE	2500.00	623.41	631.17	630.81	632.89	0.004809	10.54	239.17	63.26	0.89
1	13767	1% ACE	2500.00	620.68	628.75	628.52	630.53	0.005256	10.70	234.68	64.75	0.93
1	13479	1% ACE	2500.00	618.38	627.85	627.17	629.18	0.003497	9.29	295.53	108.68	0.77
1	13410	1% ACE	2500.00	618.06	628.16	623.83	628.72	0.000465	6.10	497.08	122.83	0.37
1	13405		Lat Struct									
1	13390	1% ACE	2500.00	618.04	628.40	627.36	628.47	0.000188	2.38	1260.89	832.86	0.11
1	13377	1% ACE	2408.50	617.94	628.41	627.20	628.45	0.000193	2.41	1591.00	900.81	0.09
1	13361	1% ACE	2299.25	617.82	628.41	627.27	628.45	0.000103	1.76	1485.63	902.53	0.08
1	13346	1% ACE	2196.62	617.71	628.42	627.09	628.45	0.000075	1.50	1599.60	921.92	0.08
1	13332	1% ACE	2094.17	617.60	628.41	627.22	628.44	0.001174	1.55	1462.93	957.15	0.08
1	13244	1% ACE	2794.17	616.43	627.37	624.08	628.07	0.003578	6.72	432.59	77.63	0.43
1	13234.1*	1% ACE	2794.17	616.45	627.31		628.02	0.003939	6.85	427.06	82.37	0.45
1	13224.2*	1% ACE	2794.17	616.47	627.24		627.97	0.004330	6.97	421.58	86.60	0.47
1	13214.3*	1% ACE	2794.17	616.50	627.16		627.92	0.004666	7.10	415.76	90.46	0.48
1	13204.5*	1% ACE	2794.17	616.52	627.08		627.87	0.005030	7.22	410.22	94.03	0.50
1	13194.6*	1% ACE	2794.17	616.54	627.00		627.81	0.005447	7.34	404.88	97.73	0.52
1	13184.7*	1% ACE	2794.17	616.57	626.92		627.75	0.005834	7.45	400.70	101.34	0.53
1	13174.8*	1% ACE	2794.17	616.59	626.84		627.69	0.006217	7.54	398.23	106.10	0.55
1	13165	1% ACE	2794.17	616.61	626.77	625.09	627.63	0.006233	7.59	399.22	113.76	0.56
1	13119	1% ACE	2794.17	616.02	627.23	624.60	627.29	0.000556	2.41	1625.11	582.82	0.17
1	13010	1% ACE	2794.17	616.09	625.43	624.13	626.72	0.009435	9.28	336.34	210.54	0.66
1	12988	1% ACE	2794.17	615.91	625.24	623.88	626.51	0.009694	9.14	331.10	186.42	0.66
1	12930	1% ACE	2694.17	615.44	625.57	622.11	625.77	0.001620	4.02	913.51	561.31	0.28
1	12925		Lat Struct									
1	12916	1% ACE	2639.38	616.82	625.55	625.15	625.76	0.000650	4.44	762.97	525.27	0.22
1	12902	1% ACE	2589.01	616.82	625.59	624.94	625.71	0.000353	3.27	979.46	655.51	0.16
1	12883	1% ACE	2525.51	616.80	625.59	624.92	625.70	0.000337	3.20	977.34	654.81	0.16
1	12869	1% ACE	2477.53	616.77	625.58	624.91	625.69	0.000325	3.14	976.98	654.69	0.16
1	12851	1% ACE	2418.00	616.77	625.46	621.61	625.67	0.023138	4.89	754.37	404.63	0.22
1	12827	1% ACE	2418.00	614.51	625.40	620.50	625.55	0.001728	3.25	1035.55	416.58	0.24
1	12713	1% ACE	2418.00	614.35	624.92	622.10	625.22	0.004387	4.54	680.12	375.58	0.34
1	12464	1% ACE	2694.17	612.91	623.85		624.07	0.004610	4.11	960.56	501.83	0.31
1	12282	1% ACE	2694.17	612.32	622.55	619.31	623.12	0.005733	6.09	475.39	187.91	0.41
1	12066	1% ACE	2694.17	612.67	620.51	619.02	621.41	0.011112	7.94	417.33	193.47	0.56
1	11941	1% ACE	2694.17	609.49	619.30		620.07	0.009699	7.17	440.65	174.46	0.52
1	11855	1% ACE	2694.17	608.72	618.70		619.32	0.007060	6.40	475.13	173.07	0.44
1	11702	1% ACE	2694.17	605.18	617.21		618.07	0.009201	7.49	370.08	63.89	0.50
1	11603	1% ACE	2694.17	604.23	616.51		617.17	0.007915	6.52	426.49	101.59	0.46
1	11411	1% ACE	2694.17	603.95	615.74		616.04	0.003863	4.43	655.43	156.82	0.33
1	11249	1% ACE	2694.17	603.15	615.02		615.37	0.004323	4.79	583.77	126.73	0.35
1	11113	1% ACE	3194.17	601.85	614.26		614.74	0.004911	5.66	617.19	137.68	0.38
1	10877	1% ACE	3194.17	600.44	613.37	609.11	613.77	0.003313	5.12	664.89	104.63	0.32
1	10593	1% ACE	3600.00	598.16	611.80	608.71	612.49	0.005978	7.40	648.44	194.34	0.41
1	10450	1% ACE	3600.00	599.27	611.53	608.04	611.80	0.002891	4.80	944.30	215.09	0.28
1	10335	1% ACE	3600.00	598.30	611.09		611.44	0.003170	5.41	875.67	252.91	0.30
1	10198	1% ACE	4700.00	596.89	610.11	606.55	610.83	0.005405	7.06	797.96	226.96	0.42
1	9993	1% ACE	4700.00	594.89	608.98	604.82	609.73	0.005323	7.24	794.40	212.18	0.40
1	9612	1% ACE	4700.00	594.79	605.55		606.86	0.010906	9.38	554.29	117.58	0.60
1	9290	1% ACE	4700.00	592.63	605.21		605.46	0.001691	4.35	1286.83	237.33	0.25
1	9031	1% ACE	4700.00	590.88	604.07	600.66	604.74	0.005265	7.51	854.27	193.97	0.41
1	8548	1% ACE	4700.00	587.51	602.27	599.10	602.65	0.003976	5.84	1140.65	277.95	0.34
1	8330	1% ACE	4700.00	587.45	601.75		601.99	0.002260	4.68	1415.90	308.99	0.27
1	8164	1% ACE	4700.00	588.61	601.43		601.66	0.002604	4.97	1482.21	366.42	0.28
1	8087	1% ACE	5000.00	585.00	601.40		601.52	0.000878	3.38	2248.25	431.41	0.17
1	8000		Lat Struct									
1	7955	1% ACE	3298.94	579.58	601.39	588.92	601.44	0.000257	2.13	2380.79	370.25	0.09
1	7951	1% ACE	3298.94	581.92	601.39	591.61	601.44	0.000316	2.25	2288.25	370.95	0.10
1	7863		Inl Struct									
1	7773	1% ACE	3298.94	572.65	591.59	581.09	591.81	0.001253	3.75	878.80	104.72	0.20
1	7589	1% ACE	5000.00	574.85	590.58		591.25	0.003902	6.77	819.76	103.73	0.36
1	7232	1% ACE	5900.00	572.40	588.80		589.76	0.004282	7.97	787.23	77.27	0.38
1	7072	1% ACE	5900.00	570.63	588.20	581.84	589.07	0.004054	7.64	843.12	86.06	0.37
1	6813	1% ACE	5900.00	570.61	587.53	580.02	588.17	0.002566	6.61	1010.92	120.10	0.31
1	6745 La Cosa		Culvert									

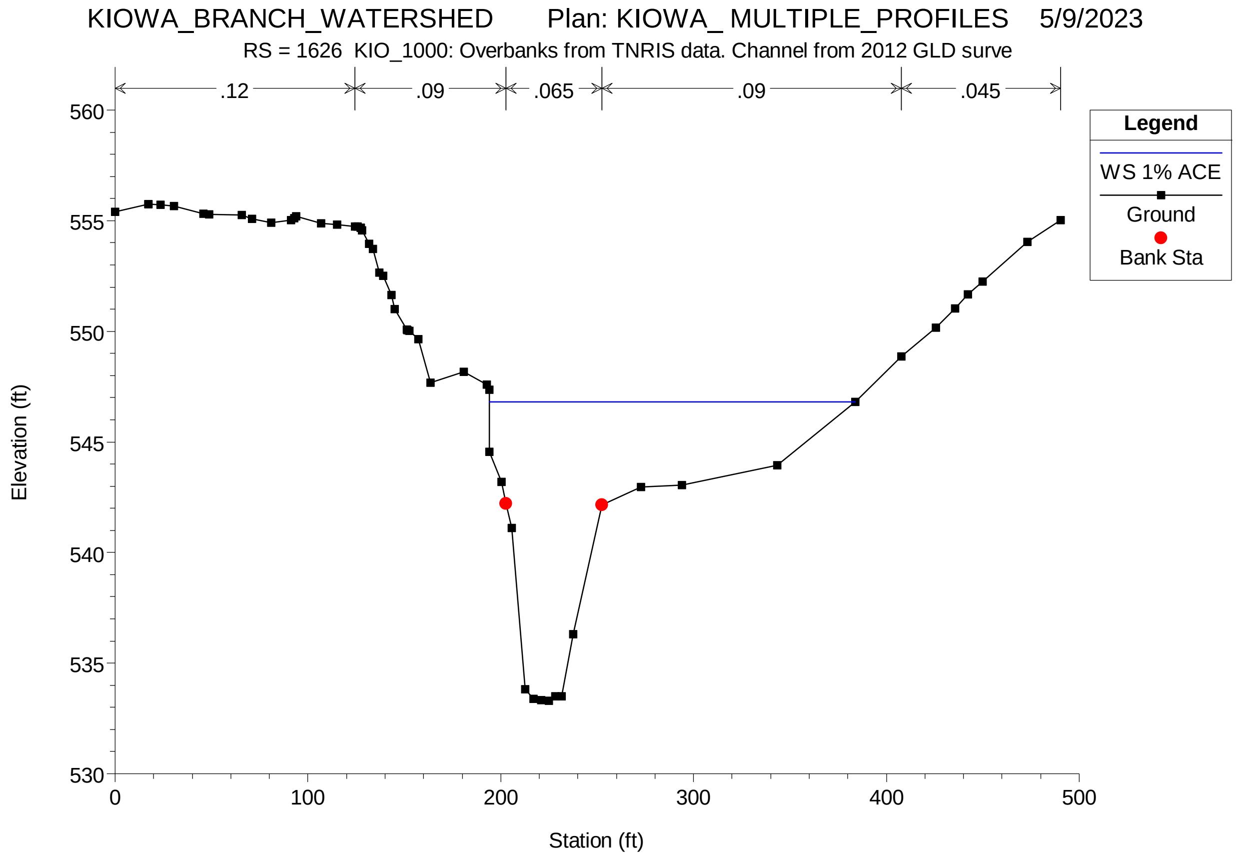
HEC-RAS Plan: KIO_MP River: KIOWA Reach: 1 Profile: 1% ACE (Continued)

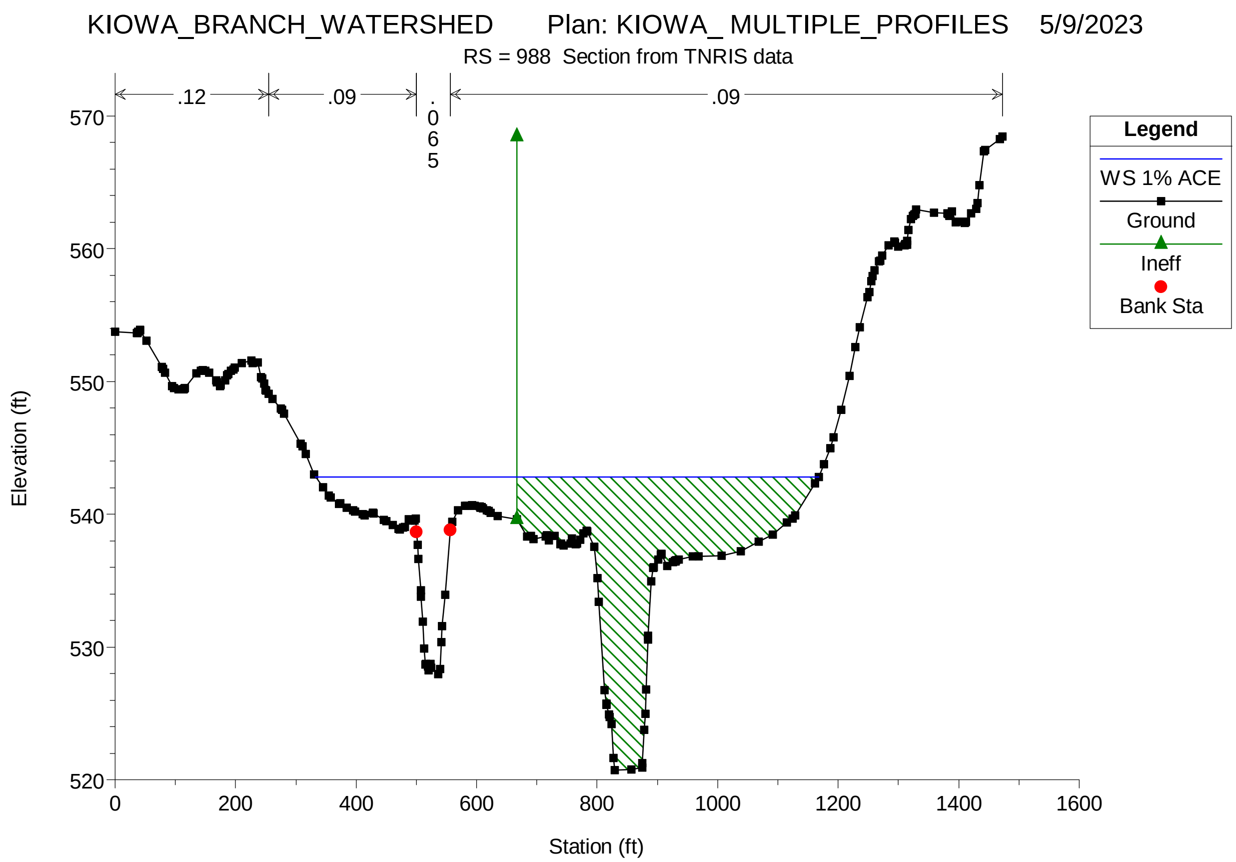
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	6682	1% ACE	6000.00	569.23	583.19	577.73	583.99	0.004221	7.23	852.71	106.42	0.38
1	6365	1% ACE	6000.00	567.13	580.69		582.01	0.008251	10.00	726.83	102.88	0.52
1	6271	1% ACE	6000.00	566.06	577.90	576.59	580.74	0.020006	13.62	459.30	63.15	0.77
1	6091	1% ACE	6000.00	564.21	577.70		578.54	0.005070	7.62	880.12	119.30	0.41
1	5991	1% ACE	6000.00	564.68	576.93		577.94	0.007144	8.67	835.93	137.91	0.47
1	5812	1% ACE	6000.00	561.32	575.98		576.91	0.004714	7.82	802.67	90.56	0.40
1	5397	1% ACE	6000.00	558.84	573.21		574.51	0.007049	9.35	705.17	96.52	0.48
1	5098	1% ACE	6000.00	556.44	572.32		572.97	0.003131	6.60	987.23	109.24	0.33
1	4924	1% ACE	6000.00	556.05	571.29		572.23	0.005775	8.16	844.30	114.64	0.43
1	4649	1% ACE	6000.00	553.52	567.99		570.00	0.010820	11.47	547.06	55.42	0.58
1	4356	1% ACE	6000.00	550.43	567.40		568.08	0.003038	7.06	1007.40	110.59	0.33
1	4045	1% ACE	6000.00	548.49	566.29		567.06	0.003540	7.20	898.18	91.00	0.35
1	3683	1% ACE	6000.00	546.31	562.65		564.78	0.011890	11.92	544.44	61.54	0.59
1	3516	1% ACE	6400.00	546.22	562.44		563.34	0.004127	7.72	890.07	90.86	0.37
1	3027	1% ACE	6400.00	541.94	557.43		559.76	0.014484	12.33	540.48	67.56	0.65
1	2767	1% ACE	6400.00	542.00	558.75	550.52	559.03	0.000135	4.24	1524.98	132.59	0.21
1	2677 Belt Line		Bridge									
1	2605	1% ACE	6400.00	539.73	558.13	548.70	558.39	0.000090	4.06	1702.32	210.66	0.20
1	2552	1% ACE	6400.00	538.92	558.07	548.65	558.37	0.000146	4.42	1465.35	185.54	0.21
1	2522	1% ACE	6500.00	539.46	557.22	551.15	558.17	0.000594	7.86	838.62	85.33	0.39
1	2459 Alexis		Bridge									
1	2391	1% ACE	6500.00	537.23	553.29	552.03	556.79	0.022681	15.22	470.98	81.01	0.78
1	2020	1% ACE	6500.00	535.08	550.13		551.25	0.007154	8.68	884.54	185.82	0.48
1	1626	1% ACE	6500.00	533.30	546.80		548.04	0.009502	9.93	931.72	189.66	0.54
1	988	1% ACE	6400.00	527.94	542.83	538.92	543.51	0.004933	7.54	1368.47	835.74	0.39
1	472	1% ACE	6400.00	523.34	538.66	535.02	540.23	0.009014	10.21	733.01	483.62	0.54


KIOWA_BRANCH_WATERSHED Plan: KIOWA_ MULTIPLE_PROFILES 5/9/2023
KIOWA 1
Legend
WS 1% ACE
Ground
Elevation (ft)
570
560
550
540
530
520
0
500
1000
1500
2000
Main Channel Distance (ft)


KIOWA_BRANCH_WATERSHED Plan: KIOWA_ MULTIPLE_PROFILES 5/9/2023
RS = 2391 KIO_2000 D/S Alexis Dr - Overbanks from TNRIS data. Channel from
.09
.065
.09
.045
Legend
WS 1% ACE
Ground
Ineff
Bank Sta
Elevation (ft)
565
560
555
550
545
540
535
0
50
100
150
200
250
300
Station (ft)


KIOWA_BRANCH_WATERSHED Plan: KIOWA_ MULTIPLE_PROFILES 5/9/2023
RS = 2020 Section from TNRIS data
.12
.09
.065
.09
.045
Legend
WS 1% ACE
Ground
Bank Sta
Elevation (ft)
565
560
555
550
545
540
535
0
100
200
300
400
500
600
Station (ft)


KIOWA_BRANCH_WATERSHED Plan: KIOWA_ MULTIPLE_PROFILES 5/9/2023
RS = 1626 KIO_1000: Overbanks from TNRIS data. Channel from 2012 GLD surve
.12
.09
.065
.09
.045
Legend
WS 1% ACE
Ground
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
0
100
200
300
400
500


KIOWA_BRANCH_WATERSHED Plan: KIOWA_ MULTIPLE_PROFILES 5/9/2023
RS = 988 Section from TNRIS data
.12
.09
.065
.09
Legend
WS 1% ACE
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
570
560
550
540
530
520
0
200
400
600
800
1000
1200
1400
1600

HEC-RAS Plan: WRCCON FDLU River: WRC Reach: 1 Profile: 1 percent

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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	146961	1 percent	34400.00	568.79	596.74		597.42	0.001692	8.46	6967.18	713.15	0.33	15961.82
1	146860	1 percent	34400.00	568.59	596.59		597.25	0.001681	8.77	7317.76	748.74	0.32	15945.80
1	146619	1 percent	34400.00	568.08	596.22		596.85	0.001475	8.59	8024.61	899.02	0.31	15901.66
1	146303	1 percent	34400.00	567.40	595.73		596.32	0.001644	8.79	8206.02	923.89	0.32	15839.35
1	146112	1 percent	34400.00	567.40	595.24		595.96	0.001766	8.58	6910.64	769.70	0.34	15802.37
1	145786	1 percent	34400.00	567.40	594.67		595.41	0.001852	9.49	7502.28	897.50	0.35	15753.75
1	145690	1 percent	34400.00	567.20	594.68		595.23	0.001275	8.27	9106.99	1032.62	0.30	15737.73
1	145533	1 percent	34400.00	567.00	594.49		595.05	0.001117	7.74	9386.32	1047.85	0.28	15708.98
1	145456	1 percent	34400.00	566.80	594.35		594.96	0.001141	8.04	9315.12	1046.66	0.29	15694.83
1	145176	1 percent	34400.00	566.30	593.79		594.54	0.001848	9.72	9062.14	997.73	0.36	15634.03
1	144975	1 percent	34400.00	566.00	593.67		594.25	0.001597	8.13	8926.02	935.78	0.33	15611.37
1	144876	1 percent	34400.00	565.80	593.39		594.07	0.002580	10.28	8159.14	856.63	0.40	15596.49
1	144623	1 percent	34400.00	565.30	592.84		593.47	0.001646	8.77	8750.53	857.29	0.34	15538.41
1	144331	1 percent	34400.00	564.80	592.48		593.13	0.001461	7.60	7744.55	742.58	0.32	15506.32
1	143948	1 percent	34400.00	564.80	591.46		592.46	0.002060	10.60	6813.54	668.29	0.39	15444.71
1	143488	1 percent	34500.00	563.40	590.59		591.47	0.002221	10.40	7531.77	846.69	0.39	15372.10
1	143302	1 percent	34500.00	563.10	590.32		591.10	0.001862	9.55	7138.81	753.39	0.35	15345.12
1	143128	1 percent	34500.00	562.80	590.28		590.75	0.001171	7.49	8052.49	799.26	0.28	15314.28
1	142882	1 percent	34500.00	562.40	590.10		590.47	0.000995	6.90	8782.45	857.13	0.26	15270.91
1	142513	1 percent	34500.00	561.70	589.35		590.03	0.001425	8.00	6908.34	756.09	0.31	15208.38
1	142026	1 percent	34500.00	560.90	588.98		589.35	0.001046	7.28	9127.08	985.57	0.26	15119.68
1	141642	1 percent	34500.00	560.30	587.89		588.80	0.002129	10.19	6483.56	838.80	0.38	15062.26
1	141469	1 percent	34500.00	559.90	587.49		588.43	0.002151	10.18	6284.33	791.55	0.38	15037.51
1	141247	1 percent	34500.00	559.50	587.59	582.91	588.13	0.001055	8.04	8255.15	892.86	0.30	15023.67
1	141182	1 percent	34500.00	559.50	587.37		587.95	0.001071	8.24	7310.64	641.62	0.31	14988.72
1	141107	1 percent	34500.00	559.30	587.45		587.83	0.000687	6.40	8766.77	726.01	0.25	14975.36
1	140908	1 percent	34500.00	558.90	587.08		587.64	0.001095	7.80	7365.55	670.44	0.31	14938.65
1	140454	1 percent	34500.00	558.20	586.62		587.18	0.001004	7.57	7140.18	586.94	0.30	14866.53
1	140309	1 percent	34500.00	557.90	586.41	576.40	587.04	0.000819	7.07	7120.97	681.05	0.27	14841.57
1	140248	1 percent	34500.00	557.80	585.89	579.50	586.92	0.001690	9.96	6041.39	695.53	0.38	14832.39
1	140108	1 percent	34500.00	557.60	585.41	579.38	586.65	0.002277	11.53	5732.77	707.11	0.44	14815.73
1	139959	1 percent	34500.00	557.30	585.56		586.23	0.001264	8.79	7088.12	716.00	0.33	14793.42
1	139756	1 percent	34500.00	557.00	585.56		585.96	0.000736	6.53	8954.86	865.87	0.25	14757.60
1	139545	1 percent	35000.00	556.60	585.40		585.81	0.000590	5.77	8426.73	714.97	0.23	14712.18
1	139466	1 percent	35000.00	556.50	584.94	577.25	585.66	0.001074	8.08	6755.38	605.49	0.30	14697.88
1	139445 Golf Cart Bridge		Bridge										
1	139436	1 percent	35000.00	556.50	584.79	577.01	585.38	0.000993	7.44	7251.25	633.11	0.28	14693.15
1	139190	1 percent	35000.00	556.00	584.60		585.16	0.000750	6.85	7362.10	615.96	0.26	14652.82
1	138946	1 percent	35000.00	555.60	584.07		584.88	0.001502	9.28	6361.75	596.45	0.36	14612.69
1	138802	1 percent	35000.00	555.34	584.05	577.39	584.64	0.001145	7.97	7486.31	743.32	0.31	14598.84
1	138789 Golf Cart Bridge		Bridge										
1	138776	1 percent	35000.00	555.34	583.80	577.39	584.42	0.001219	8.15	7301.12	735.01	0.32	14594.50
1	138497	1 percent	35000.00	554.80	583.60		584.04	0.000945	7.03	8363.88	782.21	0.28	14547.67
1	138402	1 percent	35000.00	554.60	583.49		583.93	0.001034	7.08	8577.65	985.66	0.31	14524.94
1	138389	1 percent	35000.00	554.60	583.48	578.38	583.91	0.001092	7.81	8551.85	982.16	0.32	14522.46
1	138383 Golf Cart Bridge		Bridge										
1	138377	1 percent	35000.00	554.60	583.32		583.76	0.001136	7.92	8392.18	978.89	0.32	14520.10
1	138349	1 percent	35000.00	554.60	583.07		583.68	0.000944	8.23	8413.73	971.20	0.32	14514.79
1	138257	1 percent	35000.00	554.40	583.10		583.56	0.000996	7.51	8514.69	876.28	0.31	14499.47
1	138195	1 percent	35000.00	554.30	583.10		583.48	0.000671	6.24	9220.07	841.45	0.27	14485.08
1	137957	1 percent	35000.00	553.90	583.04		583.34	0.000353	5.25	10666.46	876.90	0.20	14433.11
1	137834	1 percent	35000.00	560.05	582.90	574.57	583.29	0.000646	6.79	9395.70	829.00	0.26	14409.34
1	137820	1 percent	35000.00	564.76	582.92	574.87	583.24	0.000910	6.46	8943.03	834.54	0.27	14406.09
1	137811 Golf Cart Bridge		Bridge										
1	137802	1 percent	35000.00	556.09	582.80	573.72	583.15	0.000608	6.31	9469.04	846.62	0.23	14402.33
1	137783	1 percent	35000.00	553.60	582.79	573.89	583.13	0.000695	6.14	8980.96	827.86	0.24	14398.12
1	137635	1 percent	35000.00	553.30	582.49	574.64	583.02	0.001031	8.17	7631.99	691.77	0.29	14377.66
1	137537	1 percent	35000.00	553.20	582.50	572.61	582.89	0.000980	5.90	7869.29	600.62	0.22	14362.31
1	137305	1 percent	35000.00	552.80	582.17	572.87	582.62	0.001227	6.15	7355.44	619.45	0.24	14320.39
1	137212	1 percent	35000.00	552.60	582.02	568.14	582.51	0.000696	6.14	7376.55	550.05	0.23	14301.12
1	137158.5 Westgrove Avenue		Bridge										
1	137105	1 percent	35000.00	552.60	580.19	568.30	581.15	0.001704	8.64	6087.98	516.67	0.31	14289.16
1	137039	1 percent	35000.00	552.40	579.65	573.95	580.91	0.003077	10.44	5437.08	523.83	0.41	14280.36
1	136915	1 percent	35000.00	552.20	579.39	574.07	580.54	0.002848	10.41	5881.37	564.06	0.40	14266.56
1	136750	1 percent	35000.00	551.80	579.16	573.42	580.19	0.001672	10.10	6647.90	601.09	0.38	14247.44
1	136516	1 percent	35000.00	550.93	578.43		579.76	0.002462	11.72	5441.30	518.96	0.45	14223.11
1	136316	1 percent	35000.00	550.20	578.09		579.25	0.002055	11.14	6053.55	573.75	0.42	14195.44
1	135966	1 percent	35000.00	549.90	577.81		578.55	0.001388	9.24	7636.35	708.27	0.34	14142.01
1	135915	1 percent	35000.00	549.80	577.79	571.74	578.44	0.001245	8.55	7974.33	733.16	0.33	14133.89
1	135909 Golf Cart Bridge		Bridge										
1	135903	1 percent	35000.00	549.80	577.58		578.21	0.001239	8.34	8067.79	757.60	0.32	14131.65
1	135559	1 percent	35000.00	548.55	576.84		577.74	0.001316	9.54	7325.89	725.99	0.34	14084.46
1	135384	1 percent	35000.00	547.93	576.72		577.49	0.001063	8.76	7864.31	748.99	0.31	14053.23
1	135191	1 percent	35000.00	547.26	576.55		577.24	0.001593	9.25	7603.01	704.77	0.32	14023.21
1	134994	1 percent	35000.00	549.50	576.36		576.92	0.001342	8.00	8030.35	738.28	0.30	13988.63
1	134892	1 percent	35000.00	556.60	576.17		576.75	0.001916	8.58	7428.85	720.43	0.36	13970.40
1	134659	1 percent	35000.00	546.00	576.08	563.91	576.45	0.000600	5.63	9604.48	820.46	0.21	13922.10
1	134342 Small dam 600 fe		Inl Struct										
1	134222	1 percent	35000.00	545.05	575.71		576.36	0.000891	8.29	9196.73	1051.35	0.28	13839.49
1	134109	1 percent	35000.00	544.79	575.72	569.10	576.19	0.000855	7.91	10598.26	1158.62	0.27	13805.32
1	134064	1 percent	35000.00	544.70	575.69	568.15	576.14	0.000745	7.44	9514.38	1151.11	0.26	13789.36
1	133843	1 percent	35000.00	544.19	575.40	567.97	575.98	0.001009	7.87	7699.32	1116.50	0.27	13749.33
1	133758	1 percent	35000.00	544.00	575.43	566.79	575.83	0.000584	5.10	6869.26	912.30	0.24	13735.41
1	133691 Keller Springs R		Bridge										
1	133646	1 percent	35000.00	544.00	575.10	567.56	575.64	0.000624	6.89	6379.91	477.76	0.26	13718.75
1	133640	1 percent	35000.00	545.45	575.16	566.32	575.58	0.000428	6.25	7258.60	504.83	0.22	13717.54
1	133609 CMAQ bridge		Bridge										
1	133586	1 percent	35000.00	545.43	575.14	566.33	575.51	0.000392	5.98	7868.13	580.62	0.21	13708.45
1	133511	1 percent	35000.00	543.83	575.17		575.44	0.000381	4.72	9354.30	656.59	0.17	13699.93
1	133480	1 percent	35000.00	543.79	575.16		575.43	0.000382	4.71	9553.62	620.45	0.17	13694.62
1	133427	1 percent	35000.00	543.73	575.09		575.41	0.000477	5.18	9105.61	595.21	0.19	13687.03
1	133359	1 percent	35000.00	543.66	575.00		575.38	0.000564	5.72	8753.99	575.02	0.20	13678.46
1	133281	1 percent	35000.00	543.59	574.82		575.32	0.000988	6.83	7845.67	538.01	0.24	13669.29

HEC-RAS Plan: WRCCON FDLU River: WRC Reach: 1 Profile: 1 percent (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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	133189	1 percent	35000.00	543.49	574.55		575.22	0.001554	8.48	6946.06	510.95	0.29	13659.85
1	133104	1 percent	35000.00	543.40	574.47		575.12	0.001563	7.70	6703.00	494.31	0.30	13651.70
1	132934	1 percent	35000.00	543.21	573.84		574.81	0.002094	9.58	5980.22	473.97	0.35	13631.22
1	132758	1 percent	35000.00	543.03	573.62		574.43	0.001948	8.67	6155.40	451.14	0.32	13609.07
1	132612	1 percent	35000.00	542.88	573.38		574.18	0.001626	8.57	6341.57	455.93	0.31	13590.30
1	132388	1 percent	35000.00	542.65	572.60	566.34	573.70	0.002499	10.75	5740.30	447.86	0.38	13558.34
1	132236	1 percent	35000.00	542.48	572.44	564.98	573.31	0.001977	9.49	6336.76	472.55	0.34	13538.37
1	132186	1 percent	35000.00	542.42	572.39	564.94	573.20	0.001882	9.15	6457.23	473.02	0.33	13531.63
1	132095	1 percent	35000.00	542.34	572.21	564.74	573.03	0.001899	9.02	6672.63	569.56	0.33	13518.46
1	131896	1 percent	35000.00	542.12	571.95	564.26	572.65	0.001672	8.67	7404.02	788.69	0.32	13486.65
1	131800 St Louis RR over		Lat Struct										
1	131754	1 percent	35000.00	541.97	571.92	563.78	572.37	0.001199	7.23	8687.42	897.63	0.27	13456.78
1	131591	1 percent	35000.00	541.80	571.77	564.07	572.18	0.001126	6.77	9003.90	899.57	0.26	13423.10
1	131514	1 percent	35000.00	546.20	571.81	563.79	572.06	0.000783	5.96	10852.59	835.53	0.21	13404.50
1	131433	1 percent	35000.00	539.00	571.74	563.25	572.00	0.000644	5.78	11194.60	875.28	0.19	13380.63
1	131273	1 percent	35000.00	538.72	571.59	563.00	571.78	0.000520	5.15	12453.51	979.60	0.17	13275.48
1	131087	1 percent	35200.00	538.41	571.04	564.32	571.62	0.000977	7.63	7923.52	725.91	0.29	13235.36
1	130965	1 percent	35200.00	538.21	568.34	563.54	571.20	0.003293	14.51	3219.48	510.71	0.53	13220.12
1	130905	1 percent	35200.00	538.10	568.33	559.68	570.83	0.003102	12.68	2776.84	125.60	0.47	13215.31
1	130891.5 St. Louis Railro		Bridge										
1	130877	1 percent	35200.00	538.10	568.21	559.67	570.73	0.003160	12.75	2761.45	125.59	0.48	13213.53
1	130733	1 percent	35200.00	538.10	568.26	563.52	569.03	0.001242	9.10	6341.75	750.98	0.32	13194.43
1	130534	1 percent	35200.00	538.09	568.37		568.77	0.000747	6.50	8493.26	866.01	0.25	13167.37
1	130421	1 percent	35200.00	538.09	568.28		568.69	0.000827	6.89	8385.84	835.90	0.26	13148.03
1	130400	1 percent	35200.00	538.09	568.29	560.88	568.64	0.000674	6.01	8833.18	855.79	0.24	13143.89
1	130388 Golf Cart Bridge		Bridge										
1	130376	1 percent	35200.00	538.09	568.13		568.54	0.000790	6.90	8616.11	865.61	0.25	13139.20
1	130341	1 percent	35200.00	538.09	568.12		568.50	0.000773	7.07	8869.42	875.34	0.25	13133.21
1	130155	1 percent	35200.00	538.08	567.74		568.32	0.001000	8.17	7578.82	803.07	0.29	13098.65
1	129975	1 percent	35200.00	538.08	567.65		568.13	0.000858	7.11	7930.94	797.69	0.26	13067.66
1	129873	1 percent	35200.00	538.07	567.69		568.00	0.000640	6.31	9386.21	857.56	0.23	13045.61
1	129815	1 percent	35200.00	538.07	567.64		567.95	0.000729	6.56	9633.81	1026.45	0.24	13030.05
1	129736	1 percent	35200.00	538.07	567.60		567.89	0.000638	6.16	10217.77	1099.94	0.23	13010.09
1	129622	1 percent	35200.00	538.07	567.56		567.82	0.000596	6.12	10763.64	1182.55	0.22	12988.83
1	129486	1 percent	35200.00	538.07	567.52		567.76	0.000455	5.91	12080.77	1355.79	0.22	12962.39
1	129430	1 percent	35200.00	538.06	567.53	560.96	567.71	0.000357	5.17	13165.25	1532.59	0.20	12948.40
1	129414.5 Golf Cart Bridge		Bridge										
1	129399	1 percent	35200.00	538.06	567.44	561.10	567.63	0.000383	5.54	13403.51	1705.82	0.20	12938.26
1	129248	1 percent	37300.00	538.06	567.41	559.73	567.56	0.000292	4.71	15214.51	1577.76	0.18	12883.57
1	129127	1 percent	37300.00	538.04	567.16	557.00	567.46	0.000690	6.12	9780.37	1448.85	0.22	12813.08
1	128900	1 percent	37300.00	538.90	566.71	556.54	567.22	0.001041	7.32	7627.32	1185.72	0.28	12754.57
1	128888.5 Golf Cart Bridge		Bridge										
1	128877	1 percent	37300.00	538.90	566.54	556.09	567.11	0.001158	7.68	7275.88	914.65	0.30	12750.01
1	128871	1 percent	37300.00	538.05	566.53	557.96	567.10	0.001117	6.40	6661.62	706.35	0.29	12748.64
1	128817 Arapaho Road		Bridge										
1	128763	1 percent	37300.00	538.05	566.22	557.94	566.85	0.001251	6.67	6279.61	576.75	0.31	12733.54
1	128654	1 percent	37300.00	537.84	564.83	560.42	566.40	0.002264	11.33	4529.74	799.22	0.44	12720.86
1	128396	1 percent	37300.00	537.39	565.08	557.54	565.42	0.000882	5.99	8789.24	811.79	0.22	12670.63
1	128379 Golf Cart Bridge		Bridge										
1	128362	1 percent	37300.00	537.39	565.02	557.56	565.35	0.000871	5.95	8933.68	811.38	0.22	12663.38
1	128187	1 percent	37300.00	537.08	564.75	557.81	565.14	0.001082	6.16	8150.82	693.53	0.25	12621.32
1	128019	1 percent	37300.00	536.81	564.50	556.93	564.94	0.001206	6.83	7933.53	685.44	0.25	12590.75
1	127853	1 percent	37300.00	536.54	564.40	555.47	564.75	0.000792	5.95	8977.75	741.96	0.22	12557.80
1	127695	1 percent	37300.00	536.29	564.28	556.83	564.61	0.000862	5.99	9017.90	760.70	0.22	12525.13
1	127602	1 percent	37300.00	536.14	563.98	558.43	564.49	0.001449	7.40	7536.22	740.94	0.28	12507.28
1	127545	1 percent	37300.00	536.05	563.80	558.59	564.40	0.001782	7.94	6959.69	732.48	0.31	12500.27
1	127534.5 Golf Cart Bridge		Bridge										
1	127524	1 percent	37300.00	536.02	563.72	558.58	564.32	0.001828	8.03	6899.49	738.76	0.31	12497.17
1	127372	1 percent	37300.00	535.78	563.63	557.34	564.06	0.001284	6.85	7917.99	757.67	0.26	12478.30
1	127295	1 percent	37300.00	535.66	563.59	557.02	563.96	0.001067	6.44	8427.16	800.12	0.24	12464.95
1	127171	1 percent	37300.00	535.45	563.50	556.50	563.82	0.000929	5.89	8768.04	735.24	0.23	12441.19
1	127053	1 percent	37300.00	535.26	563.42	556.32	563.73	0.000922	5.65	8894.14	778.77	0.22	12421.91
1	126948	1 percent	37300.00	535.10	563.35	556.16	563.64	0.000858	5.45	9346.48	840.81	0.22	12402.05
1	126887	1 percent	37300.00	535.00	563.30	556.37	563.58	0.000890	5.46	9470.05	883.56	0.22	12389.78
1	126822	1 percent	37300.00	535.35	563.29	555.93	563.52	0.000658	5.26	10623.56	922.46	0.19	12376.37
1	126789 Small dam approx		Inl Struct										
1	126710	1 percent	37300.00	533.03	563.22		563.44	0.000556	5.09	11214.84	933.22	0.17	12349.49
1	126618	1 percent	37300.00	531.54	563.18		563.39	0.000531	4.70	11232.67	931.52	0.18	12329.18
1	126490	1 percent	37300.00	531.19	563.08		563.32	0.000566	5.06	10783.44	879.12	0.18	12296.92
1	126264	1 percent	37300.00	530.67	562.81		563.15	0.000781	5.97	9435.00	844.82	0.22	12243.09
1	125938	1 percent	37300.00	529.96	562.40	554.40	562.90	0.001012	6.99	7963.90	854.31	0.24	12190.50
1	125828	1 percent	37300.00	529.71	561.88	554.99	562.68	0.002167	8.48	5893.96	800.23	0.30	12163.65
1	125747	1 percent	37300.00	529.53	561.44	555.66	562.45	0.002430	9.35	5191.70	831.78	0.34	12151.58
1	125736.5 Beltline Road Go		Bridge										
1	125726	1 percent	37300.00	529.49	561.25	555.66	562.31	0.002554	9.54	5048.68	823.00	0.35	12148.17
1	125710	1 percent	37300.00	529.45	561.38	553.08	562.13	0.001440	8.57	6143.01	965.16	0.30	12146.18
1	125637 Beltline Road		Bridge										
1	125564	1 percent	37300.00	529.45	560.14	553.83	561.29	0.002412	10.73	5885.59	479.37	0.38	12126.95
1	125508	1 percent	37300.00	529.42	560.06	553.81	561.11	0.002161	9.71	6175.35	1328.48	0.36	12115.84
1	125450	1 percent	37300.00	529.40	560.02	553.56	560.98	0.001656	9.53	6902.74	1397.25	0.34	12102.35
1	125324	1 percent	37600.00	529.36	559.71	553.82	560.74	0.001808	9.88	6857.08	918.39	0.36	12072.50
1	125225	1 percent	37600.00	529.33	559.61	553.82	560.54	0.001777	9.49	7135.70	910.03	0.35	12055.26
1	125090	1 percent	37600.00	529.29	559.35	553.82	560.33	0.001616	9.82	7395.08	856.09	0.37	12034.40
1	124969	1 percent	37600.00	529.26	559.27	552.74	560.12	0.001268	8.70	7707.81	837.06	0.33	12012.63
1	124854	1 percent	37600.00	529.22	559.11	553.06	559.97	0.001305	9.47	8175.53	797.76	0.34	11990.78
1	124759	1 percent	37600.00	529.19	558.96	552.83	559.83	0.001384	9.65	8130.42	722.99	0.35	11971.12
1	124594	1 percent	37600.00	529.14	558.64	553.00	559.59	0.001547	10.16	7639.20	701.32	0.37	11943.45
1	124444	1 percent	37600.00	529.10	558.42	552.33	559.38	0.001416	9.81	7506.11	674.01	0.35	11919.75
1	124341	1 percent	37600.00	529.06	558.20	552.76	559.25	0.001624	10.39	7187.48	657.79	0.37	11907.51
1	124287	1 percent	37600.00	529.04	558.16	552.80	559.13	0.001706	10.03	7234.61	832.60	0.37	11897.30
1	124163	1 percent	37600.00	529.01	557.97	552.24	558.97	0.001572	10.05	7171.88	729.40	0.36	11884.76
1	124062	1 percent	37600.00	528.98	557.82	552.36	558.82	0.001678	10.04	7370.71	806.91	0.38	11869.77
1	123975	1 percent	37600.00	528.95	557.64	552.28	558.66	0.002075	9.92	6781.89	741.41	0.38	11856.22

HEC-RAS Plan: WRCCON FDLU River: WRC Reach: 1 Profile: 1 percent (Continued)

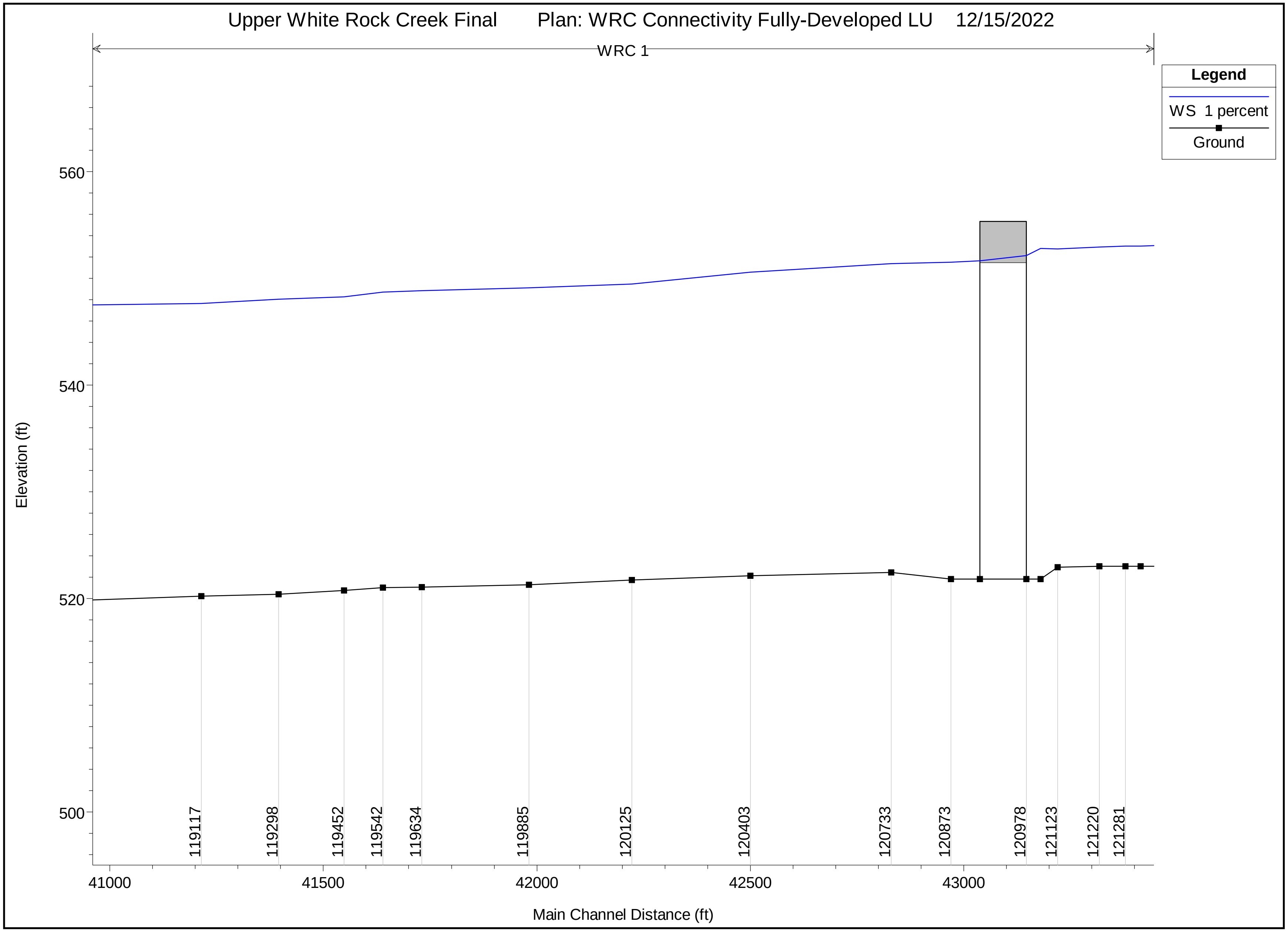
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	123838	1 percent	37600.00	528.91	557.43	547.99	558.38	0.001728	9.57	6889.50	764.07	0.35	11833.50
1	123735	1 percent	37600.00	528.88	557.02	551.12	558.15	0.002038	10.13	6617.05	777.30	0.38	11813.41
1	123652	1 percent	37600.00	528.48	557.01	550.64	557.93	0.001755	9.15	7197.89	781.36	0.35	11799.61
1	123549	1 percent	37600.00	527.81	556.99	550.09	557.73	0.001394	8.79	8566.01	859.89	0.31	11782.98
1	123446	1 percent	37600.00	527.26	557.05		557.54	0.000872	7.06	10110.93	885.96	0.25	11759.53
1	123312	1 percent	37600.00	526.84	556.86		557.42	0.001028	8.39	10489.99	975.19	0.30	11736.65
1	123177	1 percent	37600.00	526.58	556.58		557.29	0.001074	8.29	8955.52	788.85	0.31	11712.83
1	123062	1 percent	37600.00	526.28	556.49		557.19	0.001112	8.55	9379.25	863.02	0.31	11697.61
1	122959	1 percent	37600.00	526.13	556.47		557.07	0.001046	7.92	9339.87	837.41	0.30	11683.10
1	122783	1 percent	37600.00	525.70	556.54		556.82	0.000984	5.98	11297.52	880.99	0.22	11651.13
1	122505	1 percent	37600.00	525.20	555.76		556.47	0.001912	8.47	7628.90	680.67	0.31	11603.70
1	122333	1 percent	37600.00	524.80	555.36		556.15	0.002174	9.42	7622.62	711.50	0.33	11578.27
1	122127	1 percent	37600.00	524.40	554.93		555.68	0.002141	8.73	7365.66	673.48	0.32	11541.86
1	121936	1 percent	37600.00	524.00	554.32		555.25	0.002887	9.50	6514.60	632.77	0.37	11517.44
1	121815	1 percent	37600.00	525.70	553.98		554.91	0.002659	9.97	6860.43	663.77	0.36	11498.17
1	121764	1 percent	37600.00	524.20	553.91	547.64	554.75	0.002350	9.36	6749.16	545.12	0.34	11489.50
1	121565	1 percent	37600.00	523.69	553.50	546.43	554.32	0.002009	8.83	6911.12	557.78	0.32	11459.36
1	121419	1 percent	37600.00	523.00	553.17	546.52	554.01	0.002213	9.10	6837.17	579.58	0.33	11436.89
1	121317	1 percent	37600.00	523.00	553.04	545.91	553.75	0.002227	9.05	7103.38	539.48	0.32	11421.00
1	121281	1 percent	37600.00	523.00	553.03		553.64	0.001961	8.41	7505.36	550.92	0.30	11414.41
1	121220	1 percent	37600.00	522.99	552.94		553.52	0.001755	7.94	7807.26	588.93	0.29	11404.06
1	121123	1 percent	37600.00	522.93	552.76	543.89	553.36	0.001703	7.47	7410.52	652.92	0.29	11387.09
1	121083	1 percent	37600.00	521.83	552.80	539.29	553.24	0.000519	5.31	7206.75	631.46	0.21	11377.53
1	120978 Preston Road		Bridge										
1	120873	1 percent	37600.00	521.83	551.51	543.62	552.36	0.001290	7.82	5779.99	648.30	0.33	11351.09
1	120733	1 percent	37600.00	522.44	551.36	544.99	552.09	0.001677	8.13	6669.47	732.89	0.31	11329.11
1	120403	1 percent	37600.00	522.12	550.55		551.45	0.002207	9.57	7226.25	807.98	0.36	11276.19
1	120125	1 percent	37600.00	521.74	549.45		550.68	0.003301	11.09	6233.70	776.41	0.42	11233.82
1	119885	1 percent	37600.00	521.29	549.08		549.97	0.002110	9.39	6849.34	806.26	0.35	11199.80
1	119634	1 percent	37600.00	521.03	548.83		549.37	0.001995	7.39	7530.44	932.72	0.30	11160.38
1	119542	1 percent	37600.00	521.00	548.69	543.85	549.19	0.001821	7.40	7898.34	969.12	0.29	11144.47
1	119452	1 percent	37600.00	520.75	548.26	543.98	549.02	0.001510	9.14	7732.43	1021.69	0.35	11129.04
1	119298	1 percent	39400.00	520.39	548.02		548.79	0.001447	9.66	8632.77	934.38	0.35	11098.24
1	119117	1 percent	39400.00	520.19	547.62		548.45	0.001837	10.11	7954.84	902.25	0.38	11057.19
1	118748	1 percent	39400.00	519.67	547.46		547.87	0.000952	7.64	9942.18	1054.93	0.28	10985.02
1	118565	1 percent	39400.00	519.32	547.37	540.29	547.66	0.000643	6.34	10985.39	1293.45	0.23	10928.52
1	118341	1 percent	39400.00	519.30	547.28	538.50	547.52	0.000512	5.71	11702.07	1363.25	0.21	10871.58
1	118150	1 percent	39400.00	518.87	546.97	538.99	547.38	0.000795	6.89	9198.78	1510.52	0.26	10818.38
1	117845	1 percent	39400.00	518.74	546.57	539.56	547.10	0.001042	7.69	9054.38	1821.78	0.30	10748.64
1	117695	1 percent	40000.00	518.44	546.60	539.08	546.89	0.000681	6.45	12282.22	1766.48	0.24	10697.61
1	117585	1 percent	40000.00	518.18	546.58	538.37	546.82	0.000577	5.81	13638.71	1642.38	0.22	10659.69
1	117280	1 percent	40000.00	518.03	546.23	539.70	546.60	0.000844	7.09	10924.74	1798.01	0.26	10551.54
1	117042	1 percent	40000.00	516.00	545.58	539.09	546.20	0.001622	7.84	7150.99	2428.90	0.35	10465.13
1	116955 Spring Valley Ro		Bridge										
1	116868	1 percent	40000.00	515.23	545.18	536.94	545.83	0.001042	8.17	9069.53	2560.63	0.30	10431.37
1	116670	1 percent	40000.00	515.40	545.16	536.75	545.51	0.001325	6.20	9571.76	2628.77	0.22	10371.07
1	116528	1 percent	40000.00	514.40	544.37		545.27	0.001282	9.11	8794.19	2512.06	0.34	10310.27
1	116402	1 percent	40000.00	515.10	543.58		545.00	0.002102	11.90	6800.51	2155.45	0.42	10267.94
1	116310	1 percent	40100.00	514.90	543.01		544.77	0.002558	12.61	5665.90	2030.67	0.47	10246.08
1	116228	1 percent	40100.00	514.40	542.89		544.55	0.002292	12.12	5701.63	1968.91	0.45	10225.38
1	116092	1 percent	40100.00	513.90	542.73		544.20	0.002190	11.16	5797.36	2020.37	0.43	10190.38
1	115961	1 percent	40100.00	513.50	542.64		543.84	0.002523	11.18	6522.29	2104.86	0.40	10156.87
1	115817	1 percent	40100.00	513.20	541.66		543.34	0.004101	12.51	5551.97	1958.47	0.51	10115.34
1	115703	1 percent	40100.00	513.10	541.91		542.77	0.002037	9.26	7516.44	1916.54	0.37	10083.35
1	115472	1 percent	40100.00	513.00	541.54		542.28	0.002405	9.63	7388.53	1799.56	0.38	10031.23
1	115232	1 percent	40100.00	512.98	540.57		541.65	0.002821	10.46	6839.23	1594.75	0.42	9979.44
1	114931	1 percent	40100.00	512.98	539.73		540.85	0.002447	11.23	7485.29	1419.06	0.44	9916.86
1	114790	1 percent	40100.00	512.51	539.52		540.45	0.002208	10.84	8158.44	1297.56	0.41	9887.44
1	114597	1 percent	40100.00	511.74	539.28	535.13	540.05	0.001482	9.48	8642.38	1489.82	0.36	9844.72
1	114465	1 percent	40100.00	511.61	539.09	535.04	539.84	0.001726	9.13	8538.83	1506.50	0.37	9816.06
1	114349	1 percent	40100.00	511.34	538.79	535.13	539.64	0.001955	9.85	8761.11	1716.87	0.39	9795.97
1	114290	1 percent	40100.00	511.21	538.75	534.83	539.50	0.001840	9.25	9091.82	1793.25	0.38	9782.15
1	114202	1 percent	40100.00	511.02	538.67	534.07	539.34	0.001391	8.89	9414.11	1632.97	0.34	9760.25
1	114094	1 percent	40100.00	510.85	538.52	533.84	539.17	0.001455	9.51	9404.75	1743.63	0.34	9730.14
1	113907	1 percent	40100.00	510.61	538.26	532.60	538.88	0.001532	8.63	9005.84	1640.51	0.35	9682.25
1	113817	1 percent	40100.00	510.60	537.90	530.89	538.70	0.001737	9.55	8485.56	1625.54	0.38	9655.29
1	113575	1 percent	40100.00	510.11	537.87	529.60	538.36	0.001002	7.32	9602.81	1746.94	0.29	9612.58
1	113391	1 percent	40100.00	509.94	537.80	527.58	538.20	0.000759	6.45	9781.47	1710.75	0.25	9571.34
1	113245	1 percent	40100.00	509.78	537.67	526.67	538.10	0.000764	6.52	8597.85	1696.86	0.25	9540.04
1	112923	1 percent	40000.00	508.57	537.59	525.31	537.94	0.000532	5.71	9195.44	1340.99	0.21	9488.24
1	112732	1 percent	40000.00	508.34	537.37	525.65	537.82	0.000856	6.54	8430.73	1285.88	0.24	9450.03
1	112557	1 percent	40000.00	508.07	537.28	524.73	537.64	0.000740	5.57	9120.05	1414.03	0.20	9400.14
1	112500	1 percent	40000.00	507.10	537.30	523.03	537.54	0.000442	4.32	10875.47	1413.91	0.16	9365.33
1	112383	1 percent	40000.00	508.93	537.20	523.02	537.47	0.000514	4.77	10173.96	1640.36	0.17	9325.92
1	112281	1 percent	39900.00	509.42	537.06	523.93	537.39	0.000563	4.99	9019.56	1690.29	0.18	9281.72
1	112200	1 percent	39900.00	508.33	536.58	522.14	537.24	0.001297	6.71	6311.03	1582.26	0.24	9267.30
1	112151 ALPHA ROAD BRIDG		Bridge										
1	112101	1 percent	39900.00	509.14	535.26	521.41	536.02	0.000666	7.01	5719.52	1504.95	0.27	9253.22
1	112062	1 percent	39900.00	509.38	535.16	522.56	535.98	0.000797	7.30	5714.43	1561.66	0.29	9245.66
1	111962	1 percent	39900.00	507.32	534.95	526.27	535.88	0.000972	8.90	6570.04	1646.07	0.32	9227.85
1	111868	1 percent	39900.00	506.55	534.55	529.80	535.72	0.001886	10.62	5903.33	1494.84	0.42	9203.06
1	111774	1 percent	39900.00	505.00	534.77	528.51	535.41	0.001385	7.78	7348.95	1543.08	0.32	9181.26
1	111773	1 percent	39900.00	507.00	534.75	528.71	535.41	0.001472	7.89	7243.39	1542.69	0.33	9181.02
1	111772	1 percent	39900.00	505.00	534.76	528.51	535.40	0.001387	7.79	7344.12	1542.86	0.32	9180.79
1	111686	1 percent	39900.00	505.00	534.38	528.74	535.26	0.001387	10.09	7631.69	1402.64	0.36	9160.70
1	111415	1 percent	40100.00	504.90	534.44	526.90	534.87	0.000726	7.80	11124.45	1664.53	0.28	9095.78
1	111200	1 percent	40100.00	504.40	533.46	527.79	534.58	0.001552	10.53	7091.00	1105.61	0.40	9045.28
1	111032	1 percent	40100.00	504.40	533.54	526.82	534.22	0.001475	8.95	8105.69	1299.86	0.34	9017.55
1	110802	1 percent	40100.00	503.30	533.13	527.99	533.89	0.001832	9.72	8989.51	1486.79	0.34	8977.91
1	110672	1 percent	40100.00	503.30	532.55	524.86	533.58	0.002092	9.40	7841.44	1434.60	0.35	8942.07
1	110399	1 percent	40100.00	503.00	532.25	523.03	533.01	0.001520	8.01	8584.64	1246.56	0.31	8886.13
1	110207	1 percent	40100.00	502.60	531.75	526.58	532.70	0.001760	9.29	8081.34	1162.99	0.35	8854.54
1	109897	1 percent	40100.00	502.50	531.25	525.91	532.11	0.001849	8.73	8020.07	1271.29	0.36	8792.02

HEC-RAS Plan: WRCCON FDLU River: WRC Reach: 1 Profile: 1 percent (Continued)

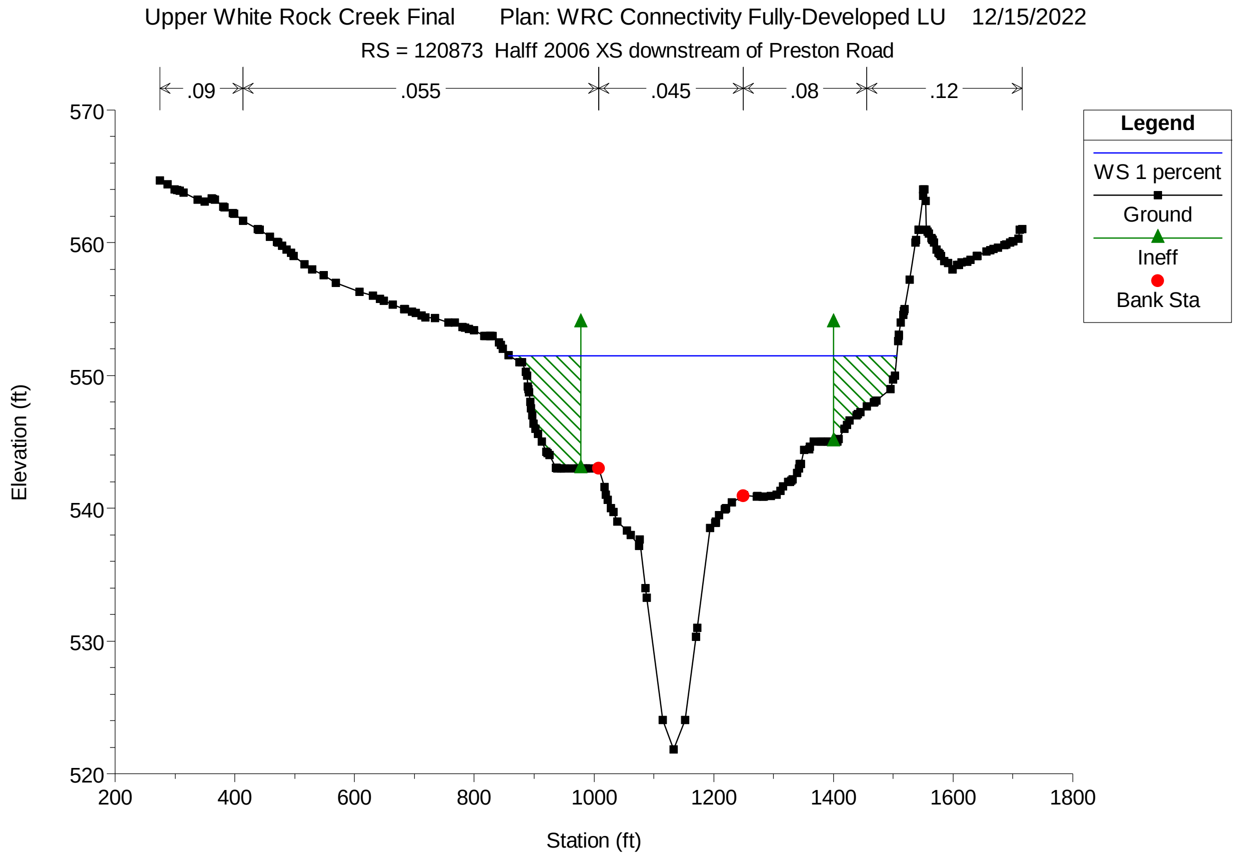
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	109585	1 percent	40100.00	501.96	530.19	523.79	531.44	0.002319	10.16	6430.31	1225.52	0.39	8735.43
1	109319	1 percent	40100.00	501.60	529.75	522.56	530.91	0.002123	10.11	6740.74	1220.97	0.36	8701.02
1	109262	1 percent	40200.00	501.20	529.93	520.22	530.52	0.001525	6.41	6984.95	1275.44	0.27	8689.08
1	109171 HILCREST AVENUE		Bridge										
1	109094	1 percent	40200.00	501.20	529.01	519.89	529.66	0.003723	6.49	6214.27	1299.16	0.29	8665.13
1	109052	1 percent	40200.00	501.10	528.55	520.98	529.48	0.001485	8.64	6133.76	1232.19	0.35	8656.45
1	108938	1 percent	40200.00	501.00	527.50	524.78	529.18	0.003192	12.97	6163.00	1002.66	0.51	8636.93
1	108729	1 percent	40200.00	500.90	527.35	524.27	528.44	0.002120	10.24	6697.07	1061.32	0.42	8600.90
1	108483	1 percent	40200.00	501.88	527.18	522.88	527.91	0.001525	8.72	8375.55	1113.72	0.36	8558.13
1	108297	1 percent	40200.00	500.62	526.77		527.59	0.002017	10.17	8661.93	1104.57	0.40	8521.35
1	108000	1 percent	40200.00	500.20	526.40		527.05	0.001572	8.54	8478.19	955.25	0.35	8468.07
1	107834	1 percent	40200.00	500.02	526.20		526.71	0.001262	8.83	9408.70	1132.09	0.35	8425.07
1	107631	1 percent	40200.00	498.93	526.02	517.00	526.43	0.001042	6.22	9906.09	1082.16	0.23	8380.31
1	107471	1 percent	40200.00	498.93	525.79	516.52	526.32	0.000443	6.78	9594.44	909.85	0.26	8344.94
1	107406	1 percent	40300.00	498.50	525.82	517.62	526.23	0.000375	6.41	9754.48	1329.44	0.24	8325.23
1	107351 635 W.B. SERVICE		Bridge										
1	107330	1 percent	40300.00	497.70	525.76	516.46	526.02	0.000195	4.68	9953.03	1418.42	0.17	8302.71
1	107319	1 percent	40300.00	497.84	525.54	516.56	525.97	0.000303	5.97	7997.24	1227.36	0.21	8298.40
1	107175 635 MAIN LANES		Bridge										
1	107040	1 percent	40300.00	497.76	525.21	516.52	525.60	0.000283	5.71	8196.80	1771.80	0.21	8241.62
1	107006	1 percent	40300.00	495.90	525.25	516.68	525.54	0.000218	4.97	9803.15	2080.70	0.18	8226.44
1	106979 635 E.B. SERVICE		Bridge										
1	106951	1 percent	40300.00	495.90	525.03	517.01	525.45	0.000631	6.56	10168.15	1594.60	0.24	8207.90
1	106887	1 percent	40300.00	497.14	524.63	519.03	525.31	0.001423	8.42	7824.35	1239.94	0.32	8187.76
1	106558	1 percent	40300.00	496.75	523.94		524.83	0.001839	9.15	6288.85	603.84	0.36	8139.47
1	106373	1 percent	40300.00	496.70	523.47		524.45	0.002282	9.62	5899.79	610.71	0.39	8114.69
1	106183	1 percent	40300.00	496.60	521.26		523.72	0.007060	15.68	3928.51	521.99	0.63	8098.11
1	106120	1 percent	40300.00	496.60	520.34		523.20	0.007643	16.38	3774.46	530.81	0.67	8092.25
1	106082	1 percent	40300.00	496.60	520.32		522.82	0.006747	15.57	4071.15	558.01	0.64	8088.85
1	105950	1 percent	40300.00	496.60	520.11		521.76	0.004393	12.32	5021.08	620.57	0.53	8072.98
1	105929	1 percent	40300.00	496.60	519.91		521.66	0.004695	12.64	4895.90	618.19	0.55	8070.61
1	105850	1 percent	40300.00	496.60	519.36		521.27	0.005593	14.05	4974.91	681.32	0.59	8062.82
1	105743	1 percent	40300.00	496.60	519.62		520.57	0.002779	9.72	6626.46	819.55	0.40	8048.63
1	105583	1 percent	40300.00	496.40	519.23		520.22	0.003769	10.65	6149.09	862.77	0.44	8035.15
1	105366	1 percent	40300.00	495.81	518.85		519.74	0.001720	7.01	6387.91	847.71	0.30	8010.36
1	105060	1 percent	40300.00	495.20	518.61	514.70	519.41	0.001551	8.29	5783.38	812.77	0.34	7981.10
1	104813	1 percent	40300.00	495.17	518.48	513.28	519.13	0.000963	6.72	6333.36	723.98	0.27	7953.60
1	104740	1 percent	40300.00	494.92	518.35	513.41	519.05	0.001043	6.92	6274.87	710.79	0.28	7943.48
1	104637	1 percent	40300.00	494.57	518.34		518.95	0.000529	5.23	7219.30	769.53	0.20	7927.40
1	104478	1 percent	40300.00	493.77	518.19		518.85	0.000650	5.24	7125.87	746.15	0.22	7900.56
1	104247	1 percent	40300.00	491.87	518.05		518.73	0.000656	5.69	7578.86	778.94	0.23	7870.58
1	104092	1 percent	40300.00	491.50	517.16		518.48	0.002739	11.43	6091.11	770.45	0.46	7846.17
1	103855	1 percent	40300.00	493.10	516.71	514.16	517.86	0.002444	10.58	7458.61	1114.44	0.45	7813.55
1	103542	1 percent	40300.00	492.60	514.34		516.77	0.005676	14.56	4391.90	720.07	0.65	7776.38
1	103532	1 percent	40300.00	492.55	513.76	513.76	516.67	0.006894	15.68	4017.35	702.47	0.72	7775.41
1	103027	1 percent	40300.00	490.00	514.21		514.49	0.000705	4.51	10092.88	842.00	0.19	7700.91
1	102865	1 percent	40300.00	490.00	514.02		514.41	0.000402	6.03	9356.28	935.77	0.25	7673.17
1	102431	1 percent	40300.00	490.00	514.01		514.32	0.000156	3.52	9154.91	707.07	0.14	7611.40
1	101986	1 percent	40300.00	490.00	513.63		514.22	0.000401	5.18	7350.86	668.63	0.22	7553.35
1	101549	1 percent	40300.00	490.00	513.31		513.98	0.000660	6.29	6117.15	573.05	0.27	7484.37
1	101082	1 percent	40900.00	487.57	512.48		513.57	0.000834	8.96	7262.74	810.01	0.35	7405.12
1	100790	1 percent	40900.00	487.50	511.95	503.62	513.38	0.000370	10.03	5774.84	1339.69	0.40	7344.95
1	100700	1 percent	40900.00	487.30	510.49	504.15	513.20	0.000688	13.53	3894.70	1048.91	0.54	7328.65
1	100595	1 percent	40900.00	487.11	510.13	504.25	513.10	0.000766	14.00	3420.68	693.39	0.57	7316.37
1	100443	1 percent	40900.00	486.91	509.94	503.89	512.97	0.000767	14.10	3289.62	489.38	0.57	7303.43
1	100232	1 percent	40900.00	486.55	509.89	503.47	512.77	0.000714	13.79	3413.73	363.62	0.55	7285.61
1	100058	1 percent	40900.00	485.99	510.39	500.93	512.09	0.000385	10.59	4214.80	558.10	0.41	7267.76
1	99992	1 percent	40900.00	485.90	509.83	501.63	511.94	0.000480	11.73	3571.87	228.43	0.46	7260.64
1	99918 FOREST LANE		Bridge										
1	99872	1 percent	40900.00	485.90	508.92	501.63	511.31	0.000571	12.41	3392.25	196.69	0.50	7251.78
1	99691	1 percent	40900.00	484.71	507.57	501.42	510.90	0.000775	14.70	2984.49	760.53	0.58	7235.71
1	99354	1 percent	40900.00	483.75	507.42	500.74	510.55	0.000707	14.27	3182.56	1009.12	0.55	7199.11
1	99056	1 percent	40900.00	483.27	507.27	500.36	510.32	0.000683	14.07	3215.12	1082.02	0.54	7167.55
1	98744	1 percent	40900.00	481.90	507.36	499.20	510.01	0.000560	13.12	3527.01	1168.85	0.49	7131.75
1	98460	1 percent	40900.00	481.30	507.38	498.46	509.78	0.000499	12.53	3770.68	1116.55	0.47	7101.28
1	98179	1 percent	40900.00	481.27	507.11	498.57	509.63	0.000529	12.83	3754.97	989.33	0.48	7071.13
1	97918	1 percent	40900.00	481.17	507.64	496.21	509.25	0.000319	10.26	4532.79	366.93	0.38	7040.60
1	97694	1 percent	40900.00	481.06	507.50	496.26	509.17	0.000328	10.45	4375.36	306.58	0.38	7017.42
1	97518	1 percent	40900.00	480.88	507.61	495.60	509.05	0.000280	9.76	5128.13	572.88	0.36	6998.19
1	97476	1 percent	40700.00	480.80	507.71	495.98	508.93	0.000278	9.00	5043.45	1614.33	0.34	6989.11
1	97457 75N - SB FRONTAG		Bridge										
1	97425	1 percent	40700.00	479.99	507.51	495.17	508.73	0.000277	8.91	4892.71	1447.43	0.34	6981.15
1	97416	1 percent	40700.00	479.85	507.60	495.03	508.63	0.000242	8.39	5543.34	1593.63	0.32	6979.37
1	97407	1 percent	40700.00	479.70	507.67	494.57	508.56	0.000194	7.88	6018.63	1271.42	0.29	6977.39
1	97306 HIGHWAY 75N MAIN		Bridge										
1	97206	1 percent	40700.00	478.15	507.72	493.03	508.29	0.000122	6.55	8293.58	1316.90	0.24	6942.09
1	97203	1 percent	40700.00	478.13	507.33	493.87	508.19	0.000213	7.88	6707.72	1354.16	0.30	6940.52
1	97200	1 percent	40700.00	478.10	507.04	493.85	508.13	0.000258	8.60	5786.77	1193.09	0.33	6939.70
1	97180 75N - NB FRONTAG		Bridge										
1	97168	1 percent	40700.00	478.10	505.79	493.85	507.11	0.000331	9.34	5121.92	948.20	0.37	6935.23
1	97115	1 percent	40700.00	479.44	505.43	494.66	507.00	0.001078	10.12	4408.61	441.22	0.39	6929.65
1	96886	1 percent	40700.00	478.30	505.24	493.18	506.75	0.000940	9.91	4315.64	302.21	0.37	6907.14
1	96697	1 percent	40700.00	477.70	505.51	491.74	506.44	0.000569	7.77	5378.72	307.07	0.29	6886.12
1	96438	1 percent	40700.00	476.60	505.57		506.22	0.000490	6.49	6350.13	312.39	0.24	6851.23
1	96311	1 percent	40700.00	476.10	505.50		506.14	0.000722	6.45	6508.86	411.72	0.26	6832.37
1	95966	1 percent	53400.00	474.46	504.46	493.91	505.74	0.001329	9.15	6208.60	656.41	0.36	6777.47
1	95670	1 percent	53400.00	473.34	503.67	495.14	505.24	0.001915	10.31	5809.91	483.47	0.41	6732.52
1	95423	1 percent	53400.00	472.10	503.48	494.42	504.79	0.001247	9.58	6369.87	467.01	0.37	6698.94
1	95356	1 percent	53400.00	474.35	503.61	495.04	504.52	0.000904	8.21	7448.42	637.77	0.32	6687.60
1	95303 DART RR		Bridge										
1	95183	1 percent	53400.00	472.67	502.49	493.19	503.89	0.001245	9.82	6596.88	602.98	0.38	6662.20
1	95015	1 percent	53400.00	470.80	502.04		503.64	0.001097	10.62	6674.57	520.61	0.40	6639.40
1	94735	1 percent	53400.00	470.70	501.90		503.16	0.001852	9.86	7908.22	658.01	0.38	6595.70

HEC-RAS Plan: WRCCON FDLU River: WRC Reach: 1 Profile: 1 percent (Continued)

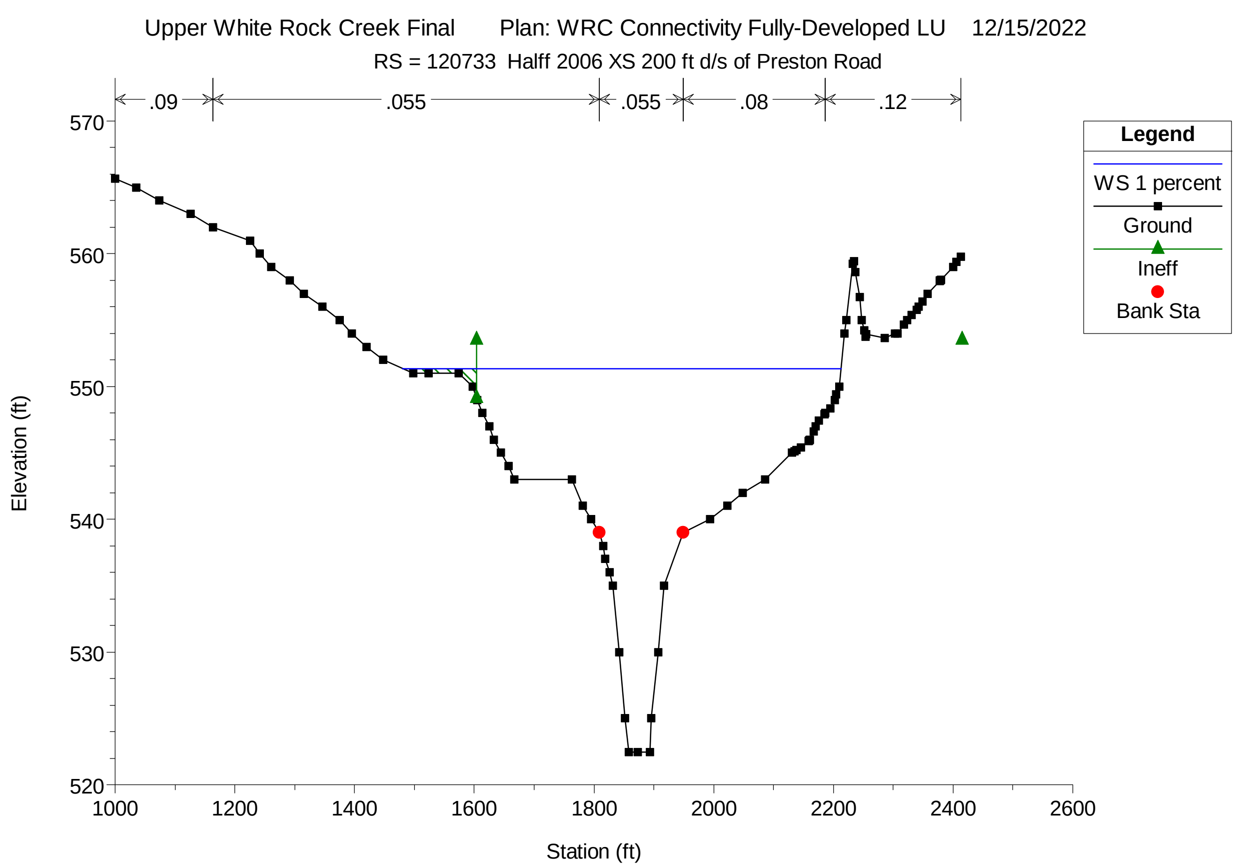
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	94517	1 percent	53400.00	470.67	501.83		502.79	0.000926	8.49	9118.03	782.64	0.36	6553.29
1	94274	1 percent	53400.00	470.60	501.67		502.59	0.000737	8.61	10294.57	905.14	0.33	6504.21
1	94191	1 percent	55200.00	470.00	501.62	492.60	502.52	0.000727	8.47	10757.98	986.44	0.33	6491.57
1	94130 ROYAL LN.		Bridge										
1	94063	1 percent	55200.00	470.00	501.51		502.22	0.001388	8.94	10801.70	1147.03	0.38	6461.11
1	93725	1 percent	55200.00	470.10	499.97	497.83	501.15	0.003388	11.76	8706.12	1152.29	0.47	6352.69
1	93379	1 percent	55300.00	469.80	498.73		500.12	0.003105	12.97	8824.77	1245.97	0.55	6291.57
1	93068	1 percent	55300.00	469.60	498.41	495.81	499.34	0.001988	11.35	10985.95	1417.78	0.45	6236.53
1	92800	1 percent	55300.00	469.10	497.60	496.13	498.81	0.002848	13.06	9978.39	1555.03	0.52	6191.61
1	92451	1 percent	55300.00	468.90	496.83	495.03	497.67	0.002794	11.60	11000.87	1728.76	0.51	6104.60
1	92135	1 percent	55300.00	468.50	496.28	494.20	496.96	0.001928	10.09	12514.31	1861.11	0.43	6028.50
1	91868	1 percent	55300.00	468.40	496.03	493.53	496.55	0.001556	9.39	13975.64	2062.78	0.39	5970.19
1	91514	1 percent	55300.00	467.80	495.53	493.03	496.02	0.001573	9.51	14141.87	2133.61	0.39	5866.08
1	91485 ROYAL OAKS GOLF		Bridge										
1	91455	1 percent	55300.00	467.80	495.13	492.65	495.69	0.001550	9.10	13740.26	2093.39	0.39	5846.99
1	91254	1 percent	55300.00	467.70	494.90	491.10	495.21	0.001153	7.10	15954.43	2212.55	0.33	5752.04
1	90805	1 percent	55500.00	467.20	494.50	490.84	494.82	0.001121	7.54	15999.15	2114.56	0.33	5630.66
1	90782 ROYAL OAKS GOLF		Bridge										
1	90759	1 percent	55500.00	467.20	494.34		494.66	0.001103	7.55	16111.13	2113.95	0.33	5613.63
1	90454	1 percent	55500.00	467.20	494.07		494.38	0.001304	7.09	15140.09	1920.65	0.35	5533.67
1	90118	1 percent	55500.00	469.07	493.63	490.07	494.05	0.000946	8.73	16380.95	2030.67	0.35	5433.33
1	90098 Royal Oaks Count		Inl Struct										
1	90078	1 percent	55500.00	469.28	493.63		493.95	0.000829	7.40	17268.32	2057.05	0.32	5417.14
1	89771	1 percent	55500.00	466.85	492.93	489.84	493.51	0.001713	9.17	12442.39	2036.97	0.40	5298.52
1	89757 ROYAL OAKS GOLF		Bridge										
1	89743	1 percent	55500.00	466.85	492.80		493.29	0.002200	8.17	11693.27	2010.32	0.37	5288.10
1	89650	1 percent	55400.00	468.50	492.59	488.93	493.15	0.001147	6.41	9454.45	2574.23	0.27	5257.71
1	89549 GREENVILLE AVENU		Bridge										
1	89447	1 percent	55400.00	468.30	492.05	482.28	492.37	0.000322	3.21	12520.92	2518.10	0.14	5206.10
1	88702	1 percent	55400.00	466.00	491.00	489.63	492.02	0.003837	11.69	8733.61	2862.88	0.48	5152.52
1	88309	1 percent	55600.00	465.30	491.04	486.07	491.20	0.000869	4.31	18220.59	2875.90	0.22	5002.38
1	87824	1 percent	55600.00	464.30	490.79	485.79	490.93	0.000654	4.69	20615.10	2528.94	0.19	4840.45
1	87375	1 percent	55600.00	463.80	490.58	485.47	490.70	0.000614	4.69	23390.99	3143.19	0.19	4652.39
1	87013	1 percent	55600.00	463.80	490.40	485.02	490.50	0.000610	4.43	26141.09	3280.05	0.19	4456.27
1	86695	1 percent	55600.00	463.30	490.21		490.28	0.000439	3.91	32395.33	3874.10	0.17	4155.79
1	86219	1 percent	55600.00	461.50	489.90	483.59	490.01	0.000513	4.49	25841.74	3257.91	0.18	3754.31
1	85283	1 percent	55600.00	461.72	489.38	483.27	489.64	0.001057	6.04	16769.67	3006.70	0.24	3467.32
1	85173 WALNUT HILL LANE		Bridge										
1	85062	1 percent	55600.00	461.72	489.10	482.06	489.30	0.000850	5.45	18122.03	2770.46	0.21	3372.14
1	84490	1 percent	55600.00	460.50	488.87	482.51	489.10	0.000771	5.92	19539.05	2719.73	0.23	3258.98
1	84200	1 percent	55600.00	460.40	488.84	481.36	488.97	0.000661	4.90	23502.71	2592.54	0.19	3188.18
1	83920	1 percent	55600.00	460.50	488.57	481.39	488.77	0.000816	5.44	18184.85	1879.95	0.21	3052.33
1	83634	1 percent	55600.00	460.40	488.12	482.84	488.45	0.001928	6.41	13765.11	1738.60	0.28	2959.44
1	83337	1 percent	55600.00	460.20	487.82	481.84	488.18	0.001483	6.32	13915.41	1716.70	0.28	2919.40
1	82978	1 percent	55600.00	460.13	487.73	481.56	487.88	0.000500	4.06	19844.87	2120.39	0.17	2811.02
1	82783	1 percent	55600.00	460.15	487.70	480.08	487.83	0.000382	3.60	20485.79	2093.75	0.15	2763.26
1	82695	1 percent	53900.00	459.70	487.69	480.62	487.82	0.000323	4.07	21284.19	2089.48	0.15	2743.02
1	82610 FAIR OAKS AVE		Bridge										
1	82525	1 percent	53900.00	459.40	484.24	480.94	484.58	0.001381	6.40	13275.04	1855.94	0.28	2705.63
1	82440	1 percent	53900.00	459.60	484.17	480.87	484.46	0.001589	5.31	13379.37	1767.97	0.25	2686.26
1	82276	1 percent	53900.00	459.50	483.80	478.99	484.22	0.001436	6.47	12657.88	1804.43	0.29	2641.84
1	82089	1 percent	53900.00	460.00	483.51	476.75	483.95	0.001482	6.37	12968.38	1968.55	0.28	2588.62
1	81768	1 percent	53900.00	460.20	483.15	477.04	483.51	0.001094	5.66	14511.32	2406.54	0.27	2482.39
1	81313	1 percent	53900.00	460.00	483.06	473.54	483.13	0.000433	2.92	26168.04	3254.13	0.13	2272.98
1	80759	1 percent	53900.00	459.60	482.97	474.79	483.02	0.000141	2.33	33536.23	3472.10	0.10	1968.99
1	80332	1 percent	53900.00	459.10	482.93		482.97	0.000114	2.02	37898.89	3838.73	0.08	1687.26
1	79663	1 percent	53900.00	458.70	482.82		482.87	0.000234	3.38	35550.85	2858.94	0.14	1152.67
1	78750	1 percent	53900.00	457.80	482.67		482.72	0.000333	3.11	34568.96	3002.46	0.14	747.66
1	78236	1 percent	53900.00	457.40	482.44		482.53	0.000572	4.94	26541.38	2760.44	0.19	463.21
1	77408	1 percent	49700.00	456.60	481.93	472.14	482.06	0.000516	4.44	24040.33	2908.59	0.19	



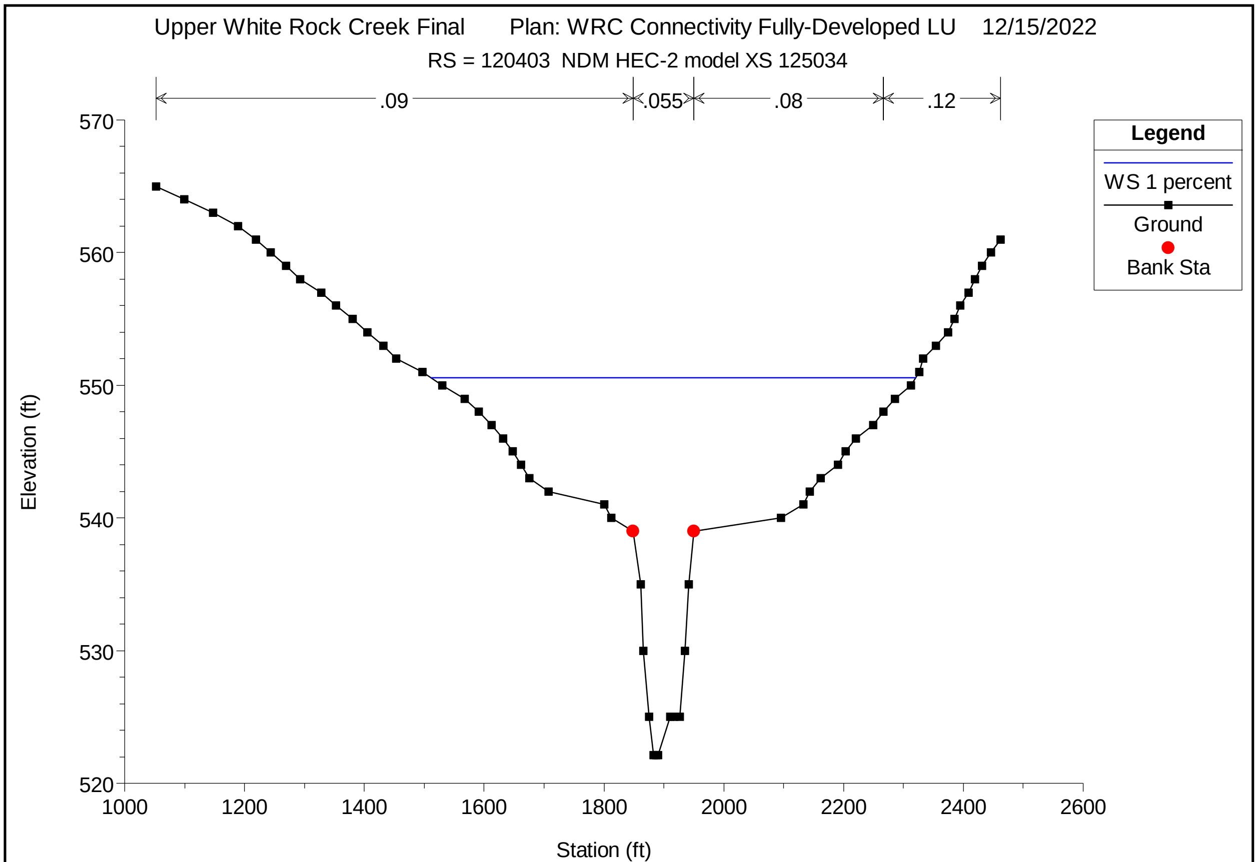
Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
WRC 1
Legend
WS 1 percent
Ground
Elevation (ft)
560
540
520
500
119117
119298
119452
119542
119634
119885
120125
120403
120733
120873
120978
121123
121220
121281
41000
41500
42000
42500
43000
Main Channel Distance (ft)

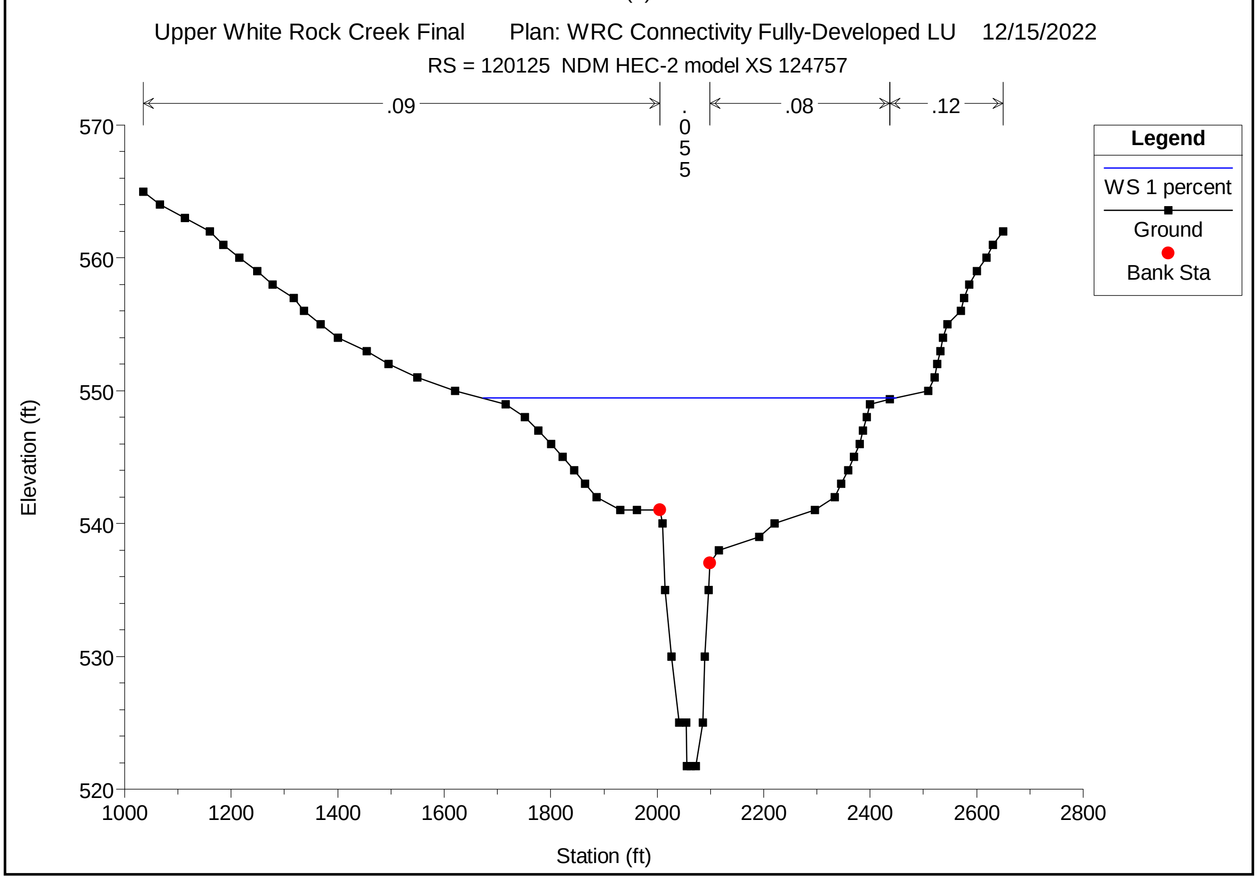


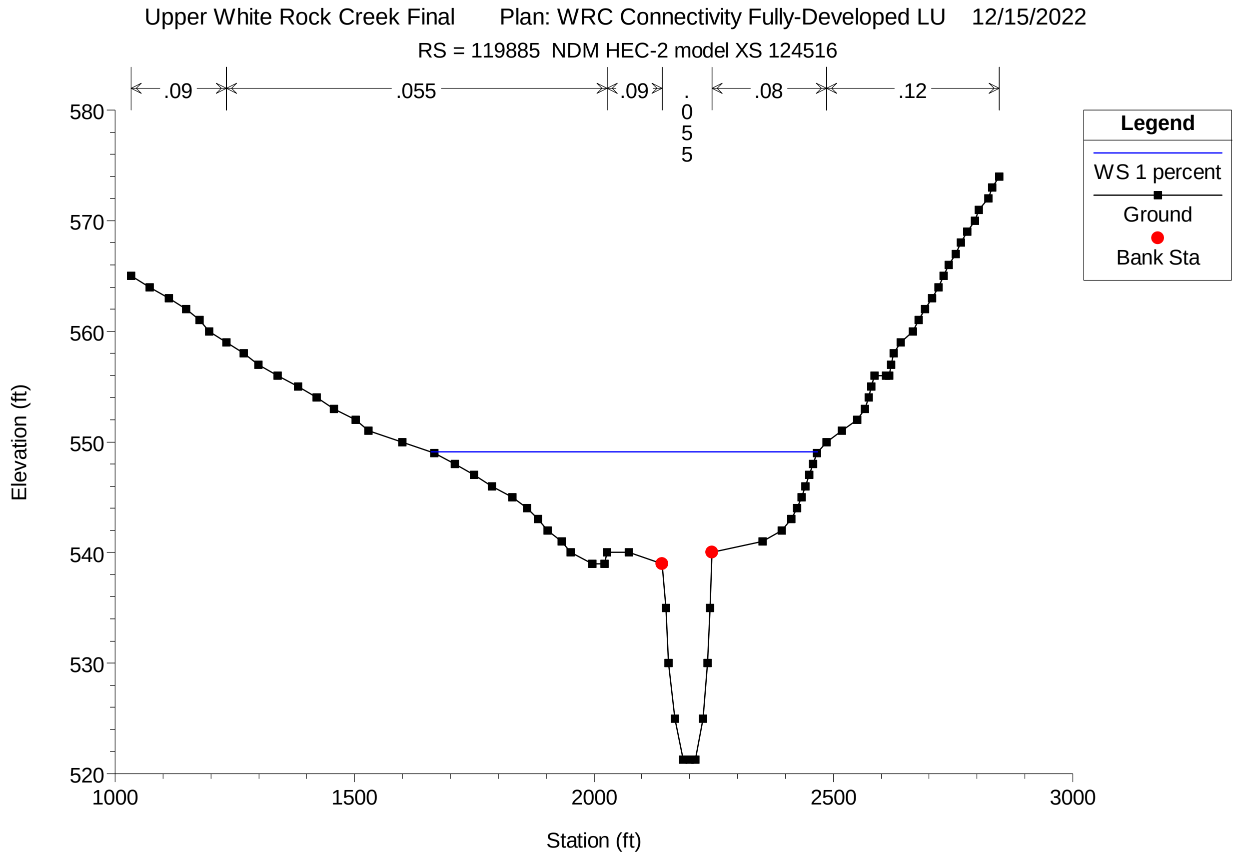
Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 120873 Halff 2006 XS downstream of Preston Road
.09
.055
.045
.08
.12
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
570
560
550
540
530
520
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)

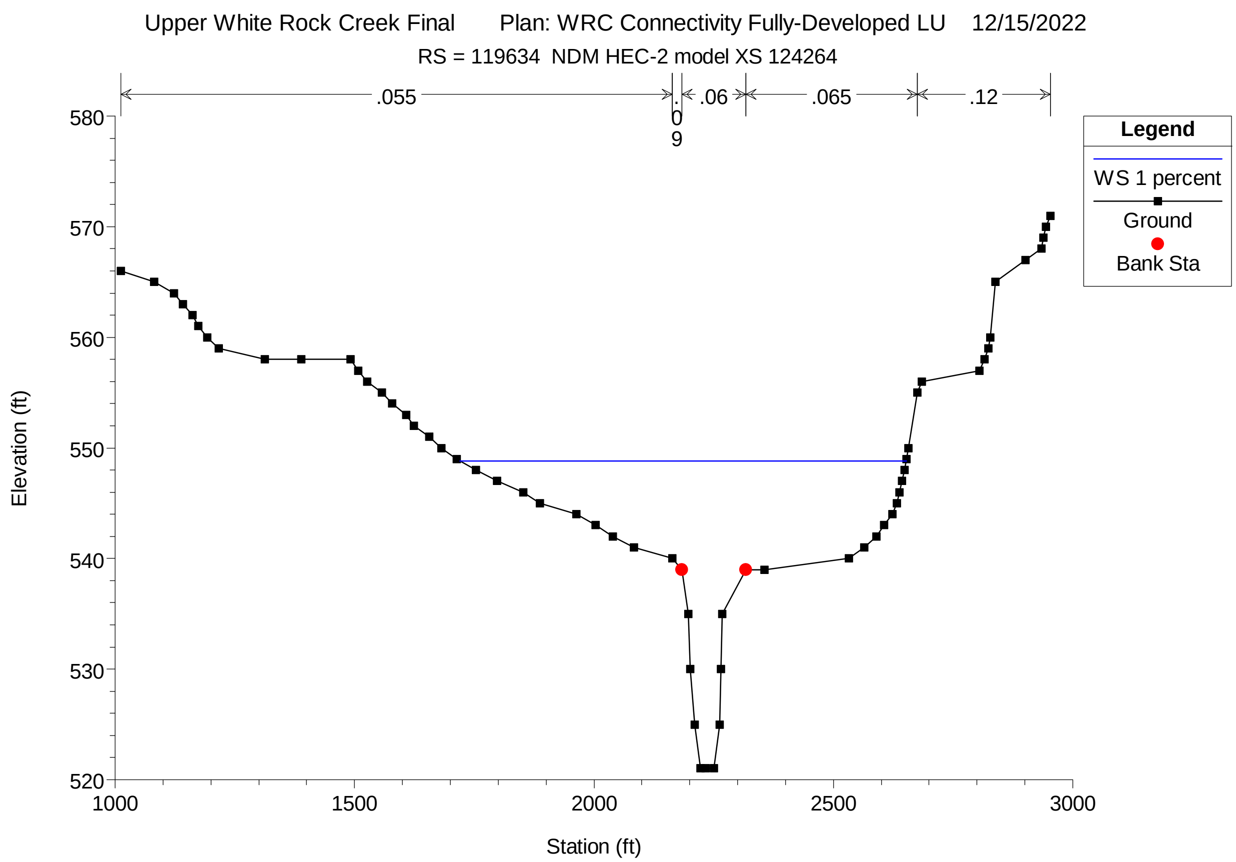


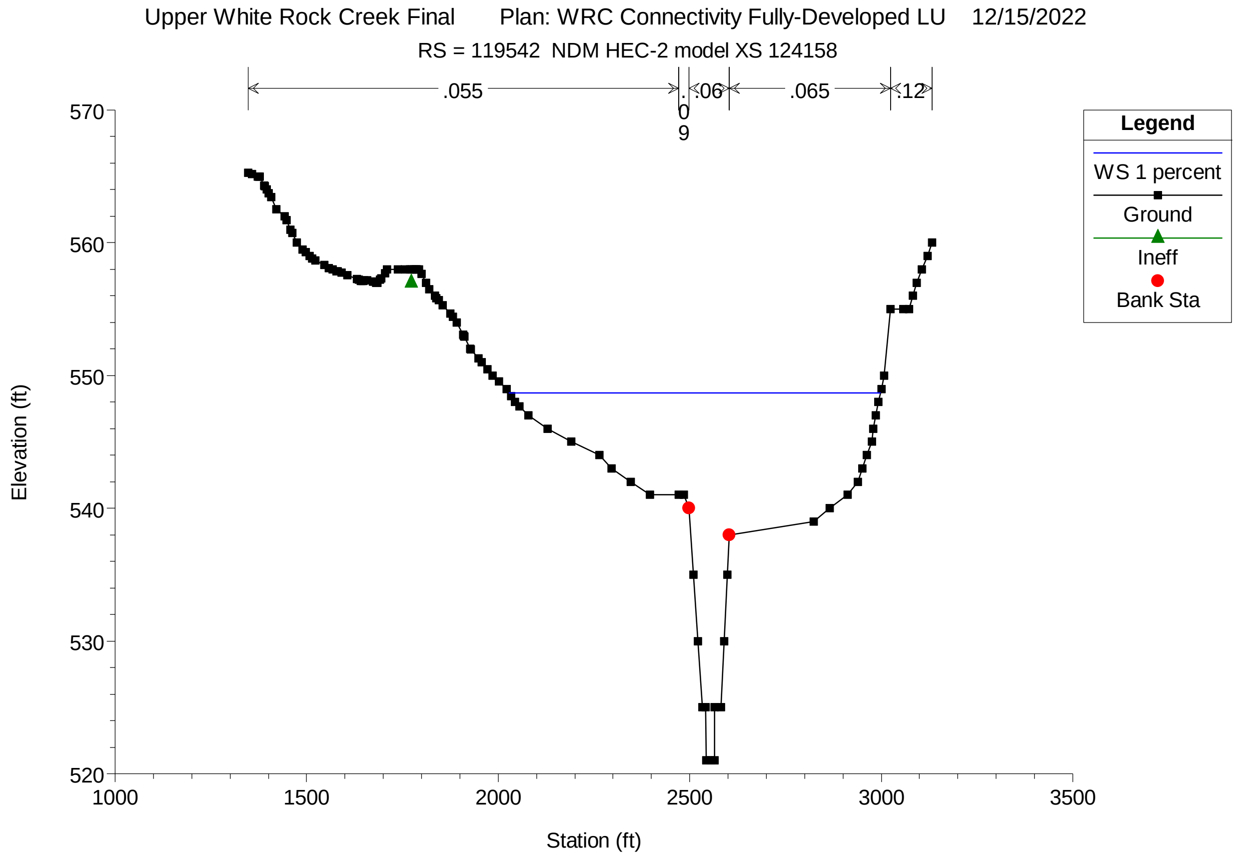
Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 120733 Halff 2006 XS 200 ft d/s of Preston Road
.09
.055
.055
.08
.12
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
570
560
550
540
530
520
1000
1200
1400
1600
1800
2000
2200
2400
2600
Station (ft)

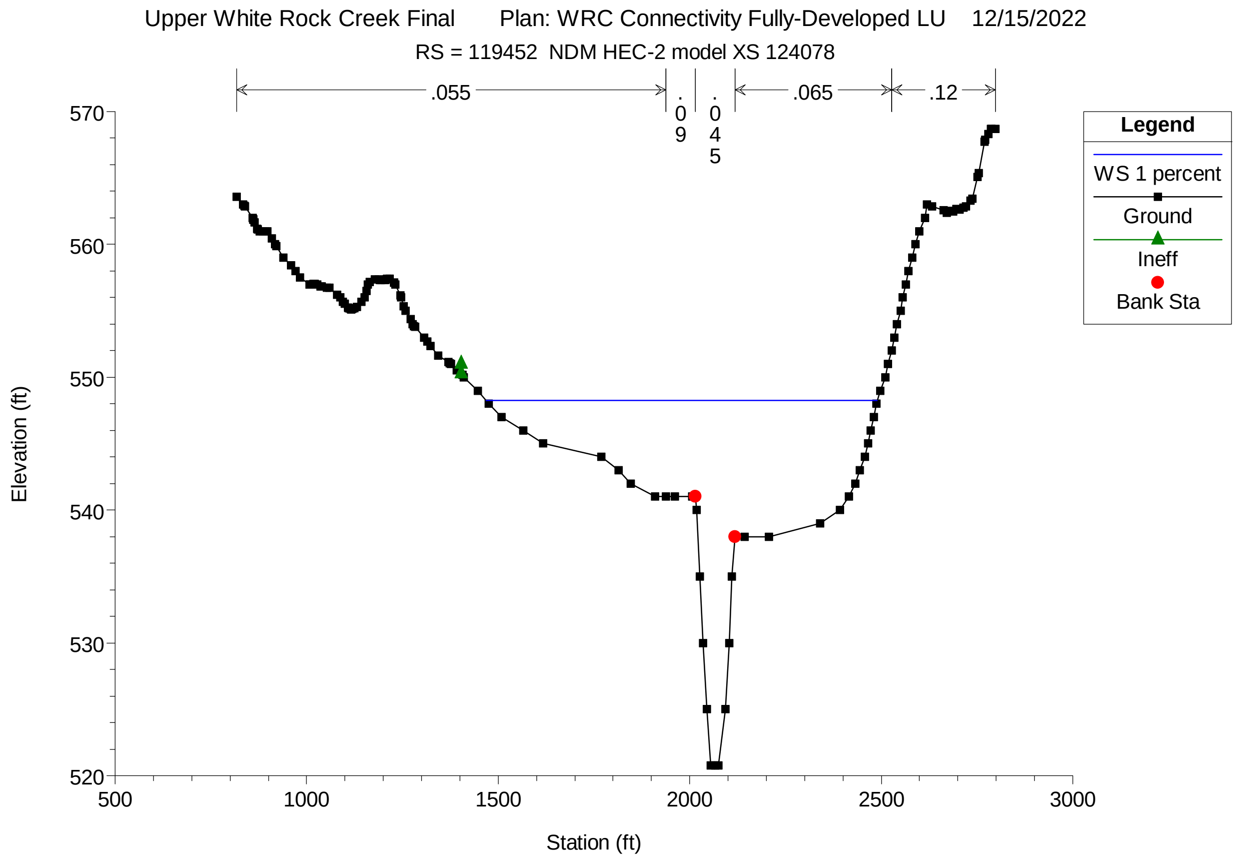

Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 120403 NDM HEC-2 model XS 125034
.09
.055
.08
.12
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
570
560
550
540
530
520
1000
1200
1400
1600
1800
2000
2200
2400
2600
Station (ft)


Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 120125 NDM HEC-2 model XS 124757
.09
.055
.08
.12
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
570
560
550
540
530
520
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
Station (ft)


Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 119885 NDM HEC-2 model XS 124516
.09
.055
.09
.055
.08
.12
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
1000
1500
2000
2500
3000


Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 119634 NDM HEC-2 model XS 124264
.055
.09
.06
.065
.12
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
580
570
560
550
540
530
520
1000
1500
2000
2500
3000


Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 119542 NDM HEC-2 model XS 124158
.055
.09
.06
.065
.12
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
570
560
550
540
530
520
1000
1500
2000
2500
3000
3500


Upper White Rock Creek Final Plan: WRC Connectivity Fully-Developed LU 12/15/2022
RS = 119452 NDM HEC-2 model XS 124078
.055
.09
.045
.065
.12
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
570
560
550
540
530
520
500
1000
1500
2000
2500
3000

Appendix C:

Revised Existing Condition Hydraulics

HEC-RAS Output
Stream Profile
Affected Cross-Sections

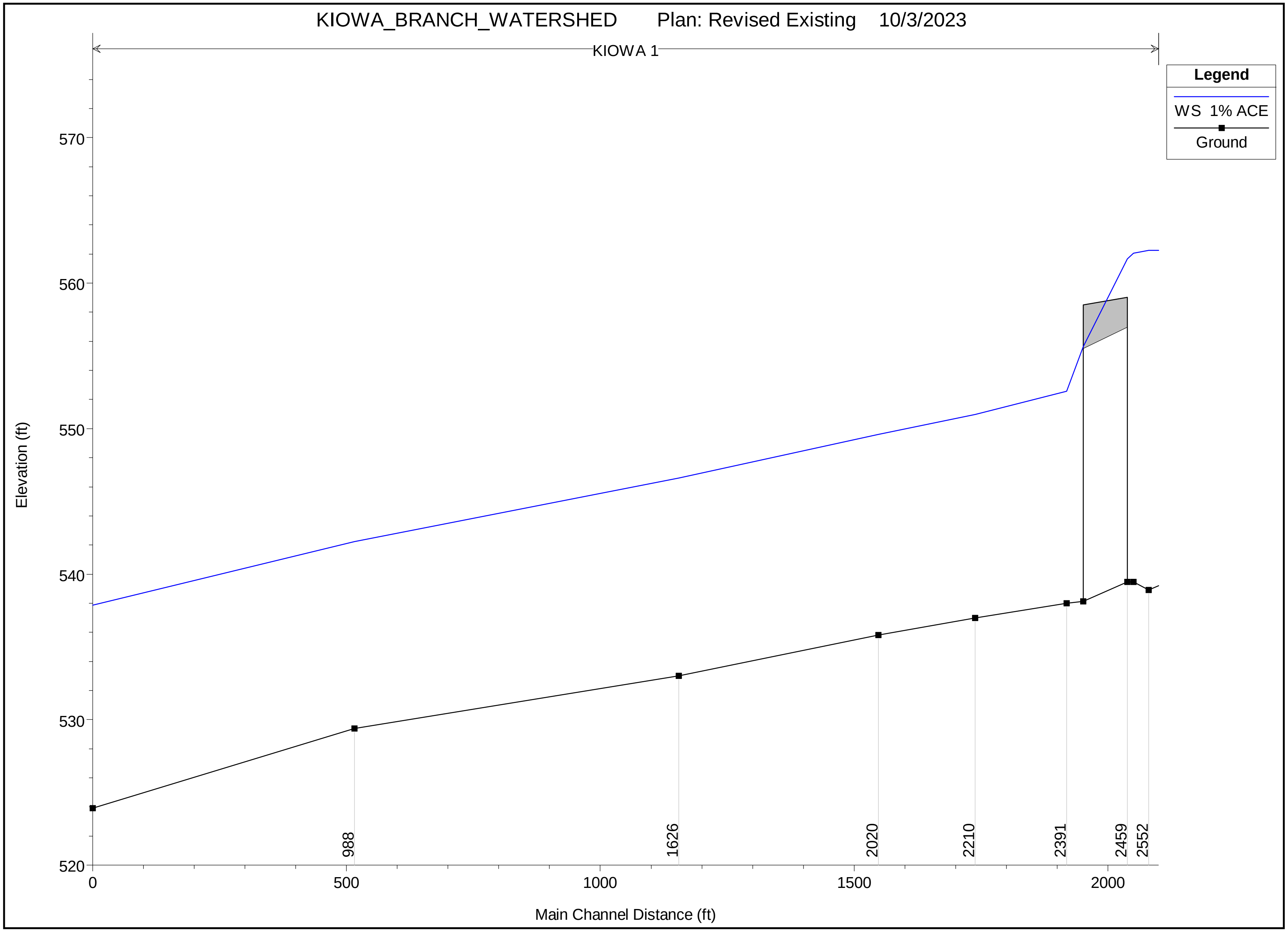
kimley-horn.com 13455 Noel Road, Suite 700 Dallas, TX 75240 972 770 1300

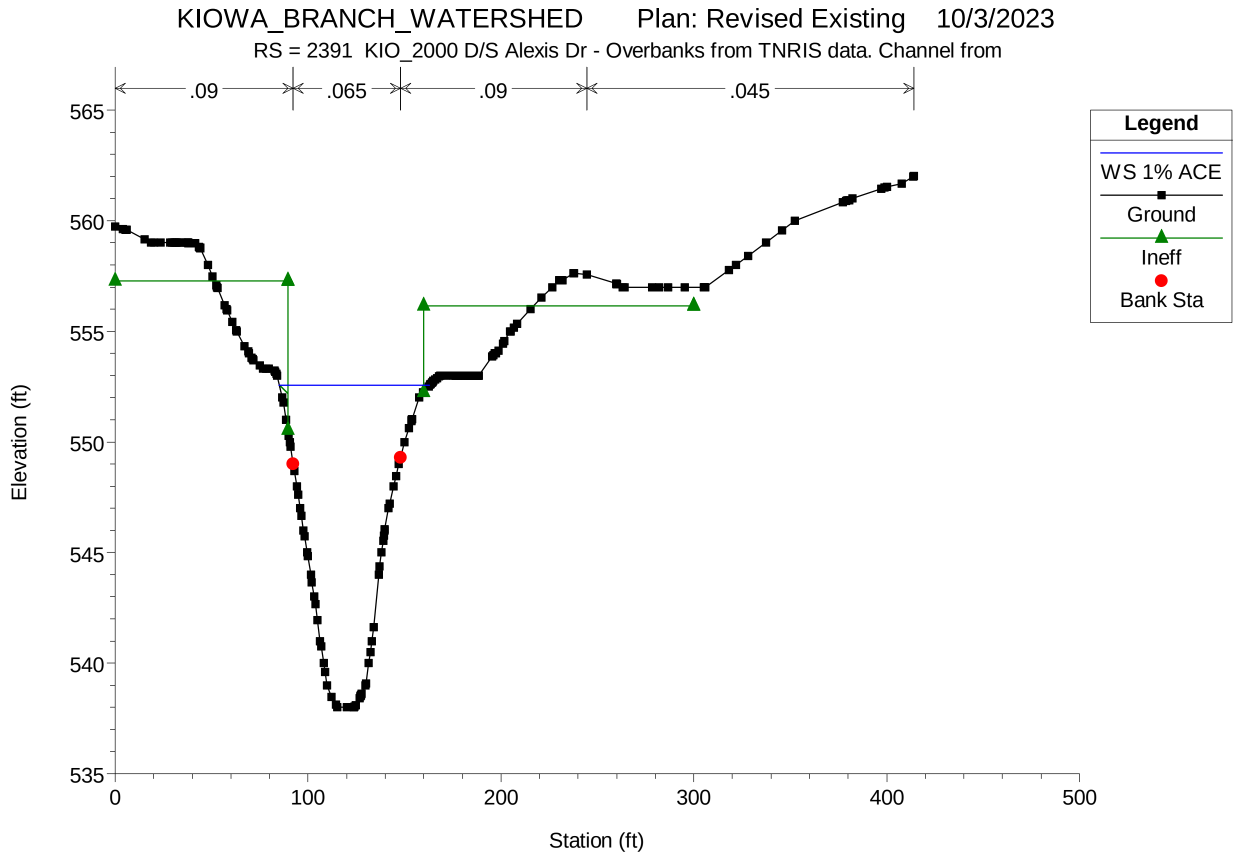
HEC-RAS Plan: RevEx River: KIOWA Reach: 1 Profile: 1% ACE

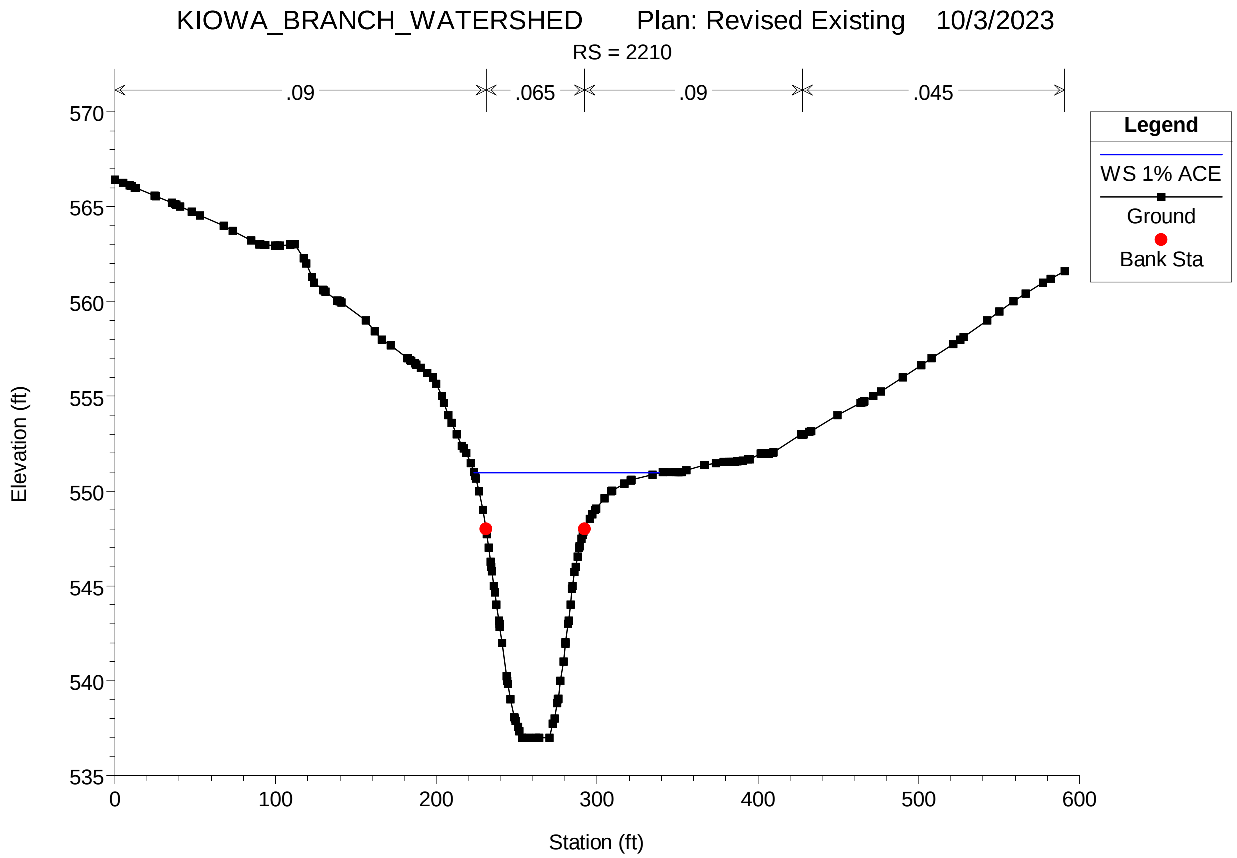
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	16598	1% ACE	1550.00	640.79	647.80		648.18	0.000811	4.96	312.40	58.91	0.38	319.95
1	16564	1% ACE	1550.00	639.71	646.19	646.19	647.98	0.006541	10.72	144.57	41.15	1.01	319.77
1	16380	1% ACE	1550.00	638.52	645.31	644.82	646.74	0.004703	9.60	161.46	41.82	0.86	319.12
1	16131	1% ACE	1550.00	637.19	643.58	643.58	645.34	0.006492	10.64	145.70	41.52	1.00	318.24
1	15671	1% ACE	1550.00	634.12	641.44	640.71	642.56	0.003733	8.51	184.78	66.21	0.77	316.50
1	15430	1% ACE	1550.00	632.85	639.68	639.68	641.35	0.006395	10.38	150.69	50.94	0.99	315.57
1	15296	1% ACE	1550.00	631.59	638.86		639.63	0.002292	7.07	219.28	55.46	0.61	315.00
1	15156	1% ACE	1550.00	630.75	638.17		639.24	0.003089	8.27	189.54	53.30	0.71	314.34
1	15096	1% ACE	1550.00	629.98	638.08		639.04	0.002473	7.87	202.84	60.18	0.65	314.07
1	15044	1% ACE	1550.00	629.53	637.67		638.86	0.003308	8.79	181.04	54.15	0.74	313.84
1	14912	1% ACE	1550.00	628.87	637.83		638.43	0.001219	6.33	302.04	118.67	0.47	313.11
1	14845	1% ACE	1550.00	628.66	637.97	634.73	638.29	0.000600	4.66	411.01	238.38	0.35	312.53
1	14832	1% ACE	1700.00	627.54	638.05	631.78	638.21	0.000323	3.27	708.46	285.43	0.20	312.35
1	14746 Hillcrest		Culvert										
1	14693	1% ACE	2500.00	626.69	635.58	632.06	636.23	0.000808	6.53	415.47	201.51	0.42	311.10
1	14668	1% ACE	2500.00	625.77	633.84	633.46	635.80	0.004956	11.23	222.60	47.37	0.91	310.91
1	14607	1% ACE	2500.00	625.04	633.27	633.27	635.44	0.006039	11.82	211.66	50.01	1.00	310.61
1	14236	1% ACE	2500.00	623.41	631.17	630.81	632.89	0.004809	10.54	239.17	63.26	0.89	308.69
1	13767	1% ACE	2500.00	620.68	628.75	628.52	630.53	0.005256	10.70	234.68	64.75	0.93	306.14
1	13479	1% ACE	2500.00	618.38	627.85	627.17	629.18	0.003497	9.29	295.53	108.68	0.77	304.39
1	13410	1% ACE	2500.00	618.06	628.16	623.83	628.72	0.000465	6.10	497.08	122.83	0.37	303.76
1	13405		Lat Struct										
1	13390	1% ACE	2500.00	618.04	628.40	627.36	628.47	0.000188	2.38	1260.89	832.86	0.11	303.24
1	13377	1% ACE	2408.50	617.94	628.41	627.20	628.45	0.000193	2.41	1591.00	900.81	0.09	302.81
1	13361	1% ACE	2299.25	617.82	628.41	627.27	628.45	0.000103	1.76	1485.63	902.53	0.08	302.25
1	13346	1% ACE	2196.62	617.71	628.42	627.09	628.45	0.000075	1.50	1599.60	921.92	0.08	301.75
1	13332	1% ACE	2094.17	617.60	628.41	627.22	628.44	0.001174	1.55	1462.93	957.15	0.08	301.24
1	13244	1% ACE	2794.17	616.43	627.37	624.08	628.07	0.003578	6.72	432.59	77.63	0.43	299.28
1	13234.1*	1% ACE	2794.17	616.45	627.31		628.02	0.003939	6.85	427.06	82.37	0.45	299.18
1	13224.2*	1% ACE	2794.17	616.47	627.24		627.97	0.004330	6.97	421.58	86.60	0.47	299.09
1	13214.3*	1% ACE	2794.17	616.50	627.16		627.92	0.004666	7.10	415.76	90.46	0.48	298.99
1	13204.5*	1% ACE	2794.17	616.52	627.08		627.87	0.005030	7.22	410.22	94.03	0.50	298.90
1	13194.6*	1% ACE	2794.17	616.54	627.00		627.81	0.005447	7.34	404.88	97.73	0.52	298.81
1	13184.7*	1% ACE	2794.17	616.57	626.92		627.75	0.005834	7.45	400.70	101.34	0.53	298.72
1	13174.8*	1% ACE	2794.17	616.59	626.84		627.69	0.006217	7.54	398.23	106.10	0.55	298.62
1	13165	1% ACE	2794.17	616.61	626.77	625.09	627.63	0.006233	7.59	399.22	113.76	0.56	298.53
1	13119	1% ACE	2794.17	616.02	627.23	624.60	627.29	0.000556	2.41	1625.11	582.82	0.17	296.30
1	13010	1% ACE	2794.17	616.09	625.43	624.13	626.72	0.009435	9.28	336.34	210.54	0.66	292.38
1	12988	1% ACE	2794.17	615.91	625.24	623.88	626.51	0.009694	9.14	331.10	186.42	0.66	292.23
1	12930	1% ACE	2694.17	615.44	625.57	622.11	625.77	0.001620	4.02	913.51	561.31	0.28	291.25
1	12925		Lat Struct										
1	12916	1% ACE	2639.38	616.82	625.55	625.15	625.76	0.000650	4.44	762.97	525.27	0.22	290.98
1	12902	1% ACE	2589.01	616.82	625.59	624.94	625.71	0.000353	3.27	979.46	655.51	0.16	290.73
1	12883	1% ACE	2525.51	616.80	625.59	624.92	625.70	0.000337	3.20	977.34	654.81	0.16	290.33
1	12869	1% ACE	2477.53	616.77	625.58	624.91	625.69	0.000325	3.14	976.98	654.69	0.16	290.08
1	12851	1% ACE	2418.00	616.77	625.46	621.61	625.67	0.023138	4.89	754.37	404.63	0.22	289.82
1	12827	1% ACE	2418.00	614.51	625.40	620.50	625.55	0.001728	3.25	1035.55	416.58	0.24	289.33
1	12713	1% ACE	2418.00	614.35	624.92	622.10	625.22	0.004387	4.54	680.12	375.58	0.34	287.23
1	12464	1% ACE	2694.17	612.91	623.85		624.07	0.004610	4.11	960.56	501.83	0.31	282.36
1	12282	1% ACE	2694.17	612.32	622.55	619.31	623.12	0.005734	6.09	475.37	187.90	0.41	279.45
1	12066	1% ACE	2694.17	612.67	620.50	619.02	621.41	0.011133	7.94	416.94	193.28	0.56	277.00
1	11941	1% ACE	2694.17	609.49	619.29		620.06	0.009785	7.19	438.42	173.36	0.52	275.67
1	11855	1% ACE	2694.17	608.72	618.68		619.30	0.007139	6.42	471.76	170.11	0.44	274.78
1	11702	1% ACE	2694.17	605.18	617.16		618.03	0.009463	7.55	366.57	63.66	0.51	273.34
1	11603	1% ACE	2694.17	604.23	616.42		617.10	0.008362	6.63	417.45	89.83	0.47	272.45
1	11411	1% ACE	2694.17	603.95	615.52		615.85	0.004472	4.65	621.17	153.53	0.35	270.19
1	11249	1% ACE	2694.17	603.15	614.63		615.04	0.005494	5.15	535.41	120.11	0.39	268.06
1	11113	1% ACE	2894.17	601.85	613.88		614.33	0.004966	5.48	566.76	127.79	0.37	266.38
1	10877	1% ACE	2894.17	600.44	613.02	608.84	613.38	0.003186	4.87	628.25	100.55	0.31	263.14
1	10593	1% ACE	3300.00	598.16	611.42	608.35	612.11	0.006111	7.28	574.57	173.85	0.41	259.28
1	10450	1% ACE	3300.00	599.27	611.13	607.80	611.40	0.003009	4.75	866.42	183.83	0.28	256.98
1	10335	1% ACE	3300.00	598.30	610.66		611.02	0.003324	5.39	784.42	190.49	0.30	254.78
1	10198	1% ACE	4300.00	596.89	609.70	606.13	610.39	0.005452	6.88	717.43	174.45	0.41	252.43
1	9993	1% ACE	4300.00	594.89	608.59	604.41	609.29	0.005257	7.00	729.17	173.35	0.40	249.03
1	9612	1% ACE	4300.00	594.79	605.19		606.44	0.010986	9.12	514.59	106.58	0.60	243.57
1	9290	1% ACE	4300.00	592.63	604.79		605.04	0.001713	4.26	1190.71	224.18	0.25	237.79
1	9031	1% ACE	4300.00	590.88	603.75	600.36	604.34	0.004758	6.99	773.97	169.05	0.39	232.31
1	8548	1% ACE	4300.00	587.51	602.01	598.80	602.38	0.003933	5.69	1067.69	273.82	0.34	223.41
1	8330	1% ACE	4300.00	587.45	601.50		601.73	0.002169	4.51	1340.51	302.14	0.26	217.68
1	8164	1% ACE	4300.00	588.61	601.19		601.41	0.002501	4.79	1397.35	351.37	0.27	213.69
1	8087	1% ACE	4500.00	585.00	601.17		601.28	0.000790	3.17	2150.63	420.75	0.16	210.76
1	8000		Lat Struct										
1	7955	1% ACE	2812.96	579.58	601.17	588.19	601.21	0.000202	1.87	2299.19	362.28	0.08	205.20
1	7951	1% ACE	2812.96	581.92	601.17	590.92	601.20	0.000250	1.98	2206.77	362.26	0.09	204.91
1	7863		Inl Struct										
1	7773	1% ACE	2812.96	572.65	590.78	580.47	590.96	0.001172	3.45	814.99	91.57	0.19	201.14
1	7589	1% ACE	4500.00	574.85	589.72		590.39	0.004251	6.70	733.28	97.40	0.37	197.85
1	7232	1% ACE	5400.00	572.40	587.81		588.77	0.004645	7.90	715.58	69.72	0.39	191.92
1	7072	1% ACE	5400.00	570.63	587.11	581.40	588.01	0.004615	7.71	751.91	82.14	0.39	189.23
1	6813	1% ACE	5400.00	570.61	586.34	579.62	587.00	0.002922	6.65	875.16	92.92	0.32	184.35
1	6745 La Cosa		Culvert										
1	6682	1% ACE	5500.00	569.23	582.65	577.31	583.41	0.004224	7.01	790.52	101.51	0.37	182.88
1	6365	1% ACE	5500.00	567.13	580.11		581.40	0.008508	9.81	669.29	97.09	0.52	177.41
1	6271	1% ACE	5500.00	566.06	577.53	576.10	580.14	0.019339	13.04	436.19	60.42	0.76	176.28
1	6091	1% ACE	5500.00	564.21	577.19		578.00	0.005152	7.43	820.00	116.12	0.41	173.75
1	5991	1% ACE	5500.00	564.68	576.36		577.38	0.007533	8.58	760.98	128.71	0.48	172.01
1	5812	1% ACE	5500.00	561.32	575.43		576.31	0.004653	7.54	755.43	84.40	0.39	169.01

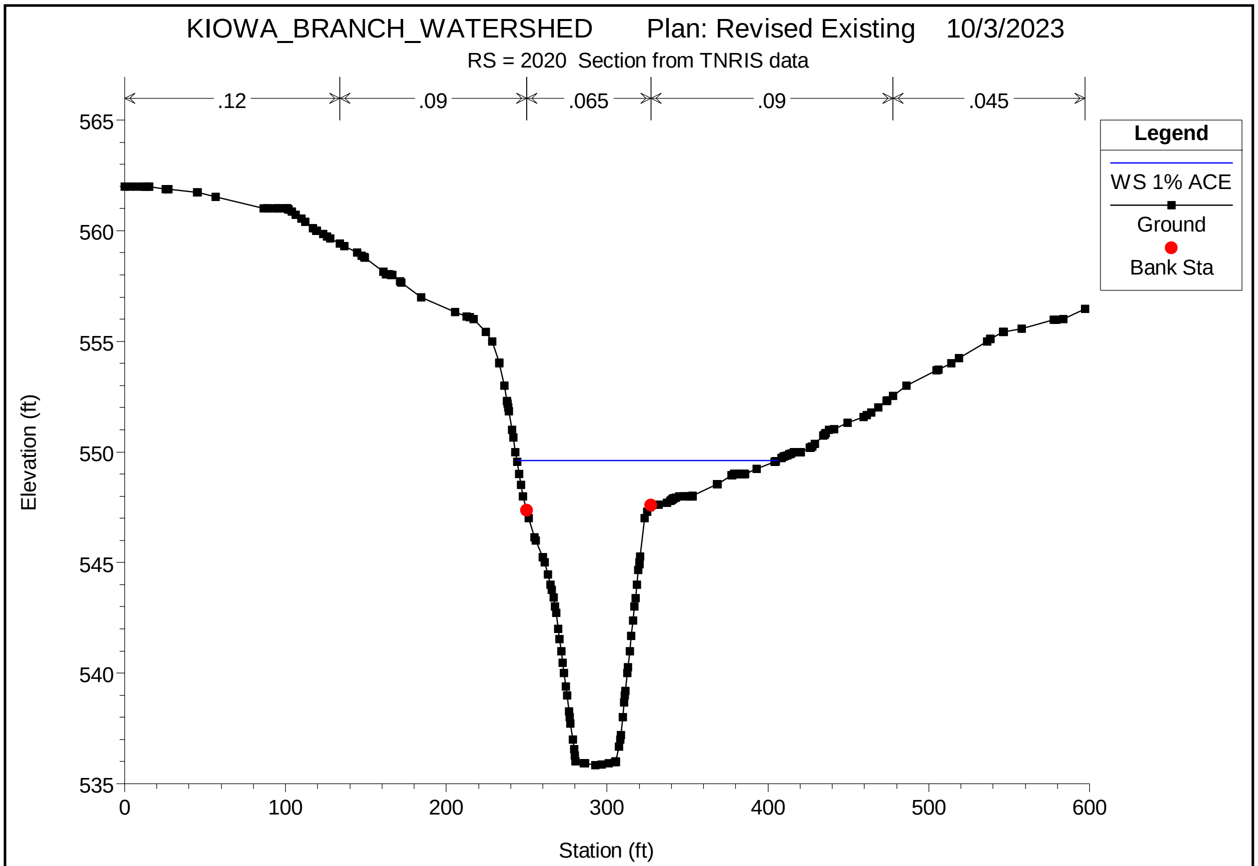
HEC-RAS Plan: RevEx River: KIOWA Reach: 1 Profile: 1% ACE (Continued)

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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	5397	1% ACE	5500.00	558.84	572.69		573.93	0.007040	9.06	657.31	88.13	0.48	162.30
1	5098	1% ACE	5500.00	556.44	571.79		572.40	0.003087	6.37	930.35	106.32	0.32	156.88
1	4924	1% ACE	5500.00	556.05	570.74		571.65	0.005961	8.01	781.55	112.19	0.43	153.53
1	4649	1% ACE	5500.00	553.52	567.72		569.49	0.009846	10.78	532.00	54.59	0.55	149.37
1	4356	1% ACE	5500.00	550.43	567.19		567.78	0.002678	6.57	984.85	106.32	0.30	144.31
1	4045	1% ACE	5500.00	548.49	566.24		566.90	0.003008	6.63	894.42	90.82	0.32	137.68
1	3683	1% ACE	5500.00	546.31	563.78		565.21	0.007242	9.85	617.65	68.13	0.47	131.40
1	3516	1% ACE	5900.00	546.22	563.70		564.31	0.002543	6.43	1021.78	133.92	0.30	128.29
1	3027	1% ACE	5900.00	541.94	562.52		563.07	0.002452	6.51	1323.78	236.90	0.28	115.19
1	2767	1% ACE	6000.00	542.00	562.79	550.27	562.91	0.000043	2.88	2725.51	456.62	0.13	103.27
1	2677 Belt Line		Bridge										
1	2605	1% ACE	6000.00	539.73	562.26	548.42	562.37	0.000027	2.67	3307.05	553.57	0.12	97.17
1	2552	1% ACE	6000.00	538.92	562.27	548.35	562.36	0.000037	2.66	3026.24	460.24	0.11	93.26
1	2522	1% ACE	6100.00	539.46	562.07	550.80	562.31	0.000119	4.35	1930.07	327.59	0.18	91.62
1	2459 Alexis		Bridge										
1	2391	1% ACE	6100.00	538.00	552.56	549.46	554.26	0.010733	10.51	600.52	77.96	0.58	88.98
1	2210	1% ACE	6100.00	537.00	550.96		552.36	0.008780	9.56	681.57	115.44	0.53	86.32
1	2020	1% ACE	6100.00	535.83	549.60		550.68	0.007862	8.44	798.28	161.75	0.49	83.08
1	1626	1% ACE	6100.00	533.00	546.59	544.57	547.62	0.007748	8.93	939.56	190.26	0.50	75.40
1	988	1% ACE	6100.00	529.38	542.25	539.45	543.05	0.006212	8.03	1190.64	822.01	0.44	25.61
1	472	1% ACE	6100.00	523.90	537.86	534.26	539.30	0.009015	9.71	676.03	433.72	0.53	

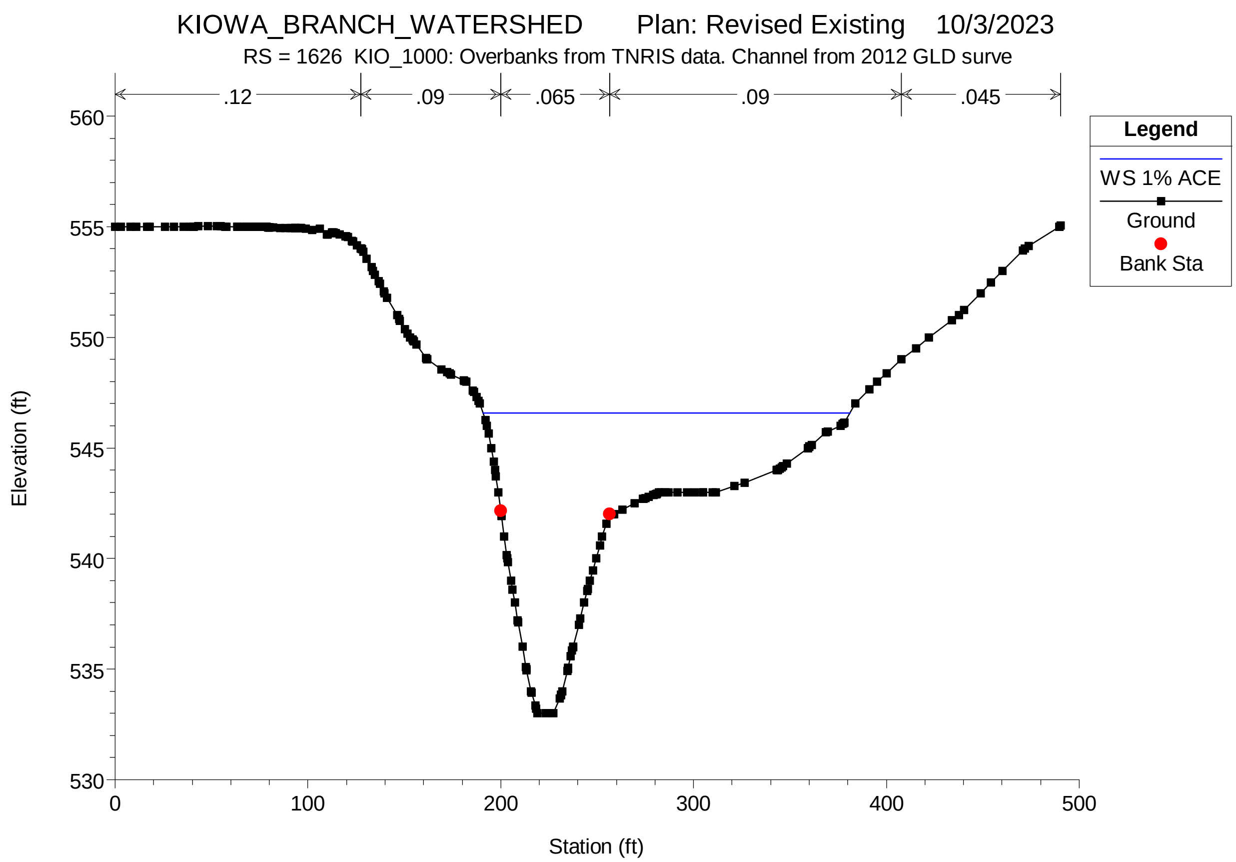

KIOWA_BRANCH_WATERSHED Plan: Revised Existing 10/3/2023
KIOWA 1
Legend
WS 1% ACE
Ground
Elevation (ft)
570
560
550
540
530
520
0
500
1000
1500
2000
Main Channel Distance (ft)
988
1626
2020
2210
2391
2459
2552


KIOWA_BRANCH_WATERSHED Plan: Revised Existing 10/3/2023
RS = 2391 KIO_2000 D/S Alexis Dr - Overbanks from TNRIS data. Channel from
.09
.065
.09
.045
Elevation (ft)
Station (ft)
Legend
WS 1% ACE
Ground
Ineff
Bank Sta

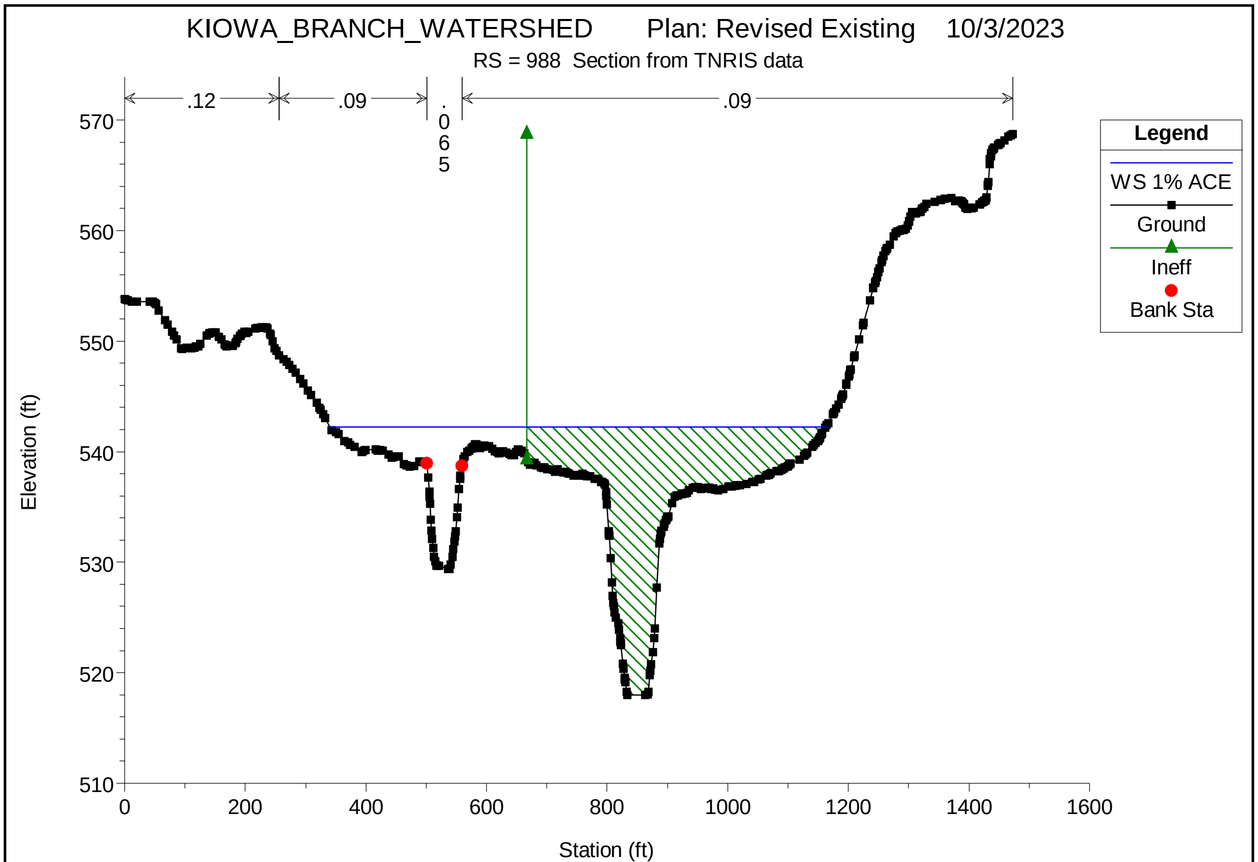

KIOWA_BRANCH_WATERSHED Plan: Revised Existing 10/3/2023
RS = 2210
.09
.065
.09
.045
Elevation (ft)
Station (ft)
Legend
WS 1% ACE
Ground
Bank Sta



KIOWA_BRANCH_WATERSHED Plan: Revised Existing 10/3/2023
RS = 2020 Section from TNRIS data
.12
.09
.065
.09
.045
Legend
WS 1% ACE
Ground
Bank Sta
Elevation (ft)
Station (ft)
565
560
555
550
545
540
535
0
100
200
300
400
500
600



KIOWA_BRANCH_WATERSHED Plan: Revised Existing 10/3/2023
RS = 1626 KIO_1000: Overbanks from TNRIS data. Channel from 2012 GLD surve
.12
.09
.065
.09
.045
Legend
WS 1% ACE
Ground
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
0
100
200
300
400
500


KIOWA_BRANCH_WATERSHED Plan: Revised Existing 10/3/2023
RS = 988 Section from TNRIS data
.12
.09
.065
.09
570
560
550
540
530
520
510
Elevation (ft)
0
200
400
600
800
1000
1200
1400
1600
Station (ft)
Legend
WS 1% ACE
Ground
Ineff
Bank Sta

HEC-RAS Plan: Rev Existing River: WRC Reach: 1 Profile: 1 percent

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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	146961	1 percent	34400.00	568.79	596.74		597.42	0.001692	8.46	6967.22	713.16	0.33	15874.54
1	146860	1 percent	34400.00	568.59	596.59		597.25	0.001681	8.77	7317.80	748.74	0.32	15858.52
1	146619	1 percent	34400.00	568.08	596.22		596.85	0.001475	8.59	8024.67	899.02	0.31	15814.38
1	146303	1 percent	34400.00	567.40	595.73		596.32	0.001644	8.79	8206.07	923.90	0.32	15752.07
1	146112	1 percent	34400.00	567.40	595.24		595.96	0.001766	8.58	6910.69	769.70	0.34	15715.08
1	145786	1 percent	34400.00	567.40	594.67		595.41	0.001852	9.49	7502.33	897.50	0.35	15666.47
1	145690	1 percent	34400.00	567.20	594.68		595.23	0.001275	8.27	9107.05	1032.62	0.30	15650.45
1	145533	1 percent	34400.00	567.00	594.49		595.05	0.001117	7.74	9386.39	1047.85	0.28	15621.70
1	145456	1 percent	34400.00	566.80	594.35		594.96	0.001140	8.04	9315.19	1046.67	0.29	15607.54
1	145176	1 percent	34400.00	566.30	593.79		594.54	0.001848	9.72	9062.20	997.74	0.36	15546.75
1	144975	1 percent	34400.00	566.00	593.67		594.25	0.001597	8.13	8926.08	935.78	0.33	15524.09
1	144876	1 percent	34400.00	565.80	593.39		594.07	0.002580	10.28	8159.19	856.63	0.40	15509.21
1	144623	1 percent	34400.00	565.30	592.84		593.47	0.001646	8.77	8750.58	857.29	0.34	15451.13
1	144331	1 percent	34400.00	564.80	592.48		593.13	0.001461	7.60	7744.60	742.58	0.32	15419.04
1	143948	1 percent	34400.00	564.80	591.46		592.46	0.002060	10.60	6813.58	668.29	0.39	15357.43
1	143488	1 percent	34500.00	563.40	590.59		591.47	0.002221	10.40	7531.87	846.69	0.39	15284.81
1	143302	1 percent	34500.00	563.10	590.32		591.10	0.001862	9.55	7138.90	753.39	0.35	15257.84
1	143128	1 percent	34500.00	562.80	590.28		590.75	0.001171	7.49	8052.58	799.26	0.28	15226.99
1	142882	1 percent	34500.00	562.40	590.10		590.47	0.000994	6.90	8782.55	857.14	0.26	15183.63
1	142513	1 percent	34500.00	561.70	589.35		590.03	0.001425	8.00	6908.43	756.10	0.31	15121.09
1	142026	1 percent	34500.00	560.90	588.98		589.35	0.001046	7.28	9127.27	985.57	0.26	15032.39
1	141642	1 percent	34500.00	560.30	587.89		588.80	0.002129	10.19	6483.87	838.80	0.38	14974.97
1	141469	1 percent	34500.00	559.90	587.49		588.44	0.002151	10.18	6284.62	791.55	0.38	14950.22
1	141247	1 percent	34500.00	559.50	587.59	582.91	588.13	0.001055	8.04	8255.47	892.86	0.30	14936.38
1	141182	1 percent	34500.00	559.50	587.37		587.95	0.001071	8.24	7310.88	641.62	0.31	14901.43
1	141107	1 percent	34500.00	559.30	587.45		587.83	0.000687	6.40	8767.03	726.02	0.25	14888.07
1	140908	1 percent	34500.00	558.90	587.08		587.64	0.001095	7.80	7365.83	670.45	0.31	14851.35
1	140454	1 percent	34500.00	558.20	586.62		587.18	0.001004	7.57	7140.43	586.94	0.30	14779.23
1	140309	1 percent	34500.00	557.90	586.41	576.40	587.04	0.000819	7.07	7121.27	681.05	0.27	14754.27
1	140248	1 percent	34500.00	557.80	585.89	579.50	586.93	0.001690	9.96	6041.77	695.54	0.38	14745.09
1	140108	1 percent	34500.00	557.60	585.41	579.38	586.65	0.002276	11.53	5733.29	707.13	0.44	14728.43
1	139959	1 percent	34500.00	557.30	585.56		586.23	0.001264	8.79	7088.60	716.06	0.33	14706.12
1	139756	1 percent	34500.00	557.00	585.56		585.96	0.000736	6.53	8955.44	865.89	0.25	14670.30
1	139545	1 percent	35000.00	556.60	585.40		585.81	0.000590	5.77	8427.21	714.98	0.23	14624.87
1	139466	1 percent	35000.00	556.50	584.94	577.25	585.66	0.001074	8.08	6755.82	605.50	0.30	14610.58
1	139445 Golf Cart Bridge		Bridge										
1	139436	1 percent	35000.00	556.50	584.79	577.01	585.38	0.000992	7.44	7251.75	633.12	0.28	14605.84
1	139190	1 percent	35000.00	556.00	584.60		585.16	0.000749	6.85	7362.63	615.97	0.26	14565.52
1	138946	1 percent	35000.00	555.60	584.07		584.88	0.001502	9.28	6362.33	596.47	0.36	14525.38
1	138802	1 percent	35000.00	555.34	584.05	577.39	584.64	0.001145	7.97	7487.03	743.34	0.31	14511.52
1	138789 Golf Cart Bridge		Bridge										
1	138776	1 percent	35000.00	555.34	583.80	577.39	584.42	0.001218	8.15	7301.88	735.04	0.32	14507.19
1	138497	1 percent	35000.00	554.80	583.60		584.04	0.000944	7.03	8364.74	782.23	0.28	14460.35
1	138402	1 percent	35000.00	554.60	583.49		583.94	0.001033	7.08	8578.79	985.69	0.31	14437.62
1	138389	1 percent	35000.00	554.60	583.48	578.38	583.91	0.001092	7.81	8552.99	982.18	0.32	14435.14
1	138383 Golf Cart Bridge		Bridge										
1	138377	1 percent	35000.00	554.60	583.32		583.76	0.001136	7.92	8393.37	978.92	0.32	14432.78
1	138349	1 percent	35000.00	554.60	583.08		583.68	0.000943	8.23	8415.03	971.22	0.32	14427.47
1	138257	1 percent	35000.00	554.40	583.10		583.56	0.000996	7.51	8515.87	876.32	0.31	14412.14
1	138195	1 percent	35000.00	554.30	583.11		583.48	0.000670	6.24	9221.15	841.46	0.27	14397.75
1	137957	1 percent	35000.00	553.90	583.05		583.35	0.000353	5.24	10667.64	876.92	0.20	14345.78
1	137834	1 percent	35000.00	560.05	582.91	574.57	583.29	0.000645	6.79	9396.77	829.10	0.26	14322.01
1	137820	1 percent	35000.00	564.76	582.92	574.87	583.25	0.000910	6.46	8944.09	834.62	0.27	14318.76
1	137811 Golf Cart Bridge		Bridge										
1	137802	1 percent	35000.00	556.09	582.80	573.72	583.15	0.000608	6.31	9470.09	846.65	0.23	14314.99
1	137783	1 percent	35000.00	553.60	582.79	573.89	583.14	0.000695	6.14	8981.99	827.90	0.24	14310.78
1	137635	1 percent	35000.00	553.30	582.50	574.64	583.02	0.001031	8.17	7632.94	691.86	0.29	14290.33
1	137537	1 percent	35000.00	553.20	582.50	572.61	582.89	0.000980	5.90	7870.18	600.77	0.22	14274.97
1	137305	1 percent	35000.00	552.80	582.17	572.87	582.62	0.001227	6.14	7356.46	619.47	0.24	14233.04
1	137212	1 percent	35000.00	552.60	582.02	568.14	582.51	0.000695	6.14	7377.49	550.07	0.23	14213.77
1	137158.5 Westgrove Avenue		Bridge										
1	137105	1 percent	35000.00	552.60	580.20	568.30	581.16	0.001702	8.64	6092.33	516.76	0.31	14201.81
1	137039	1 percent	35000.00	552.40	579.66	573.95	580.92	0.003070	10.43	5442.48	523.95	0.41	14193.00
1	136915	1 percent	35000.00	552.20	579.40	574.07	580.55	0.002841	10.40	5887.71	564.21	0.40	14179.19
1	136750	1 percent	35000.00	551.80	579.17	573.42	580.20	0.001668	10.09	6655.09	601.24	0.38	14160.05
1	136516	1 percent	35000.00	550.93	578.45		579.78	0.002454	11.71	5449.07	519.76	0.45	14135.69
1	136316	1 percent	35000.00	550.20	578.11		579.26	0.002046	11.12	6063.25	573.88	0.42	14107.98
1	135966	1 percent	35000.00	549.90	577.83		578.56	0.001382	9.22	7649.28	708.65	0.34	14054.46
1	135915	1 percent	35000.00	549.80	577.81	571.74	578.46	0.001240	8.54	7987.81	733.45	0.33	14046.33
1	135909 Golf Cart Bridge		Bridge										
1	135903	1 percent	35000.00	549.80	577.60		578.22	0.001233	8.32	8082.59	757.88	0.32	14044.08
1	135559	1 percent	35000.00	548.55	576.86		577.76	0.001309	9.52	7343.31	726.59	0.33	13996.80
1	135384	1 percent	35000.00	547.93	576.75		577.52	0.001058	8.75	7882.83	749.44	0.31	13965.50
1	135191	1 percent	35000.00	547.26	576.58		577.26	0.001583	9.22	7621.47	705.05	0.32	13935.41
1	134994	1 percent	35000.00	549.50	576.39		576.94	0.001333	7.98	8050.64	739.15	0.30	13900.75
1	134892	1 percent	35000.00	556.60	576.20		576.78	0.001900	8.55	7449.96	720.80	0.36	13882.47
1	134659	1 percent	35000.00	546.00	576.11	563.91	576.47	0.000596	5.62	9628.64	821.97	0.21	13834.04
1	134342 Small dam 600 fe		Inl Struct										
1	134222	1 percent	35000.00	545.05	575.74		576.39	0.000885	8.27	9228.25	1052.18	0.28	13751.20
1	134109	1 percent	35000.00	544.79	575.75	569.10	576.21	0.000848	7.88	10633.27	1159.05	0.27	13716.92
1	134064	1 percent	35000.00	544.70	575.72	568.15	576.17	0.000740	7.42	9536.51	1151.36	0.26	13700.91
1	133843	1 percent	35000.00	544.19	575.43	567.97	576.01	0.001003	7.86	7716.94	1116.71	0.27	13660.77
1	133758	1 percent	35100.00	544.00	575.46	566.79	575.86	0.000583	5.10	6883.98	913.91	0.24	13646.82
1	133691 Keller Springs R		Bridge										
1	133646	1 percent	35100.00	544.00	575.13	567.60	575.67	0.000623	6.89	6393.30	477.97	0.26	13630.12
1	133640	1 percent	35100.00	545.45	575.19	566.33	575.61	0.000428	6.26	7272.93	505.01	0.22	13628.90
1	133609 CMAQ bridge		Bridge										
1	133586	1 percent	35100.00	545.43	575.16	566.38	575.54	0.000392	5.99	7883.96	580.81	0.21	13619.80
1	133511	1 percent	35100.00	543.83	575.20		575.47	0.000381	4.73	9372.94	656.89	0.17	13611.26
1	133480	1 percent	35100.00	543.79	575.19		575.46	0.000383	4.71	9571.17	621.11	0.17	13605.94
1	133427	1 percent	35100.00	543.73	575.11		575.44	0.000478	5.19	9122.39	595.51	0.19	13598.33
1	133359	1 percent	35100.00	543.66	575.03		575.41	0.000565	5.72	8770.17	575.31	0.21	13589.75
1	133281	1 percent	35100.00	543.59	574.85		575.35	0.000989	6.84	7860.78	538.25	0.24	13580.57

HEC-RAS Plan: Rev Existing River: WRC Reach: 1 Profile: 1 percent (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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	133189	1 percent	35100.00	543.49	574.58		575.25	0.001554	8.49	6960.50	511.18	0.29	13571.11
1	133104	1 percent	35100.00	543.40	574.50		575.15	0.001563	7.71	6716.91	494.54	0.30	13562.95
1	132934	1 percent	35100.00	543.21	573.86		574.84	0.002094	9.59	5993.45	474.28	0.35	13542.42
1	132758	1 percent	35100.00	543.03	573.64		574.46	0.001948	8.67	6167.96	451.32	0.32	13520.22
1	132612	1 percent	35100.00	542.88	573.41		574.21	0.001627	8.58	6354.18	456.25	0.31	13501.42
1	132388	1 percent	35100.00	542.65	572.63	566.36	573.73	0.002500	10.76	5752.50	448.29	0.38	13469.40
1	132236	1 percent	35100.00	542.48	572.47	565.00	573.33	0.001978	9.50	6349.58	473.03	0.34	13449.38
1	132186	1 percent	35100.00	542.42	572.42	564.95	573.23	0.001884	9.16	6469.95	473.74	0.33	13442.63
1	132095	1 percent	35100.00	542.34	572.23	564.76	573.06	0.001901	9.03	6688.05	570.45	0.33	13429.44
1	131896	1 percent	35100.00	542.12	571.98	564.25	572.68	0.001671	8.68	7421.89	789.49	0.32	13397.55
1	131800 St Louis RR over		Lat Struct										
1	131754	1 percent	35100.00	541.97	571.95	563.75	572.40	0.001199	7.23	8706.09	898.15	0.27	13367.60
1	131591	1 percent	35100.00	541.80	571.80	564.07	572.21	0.001125	6.77	9024.86	900.10	0.26	13333.83
1	131514	1 percent	35100.00	546.20	571.83	563.80	572.09	0.000782	5.96	10876.10	835.71	0.21	13315.19
1	131433	1 percent	35100.00	539.00	571.77	563.27	572.03	0.000643	5.79	11217.77	875.48	0.19	13291.27
1	131273	1 percent	35100.00	538.72	571.62	563.00	571.81	0.000520	5.15	12481.19	979.86	0.17	13185.87
1	131087	1 percent	35300.00	538.41	571.07	564.34	571.65	0.000976	7.63	7944.17	726.15	0.29	13145.66
1	130965	1 percent	35300.00	538.21	568.36	563.58	571.23	0.003300	14.53	3224.42	510.87	0.53	13130.38
1	130905	1 percent	35300.00	538.10	568.35	559.71	570.85	0.003111	12.70	2779.11	125.60	0.48	13125.56
1	130891.5 St. Louis Railro		Bridge										
1	130877	1 percent	35300.00	538.10	568.23	559.71	570.76	0.003169	12.77	2763.67	125.59	0.48	13123.78
1	130733	1 percent	35300.00	538.10	568.28	563.54	569.05	0.001243	9.11	6353.11	751.11	0.32	13104.64
1	130534	1 percent	35300.00	538.09	568.39		568.79	0.000747	6.51	8509.91	866.38	0.25	13077.53
1	130421	1 percent	35300.00	538.09	568.30		568.70	0.000828	6.90	8401.81	836.38	0.26	13058.16
1	130400	1 percent	35300.00	538.09	568.31	560.83	568.66	0.000675	6.02	8849.48	856.29	0.24	13054.01
1	130388 Golf Cart Bridge		Bridge										
1	130376	1 percent	35300.00	538.09	568.15		568.56	0.000791	6.91	8632.66	866.10	0.25	13049.31
1	130341	1 percent	35300.00	538.09	568.14		568.52	0.000773	7.08	8886.20	875.73	0.25	13043.30
1	130155	1 percent	35300.00	538.08	567.76		568.34	0.001000	8.18	7594.17	803.35	0.29	13008.68
1	129975	1 percent	35300.00	538.08	567.66		568.15	0.000859	7.12	7946.04	797.89	0.26	12977.62
1	129873	1 percent	35300.00	538.07	567.71		568.02	0.000641	6.31	9402.44	857.78	0.23	12955.53
1	129815	1 percent	35300.00	538.07	567.66		567.97	0.000729	6.56	9653.43	1027.08	0.24	12939.95
1	129736	1 percent	35300.00	538.07	567.62		567.91	0.000638	6.16	10238.85	1100.64	0.23	12919.95
1	129622	1 percent	35300.00	538.07	567.58		567.84	0.000596	6.12	10786.38	1183.11	0.22	12898.64
1	129486	1 percent	35300.00	538.07	567.54		567.78	0.000454	5.92	12106.93	1356.27	0.22	12872.15
1	129430	1 percent	35300.00	538.06	567.55	560.97	567.73	0.000357	5.17	13191.12	1533.67	0.20	12858.13
1	129414.5 Golf Cart Bridge		Bridge										
1	129399	1 percent	35300.00	538.06	567.45	561.14	567.65	0.000383	5.55	13429.42	1706.70	0.20	12847.97
1	129248	1 percent	37400.00	538.06	567.43	559.75	567.57	0.000292	4.71	15241.89	1578.38	0.18	12793.16
1	129127	1 percent	37400.00	538.04	567.18	557.00	567.48	0.000691	6.13	9795.04	1449.26	0.22	12722.54
1	128900	1 percent	37400.00	538.90	566.72	557.23	567.23	0.001042	7.32	7638.57	1185.90	0.29	12663.93
1	128888.5 Golf Cart Bridge		Bridge										
1	128877	1 percent	37400.00	538.90	566.56	556.16	567.13	0.001159	7.68	7286.71	915.79	0.30	12659.35
1	128871	1 percent	37400.00	538.05	566.55	557.98	567.12	0.001118	6.40	6671.40	709.32	0.29	12657.98
1	128817 Arapaho Road		Bridge										
1	128763	1 percent	37400.00	538.05	566.23	557.98	566.87	0.001252	6.68	6288.51	576.89	0.31	12642.86
1	128654	1 percent	37400.00	537.84	564.84	560.43	566.42	0.002269	11.35	4534.58	799.84	0.44	12630.16
1	128396	1 percent	37400.00	537.39	565.09	557.56	565.43	0.000884	6.00	8798.69	811.89	0.22	12579.86
1	128379 Golf Cart Bridge		Bridge										
1	128362	1 percent	37400.00	537.39	565.04	557.57	565.37	0.000872	5.95	8943.39	811.48	0.22	12572.61
1	128187	1 percent	37400.00	537.08	564.76	557.83	565.15	0.001084	6.17	8159.67	693.58	0.25	12530.50
1	128019	1 percent	37400.00	536.81	564.51	556.93	564.96	0.001209	6.84	7941.86	685.50	0.25	12499.90
1	127853	1 percent	37400.00	536.54	564.42	555.49	564.76	0.000794	5.96	8986.58	742.07	0.22	12466.91
1	127695	1 percent	37400.00	536.29	564.30	556.84	564.62	0.000864	6.00	9026.72	760.85	0.22	12434.21
1	127602	1 percent	37400.00	536.14	563.99	558.44	564.50	0.001453	7.41	7544.32	741.00	0.28	12416.34
1	127545	1 percent	37400.00	536.05	563.81	558.60	564.41	0.001786	7.96	6967.38	732.54	0.31	12409.33
1	127534.5 Golf Cart Bridge		Bridge										
1	127524	1 percent	37400.00	536.02	563.73	558.60	564.34	0.001832	8.04	6907.20	738.81	0.31	12406.22
1	127372	1 percent	37400.00	535.78	563.64	557.35	564.07	0.001287	6.87	7925.58	757.75	0.26	12387.34
1	127295	1 percent	37400.00	535.66	563.60	557.04	563.97	0.001070	6.45	8435.23	800.49	0.24	12373.97
1	127171	1 percent	37400.00	535.45	563.51	556.51	563.84	0.000932	5.90	8775.23	735.36	0.23	12350.19
1	127053	1 percent	37400.00	535.26	563.43	556.33	563.74	0.000925	5.66	8901.60	779.80	0.22	12330.90
1	126948	1 percent	37400.00	535.10	563.36	556.15	563.65	0.000860	5.46	9354.38	840.92	0.22	12311.01
1	126887	1 percent	37400.00	535.00	563.31	556.38	563.59	0.000893	5.47	9478.25	883.80	0.22	12298.74
1	126822	1 percent	37400.00	535.35	563.30	555.94	563.53	0.000660	5.27	10632.12	922.73	0.19	12285.31
1	126789 Small dam approx		Inl Struct										
1	126710	1 percent	37400.00	533.03	563.23		563.45	0.000558	5.10	11223.50	933.42	0.18	12258.42
1	126618	1 percent	37400.00	531.54	563.19		563.40	0.000533	4.70	11241.20	931.70	0.18	12238.09
1	126490	1 percent	37400.00	531.19	563.09		563.33	0.000568	5.07	10791.22	879.24	0.18	12205.80
1	126264	1 percent	37400.00	530.67	562.82		563.16	0.000784	5.98	9441.66	844.95	0.22	12151.94
1	125938	1 percent	37400.00	529.96	562.41	554.00	562.91	0.001016	7.00	7968.21	854.37	0.24	12099.31
1	125828	1 percent	37400.00	529.71	561.88	554.99	562.69	0.002177	8.50	5895.78	800.33	0.30	12072.45
1	125747	1 percent	37400.00	529.53	561.44	555.66	562.45	0.002442	9.38	5191.98	831.81	0.34	12060.38
1	125736.5 Beltline Road Go		Bridge										
1	125726	1 percent	37400.00	529.49	561.25	555.67	562.31	0.002568	9.56	5048.49	822.98	0.35	12056.97
1	125710	1 percent	37400.00	529.45	561.38	553.10	562.13	0.001448	8.59	6143.12	965.18	0.30	12054.98
1	125637 Beltline Road		Bridge										
1	125564	1 percent	37400.00	529.45	559.93	553.85	561.13	0.002534	10.94	5791.98	476.33	0.39	12035.77
1	125508	1 percent	37400.00	529.42	559.84	553.84	560.94	0.002278	9.90	6062.00	1325.73	0.37	12024.92
1	125450	1 percent	37400.00	529.40	559.80	553.59	560.80	0.001746	9.72	6776.41	1392.45	0.35	12011.80
1	125324	1 percent	37600.00	529.36	559.47	553.82	560.55	0.001906	10.08	6712.44	907.26	0.36	11982.81
1	125225	1 percent	37600.00	529.33	559.36	553.82	560.34	0.001880	9.69	6973.09	896.47	0.36	11966.05
1	125090	1 percent	37600.00	529.29	559.09	553.82	560.11	0.001717	10.03	7215.01	838.73	0.38	11945.77
1	124969	1 percent	37600.00	529.26	559.00	552.74	559.89	0.001338	8.86	7518.79	817.75	0.34	11924.61
1	124854	1 percent	37600.00	529.22	558.82	553.06	559.73	0.001390	9.70	7966.91	785.01	0.35	11903.38
1	124759	1 percent	37600.00	529.19	558.66	552.83	559.58	0.001476	9.89	7919.71	715.16	0.36	11884.26
1	124594	1 percent	37600.00	529.14	558.30	553.00	559.33	0.001667	10.45	7419.61	689.64	0.38	11857.37
1	124444	1 percent	37600.00	529.10	558.07	552.33	559.10	0.001527	10.09	7279.74	648.06	0.36	11834.38
1	124341	1 percent	37600.00	529.06	557.83	552.76	558.95	0.001762	10.71	6959.44	606.55	0.39	11822.51
1	124287	1 percent	37600.00	529.04	557.78	552.80	558.82	0.001860	10.36	7000.00	739.22	0.39	11812.68
1	124163	1 percent	37600.00	529.01	557.57	552.24	558.65	0.001712	10.37	6936.95	717.55	0.38	11800.54
1	124062	1 percent	37600.00	528.98	557.40	552.36	558.48	0.001848	10.40	7100.73	789.94	0.40	11786.16
1	123975	1 percent	37600.00	528.95	557.21	552.28	558.31	0.002281	10.26	6517.93	703.71	0.40	11773.19

HEC-RAS Plan: Rev Existing River: WRC Reach: 1 Profile: 1 percent (Continued)

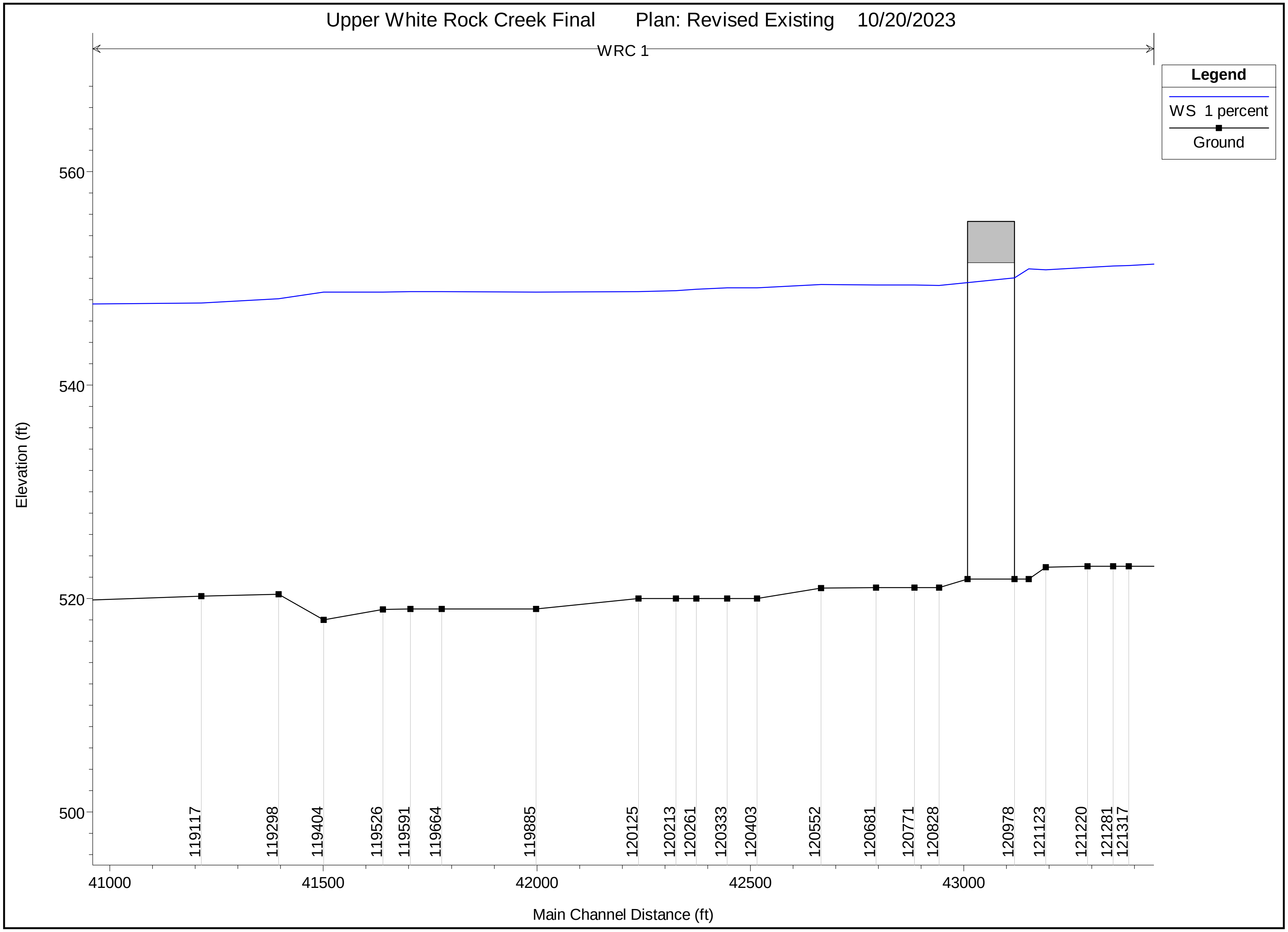
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	123838	1 percent	37600.00	528.91	556.99	547.99	558.00	0.001878	9.85	6656.34	611.03	0.36	11751.52
1	123735	1 percent	37600.00	528.88	556.50	551.12	557.74	0.002283	10.55	6311.93	739.36	0.40	11732.48
1	123652	1 percent	37600.00	528.48	556.50	550.64	557.49	0.001952	9.50	6875.26	741.04	0.37	11719.40
1	123549	1 percent	37600.00	527.81	556.46	550.09	557.28	0.001571	9.20	8172.99	848.71	0.33	11703.58
1	123446	1 percent	37600.00	527.26	556.53		557.06	0.000979	7.37	9648.74	875.90	0.27	11681.27
1	123312	1 percent	37600.00	526.84	556.30		556.93	0.001171	8.82	9945.78	963.96	0.32	11659.42
1	123177	1 percent	37600.00	526.58	556.00		556.78	0.001214	8.66	8500.05	771.87	0.33	11636.77
1	123062	1 percent	37600.00	526.28	555.88		556.67	0.001277	9.01	8855.03	853.15	0.33	11622.28
1	122959	1 percent	37600.00	526.13	555.85		556.53	0.001203	8.34	8828.73	827.08	0.32	11608.53
1	122783	1 percent	37600.00	525.70	555.94		556.25	0.001129	6.30	10764.48	874.12	0.23	11578.10
1	122505	1 percent	37600.00	525.20	555.01		555.83	0.002275	9.04	7121.31	670.14	0.33	11533.16
1	122333	1 percent	37600.00	524.80	554.49		555.44	0.002663	10.19	7010.80	693.21	0.36	11509.53
1	122127	1 percent	37600.00	524.40	553.95		554.86	0.002692	9.50	6716.95	651.00	0.36	11476.18
1	121936	1 percent	37600.00	524.00	553.07		554.29	0.003970	10.68	5735.23	612.03	0.43	11454.19
1	121815	1 percent	37600.00	525.70	552.62		553.81	0.003589	11.13	6013.22	595.44	0.42	11437.26
1	121764	1 percent	37600.00	524.20	552.50	547.64	553.60	0.003224	10.53	5992.35	534.53	0.39	11429.65
1	121565	1 percent	37600.00	523.69	551.90	546.43	553.01	0.002850	10.04	6030.13	546.94	0.37	11403.08
1	121419	1 percent	37600.00	523.00	551.40	546.52	552.57	0.003255	10.48	5863.04	538.12	0.39	11383.63
1	121317	1 percent	37600.00	523.00	551.18	545.91	552.19	0.003363	10.55	6113.63	525.72	0.39	11369.96
1	121281	1 percent	37600.00	523.00	551.16	545.66	552.03	0.002971	9.80	6484.31	542.33	0.37	11364.29
1	121220	1 percent	37600.00	522.99	551.02	544.91	551.84	0.002687	9.27	6691.00	573.96	0.35	11355.38
1	121123	1 percent	37600.00	522.93	550.80	543.89	551.58	0.002489	8.46	6399.48	564.29	0.34	11340.92
1	121083	1 percent	37700.00	521.83	550.86	539.31	551.41	0.000747	5.93	6446.89	581.53	0.25	11332.77
1	120978 Preston Road		Bridge										
1	120828	1 percent	37700.00	521.00	549.31	544.66	550.62	0.001897	10.60	4505.67	591.99	0.39	11309.85
1	120771	1 percent	37700.00	521.00	549.35	544.47	550.39	0.001375	9.30	5040.48	622.59	0.34	11301.89
1	120681	1 percent	37700.00	521.00	549.36	544.00	550.21	0.001257	8.72	5649.77	726.05	0.33	11289.64
1	120552	1 percent	37700.00	520.95	549.40		549.99	0.000955	7.41	6962.06	757.04	0.29	11270.40
1	120403	1 percent	37700.00	520.00	549.11		549.83	0.001125	8.43	6970.33	742.91	0.31	11246.29
1	120333	1 percent	37700.00	520.00	549.11		549.71	0.000989	7.45	7430.78	804.06	0.29	11233.68
1	120261	1 percent	37700.00	520.00	548.95		549.63	0.001155	8.14	7151.21	825.44	0.31	11221.88
1	120213	1 percent	37700.00	520.00	548.83		549.57	0.001195	8.58	6844.30	753.70	0.32	11214.17
1	120125	1 percent	37700.00	520.00	548.75		549.47	0.001154	8.43	6890.43	751.89	0.31	11201.62
1	119885	1 percent	37700.00	519.00	548.73		549.19	0.000696	6.58	8026.20	877.28	0.25	11162.81
1	119664	1 percent	37700.00	519.00	548.73		549.03	0.000403	4.84	9157.54	974.28	0.19	11122.11
1	119591	1 percent	37700.00	518.99	548.73		548.99	0.000335	4.69	9650.46	992.20	0.17	11106.93
1	119526	1 percent	37700.00	518.98	548.71		548.97	0.000337	4.71	9689.14	1023.75	0.17	11093.13
1	119404	1 percent	37700.00	518.00	548.70	540.68	548.92	0.000295	4.34	10536.21	1142.80	0.16	11063.84
1	119298	1 percent	38800.00	520.39	548.07		548.80	0.001384	9.46	8678.87	935.26	0.34	11035.35
1	119117	1 percent	38800.00	520.19	547.69		548.49	0.001744	9.87	8021.45	904.59	0.37	10994.00
1	118748	1 percent	38800.00	519.67	547.54		547.93	0.000901	7.45	10030.54	1056.94	0.27	10921.21
1	118565	1 percent	38800.00	519.32	547.46	540.24	547.73	0.000609	6.18	11081.50	1296.14	0.23	10864.15
1	118341	1 percent	38800.00	519.30	547.37	538.40	547.60	0.000485	5.57	11800.24	1367.79	0.20	10806.64
1	118150	1 percent	38800.00	518.87	547.07	538.92	547.47	0.000751	6.72	9286.87	1519.38	0.25	10752.72
1	117845	1 percent	38800.00	518.74	546.71	539.48	547.20	0.000979	7.48	9190.05	1846.76	0.29	10681.64
1	117695	1 percent	39500.00	518.44	546.74	539.03	547.01	0.000642	6.28	12440.99	1783.81	0.23	10629.68
1	117585	1 percent	39500.00	518.18	546.71	538.30	546.94	0.000544	5.66	13806.71	1650.59	0.22	10591.26
1	117280	1 percent	39500.00	518.03	546.39	539.64	546.73	0.000789	6.89	11092.56	1821.98	0.26	10481.39
1	117042	1 percent	39500.00	516.00	545.78	539.07	546.36	0.001501	7.61	7271.57	2550.83	0.34	10392.48
1	116955 Spring Valley Ro		Bridge										
1	116868	1 percent	39500.00	515.23	545.06	536.85	545.70	0.001042	8.14	8987.23	2549.97	0.30	10358.61
1	116670	1 percent	39500.00	515.40	545.04	536.66	545.39	0.001329	6.19	9478.70	2602.76	0.22	10299.37
1	116528	1 percent	39500.00	514.40	544.25		545.14	0.001289	9.10	8671.14	2464.55	0.34	10239.61
1	116402	1 percent	39500.00	515.10	543.46		544.87	0.002106	11.87	6716.69	2144.92	0.42	10198.05
1	116310	1 percent	39500.00	514.90	542.91		544.65	0.002534	12.52	5608.71	2022.38	0.47	10176.55
1	116228	1 percent	39500.00	514.40	542.80		544.43	0.002267	12.02	5654.16	1958.04	0.45	10156.16
1	116092	1 percent	39500.00	513.90	542.64		544.08	0.002169	11.07	5751.45	2007.04	0.43	10121.66
1	115961	1 percent	39500.00	513.50	542.54		543.73	0.002503	11.10	6469.80	2098.60	0.40	10088.62
1	115817	1 percent	39500.00	513.20	541.57		543.23	0.004085	12.45	5495.66	1954.71	0.50	10047.73
1	115703	1 percent	39500.00	513.10	541.81		542.66	0.002027	9.21	7446.80	1914.75	0.37	10016.24
1	115472	1 percent	39500.00	513.00	541.44		542.18	0.002405	9.60	7312.72	1796.48	0.38	9964.91
1	115232	1 percent	39500.00	512.98	540.47		541.55	0.002809	10.40	6770.30	1572.92	0.42	9913.96
1	114931	1 percent	39500.00	512.98	539.63		540.74	0.002444	11.19	7396.06	1404.47	0.44	9852.42
1	114790	1 percent	39500.00	512.51	539.42		540.35	0.002206	10.80	8061.37	1290.60	0.41	9823.46
1	114597	1 percent	39500.00	511.74	539.18	535.11	539.95	0.001479	9.45	8551.53	1480.44	0.36	9781.35
1	114465	1 percent	39500.00	511.61	538.99	535.00	539.74	0.001726	9.10	8436.73	1494.38	0.37	9753.14
1	114349	1 percent	39500.00	511.34	538.69	535.05	539.54	0.001959	9.82	8646.94	1702.78	0.39	9733.43
1	114290	1 percent	39500.00	511.21	538.65	535.06	539.40	0.001845	9.23	8967.01	1776.50	0.38	9719.87
1	114202	1 percent	39500.00	511.02	538.57	533.98	539.24	0.001388	8.85	9310.86	1628.93	0.34	9698.32
1	114094	1 percent	39500.00	510.85	538.42	533.78	539.07	0.001452	9.48	9297.02	1739.03	0.34	9668.66
1	113907	1 percent	39500.00	510.61	538.16	532.54	538.78	0.001529	8.59	8902.99	1634.55	0.35	9621.43
1	113817	1 percent	39500.00	510.60	537.81	530.89	538.60	0.001729	9.49	8387.29	1620.24	0.38	9594.88
1	113575	1 percent	39500.00	510.11	537.78	529.53	538.26	0.000995	7.27	9493.27	1738.32	0.29	9552.73
1	113391	1 percent	39500.00	509.94	537.71	527.49	538.10	0.000753	6.41	9675.01	1679.58	0.25	9512.01
1	113245	1 percent	39500.00	509.78	537.58	526.59	538.01	0.000756	6.47	8485.60	1681.66	0.25	9481.17
1	112923	1 percent	39700.00	508.57	537.50	525.28	537.84	0.000534	5.70	9118.58	1323.75	0.21	9430.06
1	112732	1 percent	39700.00	508.34	537.28	525.61	537.72	0.000860	6.53	8358.44	1271.33	0.24	9392.27
1	112557	1 percent	39700.00	508.07	537.19	524.67	537.54	0.000743	5.57	9040.60	1379.99	0.20	9342.99
1	112500	1 percent	39700.00	507.10	537.20	522.99	537.44	0.000443	4.32	10812.71	1409.16	0.16	9308.60
1	112383	1 percent	39700.00	508.93	537.11	522.98	537.38	0.000516	4.77	10112.93	1628.47	0.17	9269.61
1	112281	1 percent	39700.00	509.42	536.96	523.91	537.29	0.000567	4.99	8970.02	1560.71	0.18	9225.93
1	112200	1 percent	39700.00	508.33	536.48	522.10	537.14	0.001303	6.71	6279.62	1567.05	0.24	9211.69
1	112151 ALPHA ROAD BRIDG		Bridge										
1	112101	1 percent	39700.00	509.14	535.21	521.40	535.97	0.000664	6.99	5706.34	1492.15	0.27	9197.78
1	112062	1 percent	39700.00	509.38	535.12	522.51	535.93	0.000796	7.28	5699.24	1553.58	0.29	9190.27
1	111962	1 percent	39700.00	507.32	534.91	526.22	535.83	0.000970	8.88	6549.89	1639.51	0.32	9172.56
1	111868	1 percent	39700.00	506.55	534.50	529.77	535.67	0.001889	10.61	5878.66	1489.53	0.42	9147.94
1	111774	1 percent	39700.00	505.00	534.72	528.49	535.36	0.001386	7.78	7319.65	1541.73	0.32	9126.30
1	111773	1 percent	39700.00	507.00	534.70	528.70	535.36	0.001474	7.88	7214.05	1541.33	0.33	9126.06
1	111772	1 percent	39700.00	505.00	534.71	528.49	535.35	0.001389	7.78	7314.78	1541.50	0.32	9125.83
1	111686	1 percent	39700.00	505.00	534.33	528.70	535.21	0.001391	10.09	7594.06	1396.69	0.36	9105.89
1	111415	1 percent	39800.00	504.90	534.39	526.90	534.82	0.000724	7.77	11074.33	1652.92	0.27	9041.39
1	111200	1 percent	39800.00	504.40	533.42	527.74	534.53	0.001544	10.49	7055.63	1100.18	0.40	8991.20

HEC-RAS Plan: Rev Existing River: WRC Reach: 1 Profile: 1 percent (Continued)

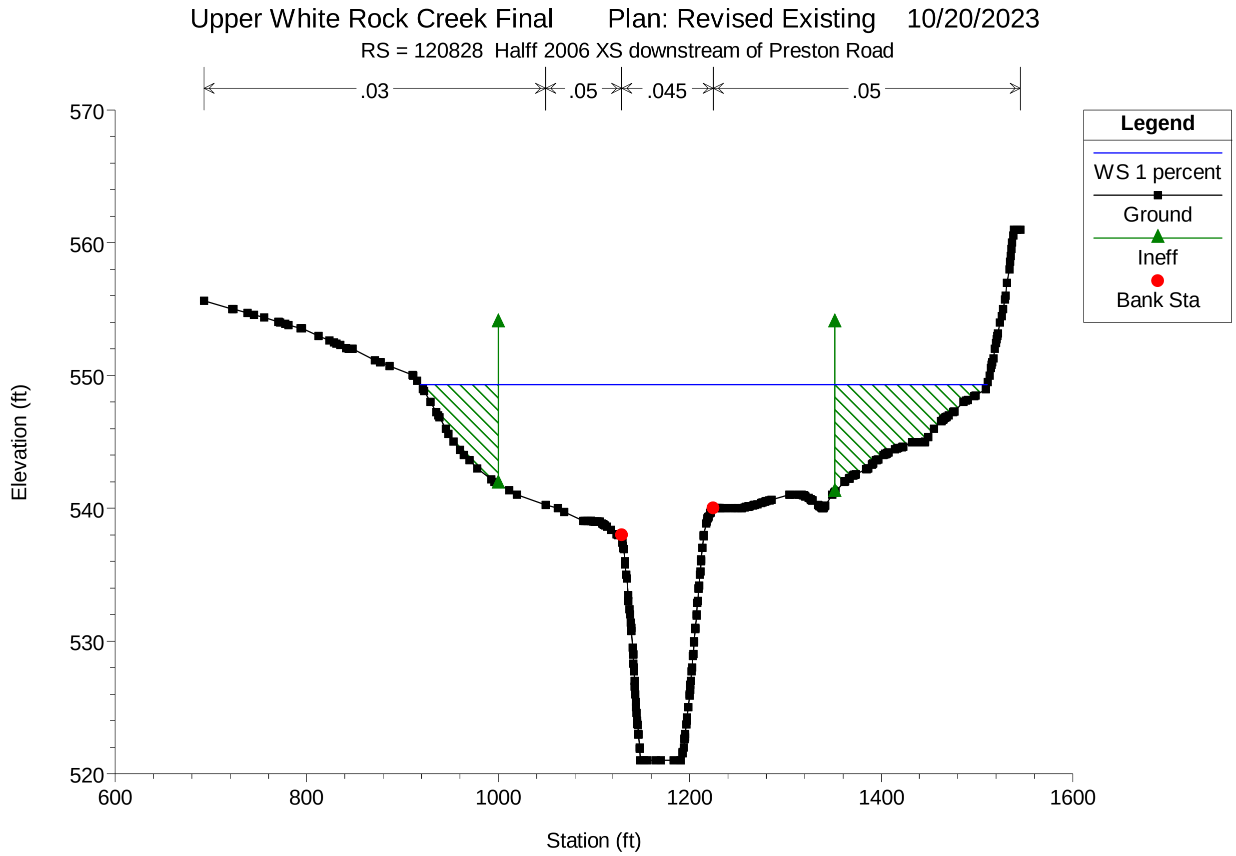
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	111032	1 percent	39800.00	504.40	533.49	526.79	534.17	0.001467	8.92	8072.82	1293.72	0.34	8963.65
1	110802	1 percent	39800.00	503.30	533.09	527.97	533.85	0.001823	9.68	8954.77	1481.62	0.34	8924.24
1	110672	1 percent	39800.00	503.30	532.51	524.73	533.54	0.002084	9.37	7801.02	1419.38	0.35	8888.62
1	110399	1 percent	39800.00	503.00	532.22	522.97	532.97	0.001510	7.98	8553.03	1241.47	0.31	8833.01
1	110207	1 percent	39800.00	502.60	531.71	526.51	532.66	0.001747	9.25	8055.03	1151.46	0.35	8801.55
1	109897	1 percent	39800.00	502.50	531.22	525.89	532.07	0.001834	8.68	7997.06	1263.26	0.36	8739.29
1	109585	1 percent	39800.00	501.96	530.18	523.73	531.41	0.002291	10.09	6421.89	1224.55	0.39	8682.87
1	109319	1 percent	39800.00	501.60	529.74	522.19	530.89	0.002093	10.04	6737.51	1219.77	0.36	8648.49
1	109262	1 percent	40000.00	501.20	529.92	520.22	530.51	0.001512	6.38	6980.37	1270.49	0.27	8636.57
1	109171 HILCREST AVENUE		Bridge										
1	109094	1 percent	40000.00	501.20	528.98	519.87	529.62	0.003712	6.47	6200.44	1273.85	0.29	8612.64
1	109052	1 percent	40000.00	501.10	528.52	520.92	529.44	0.001482	8.62	6117.23	1221.47	0.35	8604.00
1	108938	1 percent	40000.00	501.00	527.47	524.77	529.14	0.003188	12.95	6141.65	999.96	0.51	8584.58
1	108729	1 percent	40000.00	500.90	527.32	524.23	528.41	0.002119	10.22	6671.23	1058.70	0.42	8548.70
1	108483	1 percent	40000.00	501.88	527.15	522.88	527.87	0.001525	8.71	8343.44	1113.49	0.36	8506.10
1	108297	1 percent	40000.00	500.62	526.74		527.55	0.002023	10.17	8621.44	1103.10	0.40	8469.48
1	108000	1 percent	40000.00	500.20	526.36		527.01	0.001575	8.53	8443.39	954.83	0.35	8416.43
1	107834	1 percent	40100.00	500.02	526.16		526.67	0.001272	8.86	9362.92	1130.70	0.35	8373.63
1	107631	1 percent	40100.00	498.93	525.97	516.99	526.39	0.001047	6.23	9863.83	1068.65	0.23	8329.08
1	107471	1 percent	40100.00	498.93	525.75	516.52	526.28	0.000444	6.78	9562.22	907.33	0.26	8293.85
1	107406	1 percent	40100.00	498.50	525.78	517.57	526.19	0.000375	6.40	9724.27	1327.50	0.24	8274.21
1	107351 635 W.B. SERVICE		Bridge										
1	107330	1 percent	40100.00	497.70	525.72	516.44	525.98	0.000194	4.67	9926.70	1417.35	0.17	8251.79
1	107319	1 percent	40100.00	497.84	525.51	516.54	525.93	0.000302	5.96	7975.99	1225.34	0.21	8247.50
1	107175 635 MAIN LANES		Bridge										
1	107040	1 percent	40100.00	497.76	525.17	516.47	525.57	0.000282	5.70	8179.04	1770.09	0.21	8190.79
1	107006	1 percent	40100.00	495.90	525.22	516.66	525.50	0.000218	4.96	9779.32	2078.41	0.18	8175.66
1	106979 635 E.B. SERVICE		Bridge										
1	106951	1 percent	40100.00	495.90	525.00	517.00	525.42	0.000629	6.54	10143.78	1592.22	0.24	8157.20
1	106887	1 percent	40100.00	497.14	524.60	519.00	525.28	0.001420	8.40	7803.29	1236.21	0.32	8137.13
1	106558	1 percent	40100.00	496.75	523.91		524.80	0.001835	9.13	6271.31	603.45	0.35	8089.00
1	106373	1 percent	40100.00	496.70	523.44		524.42	0.002277	9.60	5882.61	610.19	0.39	8064.29
1	106183	1 percent	40100.00	496.60	521.24		523.69	0.007049	15.65	3915.65	521.03	0.63	8047.76
1	106120	1 percent	40100.00	496.60	520.31		523.17	0.007643	16.36	3759.50	530.50	0.67	8041.92
1	106082	1 percent	40100.00	496.60	520.29		522.79	0.006745	15.55	4055.49	557.56	0.64	8038.53
1	105950	1 percent	40100.00	496.60	520.09		521.73	0.004386	12.30	5005.36	620.21	0.53	8022.73
1	105929	1 percent	40100.00	496.60	519.88		521.63	0.004687	12.61	4880.54	617.96	0.55	8020.36
1	105850	1 percent	40100.00	496.60	519.33		521.24	0.005597	14.04	4954.42	680.84	0.59	8012.60
1	105743	1 percent	40100.00	496.60	519.59		520.54	0.002779	9.71	6602.31	819.27	0.40	7998.47
1	105583	1 percent	40100.00	496.40	519.19		520.19	0.003782	10.66	6120.50	862.39	0.44	7985.03
1	105366	1 percent	40100.00	495.81	518.82		519.71	0.001718	6.99	6362.06	842.88	0.30	7960.34
1	105060	1 percent	40100.00	495.20	518.58	514.66	519.38	0.001549	8.27	5761.53	810.71	0.34	7931.22
1	104813	1 percent	40100.00	495.17	518.45	513.27	519.09	0.000961	6.71	6312.53	722.81	0.27	7903.82
1	104740	1 percent	40100.00	494.92	518.32	513.40	519.02	0.001041	6.91	6253.79	710.49	0.28	7893.73
1	104637	1 percent	40100.00	494.57	518.31		518.92	0.000527	5.22	7196.48	769.20	0.20	7877.70
1	104478	1 percent	40100.00	493.77	518.16		518.81	0.000649	5.22	7104.02	745.98	0.22	7850.94
1	104247	1 percent	40100.00	491.87	518.02		518.70	0.000655	5.68	7556.52	778.39	0.23	7821.06
1	104092	1 percent	40100.00	491.50	517.13		518.45	0.002738	11.41	6068.12	770.19	0.46	7796.73
1	103855	1 percent	40100.00	493.10	516.68	514.15	517.83	0.002443	10.57	7428.77	1114.10	0.45	7764.23
1	103542	1 percent	40100.00	492.60	514.42		516.76	0.005460	14.33	4449.19	722.73	0.64	7727.03
1	103532	1 percent	40100.00	492.55	513.70	513.70	516.64	0.006982	15.73	3975.09	700.46	0.72	7726.06
1	103027	1 percent	40100.00	490.00	514.19		514.46	0.000702	4.50	10070.59	841.36	0.19	7651.89
1	102865	1 percent	40100.00	490.00	513.99		514.38	0.000401	6.02	9332.08	935.09	0.24	7624.21
1	102431	1 percent	40100.00	490.00	513.98		514.29	0.000156	3.51	9136.75	706.87	0.14	7562.58
1	101986	1 percent	40100.00	490.00	513.61		514.20	0.000400	5.16	7334.98	668.39	0.22	7504.65
1	101549	1 percent	40100.00	490.00	513.28		513.96	0.000657	6.27	6104.31	572.78	0.27	7435.81
1	101082	1 percent	40800.00	487.57	512.45		513.54	0.000834	8.96	7241.78	809.62	0.35	7356.77
1	100790	1 percent	40800.00	487.50	511.92	503.61	513.35	0.000370	10.02	5763.14	1338.71	0.40	7296.81
1	100700	1 percent	40800.00	487.30	510.47	504.11	513.18	0.000688	13.51	3887.19	1043.65	0.54	7280.56
1	100595	1 percent	40800.00	487.11	510.12	504.23	513.08	0.000764	13.98	3415.49	690.34	0.57	7268.32
1	100443	1 percent	40800.00	486.91	509.93	503.85	512.95	0.000765	14.07	3285.86	488.06	0.57	7255.41
1	100232	1 percent	40800.00	486.55	509.88	503.46	512.75	0.000713	13.76	3409.86	363.18	0.55	7237.61
1	100058	1 percent	40800.00	485.99	510.37	500.90	512.07	0.000384	10.58	4210.86	557.72	0.41	7219.79
1	99992	1 percent	40800.00	485.90	509.82	501.61	511.92	0.000479	11.71	3569.38	228.34	0.46	7212.69
1	99918 FOREST LANE		Bridge										
1	99872	1 percent	40800.00	485.90	508.92	501.61	511.29	0.000569	12.38	3390.88	196.67	0.50	7203.83
1	99691	1 percent	40800.00	484.71	507.57	501.41	510.89	0.000771	14.66	2985.20	760.74	0.57	7187.75
1	99354	1 percent	40800.00	483.75	507.42	500.71	510.54	0.000703	14.23	3183.65	1009.27	0.55	7151.12
1	99056	1 percent	40800.00	483.27	507.28	500.34	510.31	0.000679	14.03	3216.47	1082.77	0.54	7119.53
1	98744	1 percent	40800.00	481.90	507.37	499.17	510.00	0.000557	13.09	3528.27	1168.98	0.49	7083.68
1	98460	1 percent	40800.00	481.30	507.39	498.45	509.78	0.000496	12.50	3771.98	1116.69	0.47	7053.19
1	98179	1 percent	40800.00	481.27	507.12	498.53	509.62	0.000526	12.79	3757.06	989.75	0.48	7023.00
1	97918	1 percent	40800.00	481.17	507.64	496.20	509.25	0.000318	10.23	4533.94	367.43	0.38	6992.44
1	97694	1 percent	40800.00	481.06	507.50	496.24	509.17	0.000326	10.42	4376.49	307.59	0.38	6969.26
1	97518	1 percent	40800.00	480.88	507.61	495.57	509.05	0.000279	9.73	5129.74	572.93	0.35	6950.02
1	97476	1 percent	40800.00	480.80	507.70	495.99	508.93	0.000280	9.03	5042.10	1613.79	0.34	6940.94
1	97457 75N - SB FRONTAG		Bridge										
1	97425	1 percent	40800.00	479.99	507.50	495.16	508.73	0.000279	8.93	4889.08	1443.56	0.34	6933.00
1	97416	1 percent	40800.00	479.85	507.59	495.05	508.63	0.000244	8.42	5539.99	1593.37	0.32	6931.21
1	97407	1 percent	40800.00	479.70	507.66	494.58	508.56	0.000195	7.91	6015.40	1270.39	0.30	6929.23
1	97306 HIGHWAY 75N MAIN		Bridge										
1	97206	1 percent	40800.00	478.15	507.72	493.02	508.28	0.000123	6.57	8288.89	1316.25	0.24	6893.96
1	97203	1 percent	40800.00	478.13	507.31	493.91	508.19	0.000215	7.91	6700.47	1353.85	0.30	6892.40
1	97200	1 percent	40800.00	478.10	507.02	493.88	508.12	0.000260	8.63	5777.59	1190.75	0.33	6891.57
1	97180 75N - NB FRONTAG		Bridge										
1	97168	1 percent	40800.00	478.10	505.67	493.88	507.02	0.000341	9.45	5037.94	940.09	0.37	6887.11
1	97115	1 percent	40800.00	479.44	505.31	494.70	506.91	0.001106	10.21	4357.08	438.00	0.40	6881.60
1	96886	1 percent	40800.00	478.30	505.12	493.20	506.66	0.000962	9.99	4280.70	288.98	0.37	6859.28
1	96697	1 percent	40800.00	477.70	505.39	491.76	506.34	0.000582	7.83	5343.93	300.29	0.29	6838.41
1	96438	1 percent	40800.00	476.60	505.46		506.12	0.000501	6.54	6314.53	310.10	0.24	6803.73
1	96311	1 percent	40800.00	476.10	505.38		506.04	0.000741	6.51	6460.61	410.20	0.26	6784.99
1	95966	1 percent	53100.00	474.46	504.35	493.85	505.63	0.001340	9.16	6164.13	655.87	0.36	6730.58
1	95670	1 percent	53100.00	473.34	503.54	495.09	505.13	0.001940	10.33	5757.13	483.00	0.41	6686.06

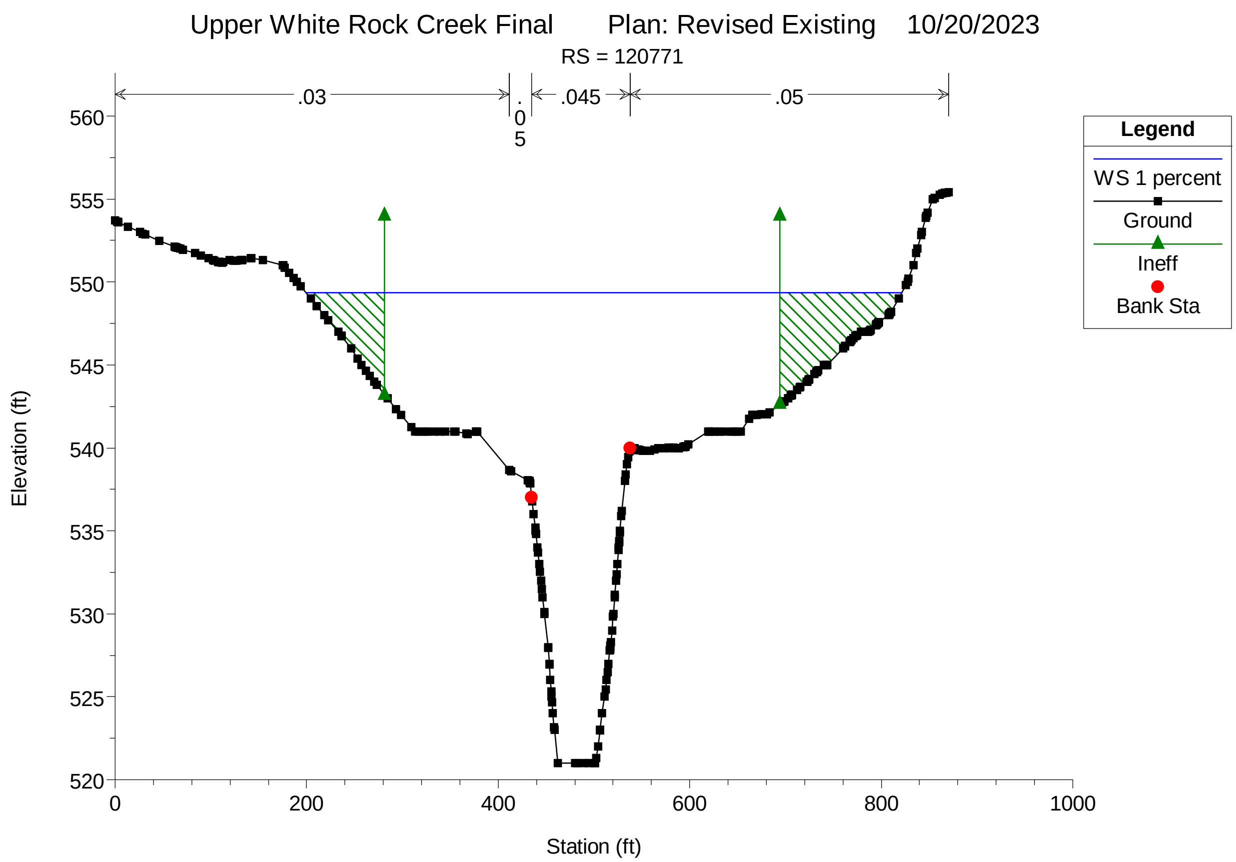
HEC-RAS Plan: Rev Existing River: WRC Reach: 1 Profile: 1 percent (Continued)

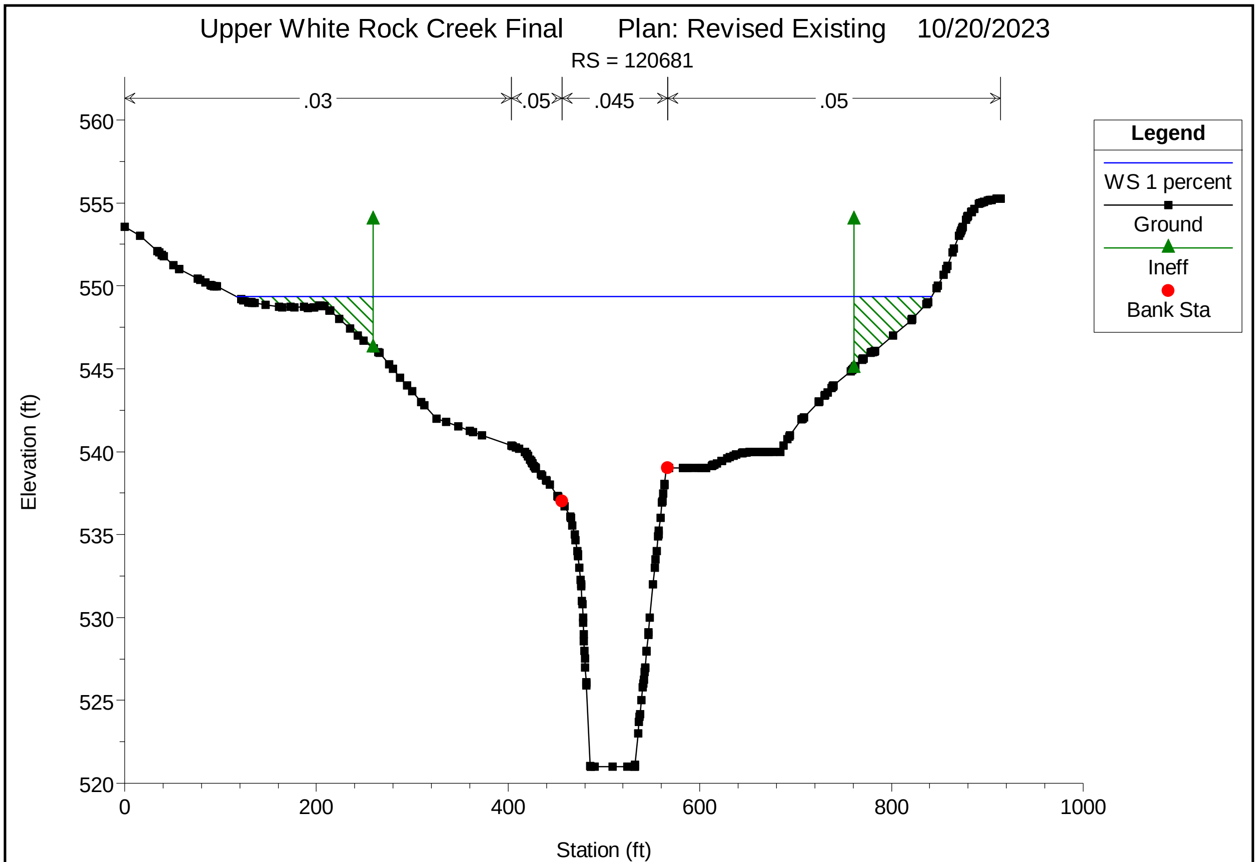
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	95423	1 percent	53100.00	472.10	503.35	494.37	504.67	0.001264	9.60	6313.78	465.22	0.37	6652.78
1	95356	1 percent	53100.00	474.35	503.48	495.00	504.40	0.000918	8.24	7383.46	636.02	0.32	6641.55
1	95303 DART RR		Bridge										
1	95183	1 percent	53100.00	472.67	502.35	493.17	503.76	0.001265	9.85	6523.97	600.88	0.38	6616.42
1	95015	1 percent	53100.00	470.80	501.90		503.50	0.001114	10.65	6597.25	516.27	0.41	6593.91
1	94735	1 percent	53100.00	470.70	501.74		503.01	0.001887	9.92	7802.95	655.06	0.39	6550.74
1	94517	1 percent	53100.00	470.67	501.67		502.64	0.000951	8.55	8989.64	781.33	0.37	6508.91
1	94274	1 percent	53100.00	470.60	501.49		502.43	0.000756	8.67	10140.36	903.77	0.33	6460.51
1	94191	1 percent	53800.00	470.00	501.47	492.42	502.35	0.000714	8.35	10608.63	984.58	0.33	6448.02
1	94130 ROYAL LN.		Bridge										
1	94063	1 percent	53800.00	470.00	501.36		502.06	0.001377	8.85	10636.51	1143.97	0.37	6417.96
1	93725	1 percent	53800.00	470.10	499.83	497.73	501.01	0.003379	11.69	8549.30	1148.59	0.47	6311.37
1	93379	1 percent	53800.00	469.80	498.61		499.97	0.003072	12.84	8670.73	1242.25	0.54	6251.35
1	93068	1 percent	53800.00	469.60	498.29	495.70	499.20	0.001961	11.22	10816.15	1414.51	0.45	6197.18
1	92800	1 percent	53800.00	469.10	497.47	496.04	498.68	0.002832	12.97	9784.06	1551.22	0.52	6152.98
1	92451	1 percent	53800.00	468.90	496.70	494.93	497.54	0.002802	11.55	10778.84	1725.74	0.51	6067.63
1	92135	1 percent	53800.00	468.50	496.15	494.13	496.83	0.001927	10.03	12276.23	1859.99	0.43	5993.01
1	91868	1 percent	53800.00	468.40	495.90	493.47	496.42	0.001552	9.34	13720.52	2045.88	0.39	5935.77
1	91514	1 percent	53800.00	467.80	495.40	492.96	495.89	0.001571	9.46	13880.34	2118.75	0.39	5833.60
1	91485 ROYAL OAKS GOLF		Bridge										
1	91455	1 percent	53800.00	467.80	495.00	492.57	495.55	0.001547	9.05	13482.93	2084.30	0.39	5814.88
1	91254	1 percent	53800.00	467.70	494.77	491.06	495.08	0.001149	7.04	15683.51	2210.42	0.33	5721.69
1	90805	1 percent	54100.00	467.20	494.37	490.78	494.69	0.001122	7.51	15728.16	2112.00	0.33	5602.41
1	90782 ROYAL OAKS GOLF		Bridge										
1	90759	1 percent	54100.00	467.20	494.22		494.53	0.001104	7.51	15838.69	2110.69	0.33	5585.66
1	90454	1 percent	54100.00	467.20	493.94		494.24	0.001304	7.06	14892.63	1919.86	0.35	5507.01
1	90118	1 percent	54100.00	469.07	493.50	490.03	493.92	0.000941	8.67	16120.94	2028.29	0.35	5408.28
1	90098 Royal Oaks Count		Inl Struct										
1	90078	1 percent	54100.00	469.28	493.50		493.82	0.000824	7.35	17004.94	2055.73	0.32	5392.34
1	89771	1 percent	54100.00	466.85	492.81	489.77	493.39	0.001702	9.10	12248.98	2028.88	0.40	5275.49
1	89757 ROYAL OAKS GOLF		Bridge										
1	89743	1 percent	54100.00	466.85	492.69		493.17	0.002187	8.11	11515.15	2007.84	0.37	5265.23
1	89650	1 percent	54000.00	468.50	492.48	488.85	493.03	0.001139	6.37	9323.63	2549.49	0.26	5235.32
1	89549 GREENVILLE AVENU		Bridge										
1	89447	1 percent	54000.00	468.30	491.95	482.17	492.26	0.000314	3.15	12398.35	2503.33	0.14	5184.35
1	88702	1 percent	54000.00	466.00	490.90	489.56	491.92	0.003811	11.61	8580.89	2850.59	0.48	5131.71
1	88309	1 percent	54300.00	465.30	490.94	486.03	491.10	0.000862	4.27	17999.92	2861.43	0.22	4983.98
1	87824	1 percent	54300.00	464.30	490.70	485.76	490.83	0.000647	4.65	20382.31	2528.00	0.19	4824.03
1	87375	1 percent	54300.00	463.80	490.49	485.42	490.61	0.000606	4.64	23133.71	3139.92	0.19	4638.13
1	87013	1 percent	54300.00	463.80	490.31	485.01	490.41	0.000601	4.38	25869.67	3277.63	0.19	4444.14
1	86695	1 percent	54300.00	463.30	490.13		490.19	0.000432	3.87	32059.15	3872.56	0.17	4146.77
1	86219	1 percent	54300.00	461.50	489.82	483.53	489.93	0.000503	4.44	25615.98	3256.68	0.18	3748.92
1	85283	1 percent	54300.00	461.72	489.32	483.20	489.56	0.001029	5.95	16642.70	3005.33	0.23	3464.01
1	85173 WALNUT HILL LANE		Bridge										
1	85062	1 percent	54300.00	461.72	489.04	481.99	489.23	0.000824	5.36	18012.01	2770.14	0.21	3369.37
1	84490	1 percent	54300.00	460.50	488.82	482.42	489.04	0.000746	5.81	19435.46	2719.08	0.23	3256.83
1	84200	1 percent	54300.00	460.40	488.79	481.29	488.91	0.000641	4.82	23379.30	2591.82	0.18	3186.40
1	83920	1 percent	54300.00	460.50	488.53	481.31	488.72	0.000788	5.34	18107.07	1879.09	0.21	3051.23
1	83634	1 percent	54300.00	460.40	488.10	482.76	488.41	0.001854	6.29	13723.04	1737.92	0.28	2958.69
1	83337	1 percent	54300.00	460.20	487.81	481.77	488.16	0.001419	6.18	13897.38	1716.39	0.27	2918.73
1	82978	1 percent	54300.00	460.13	487.73	481.46	487.87	0.000478	3.97	19831.21	2120.24	0.16	2810.44
1	82783	1 percent	54300.00	460.15	487.70	479.77	487.82	0.000365	3.52	20475.25	2093.61	0.14	2762.71
1	82695	1 percent	53800.00	459.70	487.69	480.63	487.81	0.000322	4.06	21268.69	2089.44	0.15	2742.48
1	82610 FAIR OAKS AVE		Bridge										
1	82525	1 percent	53800.00	459.40	484.24	480.93	484.58	0.001379	6.39	13265.13	1855.80	0.28	2705.10
1	82440	1 percent	53800.00	459.60	484.17	480.85	484.45	0.001587	5.30	13370.15	1767.87	0.25	2685.75
1	82276	1 percent	53800.00	459.50	483.79	479.00	484.21	0.001434	6.46	12649.79	1804.39	0.29	2641.36
1	82089	1 percent	53800.00	460.00	483.51	476.75	483.94	0.001479	6.36	12960.93	1968.51	0.28	2588.17
1	81768	1 percent	53800.00	460.20	483.15	477.02	483.50	0.001091	5.65	14505.49	2405.96	0.26	2481.99
1	81313	1 percent	53800.00	460.00	483.05	473.54	483.13	0.000432	2.91	26160.11	3254.03	0.13	2272.66
1	80759	1 percent	53800.00	459.60	482.97	474.79	483.02	0.000141	2.33	33528.56	3471.84	0.10	1968.75
1	80332	1 percent	53800.00	459.10	482.93		482.97	0.000113	2.02	37890.70	3838.68	0.08	1687.09
1	79663	1 percent	53800.00	458.70	482.82		482.87	0.000233	3.38	35545.80	2858.93	0.14	1152.58
1	78750	1 percent	53800.00	457.80	482.67		482.72	0.000332	3.11	34565.12	3002.45	0.14	747.63
1	78236	1 percent	53800.00	457.40	482.44		482.53	0.000570	4.93	26540.12	2760.37	0.19	463.20
1	77408	1 percent	49700.00	456.60	481.93	472.13	482.06	0.000516	4.44	24040.33	2908.59	0.19	

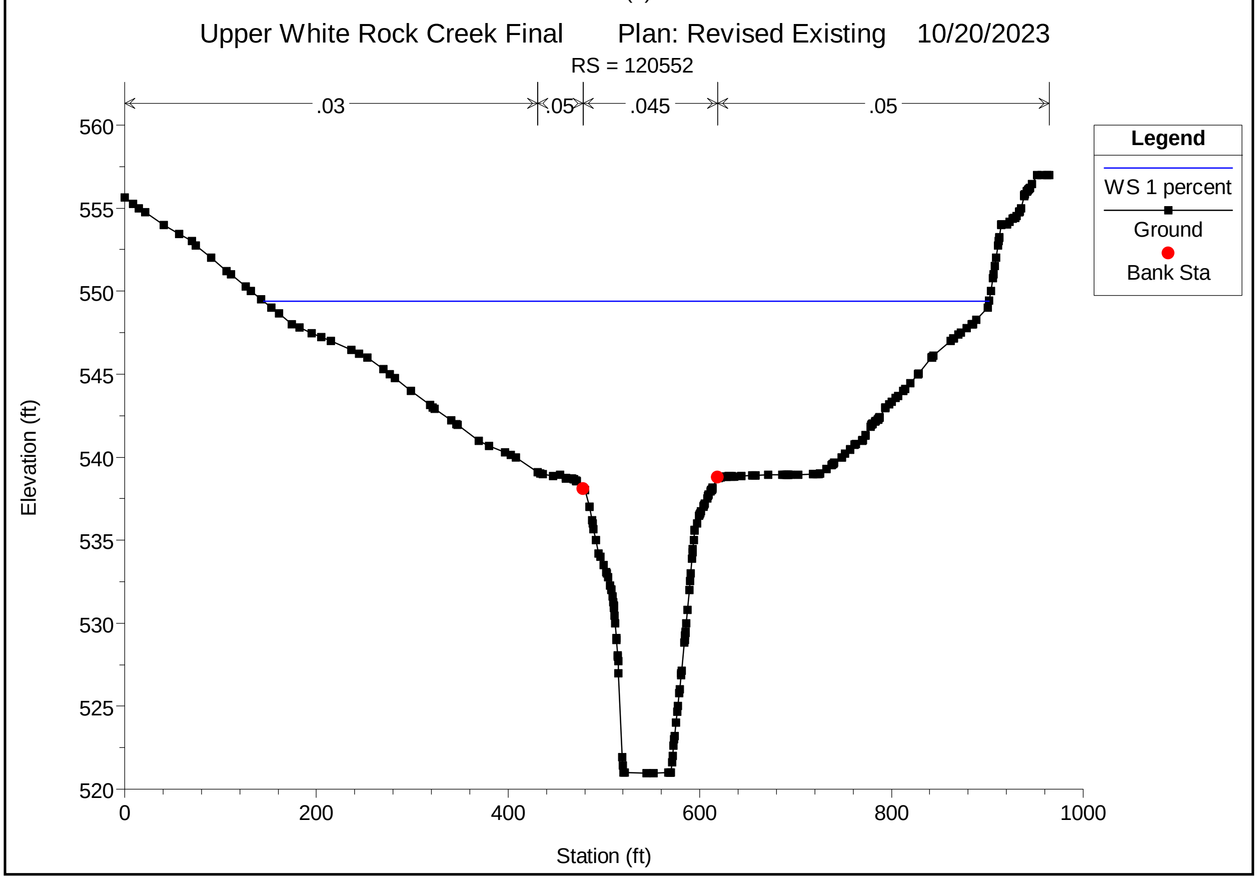


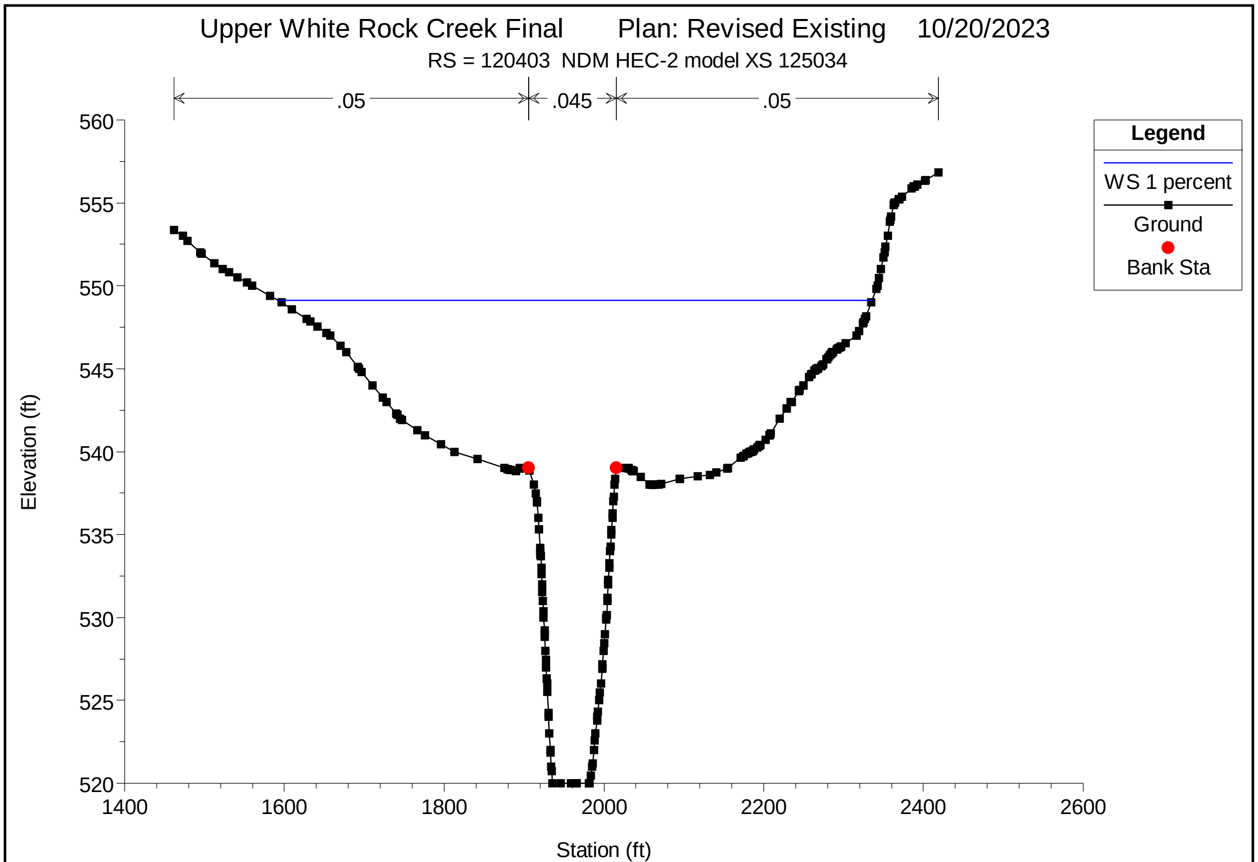
Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
WRC 1
Legend
WS 1 percent
Ground
Elevation (ft)
560
540
520
500
119117
119298
119404
119526
119591
119664
119885
120125
120213
120261
120333
120403
120552
120681
120771
120828
120978
121123
121220
121281
121317
41000
41500
42000
42500
43000
Main Channel Distance (ft)

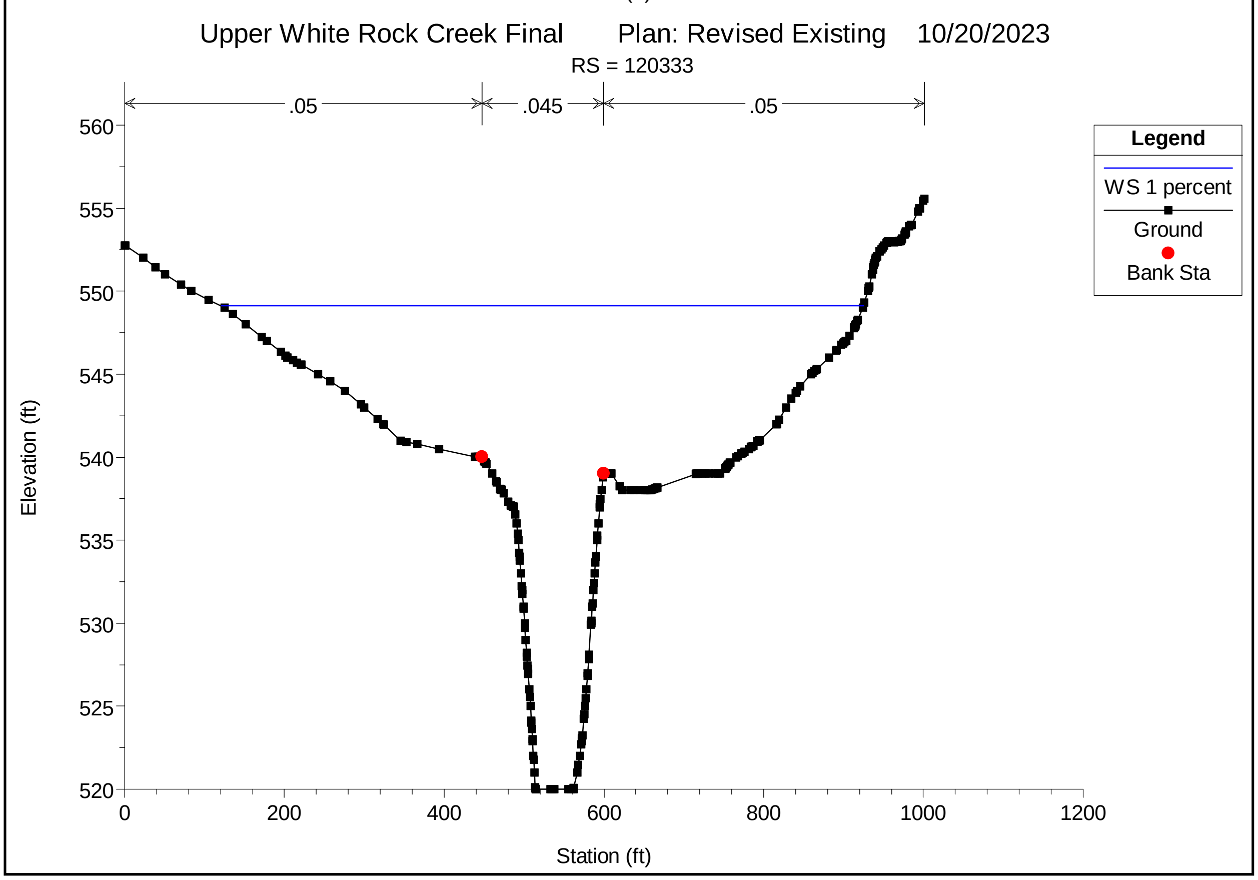

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120828 Halff 2006 XS downstream of Preston Road
.03
.05
.045
.05
570
560
550
540
530
520
Elevation (ft)
600
800
1000
1200
1400
1600
Station (ft)
Legend
WS 1 percent
Ground
Ineff
Bank Sta

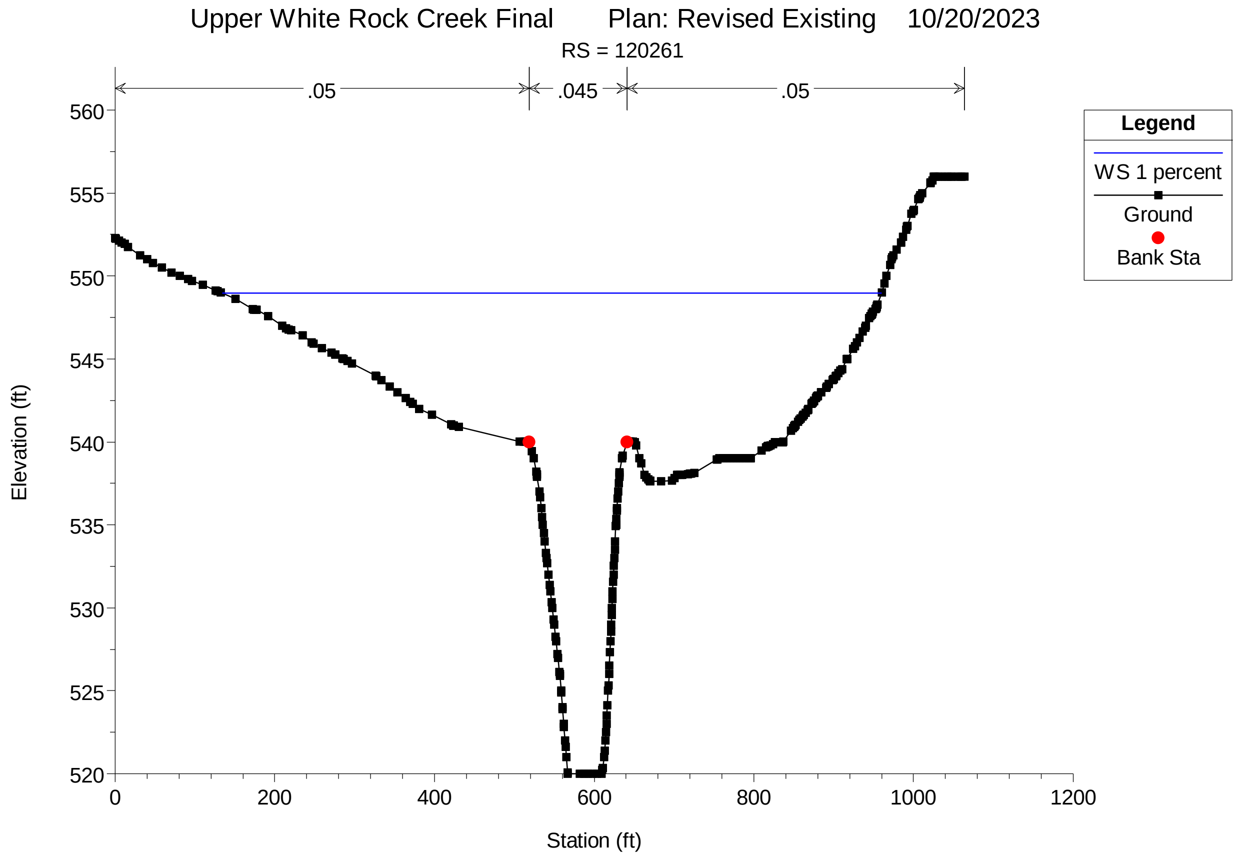

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120771
.03
.
0
5
.045
.05
560
555
550
545
540
535
530
525
520
Elevation (ft)
0
200
400
600
800
1000
Station (ft)
Legend
WS 1 percent
Ground
Ineff
Bank Sta

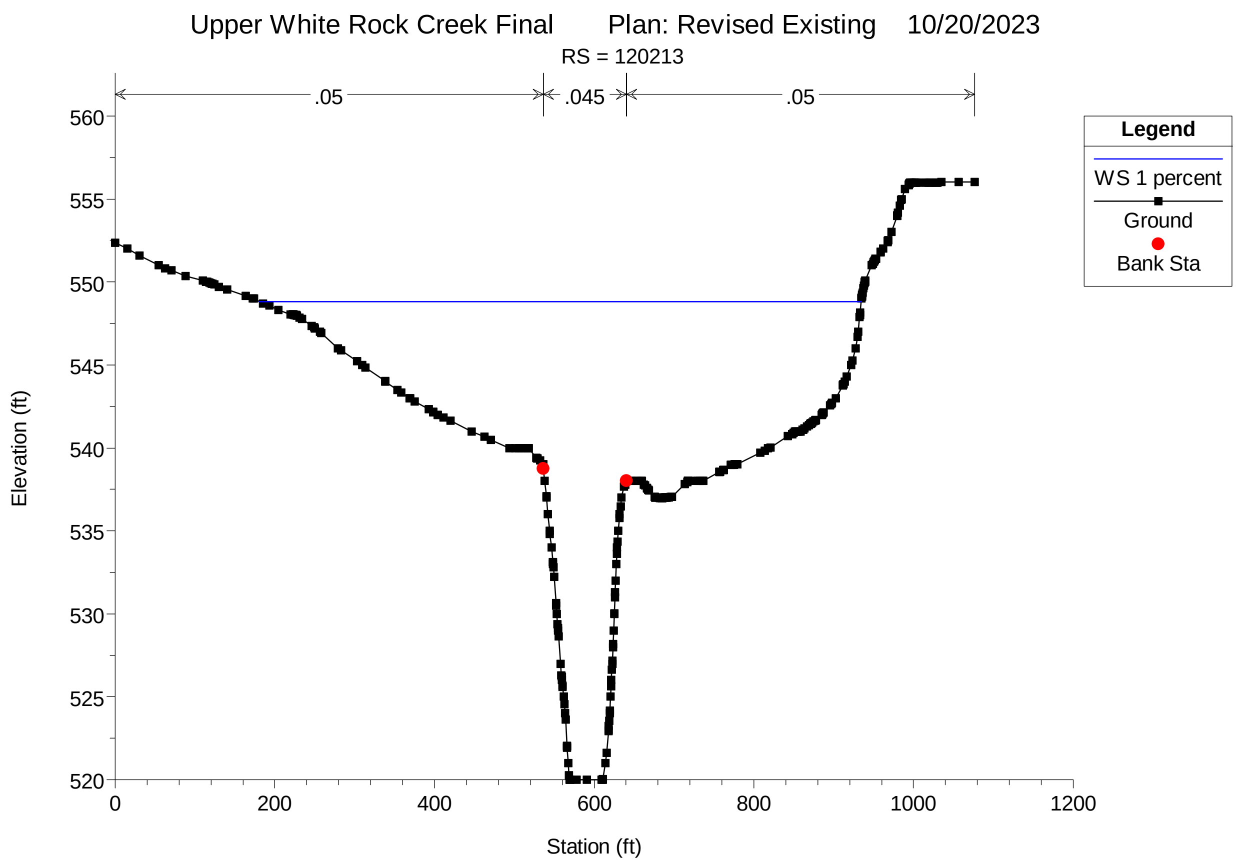

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120681
.03
.05
.045
.05
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000

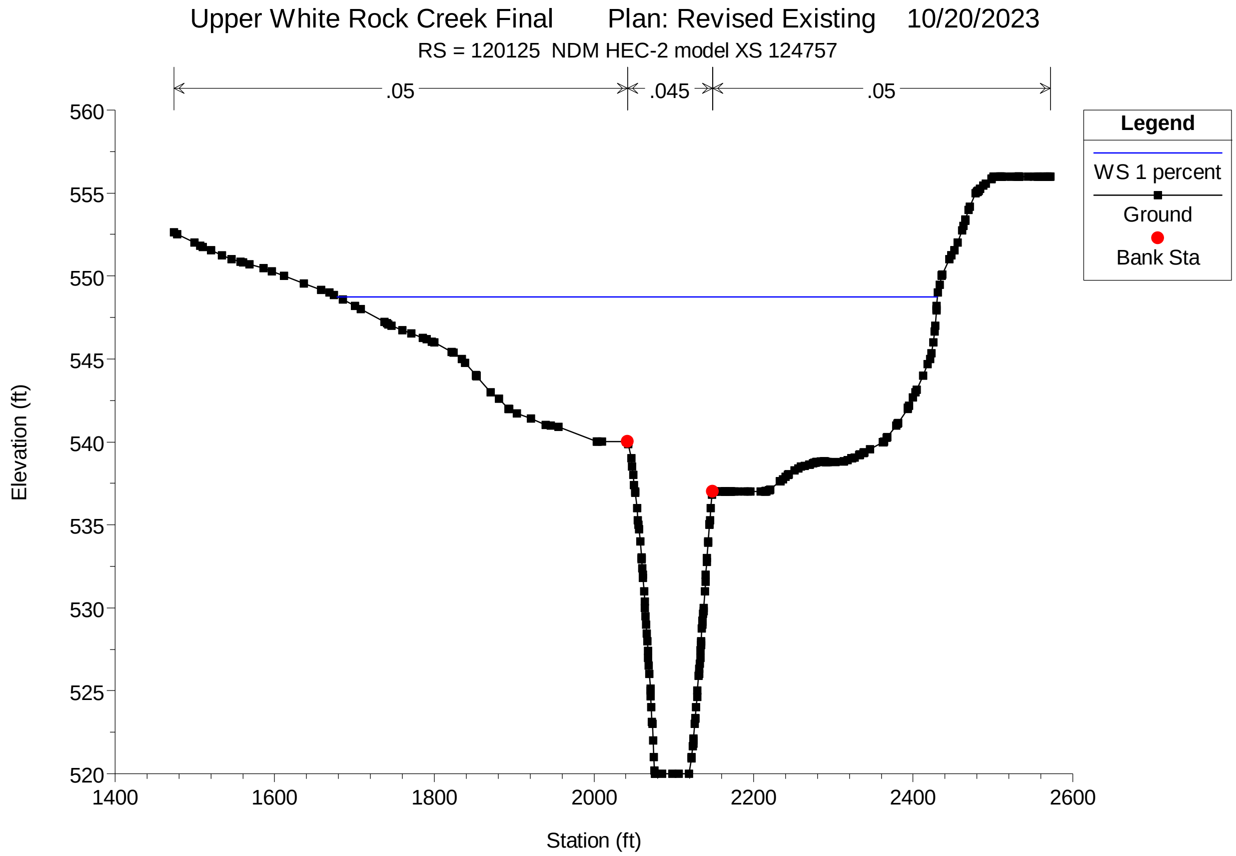

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120552
.03
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000

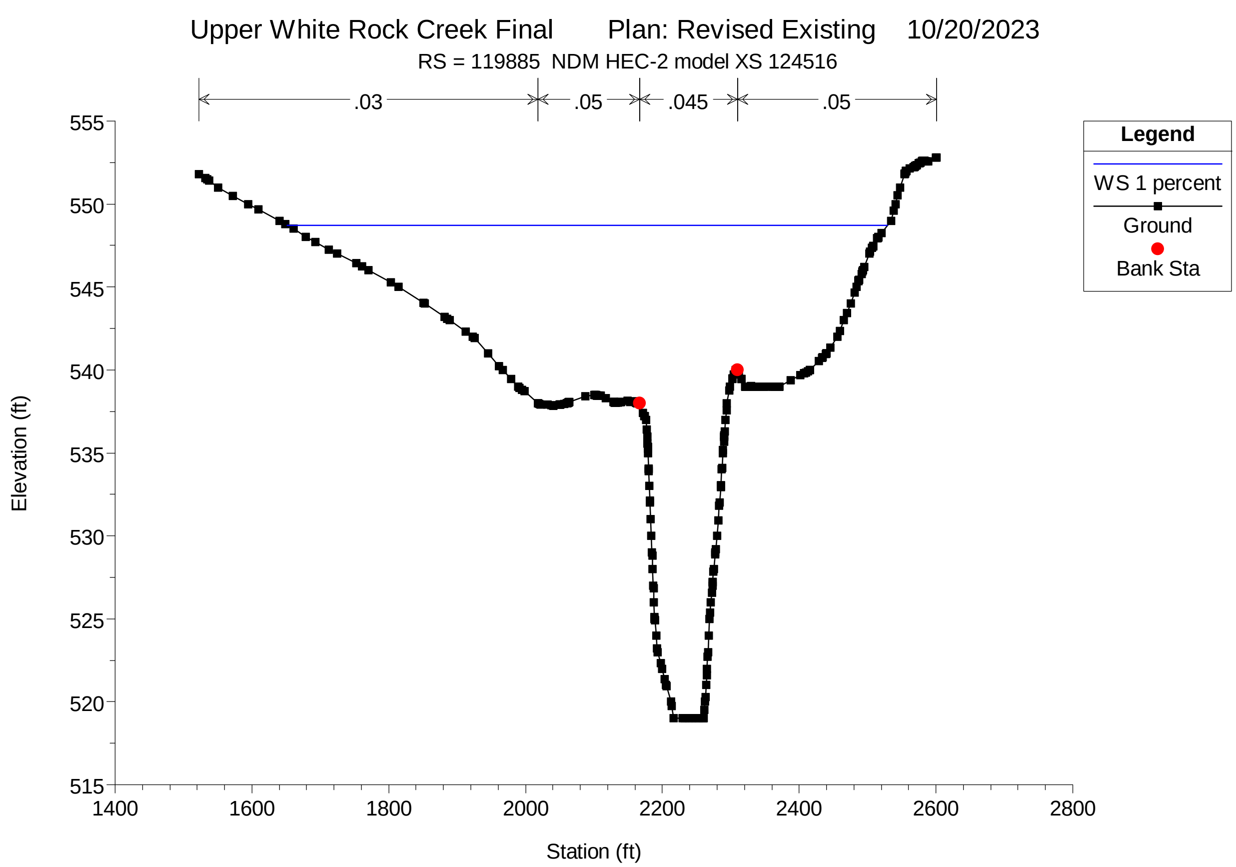

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120403 NDM HEC-2 model XS 125034
.05
.045
.05
560
555
550
545
540
535
530
525
520
Elevation (ft)
1400
1600
1800
2000
2200
2400
2600
Station (ft)
Legend
WS 1 percent
Ground
Bank Sta

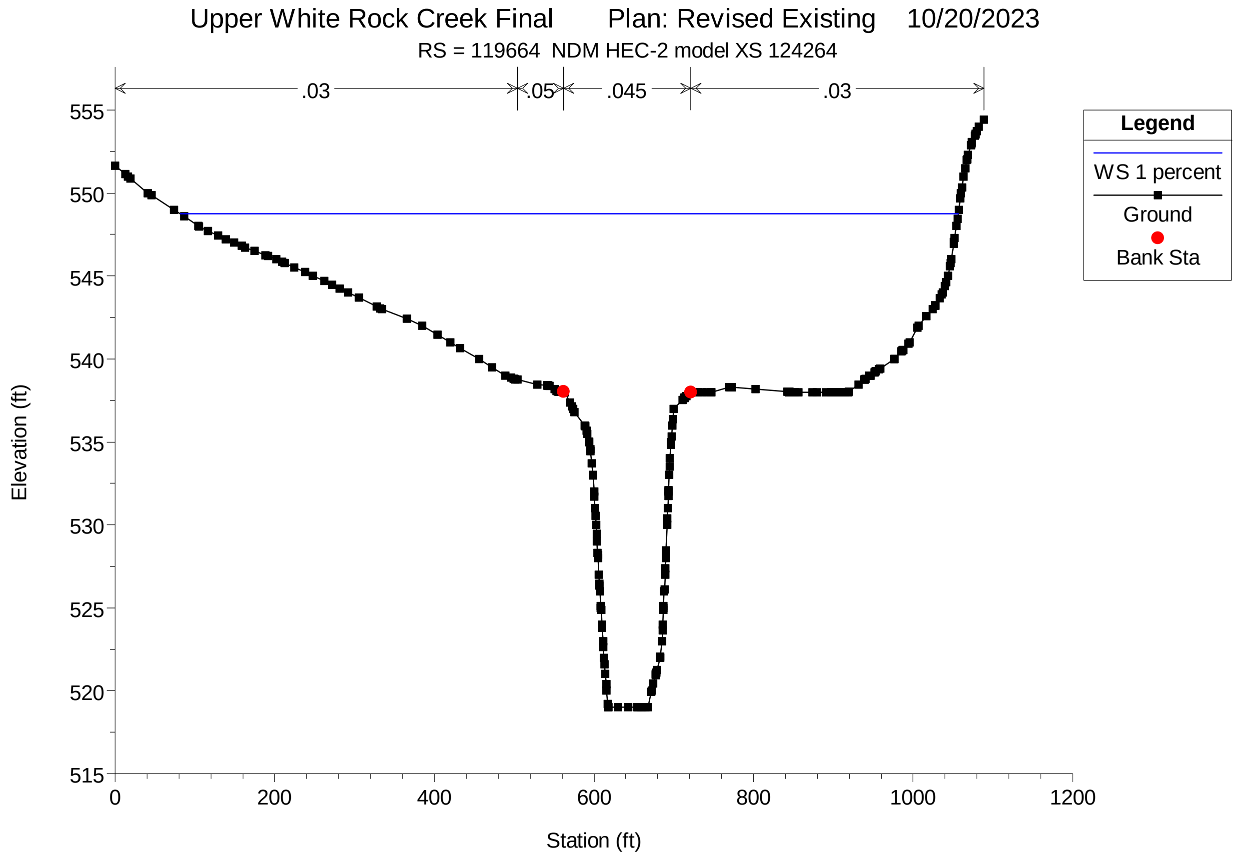

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120333
.05
.045
.05
560
555
550
545
540
535
530
525
520
Elevation (ft)
0
200
400
600
800
1000
1200
Station (ft)
Legend
WS 1 percent
Ground
Bank Sta

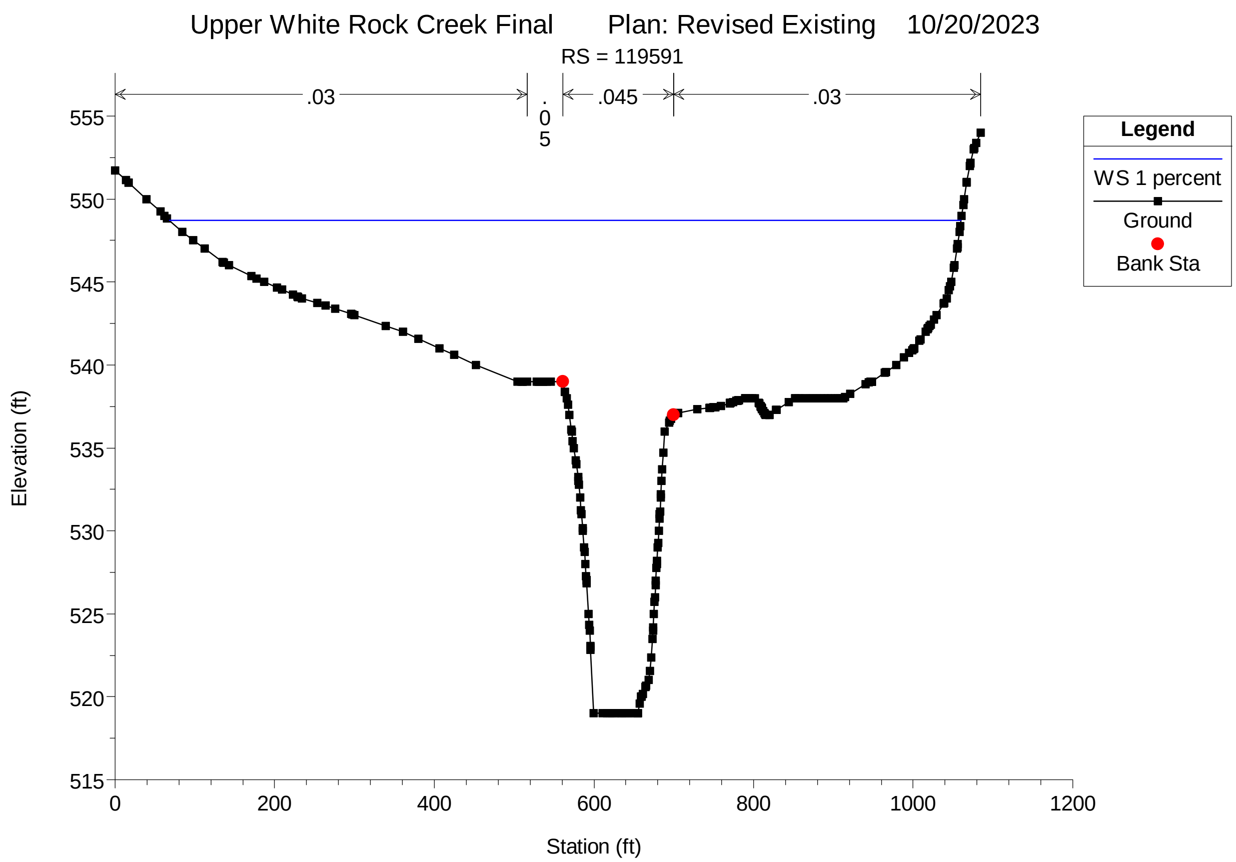

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120261
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000
1200
Station (ft)

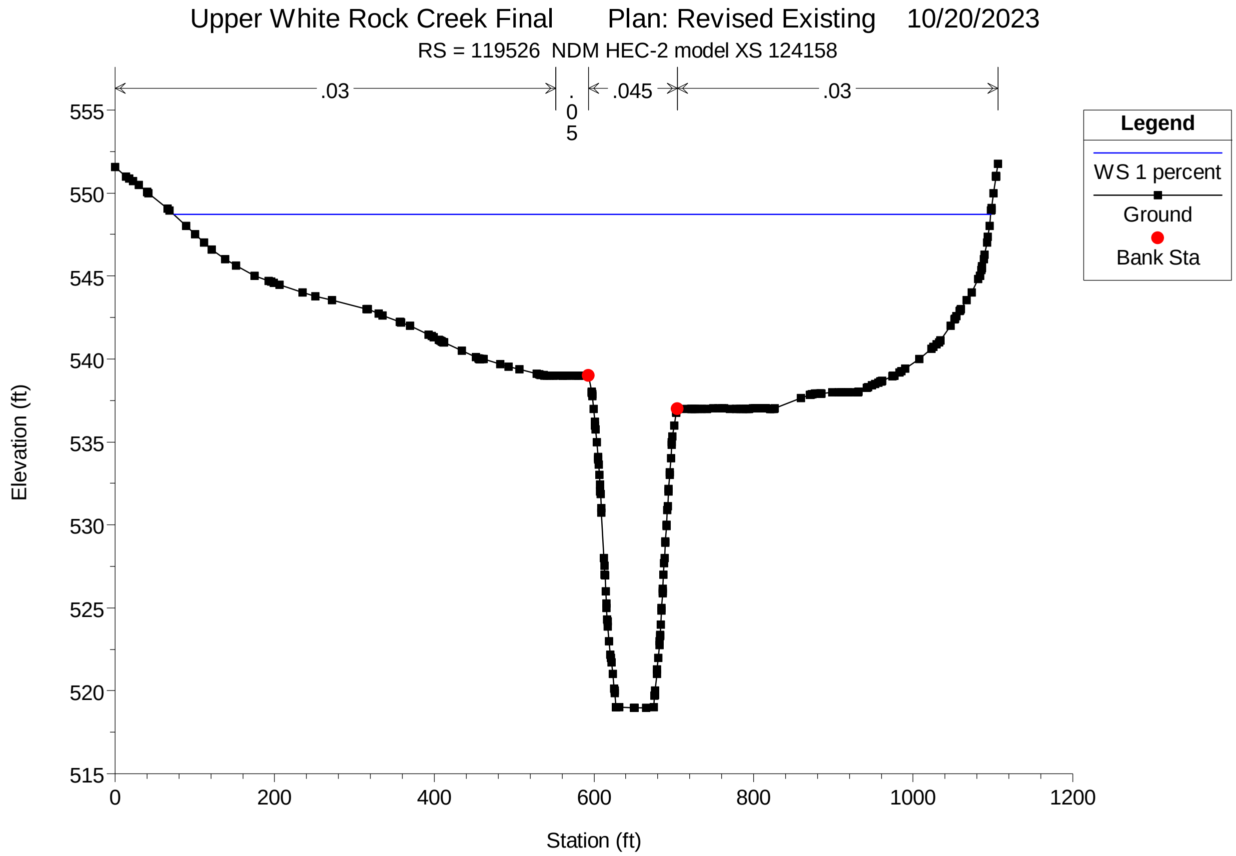

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120213
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000
1200
Station (ft)

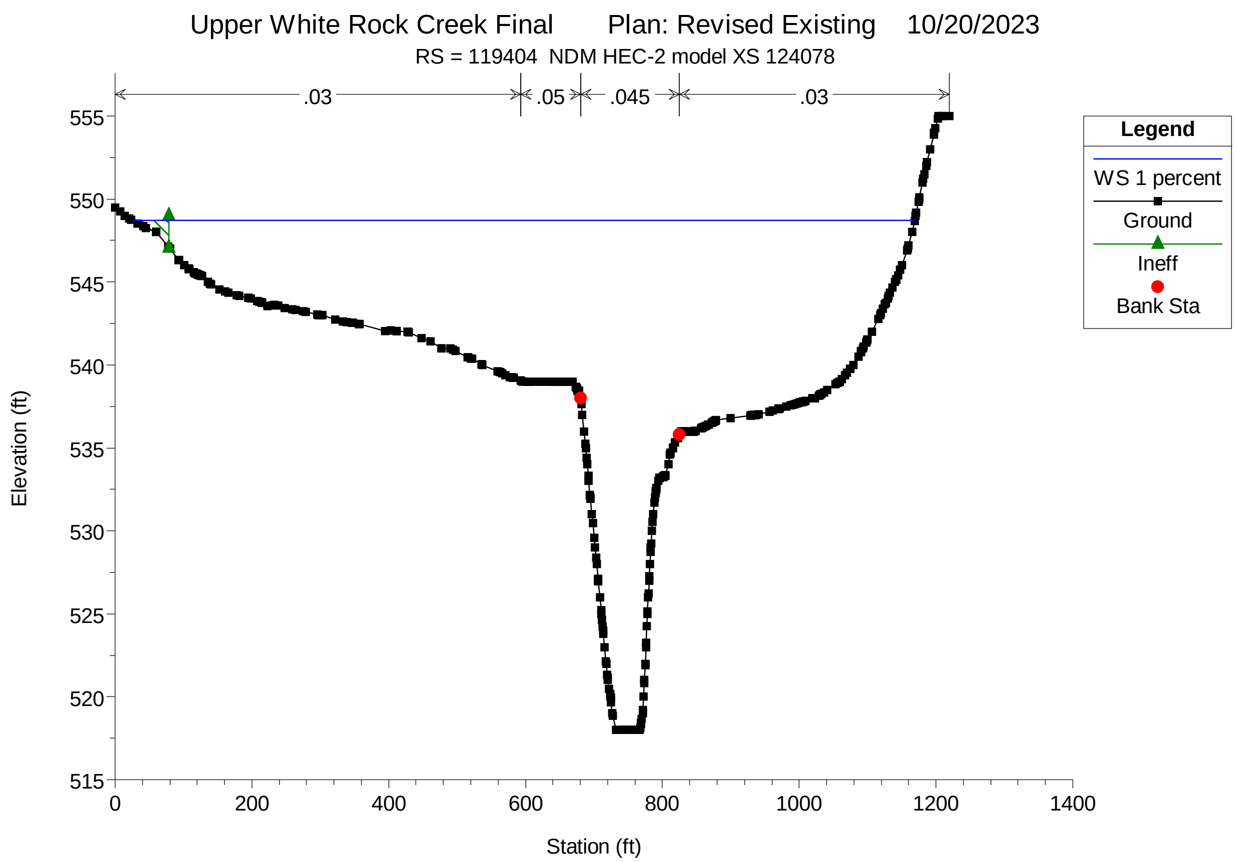

Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 120125 NDM HEC-2 model XS 124757
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
525
520
1400
1600
1800
2000
2200
2400
2600


Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 119885 NDM HEC-2 model XS 124516
.03
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
555
550
545
540
535
530
525
520
515
1400
1600
1800
2000
2200
2400
2600
2800


Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 119664 NDM HEC-2 model XS 124264
.03
.05
.045
.03
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
555
550
545
540
535
530
525
520
515
0
200
400
600
800
1000
1200


Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 119591
.03
.
0
5
.045
.03
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
555
550
545
540
535
530
525
520
515
0
200
400
600
800
1000
1200


Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 119526 NDM HEC-2 model XS 124158
.03
.05
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 1 percent
Ground
Bank Sta


Upper White Rock Creek Final Plan: Revised Existing 10/20/2023
RS = 119404 NDM HEC-2 model XS 124078
.03
.05
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 1 percent
Ground
Ineff
Bank Sta

Appendix D:
Proposed Condition Hydraulics

HEC-RAS Output
Stream Profile
Affected Cross-Sections

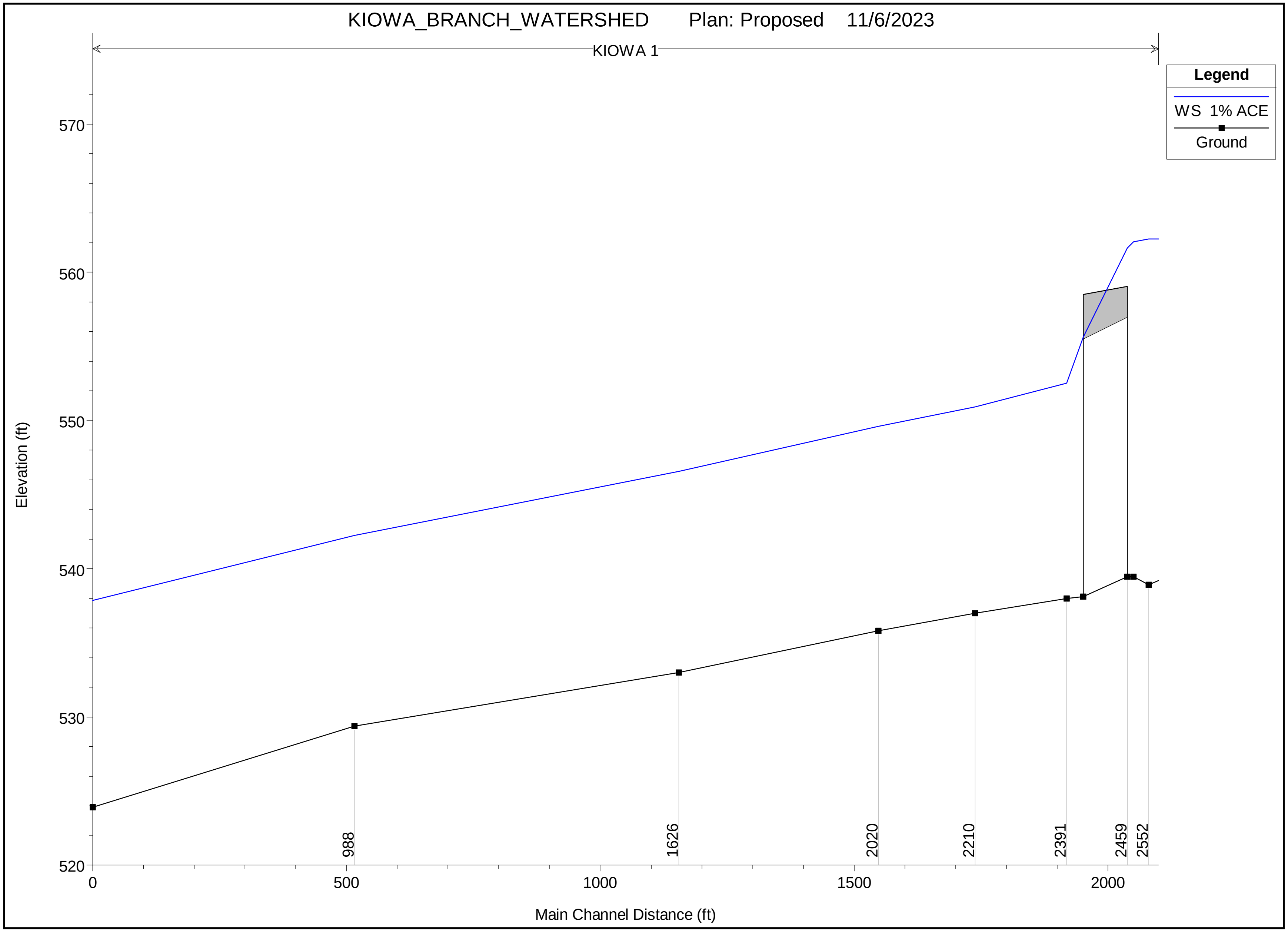
kimley-horn.com 13455 Noel Road, Suite 700 Dallas, TX 75240 972 770 1300

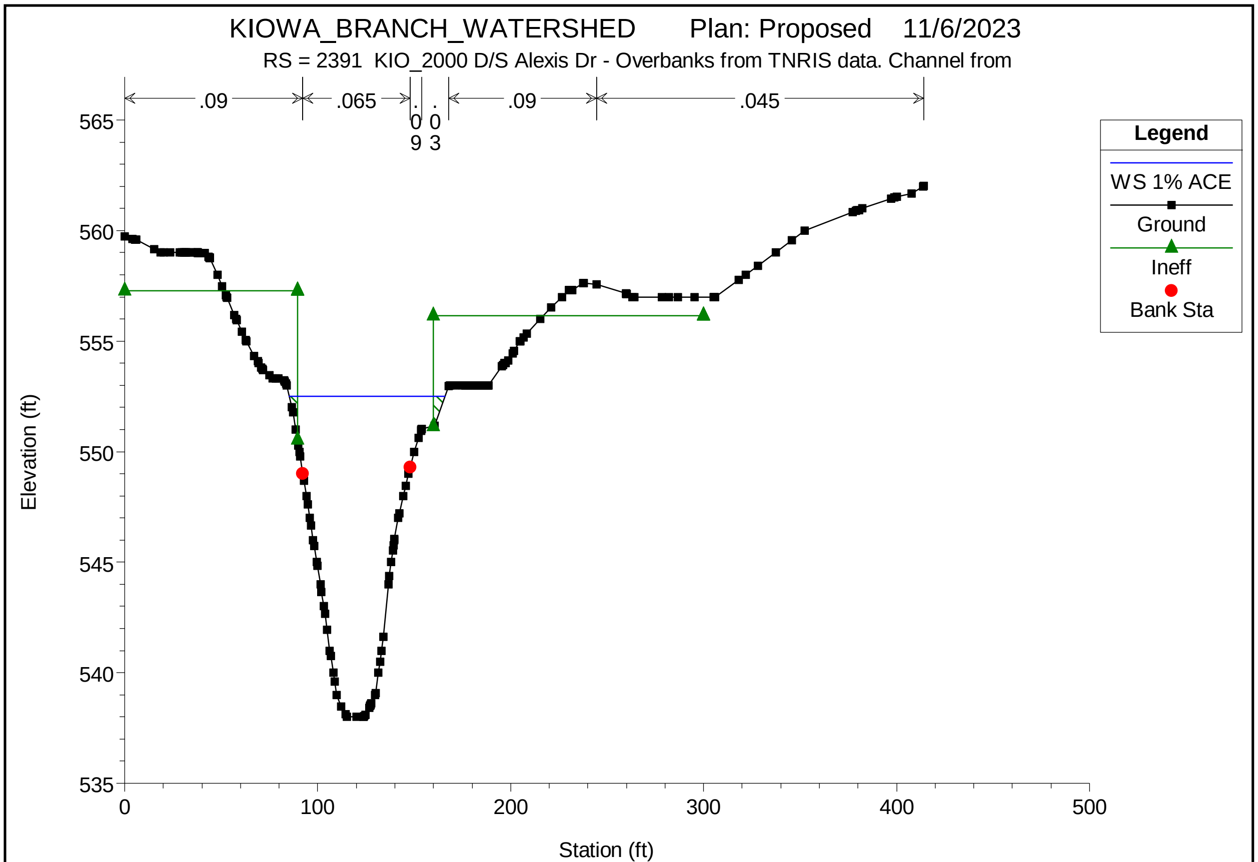
HEC-RAS Plan: Prop River: KIOWA Reach: 1 Profile: 1% ACE

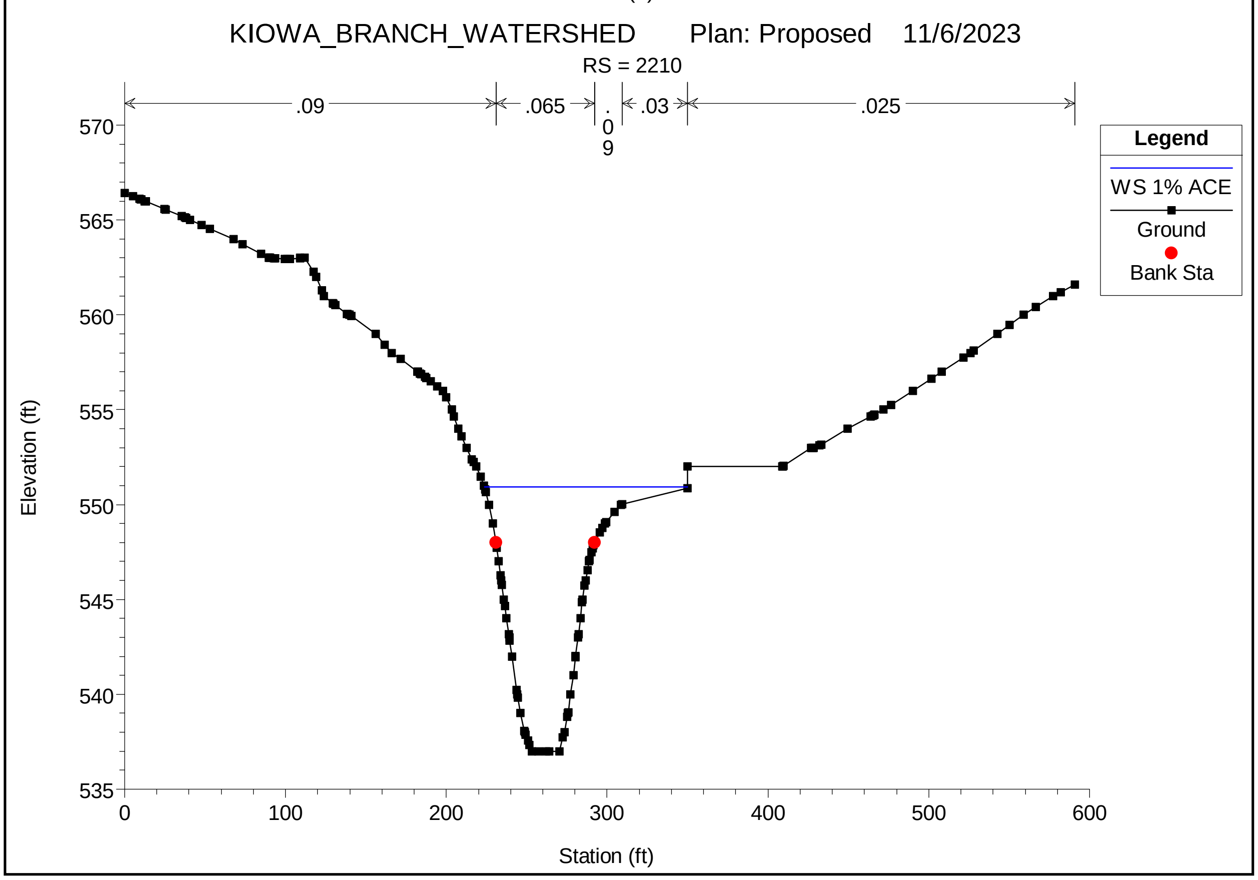
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	16598	1% ACE	1550.00	640.79	647.80		648.18	0.000811	4.96	312.40	58.91	0.38
1	16564	1% ACE	1550.00	639.71	646.19	646.19	647.98	0.006541	10.72	144.57	41.15	1.01
1	16380	1% ACE	1550.00	638.52	645.31	644.82	646.74	0.004703	9.60	161.46	41.82	0.86
1	16131	1% ACE	1550.00	637.19	643.58	643.58	645.34	0.006492	10.64	145.70	41.52	1.00
1	15671	1% ACE	1550.00	634.12	641.44	640.71	642.56	0.003733	8.51	184.78	66.21	0.77
1	15430	1% ACE	1550.00	632.85	639.68	639.68	641.35	0.006395	10.38	150.69	50.94	0.99
1	15296	1% ACE	1550.00	631.59	638.86		639.63	0.002292	7.07	219.28	55.46	0.61
1	15156	1% ACE	1550.00	630.75	638.17		639.24	0.003089	8.27	189.54	53.30	0.71
1	15096	1% ACE	1550.00	629.98	638.08		639.04	0.002473	7.87	202.84	60.18	0.65
1	15044	1% ACE	1550.00	629.53	637.67		638.86	0.003308	8.79	181.04	54.15	0.74
1	14912	1% ACE	1550.00	628.87	637.83		638.43	0.001219	6.33	302.04	118.67	0.47
1	14845	1% ACE	1550.00	628.66	637.97	634.73	638.29	0.000600	4.66	411.01	238.38	0.35
1	14832	1% ACE	1700.00	627.54	638.05	631.78	638.21	0.000323	3.27	708.46	285.43	0.20
1	14746 Hillcrest		Culvert									
1	14693	1% ACE	2500.00	626.69	635.58	632.06	636.23	0.000808	6.53	415.47	201.51	0.42
1	14668	1% ACE	2500.00	625.77	633.84	633.46	635.80	0.004956	11.23	222.60	47.37	0.91
1	14607	1% ACE	2500.00	625.04	633.27	633.27	635.44	0.006039	11.82	211.66	50.01	1.00
1	14236	1% ACE	2500.00	623.41	631.17	630.81	632.89	0.004809	10.54	239.17	63.26	0.89
1	13767	1% ACE	2500.00	620.68	628.75	628.52	630.53	0.005256	10.70	234.68	64.75	0.93
1	13479	1% ACE	2500.00	618.38	627.85	627.17	629.18	0.003497	9.29	295.53	108.68	0.77
1	13410	1% ACE	2500.00	618.06	628.16	623.83	628.72	0.000465	6.10	497.08	122.83	0.37
1	13405		Lat Struct									
1	13390	1% ACE	2500.00	618.04	628.40	627.36	628.47	0.000188	2.38	1260.89	832.86	0.11
1	13377	1% ACE	2408.50	617.94	628.41	627.20	628.45	0.000193	2.41	1591.00	900.81	0.09
1	13361	1% ACE	2299.25	617.82	628.41	627.27	628.45	0.000103	1.76	1485.63	902.53	0.08
1	13346	1% ACE	2196.62	617.71	628.42	627.09	628.45	0.000075	1.50	1599.60	921.92	0.08
1	13332	1% ACE	2094.17	617.60	628.41	627.22	628.44	0.001174	1.55	1462.93	957.15	0.08
1	13244	1% ACE	2794.17	616.43	627.37	624.08	628.07	0.003578	6.72	432.59	77.63	0.43
1	13234.1*	1% ACE	2794.17	616.45	627.31		628.02	0.003939	6.85	427.06	82.37	0.45
1	13224.2*	1% ACE	2794.17	616.47	627.24		627.97	0.004330	6.97	421.58	86.60	0.47
1	13214.3*	1% ACE	2794.17	616.50	627.16		627.92	0.004666	7.10	415.76	90.46	0.48
1	13204.5*	1% ACE	2794.17	616.52	627.08		627.87	0.005030	7.22	410.22	94.03	0.50
1	13194.6*	1% ACE	2794.17	616.54	627.00		627.81	0.005447	7.34	404.88	97.73	0.52
1	13184.7*	1% ACE	2794.17	616.57	626.92		627.75	0.005834	7.45	400.70	101.34	0.53
1	13174.8*	1% ACE	2794.17	616.59	626.84		627.69	0.006217	7.54	398.23	106.10	0.55
1	13165	1% ACE	2794.17	616.61	626.77	625.09	627.63	0.006233	7.59	399.22	113.76	0.56
1	13119	1% ACE	2794.17	616.02	627.23	624.60	627.29	0.000556	2.41	1625.11	582.82	0.17
1	13010	1% ACE	2794.17	616.09	625.43	624.13	626.72	0.009435	9.28	336.34	210.54	0.66
1	12988	1% ACE	2794.17	615.91	625.24	623.88	626.51	0.009694	9.14	331.10	186.42	0.66
1	12930	1% ACE	2694.17	615.44	625.57	622.11	625.77	0.001620	4.02	913.51	561.31	0.28
1	12925		Lat Struct									
1	12916	1% ACE	2639.38	616.82	625.55	625.15	625.76	0.000650	4.44	762.97	525.27	0.22
1	12902	1% ACE	2589.01	616.82	625.59	624.94	625.71	0.000353	3.27	979.46	655.51	0.16
1	12883	1% ACE	2525.51	616.80	625.59	624.92	625.70	0.000337	3.20	977.34	654.81	0.16
1	12869	1% ACE	2477.53	616.77	625.58	624.91	625.69	0.000325	3.14	976.98	654.69	0.16
1	12851	1% ACE	2418.00	616.77	625.46	621.61	625.67	0.023138	4.89	754.37	404.63	0.22
1	12827	1% ACE	2418.00	614.51	625.40	620.50	625.55	0.001728	3.25	1035.55	416.58	0.24
1	12713	1% ACE	2418.00	614.35	624.92	622.10	625.22	0.004387	4.54	680.12	375.58	0.34
1	12464	1% ACE	2694.17	612.91	623.85		624.07	0.004610	4.11	960.56	501.83	0.31
1	12282	1% ACE	2694.17	612.32	622.55	619.31	623.12	0.005734	6.09	475.37	187.90	0.41
1	12066	1% ACE	2694.17	612.67	620.50	619.02	621.41	0.011133	7.94	416.94	193.28	0.56
1	11941	1% ACE	2694.17	609.49	619.29		620.06	0.009785	7.19	438.42	173.36	0.52
1	11855	1% ACE	2694.17	608.72	618.68		619.30	0.007139	6.42	471.76	170.11	0.44
1	11702	1% ACE	2694.17	605.18	617.16		618.03	0.009463	7.55	366.57	63.66	0.51
1	11603	1% ACE	2694.17	604.23	616.42		617.10	0.008362	6.63	417.45	89.83	0.47
1	11411	1% ACE	2694.17	603.95	615.52		615.85	0.004472	4.65	621.17	153.53	0.35
1	11249	1% ACE	2694.17	603.15	614.63		615.04	0.005494	5.15	535.41	120.11	0.39
1	11113	1% ACE	2894.17	601.85	613.88		614.33	0.004966	5.48	566.76	127.79	0.37
1	10877	1% ACE	2894.17	600.44	613.02	608.84	613.38	0.003186	4.87	628.25	100.55	0.31
1	10593	1% ACE	3300.00	598.16	611.42	608.35	612.11	0.006111	7.28	574.57	173.85	0.41
1	10450	1% ACE	3300.00	599.27	611.13	607.80	611.40	0.003009	4.75	866.42	183.83	0.28
1	10335	1% ACE	3300.00	598.30	610.66		611.02	0.003324	5.39	784.42	190.49	0.30
1	10198	1% ACE	4300.00	596.89	609.70	606.13	610.39	0.005452	6.88	717.43	174.45	0.41
1	9993	1% ACE	4300.00	594.89	608.59	604.41	609.29	0.005257	7.00	729.17	173.35	0.40
1	9612	1% ACE	4300.00	594.79	605.19		606.44	0.010986	9.12	514.59	106.58	0.60
1	9290	1% ACE	4300.00	592.63	604.79		605.04	0.001713	4.26	1190.71	224.18	0.25
1	9031	1% ACE	4300.00	590.88	603.75	600.36	604.34	0.004758	6.99	773.97	169.05	0.39
1	8548	1% ACE	4300.00	587.51	602.01	598.80	602.38	0.003933	5.69	1067.69	273.82	0.34
1	8330	1% ACE	4300.00	587.45	601.50		601.73	0.002169	4.51	1340.51	302.14	0.26
1	8164	1% ACE	4300.00	588.61	601.19		601.41	0.002501	4.79	1397.35	351.37	0.27
1	8087	1% ACE	4500.00	585.00	601.17		601.28	0.000790	3.17	2150.63	420.75	0.16
1	8000		Lat Struct									
1	7955	1% ACE	2812.96	579.58	601.17	588.19	601.21	0.000202	1.87	2299.19	362.28	0.08
1	7951	1% ACE	2812.96	581.92	601.17	590.92	601.20	0.000250	1.98	2206.77	362.26	0.09
1	7863		Inl Struct									
1	7773	1% ACE	2812.96	572.65	590.78	580.47	590.96	0.001172	3.45	814.99	91.57	0.19
1	7589	1% ACE	4500.00	574.85	589.72		590.39	0.004251	6.70	733.28	97.40	0.37
1	7232	1% ACE	5400.00	572.40	587.81		588.77	0.004645	7.90	715.58	69.72	0.39
1	7072	1% ACE	5400.00	570.63	587.11	581.40	588.01	0.004615	7.71	751.91	82.14	0.39
1	6813	1% ACE	5400.00	570.61	586.34	579.62	587.00	0.002922	6.65	875.16	92.92	0.32
1	6745 La Cosa		Culvert									

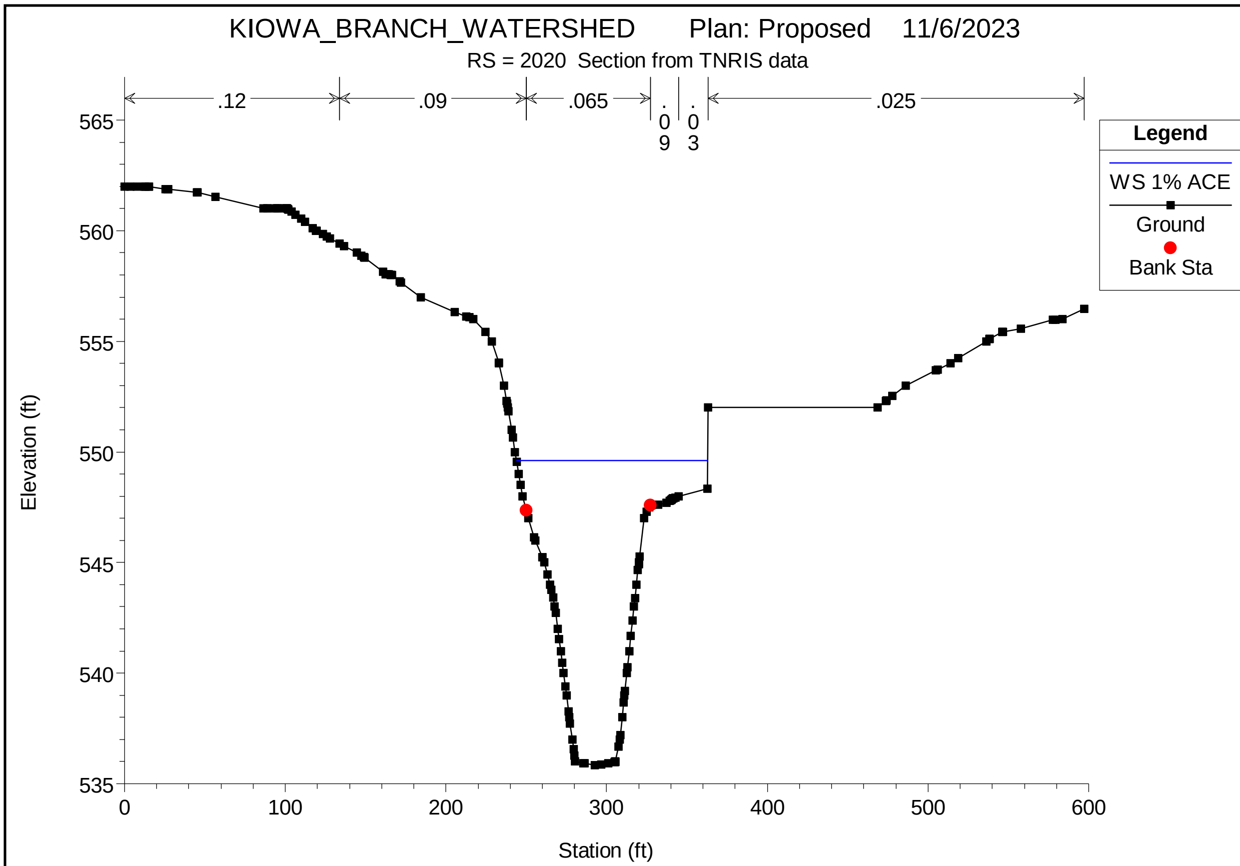
HEC-RAS Plan: Prop River: KIOWA Reach: 1 Profile: 1% ACE (Continued)

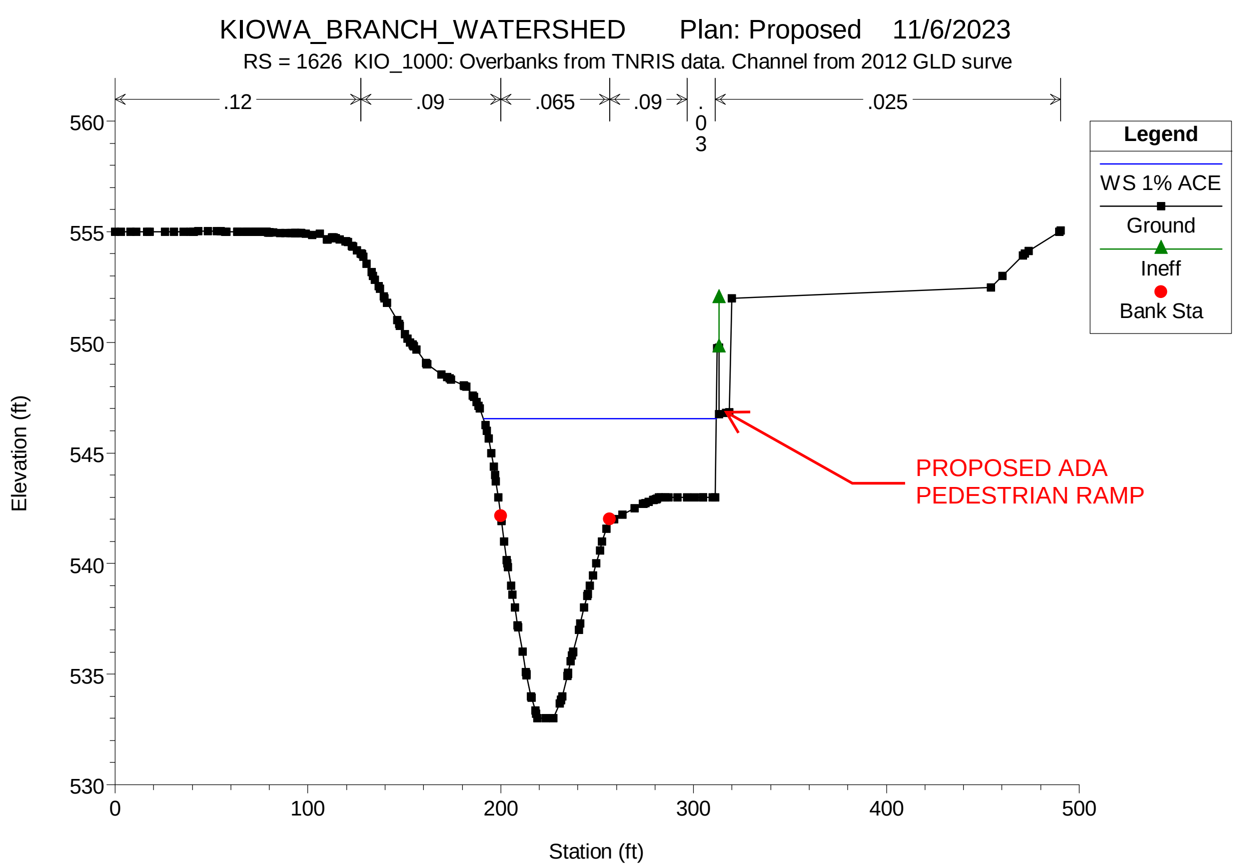
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	6682	1% ACE	5500.00	569.23	582.65	577.31	583.41	0.004224	7.01	790.52	101.51	0.37
1	6365	1% ACE	5500.00	567.13	580.11		581.40	0.008508	9.81	669.29	97.09	0.52
1	6271	1% ACE	5500.00	566.06	577.53	576.10	580.14	0.019339	13.04	436.19	60.42	0.76
1	6091	1% ACE	5500.00	564.21	577.19		578.00	0.005152	7.43	820.00	116.12	0.41
1	5991	1% ACE	5500.00	564.68	576.36		577.38	0.007533	8.58	760.98	128.71	0.48
1	5812	1% ACE	5500.00	561.32	575.43		576.31	0.004653	7.54	755.43	84.40	0.39
1	5397	1% ACE	5500.00	558.84	572.69		573.93	0.007040	9.06	657.31	88.13	0.48
1	5098	1% ACE	5500.00	556.44	571.79		572.40	0.003087	6.37	930.35	106.32	0.32
1	4924	1% ACE	5500.00	556.05	570.74		571.65	0.005961	8.01	781.55	112.19	0.43
1	4649	1% ACE	5500.00	553.52	567.72		569.49	0.009846	10.78	532.00	54.59	0.55
1	4356	1% ACE	5500.00	550.43	567.19		567.78	0.002678	6.57	984.85	106.32	0.30
1	4045	1% ACE	5500.00	548.49	566.24		566.90	0.003008	6.63	894.42	90.82	0.32
1	3683	1% ACE	5500.00	546.31	563.78		565.21	0.007242	9.85	617.65	68.13	0.47
1	3516	1% ACE	5900.00	546.22	563.70		564.31	0.002543	6.43	1021.78	133.92	0.30
1	3027	1% ACE	5900.00	541.94	562.52		563.07	0.002452	6.51	1323.78	236.90	0.28
1	2767	1% ACE	6000.00	542.00	562.79	550.27	562.91	0.000043	2.88	2725.51	456.62	0.13
1	2677 Belt Line		Bridge									
1	2605	1% ACE	6000.00	539.73	562.26	548.42	562.37	0.000027	2.67	3307.05	553.57	0.12
1	2552	1% ACE	6000.00	538.92	562.27	548.35	562.36	0.000037	2.66	3026.24	460.24	0.11
1	2522	1% ACE	6100.00	539.46	562.07	550.80	562.31	0.000119	4.35	1930.07	327.59	0.18
1	2459 Alexis		Bridge									
1	2391	1% ACE	6100.00	538.00	552.51	549.46	554.19	0.010721	10.47	601.02	80.68	0.58
1	2210	1% ACE	6100.00	537.00	550.93		552.30	0.008666	9.48	688.22	126.31	0.52
1	2020	1% ACE	6100.00	535.83	549.60		550.65	0.007668	8.33	771.28	118.85	0.49
1	1626	1% ACE	6100.00	533.00	546.56	544.49	547.64	0.007762	8.92	784.35	120.82	0.50
1	988	1% ACE	6100.00	529.38	542.25	539.45	543.05	0.006212	8.03	1190.64	822.01	0.44
1	472	1% ACE	6100.00	523.90	537.86	534.26	539.30	0.009015	9.71	676.03	433.72	0.53

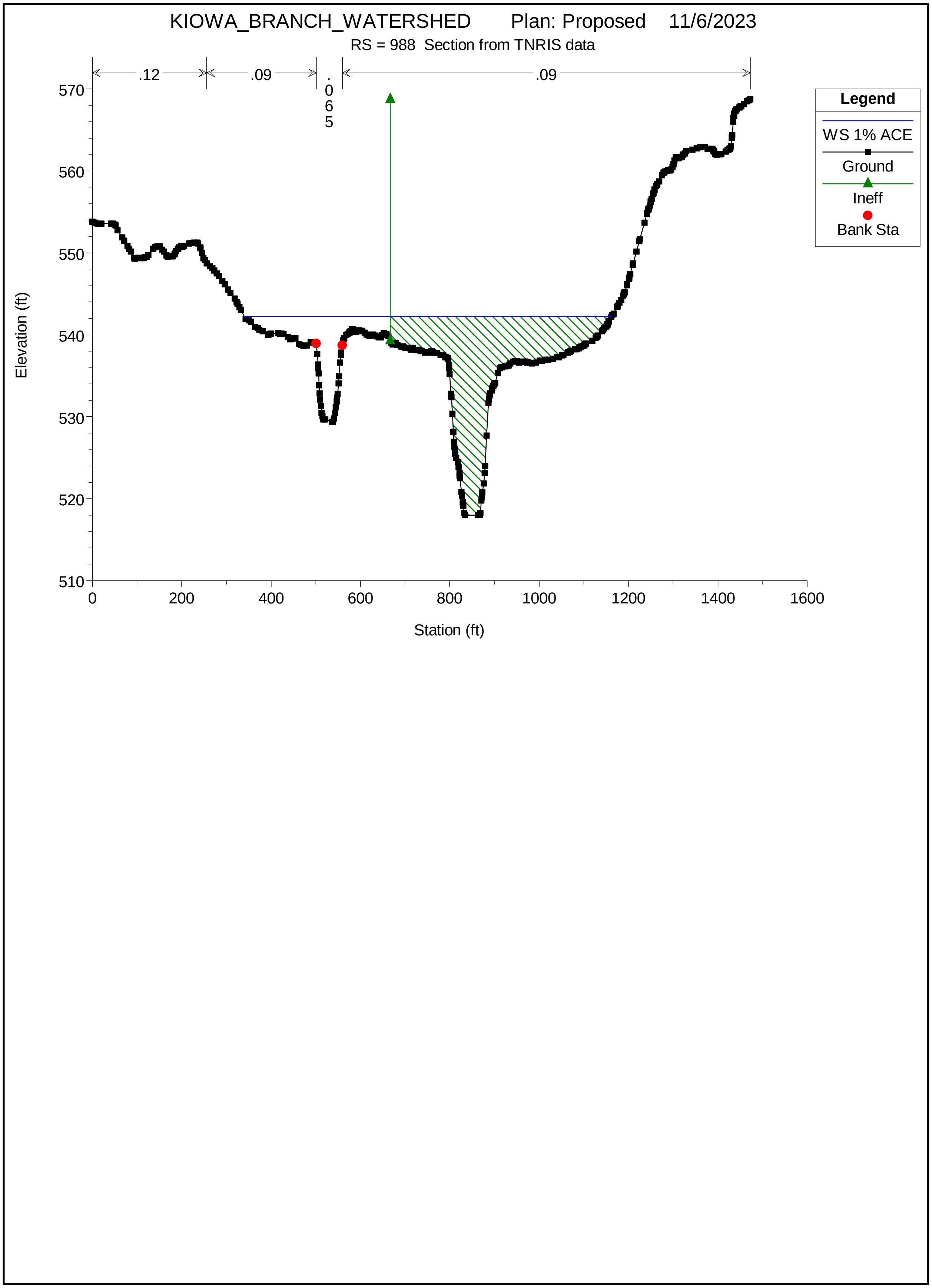

KIOWA_BRANCH_WATERSHED Plan: Proposed 11/6/2023
KIOWA 1
Legend
WS 1% ACE
Ground
Elevation (ft)
570
560
550
540
530
520
0
500
1000
1500
2000
Main Channel Distance (ft)
988
1626
2020
2210
2391
2459
2552


KIOWA_BRANCH_WATERSHED Plan: Proposed 11/6/2023
RS = 2391 KIO_2000 D/S Alexis Dr - Overbanks from TNRIS data. Channel from
.09
.065
.09
.03
.09
.045
Elevation (ft)
Station (ft)
Legend
WS 1% ACE
Ground
Ineff
Bank Sta


KIOWA_BRANCH_WATERSHED Plan: Proposed 11/6/2023
RS = 2210
.09
.065
.09
.03
.025
Elevation (ft)
Station (ft)
Legend
WS 1% ACE
Ground
Bank Sta


KIOWA_BRANCH_WATERSHED Plan: Proposed 11/6/2023
RS = 2020 Section from TNRIS data
.12
.09
.065
.09
.03
.025
Legend
WS 1% ACE
Ground
Bank Sta
Elevation (ft)
Station (ft)
565
560
555
550
545
540
535
0
100
200
300
400
500
600


KIOWA_BRANCH_WATERSHED Plan: Proposed 11/6/2023
RS = 1626 KIO_1000: Overbanks from TNRIS data. Channel from 2012 GLD surve
.12
.09
.065
.09
.03
.025
Legend
WS 1% ACE
Ground
Ineff
Bank Sta
PROPOSED ADA
PEDESTRIAN RAMP
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
0
100
200
300
400
500



KIOWA_BRANCH_WATERSHED Plan: Proposed 11/6/2023
RS = 988 Section from TNRIS data
.12
.09
.065
.09
Legend
WS 1% ACE
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
570
560
550
540
530
520
510
0
200
400
600
800
1000
1200
1400
1600

HEC-RAS Plan: Proposed River: WRC Reach: 1 Profile: 1 percent

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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	146961	1 percent	34400.00	568.79	596.74		597.42	0.001692	8.46	6967.22	713.16	0.33	15875.33
1	146860	1 percent	34400.00	568.59	596.59		597.25	0.001681	8.77	7317.80	748.74	0.32	15859.32
1	146619	1 percent	34400.00	568.08	596.22		596.85	0.001475	8.59	8024.67	899.02	0.31	15815.18
1	146303	1 percent	34400.00	567.40	595.73		596.32	0.001644	8.79	8206.07	923.90	0.32	15752.87
1	146112	1 percent	34400.00	567.40	595.24		595.96	0.001766	8.58	6910.69	769.70	0.34	15715.88
1	145786	1 percent	34400.00	567.40	594.67		595.41	0.001852	9.49	7502.33	897.50	0.35	15667.27
1	145690	1 percent	34400.00	567.20	594.68		595.23	0.001275	8.27	9107.05	1032.62	0.30	15651.24
1	145533	1 percent	34400.00	567.00	594.49		595.05	0.001117	7.74	9386.39	1047.85	0.28	15622.50
1	145456	1 percent	34400.00	566.80	594.35		594.96	0.001140	8.04	9315.19	1046.67	0.29	15608.34
1	145176	1 percent	34400.00	566.30	593.79		594.54	0.001848	9.72	9062.20	997.74	0.36	15547.54
1	144975	1 percent	34400.00	566.00	593.67		594.25	0.001597	8.13	8926.08	935.78	0.33	15524.88
1	144876	1 percent	34400.00	565.80	593.39		594.07	0.002580	10.28	8159.19	856.63	0.40	15510.01
1	144623	1 percent	34400.00	565.30	592.84		593.47	0.001646	8.77	8750.58	857.29	0.34	15451.92
1	144331	1 percent	34400.00	564.80	592.48		593.13	0.001461	7.60	7744.60	742.58	0.32	15419.84
1	143948	1 percent	34400.00	564.80	591.46		592.46	0.002060	10.60	6813.58	668.29	0.39	15358.23
1	143488	1 percent	34500.00	563.40	590.59		591.47	0.002221	10.40	7531.87	846.69	0.39	15285.61
1	143302	1 percent	34500.00	563.10	590.32		591.10	0.001862	9.55	7138.90	753.39	0.35	15258.63
1	143128	1 percent	34500.00	562.80	590.28		590.75	0.001171	7.49	8052.58	799.26	0.28	15227.79
1	142882	1 percent	34500.00	562.40	590.10		590.47	0.000994	6.90	8782.55	857.14	0.26	15184.42
1	142513	1 percent	34500.00	561.70	589.35		590.03	0.001425	8.00	6908.43	756.10	0.31	15121.89
1	142026	1 percent	34500.00	560.90	588.98		589.35	0.001046	7.28	9127.27	985.57	0.26	15033.19
1	141642	1 percent	34500.00	560.30	587.89		588.80	0.002129	10.19	6483.87	838.80	0.38	14975.77
1	141469	1 percent	34500.00	559.90	587.49		588.44	0.002151	10.18	6284.62	791.55	0.38	14951.02
1	141247	1 percent	34500.00	559.50	587.59	582.91	588.13	0.001055	8.04	8255.47	892.86	0.30	14937.18
1	141182	1 percent	34500.00	559.50	587.37		587.95	0.001071	8.24	7310.88	641.62	0.31	14902.23
1	141107	1 percent	34500.00	559.30	587.45		587.83	0.000687	6.40	8767.03	726.02	0.25	14888.87
1	140908	1 percent	34500.00	558.90	587.08		587.64	0.001095	7.80	7365.83	670.45	0.31	14852.15
1	140454	1 percent	34500.00	558.20	586.62		587.18	0.001004	7.57	7140.43	586.94	0.30	14780.03
1	140309	1 percent	34500.00	557.90	586.41	576.40	587.04	0.000819	7.07	7121.27	681.05	0.27	14755.07
1	140248	1 percent	34500.00	557.80	585.89	579.50	586.93	0.001690	9.96	6041.77	695.54	0.38	14745.89
1	140108	1 percent	34500.00	557.60	585.41	579.38	586.65	0.002276	11.53	5733.29	707.13	0.44	14729.23
1	139959	1 percent	34500.00	557.30	585.56		586.23	0.001264	8.79	7088.60	716.06	0.33	14706.92
1	139756	1 percent	34500.00	557.00	585.56		585.96	0.000736	6.53	8955.44	865.89	0.25	14671.10
1	139545	1 percent	35000.00	556.60	585.40		585.81	0.000590	5.77	8427.21	714.98	0.23	14625.67
1	139466	1 percent	35000.00	556.50	584.94	577.25	585.66	0.001074	8.08	6755.82	605.50	0.30	14611.37
1	139445 Golf Cart Bridge		Bridge										
1	139436	1 percent	35000.00	556.50	584.79	577.01	585.38	0.000992	7.44	7251.75	633.12	0.28	14606.64
1	139190	1 percent	35000.00	556.00	584.60		585.16	0.000749	6.85	7362.63	615.97	0.26	14566.31
1	138946	1 percent	35000.00	555.60	584.07		584.88	0.001502	9.28	6362.33	596.47	0.36	14526.18
1	138802	1 percent	35000.00	555.34	584.05	577.39	584.64	0.001145	7.97	7487.03	743.34	0.31	14512.32
1	138789 Golf Cart Bridge		Bridge										
1	138776	1 percent	35000.00	555.34	583.80	577.39	584.42	0.001218	8.15	7301.88	735.04	0.32	14507.98
1	138497	1 percent	35000.00	554.80	583.60		584.04	0.000944	7.03	8364.74	782.23	0.28	14461.15
1	138402	1 percent	35000.00	554.60	583.49		583.94	0.001033	7.08	8578.79	985.69	0.31	14438.41
1	138389	1 percent	35000.00	554.60	583.48	578.38	583.91	0.001092	7.81	8552.99	982.18	0.32	14435.94
1	138383 Golf Cart Bridge		Bridge										
1	138377	1 percent	35000.00	554.60	583.32		583.76	0.001136	7.92	8393.37	978.92	0.32	14433.58
1	138349	1 percent	35000.00	554.60	583.08		583.68	0.000943	8.23	8415.03	971.22	0.32	14428.26
1	138257	1 percent	35000.00	554.40	583.10		583.56	0.000996	7.51	8515.87	876.32	0.31	14412.94
1	138195	1 percent	35000.00	554.30	583.11		583.48	0.000670	6.24	9221.15	841.46	0.27	14398.55
1	137957	1 percent	35000.00	553.90	583.05		583.35	0.000353	5.24	10667.64	876.92	0.20	14346.57
1	137834	1 percent	35000.00	560.05	582.91	574.57	583.29	0.000645	6.79	9396.77	829.10	0.26	14322.81
1	137820	1 percent	35000.00	564.76	582.92	574.87	583.25	0.000910	6.46	8944.09	834.62	0.27	14319.55
1	137811 Golf Cart Bridge		Bridge										
1	137802	1 percent	35000.00	556.09	582.80	573.72	583.15	0.000608	6.31	9470.09	846.65	0.23	14315.79
1	137783	1 percent	35000.00	553.60	582.79	573.89	583.14	0.000695	6.14	8981.99	827.90	0.24	14311.58
1	137635	1 percent	35000.00	553.30	582.50	574.64	583.02	0.001031	8.17	7632.94	691.86	0.29	14291.12
1	137537	1 percent	35000.00	553.20	582.50	572.61	582.89	0.000980	5.90	7870.18	600.77	0.22	14275.77
1	137305	1 percent	35000.00	552.80	582.17	572.87	582.62	0.001227	6.14	7356.46	619.47	0.24	14233.84
1	137212	1 percent	35000.00	552.60	582.02	568.14	582.51	0.000695	6.14	7377.49	550.07	0.23	14214.56
1	137158.5 Westgrove Avenue		Bridge										
1	137105	1 percent	35000.00	552.60	580.20	568.30	581.16	0.001702	8.64	6092.33	516.76	0.31	14202.61
1	137039	1 percent	35000.00	552.40	579.66	573.95	580.92	0.003070	10.43	5442.48	523.95	0.41	14193.80
1	136915	1 percent	35000.00	552.20	579.40	574.07	580.55	0.002841	10.40	5887.71	564.21	0.40	14179.98
1	136750	1 percent	35000.00	551.80	579.17	573.42	580.20	0.001668	10.09	6655.09	601.24	0.38	14160.84
1	136516	1 percent	35000.00	550.93	578.45		579.78	0.002454	11.71	5449.07	519.76	0.45	14136.49
1	136316	1 percent	35000.00	550.20	578.11		579.26	0.002046	11.12	6063.25	573.88	0.42	14108.78
1	135966	1 percent	35000.00	549.90	577.83		578.56	0.001382	9.22	7649.28	708.65	0.34	14055.26
1	135915	1 percent	35000.00	549.80	577.81	571.74	578.46	0.001240	8.54	7987.81	733.45	0.33	14047.12
1	135909 Golf Cart Bridge		Bridge										
1	135903	1 percent	35000.00	549.80	577.60		578.22	0.001233	8.32	8082.59	757.88	0.32	14044.88
1	135559	1 percent	35000.00	548.55	576.86		577.76	0.001309	9.52	7343.31	726.59	0.33	13997.60
1	135384	1 percent	35000.00	547.93	576.75		577.52	0.001058	8.75	7882.83	749.44	0.31	13966.30
1	135191	1 percent	35000.00	547.26	576.58		577.26	0.001583	9.22	7621.47	705.05	0.32	13936.20
1	134994	1 percent	35000.00	549.50	576.39		576.94	0.001333	7.98	8050.64	739.15	0.30	13901.54
1	134892	1 percent	35000.00	556.60	576.20		576.78	0.001900	8.55	7449.96	720.80	0.36	13883.26
1	134659	1 percent	35000.00	546.00	576.11	563.91	576.47	0.000596	5.62	9628.64	821.97	0.21	13834.83
1	134342 Small dam 600 fe		Inl Struct										
1	134222	1 percent	35000.00	545.05	575.74		576.39	0.000885	8.27	9228.25	1052.18	0.28	13752.00
1	134109	1 percent	35000.00	544.79	575.75	569.10	576.21	0.000848	7.88	10633.27	1159.05	0.27	13717.71
1	134064	1 percent	35000.00	544.70	575.72	568.15	576.17	0.000740	7.42	9536.51	1151.36	0.26	13701.70
1	133843	1 percent	35000.00	544.19	575.43	567.97	576.01	0.001003	7.86	7716.94	1116.71	0.27	13661.56
1	133758	1 percent	35100.00	544.00	575.46	566.79	575.86	0.000583	5.10	6883.98	913.91	0.24	13647.61
1	133691 Keller Springs R		Bridge										
1	133646	1 percent	35100.00	544.00	575.13	567.60	575.67	0.000623	6.89	6393.30	477.97	0.26	13630.92
1	133640	1 percent	35100.00	545.45	575.19	566.33	575.61	0.000428	6.26	7272.93	505.01	0.22	13629.70
1	133609 CMAQ bridge		Bridge										
1	133586	1 percent	35100.00	545.43	575.16	566.38	575.54	0.000392	5.99	7883.96	580.81	0.21	13620.59
1	133511	1 percent	35100.00	543.83	575.20		575.47	0.000381	4.73	9372.94	656.89	0.17	13612.05
1	133480	1 percent	35100.00	543.79	575.19		575.46	0.000383	4.71	9571.17	621.11	0.17	13606.74
1	133427	1 percent	35100.00	543.73	575.11		575.44	0.000478	5.19	9122.39	595.51	0.19	13599.13
1	133359	1 percent	35100.00	543.66	575.03		575.41	0.000565	5.72	8770.17	575.31	0.21	13590.55
1	133281	1 percent	35100.00	543.59	574.85		575.35	0.000989	6.84	7860.78	538.25	0.24	13581.36

HEC-RAS Plan: Proposed River: WRC Reach: 1 Profile: 1 percent (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	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	133189	1 percent	35100.00	543.49	574.58		575.25	0.001554	8.49	6960.50	511.18	0.29	13571.90
1	133104	1 percent	35100.00	543.40	574.50		575.15	0.001563	7.71	6716.91	494.54	0.30	13563.74
1	132934	1 percent	35100.00	543.21	573.86		574.84	0.002094	9.59	5993.45	474.28	0.35	13543.22
1	132758	1 percent	35100.00	543.03	573.64		574.46	0.001948	8.67	6167.96	451.32	0.32	13521.02
1	132612	1 percent	35100.00	542.88	573.41		574.21	0.001627	8.58	6354.18	456.25	0.31	13502.22
1	132388	1 percent	35100.00	542.65	572.63	566.36	573.73	0.002500	10.76	5752.50	448.29	0.38	13470.20
1	132236	1 percent	35100.00	542.48	572.47	565.00	573.33	0.001978	9.50	6349.58	473.03	0.34	13450.18
1	132186	1 percent	35100.00	542.42	572.42	564.95	573.23	0.001884	9.16	6469.95	473.74	0.33	13443.42
1	132095	1 percent	35100.00	542.34	572.23	564.76	573.06	0.001901	9.03	6688.05	570.45	0.33	13430.23
1	131896	1 percent	35100.00	542.12	571.98	564.25	572.68	0.001671	8.68	7421.89	789.49	0.32	13398.34
1	131800 St Louis RR over		Lat Struct										
1	131754	1 percent	35100.00	541.97	571.95	563.75	572.40	0.001199	7.23	8706.09	898.15	0.27	13368.39
1	131591	1 percent	35100.00	541.80	571.80	564.07	572.21	0.001125	6.77	9024.86	900.10	0.26	13334.63
1	131514	1 percent	35100.00	546.20	571.83	563.80	572.09	0.000782	5.96	10876.10	835.71	0.21	13315.98
1	131433	1 percent	35100.00	539.00	571.77	563.27	572.03	0.000643	5.79	11217.77	875.48	0.19	13292.07
1	131273	1 percent	35100.00	538.72	571.62	563.00	571.81	0.000520	5.15	12481.19	979.86	0.17	13186.66
1	131087	1 percent	35300.00	538.41	571.07	564.34	571.65	0.000976	7.63	7944.17	726.15	0.29	13146.45
1	130965	1 percent	35300.00	538.21	568.36	563.58	571.23	0.003300	14.53	3224.42	510.87	0.53	13131.18
1	130905	1 percent	35300.00	538.10	568.35	559.71	570.85	0.003111	12.70	2779.11	125.60	0.48	13126.36
1	130891.5 St. Louis Railro		Bridge										
1	130877	1 percent	35300.00	538.10	568.23	559.71	570.76	0.003169	12.77	2763.67	125.59	0.48	13124.58
1	130733	1 percent	35300.00	538.10	568.28	563.54	569.05	0.001243	9.11	6353.11	751.11	0.32	13105.43
1	130534	1 percent	35300.00	538.09	568.39		568.79	0.000747	6.51	8509.91	866.38	0.25	13078.33
1	130421	1 percent	35300.00	538.09	568.30		568.70	0.000828	6.90	8401.81	836.38	0.26	13058.95
1	130400	1 percent	35300.00	538.09	568.31	560.83	568.66	0.000675	6.02	8849.48	856.29	0.24	13054.80
1	130388 Golf Cart Bridge		Bridge										
1	130376	1 percent	35300.00	538.09	568.15		568.56	0.000791	6.91	8632.66	866.10	0.25	13050.10
1	130341	1 percent	35300.00	538.09	568.14		568.52	0.000773	7.08	8886.20	875.73	0.25	13044.10
1	130155	1 percent	35300.00	538.08	567.76		568.34	0.001000	8.18	7594.17	803.35	0.29	13009.48
1	129975	1 percent	35300.00	538.08	567.66		568.15	0.000859	7.12	7946.04	797.89	0.26	12978.42
1	129873	1 percent	35300.00	538.07	567.71		568.02	0.000641	6.31	9402.44	857.78	0.23	12956.33
1	129815	1 percent	35300.00	538.07	567.66		567.97	0.000729	6.56	9653.43	1027.08	0.24	12940.75
1	129736	1 percent	35300.00	538.07	567.62		567.91	0.000638	6.16	10238.85	1100.64	0.23	12920.74
1	129622	1 percent	35300.00	538.07	567.58		567.84	0.000596	6.12	10786.38	1183.11	0.22	12899.44
1	129486	1 percent	35300.00	538.07	567.54		567.78	0.000454	5.92	12106.93	1356.27	0.22	12872.95
1	129430	1 percent	35300.00	538.06	567.55	560.97	567.73	0.000357	5.17	13191.12	1533.67	0.20	12858.92
1	129414.5 Golf Cart Bridge		Bridge										
1	129399	1 percent	35300.00	538.06	567.45	561.14	567.65	0.000383	5.55	13429.42	1706.70	0.20	12848.76
1	129248	1 percent	37400.00	538.06	567.43	559.75	567.57	0.000292	4.71	15241.89	1578.38	0.18	12793.96
1	129127	1 percent	37400.00	538.04	567.18	557.00	567.48	0.000691	6.13	9795.04	1449.26	0.22	12723.34
1	128900	1 percent	37400.00	538.90	566.72	557.23	567.23	0.001042	7.32	7638.57	1185.90	0.29	12664.72
1	128888.5 Golf Cart Bridge		Bridge										
1	128877	1 percent	37400.00	538.90	566.56	556.16	567.13	0.001159	7.68	7286.71	915.79	0.30	12660.15
1	128871	1 percent	37400.00	538.05	566.55	557.98	567.12	0.001118	6.40	6671.40	709.32	0.29	12658.78
1	128817 Arapaho Road		Bridge										
1	128763	1 percent	37400.00	538.05	566.23	557.98	566.87	0.001252	6.68	6288.51	576.89	0.31	12643.65
1	128654	1 percent	37400.00	537.84	564.84	560.43	566.42	0.002269	11.35	4534.58	799.84	0.44	12630.96
1	128396	1 percent	37400.00	537.39	565.09	557.56	565.43	0.000884	6.00	8798.69	811.89	0.22	12580.66
1	128379 Golf Cart Bridge		Bridge										
1	128362	1 percent	37400.00	537.39	565.04	557.57	565.37	0.000872	5.95	8943.39	811.48	0.22	12573.40
1	128187	1 percent	37400.00	537.08	564.76	557.83	565.15	0.001084	6.17	8159.67	693.58	0.25	12531.29
1	128019	1 percent	37400.00	536.81	564.51	556.93	564.96	0.001209	6.84	7941.86	685.50	0.25	12500.69
1	127853	1 percent	37400.00	536.54	564.42	555.49	564.76	0.000794	5.96	8986.58	742.07	0.22	12467.71
1	127695	1 percent	37400.00	536.29	564.30	556.84	564.62	0.000864	6.00	9026.72	760.85	0.22	12435.01
1	127602	1 percent	37400.00	536.14	563.99	558.44	564.50	0.001453	7.41	7544.32	741.00	0.28	12417.14
1	127545	1 percent	37400.00	536.05	563.81	558.60	564.41	0.001786	7.96	6967.38	732.54	0.31	12410.13
1	127534.5 Golf Cart Bridge		Bridge										
1	127524	1 percent	37400.00	536.02	563.73	558.60	564.34	0.001832	8.04	6907.20	738.81	0.31	12407.02
1	127372	1 percent	37400.00	535.78	563.64	557.35	564.07	0.001287	6.87	7925.58	757.75	0.26	12388.13
1	127295	1 percent	37400.00	535.66	563.60	557.04	563.97	0.001070	6.45	8435.23	800.49	0.24	12374.77
1	127171	1 percent	37400.00	535.45	563.51	556.51	563.84	0.000932	5.90	8775.23	735.36	0.23	12350.99
1	127053	1 percent	37400.00	535.26	563.43	556.33	563.74	0.000925	5.66	8901.60	779.80	0.22	12331.69
1	126948	1 percent	37400.00	535.10	563.36	556.15	563.65	0.000860	5.46	9354.38	840.92	0.22	12311.81
1	126887	1 percent	37400.00	535.00	563.31	556.38	563.59	0.000893	5.47	9478.25	883.80	0.22	12299.53
1	126822	1 percent	37400.00	535.35	563.30	555.94	563.53	0.000660	5.27	10632.12	922.73	0.19	12286.11
1	126789 Small dam approx		Inl Struct										
1	126710	1 percent	37400.00	533.03	563.23		563.45	0.000558	5.10	11223.50	933.42	0.18	12259.21
1	126618	1 percent	37400.00	531.54	563.19		563.40	0.000533	4.70	11241.20	931.70	0.18	12238.89
1	126490	1 percent	37400.00	531.19	563.09		563.33	0.000568	5.07	10791.22	879.24	0.18	12206.60
1	126264	1 percent	37400.00	530.67	562.82		563.16	0.000784	5.98	9441.66	844.95	0.22	12152.73
1	125938	1 percent	37400.00	529.96	562.41	554.00	562.91	0.001016	7.00	7968.21	854.37	0.24	12100.11
1	125828	1 percent	37400.00	529.71	561.88	554.99	562.69	0.002177	8.50	5895.78	800.33	0.30	12073.24
1	125747	1 percent	37400.00	529.53	561.44	555.66	562.45	0.002442	9.38	5191.98	831.81	0.34	12061.18
1	125736.5 Beltline Road Go		Bridge										
1	125726	1 percent	37400.00	529.49	561.25	555.67	562.31	0.002568	9.56	5048.49	822.98	0.35	12057.77
1	125710	1 percent	37400.00	529.45	561.38	553.10	562.13	0.001448	8.59	6143.12	965.18	0.30	12055.77
1	125637 Beltline Road		Bridge										
1	125564	1 percent	37400.00	529.45	559.93	553.85	561.13	0.002534	10.94	5791.98	476.33	0.39	12036.56
1	125508	1 percent	37400.00	529.42	559.84	553.84	560.94	0.002278	9.90	6062.00	1325.73	0.37	12025.72
1	125450	1 percent	37400.00	529.40	559.80	553.59	560.80	0.001746	9.72	6776.41	1392.45	0.35	12012.60
1	125324	1 percent	37600.00	529.36	559.47	553.82	560.55	0.001906	10.08	6712.44	907.26	0.36	11983.61
1	125225	1 percent	37600.00	529.33	559.36	553.82	560.34	0.001880	9.69	6973.09	896.47	0.36	11966.85
1	125090	1 percent	37600.00	529.29	559.09	553.82	560.11	0.001717	10.03	7215.01	838.73	0.38	11946.57
1	124969	1 percent	37600.00	529.26	559.00	552.74	559.89	0.001338	8.86	7518.79	817.75	0.34	11925.41
1	124854	1 percent	37600.00	529.22	558.82	553.06	559.73	0.001390	9.70	7966.91	785.01	0.35	11904.17
1	124759	1 percent	37600.00	529.19	558.66	552.83	559.58	0.001476	9.89	7919.71	715.16	0.36	11885.06
1	124594	1 percent	37600.00	529.14	558.30	553.00	559.33	0.001667	10.45	7419.61	689.64	0.38	11858.16
1	124444	1 percent	37600.00	529.10	558.07	552.33	559.10	0.001527	10.09	7279.74	648.06	0.36	11835.18
1	124341	1 percent	37600.00	529.06	557.83	552.76	558.95	0.001762	10.71	6959.44	606.55	0.39	11823.30
1	124287	1 percent	37600.00	529.04	557.78	552.80	558.82	0.001860	10.36	7000.00	739.22	0.39	11813.47
1	124163	1 percent	37600.00	529.01	557.57	552.24	558.65	0.001712	10.37	6936.95	717.55	0.38	11801.34
1	124062	1 percent	37600.00	528.98	557.40	552.36	558.48	0.001848	10.40	7100.73	789.94	0.40	11786.95
1	123975	1 percent	37600.00	528.95	557.21	552.28	558.31	0.002281	10.26	6517.93	703.71	0.40	11773.99

HEC-RAS Plan: Proposed River: WRC Reach: 1 Profile: 1 percent (Continued)

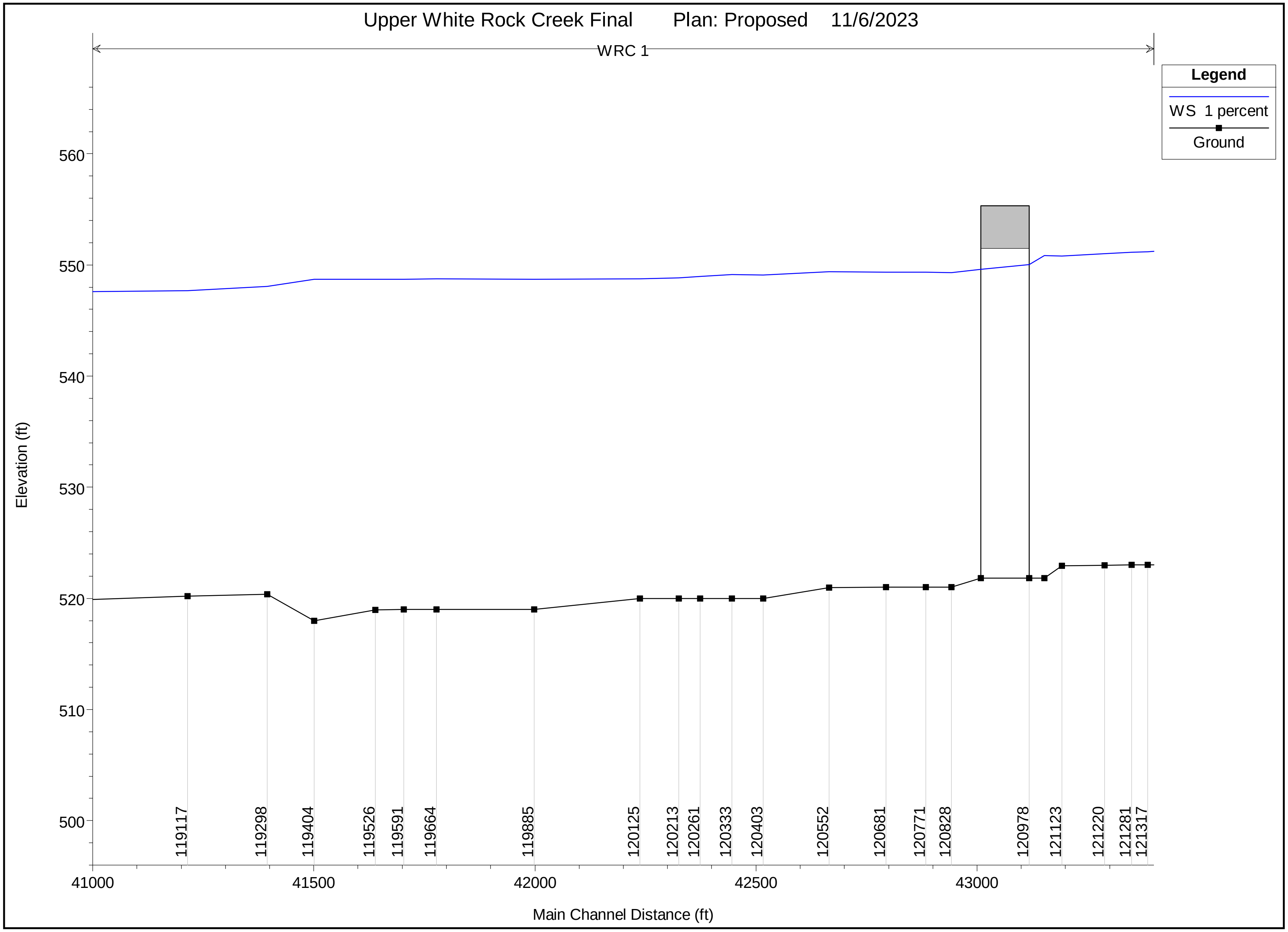
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	123838	1 percent	37600.00	528.91	556.99	547.99	558.00	0.001878	9.85	6656.34	611.03	0.36	11752.31
1	123735	1 percent	37600.00	528.88	556.50	551.12	557.74	0.002283	10.55	6311.93	739.36	0.40	11733.28
1	123652	1 percent	37600.00	528.48	556.50	550.64	557.49	0.001952	9.50	6875.26	741.04	0.37	11720.20
1	123549	1 percent	37600.00	527.81	556.46	550.09	557.28	0.001571	9.20	8172.99	848.71	0.33	11704.38
1	123446	1 percent	37600.00	527.26	556.53		557.06	0.000979	7.37	9648.74	875.90	0.27	11682.07
1	123312	1 percent	37600.00	526.84	556.30		556.93	0.001171	8.82	9945.78	963.96	0.32	11660.21
1	123177	1 percent	37600.00	526.58	556.00		556.78	0.001214	8.66	8500.05	771.87	0.33	11637.57
1	123062	1 percent	37600.00	526.28	555.88		556.67	0.001277	9.01	8855.03	853.15	0.33	11623.08
1	122959	1 percent	37600.00	526.13	555.85		556.53	0.001203	8.34	8828.73	827.08	0.32	11609.33
1	122783	1 percent	37600.00	525.70	555.94		556.25	0.001129	6.30	10764.48	874.12	0.23	11578.90
1	122505	1 percent	37600.00	525.20	555.01		555.83	0.002275	9.04	7121.31	670.14	0.33	11533.96
1	122333	1 percent	37600.00	524.80	554.49		555.44	0.002663	10.19	7010.80	693.21	0.36	11510.32
1	122127	1 percent	37600.00	524.40	553.95		554.86	0.002692	9.50	6716.95	651.00	0.36	11476.98
1	121936	1 percent	37600.00	524.00	553.07		554.29	0.003970	10.68	5735.27	612.03	0.43	11454.99
1	121815	1 percent	37600.00	525.70	552.62		553.81	0.003589	11.13	6013.25	595.44	0.42	11438.06
1	121764	1 percent	37600.00	524.20	552.50	547.64	553.60	0.003224	10.53	5992.38	534.53	0.39	11430.45
1	121565	1 percent	37600.00	523.69	551.90	546.43	553.01	0.002850	10.04	6030.16	546.94	0.37	11403.87
1	121419	1 percent	37600.00	523.00	551.40	546.52	552.57	0.003255	10.48	5863.08	538.12	0.39	11384.42
1	121317	1 percent	37600.00	523.00	551.18	545.91	552.19	0.003362	10.55	6113.70	525.72	0.39	11370.76
1	121281	1 percent	37600.00	523.00	551.16	545.66	552.03	0.002971	9.80	6484.41	542.33	0.37	11365.09
1	121220	1 percent	37600.00	522.99	551.02	544.91	551.84	0.002687	9.27	6691.10	573.96	0.35	11356.18
1	121123	1 percent	37600.00	522.93	550.80	543.89	551.58	0.002489	8.46	6399.57	564.30	0.34	11341.71
1	121083	1 percent	37700.00	521.83	550.86	539.31	551.41	0.000747	5.93	6446.96	581.53	0.25	11333.56
1	120978 Preston Road		Bridge										
1	120828	1 percent	37700.00	521.00	549.31	544.68	550.62	0.001897	10.60	4505.78	556.51	0.39	11310.68
1	120771	1 percent	37700.00	521.00	549.35	544.13	550.38	0.001376	9.30	5069.06	577.69	0.34	11302.55
1	120681	1 percent	37700.00	521.00	549.36	543.26	550.21	0.001246	8.72	5678.61	599.81	0.32	11289.35
1	120552	1 percent	37700.00	520.95	549.40		549.99	0.000929	7.31	6961.32	636.68	0.28	11269.19
1	120403	1 percent	37700.00	520.00	549.10		549.83	0.001110	8.38	6651.62	618.57	0.31	11245.64
1	120333	1 percent	37700.00	520.00	549.11		549.71	0.000978	7.41	7248.96	710.88	0.29	11233.61
1	120261	1 percent	37700.00	520.00	548.95		549.63	0.001140	8.09	6850.32	702.01	0.31	11222.21
1	120213	1 percent	37700.00	520.00	548.83	543.57	549.57	0.001190	8.56	6649.06	666.54	0.32	11214.77
1	120125	1 percent	37700.00	520.00	548.75		549.47	0.001153	8.42	6760.28	688.24	0.31	11202.56
1	119885	1 percent	37700.00	519.00	548.73		549.19	0.000697	6.58	8079.00	769.06	0.25	11163.92
1	119664	1 percent	37700.00	519.00	548.73		549.03	0.000404	4.84	9174.63	833.49	0.19	11123.09
1	119591	1 percent	37700.00	518.99	548.73		548.99	0.000331	4.73	9669.56	846.86	0.17	11107.87
1	119526	1 percent	37700.00	518.98	548.71		548.97	0.000334	4.69	9919.01	914.73	0.17	11093.81
1	119404	1 percent	37700.00	518.00	548.69	540.76	548.92	0.000311	4.45	10668.57	1021.76	0.17	11064.05
1	119298	1 percent	38800.00	520.39	548.07		548.80	0.001384	9.46	8678.87	935.26	0.34	11035.35
1	119117	1 percent	38800.00	520.19	547.69		548.49	0.001744	9.87	8021.45	904.59	0.37	10994.00
1	118748	1 percent	38800.00	519.67	547.54		547.93	0.000901	7.45	10030.54	1056.94	0.27	10921.21
1	118565	1 percent	38800.00	519.32	547.46	540.24	547.73	0.000609	6.18	11081.50	1296.14	0.23	10864.15
1	118341	1 percent	38800.00	519.30	547.37	538.40	547.60	0.000485	5.57	11800.24	1367.79	0.20	10806.64
1	118150	1 percent	38800.00	518.87	547.07	538.92	547.47	0.000751	6.72	9286.87	1519.38	0.25	10752.72
1	117845	1 percent	38800.00	518.74	546.71	539.48	547.20	0.000979	7.48	9190.05	1846.76	0.29	10681.64
1	117695	1 percent	39500.00	518.44	546.74	539.03	547.01	0.000642	6.28	12440.99	1783.81	0.23	10629.68
1	117585	1 percent	39500.00	518.18	546.71	538.30	546.94	0.000544	5.66	13806.71	1650.59	0.22	10591.26
1	117280	1 percent	39500.00	518.03	546.39	539.64	546.73	0.000789	6.89	11092.56	1821.98	0.26	10481.39
1	117042	1 percent	39500.00	516.00	545.78	539.07	546.36	0.001501	7.61	7271.57	2550.83	0.34	10392.48
1	116955 Spring Valley Ro		Bridge										
1	116868	1 percent	39500.00	515.23	545.06	536.85	545.70	0.001042	8.14	8987.23	2549.97	0.30	10358.61
1	116670	1 percent	39500.00	515.40	545.04	536.66	545.39	0.001329	6.19	9478.70	2602.76	0.22	10299.37
1	116528	1 percent	39500.00	514.40	544.25		545.14	0.001289	9.10	8671.14	2464.55	0.34	10239.61
1	116402	1 percent	39500.00	515.10	543.46		544.87	0.002106	11.87	6716.69	2144.92	0.42	10198.05
1	116310	1 percent	39500.00	514.90	542.91		544.65	0.002534	12.52	5608.71	2022.38	0.47	10176.55
1	116228	1 percent	39500.00	514.40	542.80		544.43	0.002267	12.02	5654.16	1958.04	0.45	10156.16
1	116092	1 percent	39500.00	513.90	542.64		544.08	0.002169	11.07	5751.45	2007.04	0.43	10121.66
1	115961	1 percent	39500.00	513.50	542.54		543.73	0.002503	11.10	6469.80	2098.60	0.40	10088.62
1	115817	1 percent	39500.00	513.20	541.57		543.23	0.004085	12.45	5495.66	1954.71	0.50	10047.73
1	115703	1 percent	39500.00	513.10	541.81		542.66	0.002027	9.21	7446.80	1914.75	0.37	10016.24
1	115472	1 percent	39500.00	513.00	541.44		542.18	0.002405	9.60	7312.72	1796.48	0.38	9964.91
1	115232	1 percent	39500.00	512.98	540.47		541.55	0.002809	10.40	6770.30	1572.92	0.42	9913.96
1	114931	1 percent	39500.00	512.98	539.63		540.74	0.002444	11.19	7396.06	1404.47	0.44	9852.42
1	114790	1 percent	39500.00	512.51	539.42		540.35	0.002206	10.80	8061.37	1290.60	0.41	9823.46
1	114597	1 percent	39500.00	511.74	539.18	535.11	539.95	0.001479	9.45	8551.53	1480.44	0.36	9781.35
1	114465	1 percent	39500.00	511.61	538.99	535.00	539.74	0.001726	9.10	8436.73	1494.38	0.37	9753.14
1	114349	1 percent	39500.00	511.34	538.69	535.05	539.54	0.001959	9.82	8646.94	1702.78	0.39	9733.43
1	114290	1 percent	39500.00	511.21	538.65	535.06	539.40	0.001845	9.23	8967.01	1776.50	0.38	9719.87
1	114202	1 percent	39500.00	511.02	538.57	533.98	539.24	0.001388	8.85	9310.86	1628.93	0.34	9698.32
1	114094	1 percent	39500.00	510.85	538.42	533.78	539.07	0.001452	9.48	9297.02	1739.03	0.34	9668.66
1	113907	1 percent	39500.00	510.61	538.16	532.54	538.78	0.001529	8.59	8902.99	1634.55	0.35	9621.43
1	113817	1 percent	39500.00	510.60	537.81	530.89	538.60	0.001729	9.49	8387.29	1620.24	0.38	9594.88
1	113575	1 percent	39500.00	510.11	537.78	529.53	538.26	0.000995	7.27	9493.27	1738.32	0.29	9552.73
1	113391	1 percent	39500.00	509.94	537.71	527.49	538.10	0.000753	6.41	9675.01	1679.58	0.25	9512.01
1	113245	1 percent	39500.00	509.78	537.58	526.59	538.01	0.000756	6.47	8485.60	1681.66	0.25	9481.17
1	112923	1 percent	39700.00	508.57	537.50	525.28	537.84	0.000534	5.70	9118.58	1323.75	0.21	9430.06
1	112732	1 percent	39700.00	508.34	537.28	525.61	537.72	0.000860	6.53	8358.44	1271.33	0.24	9392.27
1	112557	1 percent	39700.00	508.07	537.19	524.67	537.54	0.000743	5.57	9040.60	1379.99	0.20	9342.99
1	112500	1 percent	39700.00	507.10	537.20	522.99	537.44	0.000443	4.32	10812.71	1409.16	0.16	9308.60
1	112383	1 percent	39700.00	508.93	537.11	522.98	537.38	0.000516	4.77	10112.93	1628.47	0.17	9269.61
1	112281	1 percent	39700.00	509.42	536.96	523.91	537.29	0.000567	4.99	8970.02	1560.71	0.18	9225.93
1	112200	1 percent	39700.00	508.33	536.48	522.10	537.14	0.001303	6.71	6279.62	1567.05	0.24	9211.69
1	112151 ALPHA ROAD BRIDG		Bridge										
1	112101	1 percent	39700.00	509.14	535.21	521.40	535.97	0.000664	6.99	5706.34	1492.15	0.27	9197.78
1	112062	1 percent	39700.00	509.38	535.12	522.51	535.93	0.000796	7.28	5699.24	1553.58	0.29	9190.27
1	111962	1 percent	39700.00	507.32	534.91	526.22	535.83	0.000970	8.88	6549.89	1639.51	0.32	9172.56
1	111868	1 percent	39700.00	506.55	534.50	529.77	535.67	0.001889	10.61	5878.66	1489.53	0.42	9147.94
1	111774	1 percent	39700.00	505.00	534.72	528.49	535.36	0.001386	7.78	7319.65	1541.73	0.32	9126.30
1	111773	1 percent	39700.00	507.00	534.70	528.70	535.36	0.001474	7.88	7214.05	1541.33	0.33	9126.06
1	111772	1 percent	39700.00	505.00	534.71	528.49	535.35	0.001389	7.78	7314.78	1541.50	0.32	9125.83
1	111686	1 percent	39700.00	505.00	534.33	528.70	535.21	0.001391	10.09	7594.06	1396.69	0.36	9105.89
1	111415	1 percent	39800.00	504.90	534.39	526.90	534.82	0.000724	7.77	11074.33	1652.92	0.27	9041.39
1	111200	1 percent	39800.00	504.40	533.42	527.74	534.53	0.001544	10.49	7055.63	1100.18	0.40	8991.20

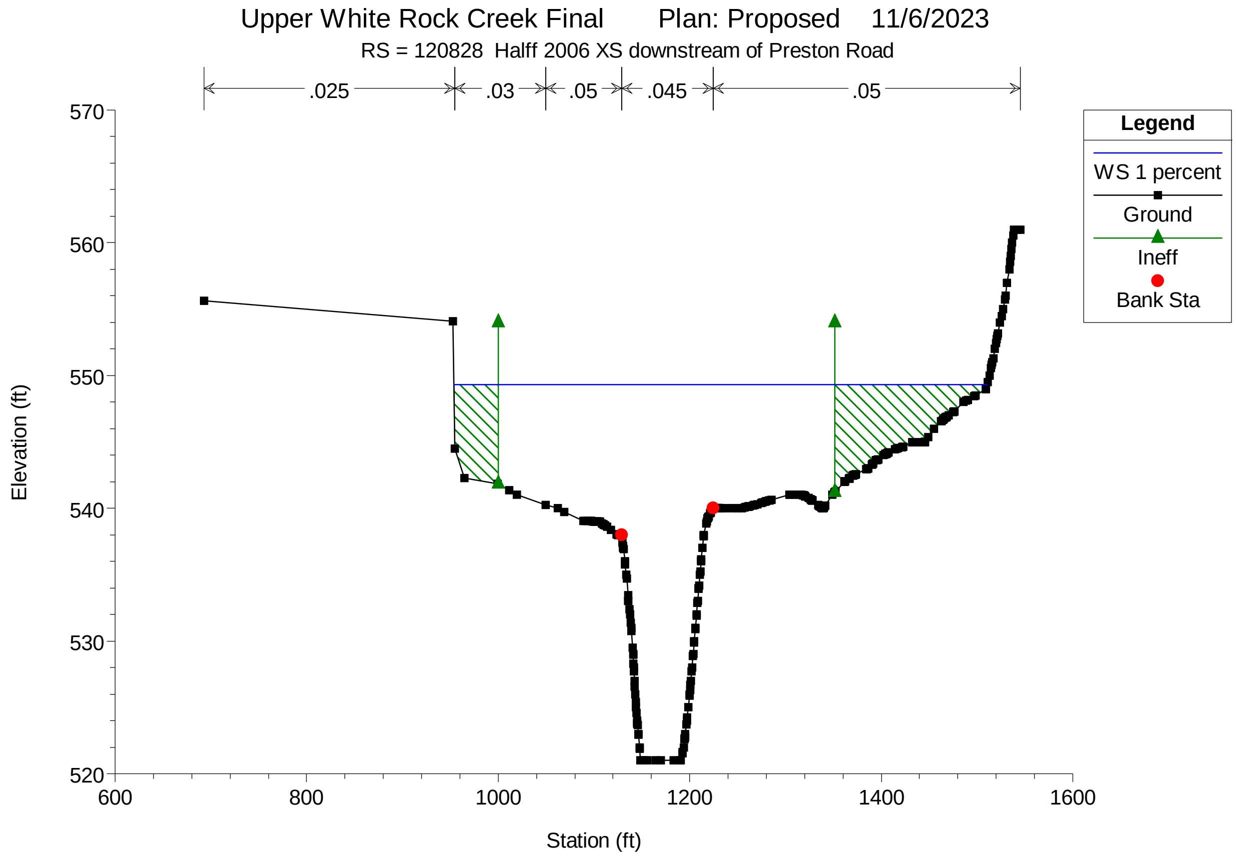
HEC-RAS Plan: Proposed River: WRC Reach: 1 Profile: 1 percent (Continued)

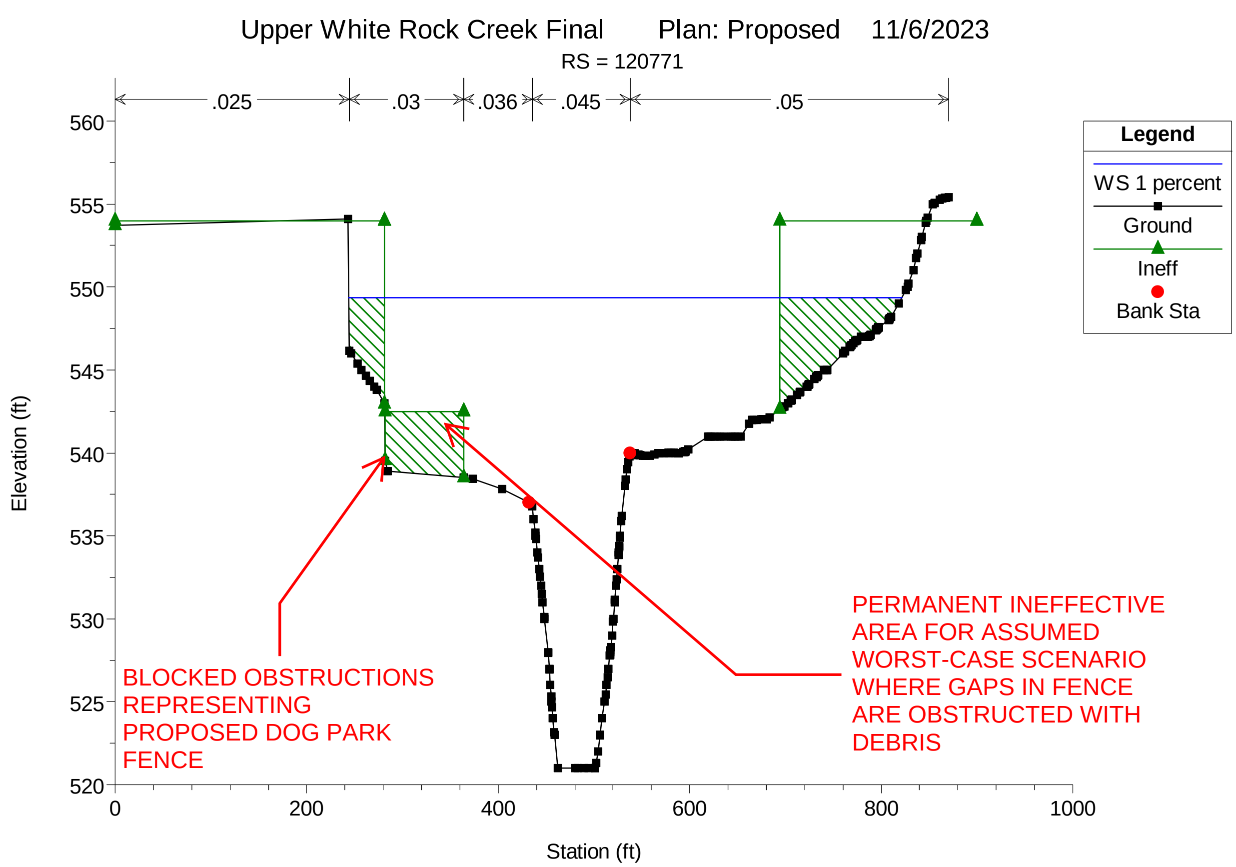
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	111032	1 percent	39800.00	504.40	533.49	526.79	534.17	0.001467	8.92	8072.82	1293.72	0.34	8963.65
1	110802	1 percent	39800.00	503.30	533.09	527.97	533.85	0.001823	9.68	8954.77	1481.62	0.34	8924.24
1	110672	1 percent	39800.00	503.30	532.51	524.73	533.54	0.002084	9.37	7801.02	1419.38	0.35	8888.62
1	110399	1 percent	39800.00	503.00	532.22	522.97	532.97	0.001510	7.98	8553.03	1241.47	0.31	8833.01
1	110207	1 percent	39800.00	502.60	531.71	526.51	532.66	0.001747	9.25	8055.03	1151.46	0.35	8801.55
1	109897	1 percent	39800.00	502.50	531.22	525.89	532.07	0.001834	8.68	7997.06	1263.26	0.36	8739.29
1	109585	1 percent	39800.00	501.96	530.18	523.73	531.41	0.002291	10.09	6421.89	1224.55	0.39	8682.87
1	109319	1 percent	39800.00	501.60	529.74	522.19	530.89	0.002093	10.04	6737.51	1219.77	0.36	8648.49
1	109262	1 percent	40000.00	501.20	529.92	520.22	530.51	0.001512	6.38	6980.37	1270.49	0.27	8636.57
1	109171 HILCREST AVENUE		Bridge										
1	109094	1 percent	40000.00	501.20	528.98	519.87	529.62	0.003712	6.47	6200.44	1273.85	0.29	8612.64
1	109052	1 percent	40000.00	501.10	528.52	520.92	529.44	0.001482	8.62	6117.23	1221.47	0.35	8604.00
1	108938	1 percent	40000.00	501.00	527.47	524.77	529.14	0.003188	12.95	6141.65	999.96	0.51	8584.58
1	108729	1 percent	40000.00	500.90	527.32	524.23	528.41	0.002119	10.22	6671.23	1058.70	0.42	8548.70
1	108483	1 percent	40000.00	501.88	527.15	522.88	527.87	0.001525	8.71	8343.44	1113.49	0.36	8506.10
1	108297	1 percent	40000.00	500.62	526.74		527.55	0.002023	10.17	8621.44	1103.10	0.40	8469.48
1	108000	1 percent	40000.00	500.20	526.36		527.01	0.001575	8.53	8443.39	954.83	0.35	8416.43
1	107834	1 percent	40100.00	500.02	526.16		526.67	0.001272	8.86	9362.92	1130.70	0.35	8373.63
1	107631	1 percent	40100.00	498.93	525.97	516.99	526.39	0.001047	6.23	9863.83	1068.65	0.23	8329.08
1	107471	1 percent	40100.00	498.93	525.75	516.52	526.28	0.000444	6.78	9562.22	907.33	0.26	8293.85
1	107406	1 percent	40100.00	498.50	525.78	517.57	526.19	0.000375	6.40	9724.27	1327.50	0.24	8274.21
1	107351 635 W.B. SERVICE		Bridge										
1	107330	1 percent	40100.00	497.70	525.72	516.44	525.98	0.000194	4.67	9926.70	1417.35	0.17	8251.79
1	107319	1 percent	40100.00	497.84	525.51	516.54	525.93	0.000302	5.96	7975.99	1225.34	0.21	8247.50
1	107175 635 MAIN LANES		Bridge										
1	107040	1 percent	40100.00	497.76	525.17	516.47	525.57	0.000282	5.70	8179.04	1770.09	0.21	8190.79
1	107006	1 percent	40100.00	495.90	525.22	516.66	525.50	0.000218	4.96	9779.32	2078.41	0.18	8175.66
1	106979 635 E.B. SERVICE		Bridge										
1	106951	1 percent	40100.00	495.90	525.00	517.00	525.42	0.000629	6.54	10143.78	1592.22	0.24	8157.20
1	106887	1 percent	40100.00	497.14	524.60	519.00	525.28	0.001420	8.40	7803.29	1236.21	0.32	8137.13
1	106558	1 percent	40100.00	496.75	523.91		524.80	0.001835	9.13	6271.31	603.45	0.35	8089.00
1	106373	1 percent	40100.00	496.70	523.44		524.42	0.002277	9.60	5882.61	610.19	0.39	8064.29
1	106183	1 percent	40100.00	496.60	521.24		523.69	0.007049	15.65	3915.65	521.03	0.63	8047.76
1	106120	1 percent	40100.00	496.60	520.31		523.17	0.007643	16.36	3759.50	530.50	0.67	8041.92
1	106082	1 percent	40100.00	496.60	520.29		522.79	0.006745	15.55	4055.49	557.56	0.64	8038.53
1	105950	1 percent	40100.00	496.60	520.09		521.73	0.004386	12.30	5005.36	620.21	0.53	8022.73
1	105929	1 percent	40100.00	496.60	519.88		521.63	0.004687	12.61	4880.54	617.96	0.55	8020.36
1	105850	1 percent	40100.00	496.60	519.33		521.24	0.005597	14.04	4954.42	680.84	0.59	8012.60
1	105743	1 percent	40100.00	496.60	519.59		520.54	0.002779	9.71	6602.31	819.27	0.40	7998.47
1	105583	1 percent	40100.00	496.40	519.19		520.19	0.003782	10.66	6120.50	862.39	0.44	7985.03
1	105366	1 percent	40100.00	495.81	518.82		519.71	0.001718	6.99	6362.06	842.88	0.30	7960.34
1	105060	1 percent	40100.00	495.20	518.58	514.66	519.38	0.001549	8.27	5761.53	810.71	0.34	7931.22
1	104813	1 percent	40100.00	495.17	518.45	513.27	519.09	0.000961	6.71	6312.53	722.81	0.27	7903.82
1	104740	1 percent	40100.00	494.92	518.32	513.40	519.02	0.001041	6.91	6253.79	710.49	0.28	7893.73
1	104637	1 percent	40100.00	494.57	518.31		518.92	0.000527	5.22	7196.48	769.20	0.20	7877.70
1	104478	1 percent	40100.00	493.77	518.16		518.81	0.000649	5.22	7104.02	745.98	0.22	7850.94
1	104247	1 percent	40100.00	491.87	518.02		518.70	0.000655	5.68	7556.52	778.39	0.23	7821.06
1	104092	1 percent	40100.00	491.50	517.13		518.45	0.002738	11.41	6068.12	770.19	0.46	7796.73
1	103855	1 percent	40100.00	493.10	516.68	514.15	517.83	0.002443	10.57	7428.77	1114.10	0.45	7764.23
1	103542	1 percent	40100.00	492.60	514.42		516.76	0.005460	14.33	4449.19	722.73	0.64	7727.03
1	103532	1 percent	40100.00	492.55	513.70	513.70	516.64	0.006982	15.73	3975.09	700.46	0.72	7726.06
1	103027	1 percent	40100.00	490.00	514.19		514.46	0.000702	4.50	10070.59	841.36	0.19	7651.89
1	102865	1 percent	40100.00	490.00	513.99		514.38	0.000401	6.02	9332.08	935.09	0.24	7624.21
1	102431	1 percent	40100.00	490.00	513.98		514.29	0.000156	3.51	9136.75	706.87	0.14	7562.58
1	101986	1 percent	40100.00	490.00	513.61		514.20	0.000400	5.16	7334.98	668.39	0.22	7504.65
1	101549	1 percent	40100.00	490.00	513.28		513.96	0.000657	6.27	6104.31	572.78	0.27	7435.81
1	101082	1 percent	40800.00	487.57	512.45		513.54	0.000834	8.96	7241.78	809.62	0.35	7356.77
1	100790	1 percent	40800.00	487.50	511.92	503.61	513.35	0.000370	10.02	5763.14	1338.71	0.40	7296.81
1	100700	1 percent	40800.00	487.30	510.47	504.11	513.18	0.000688	13.51	3887.19	1043.65	0.54	7280.56
1	100595	1 percent	40800.00	487.11	510.12	504.23	513.08	0.000764	13.98	3415.49	690.34	0.57	7268.32
1	100443	1 percent	40800.00	486.91	509.93	503.85	512.95	0.000765	14.07	3285.86	488.06	0.57	7255.41
1	100232	1 percent	40800.00	486.55	509.88	503.46	512.75	0.000713	13.76	3409.86	363.18	0.55	7237.61
1	100058	1 percent	40800.00	485.99	510.37	500.90	512.07	0.000384	10.58	4210.86	557.72	0.41	7219.79
1	99992	1 percent	40800.00	485.90	509.82	501.61	511.92	0.000479	11.71	3569.38	228.34	0.46	7212.69
1	99918 FOREST LANE		Bridge										
1	99872	1 percent	40800.00	485.90	508.92	501.61	511.29	0.000569	12.38	3390.88	196.67	0.50	7203.83
1	99691	1 percent	40800.00	484.71	507.57	501.41	510.89	0.000771	14.66	2985.20	760.74	0.57	7187.75
1	99354	1 percent	40800.00	483.75	507.42	500.71	510.54	0.000703	14.23	3183.65	1009.27	0.55	7151.12
1	99056	1 percent	40800.00	483.27	507.28	500.34	510.31	0.000679	14.03	3216.47	1082.77	0.54	7119.53
1	98744	1 percent	40800.00	481.90	507.37	499.17	510.00	0.000557	13.09	3528.27	1168.98	0.49	7083.68
1	98460	1 percent	40800.00	481.30	507.39	498.45	509.78	0.000496	12.50	3771.98	1116.69	0.47	7053.19
1	98179	1 percent	40800.00	481.27	507.12	498.53	509.62	0.000526	12.79	3757.06	989.75	0.48	7023.00
1	97918	1 percent	40800.00	481.17	507.64	496.20	509.25	0.000318	10.23	4533.94	367.43	0.38	6992.44
1	97694	1 percent	40800.00	481.06	507.50	496.24	509.17	0.000326	10.42	4376.49	307.59	0.38	6969.26
1	97518	1 percent	40800.00	480.88	507.61	495.57	509.05	0.000279	9.73	5129.74	572.93	0.35	6950.02
1	97476	1 percent	40800.00	480.80	507.70	495.99	508.93	0.000280	9.03	5042.10	1613.79	0.34	6940.94
1	97457 75N - SB FRONTAG		Bridge										
1	97425	1 percent	40800.00	479.99	507.50	495.16	508.73	0.000279	8.93	4889.08	1443.56	0.34	6933.00
1	97416	1 percent	40800.00	479.85	507.59	495.05	508.63	0.000244	8.42	5539.99	1593.37	0.32	6931.21
1	97407	1 percent	40800.00	479.70	507.66	494.58	508.56	0.000195	7.91	6015.40	1270.39	0.30	6929.23
1	97306 HIGHWAY 75N MAIN		Bridge										
1	97206	1 percent	40800.00	478.15	507.72	493.02	508.28	0.000123	6.57	8288.89	1316.25	0.24	6893.96
1	97203	1 percent	40800.00	478.13	507.31	493.91	508.19	0.000215	7.91	6700.47	1353.85	0.30	6892.40
1	97200	1 percent	40800.00	478.10	507.02	493.88	508.12	0.000260	8.63	5777.59	1190.75	0.33	6891.57
1	97180 75N - NB FRONTAG		Bridge										
1	97168	1 percent	40800.00	478.10	505.67	493.88	507.02	0.000341	9.45	5037.94	940.09	0.37	6887.11
1	97115	1 percent	40800.00	479.44	505.31	494.70	506.91	0.001106	10.21	4357.08	438.00	0.40	6881.60
1	96886	1 percent	40800.00	478.30	505.12	493.20	506.66	0.000962	9.99	4280.70	288.98	0.37	6859.28
1	96697	1 percent	40800.00	477.70	505.39	491.76	506.34	0.000582	7.83	5343.93	300.29	0.29	6838.41
1	96438	1 percent	40800.00	476.60	505.46		506.12	0.000501	6.54	6314.53	310.10	0.24	6803.73
1	96311	1 percent	40800.00	476.10	505.38		506.04	0.000741	6.51	6460.61	410.20	0.26	6784.99
1	95966	1 percent	53100.00	474.46	504.35	493.85	505.63	0.001340	9.16	6164.13	655.87	0.36	6730.58
1	95670	1 percent	53100.00	473.34	503.54	495.09	505.13	0.001940	10.33	5757.13	483.00	0.41	6686.06

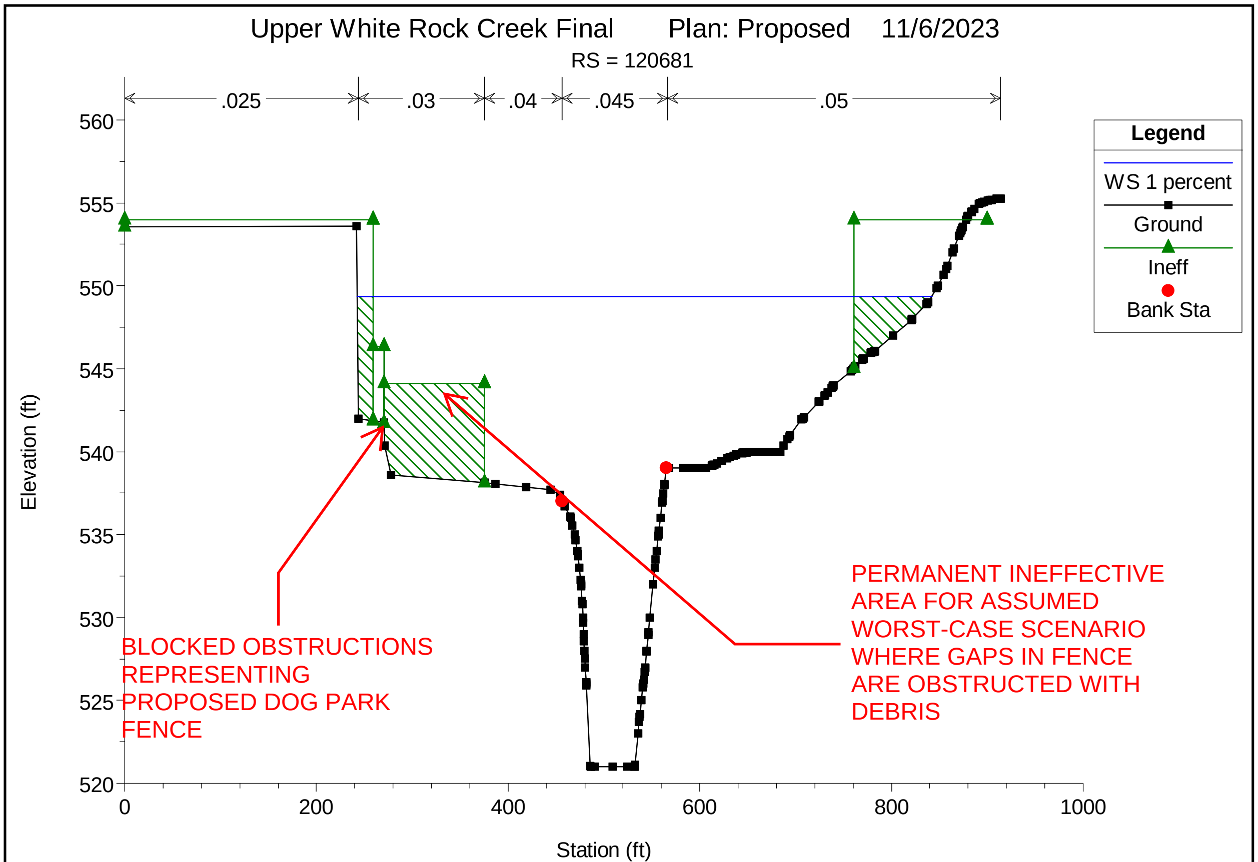
HEC-RAS Plan: Proposed River: WRC Reach: 1 Profile: 1 percent (Continued)

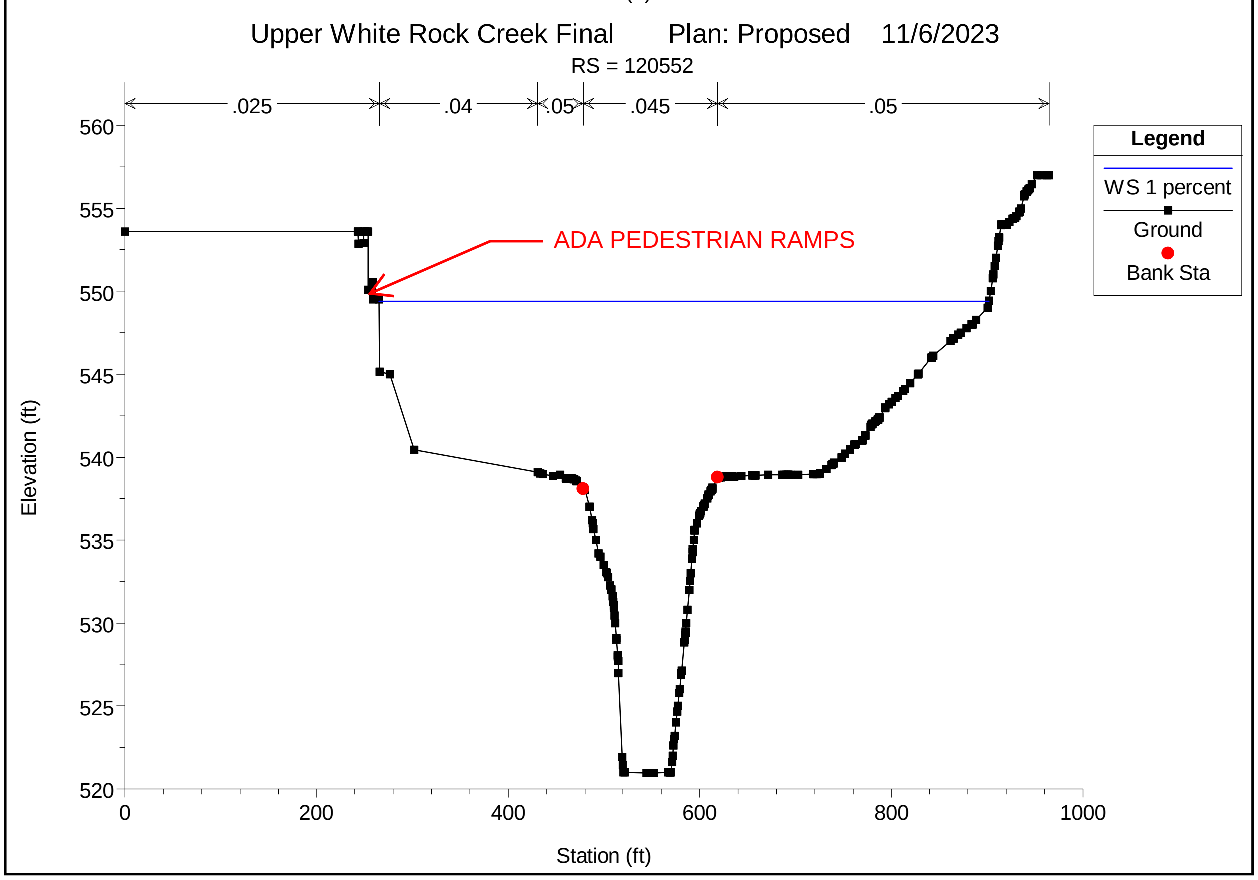
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Volume
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(acre-ft)
1	95423	1 percent	53100.00	472.10	503.35	494.37	504.67	0.001264	9.60	6313.78	465.22	0.37	6652.78
1	95356	1 percent	53100.00	474.35	503.48	495.00	504.40	0.000918	8.24	7383.46	636.02	0.32	6641.55
1	95303 DART RR		Bridge										
1	95183	1 percent	53100.00	472.67	502.35	493.17	503.76	0.001265	9.85	6523.97	600.88	0.38	6616.42
1	95015	1 percent	53100.00	470.80	501.90		503.50	0.001114	10.65	6597.25	516.27	0.41	6593.91
1	94735	1 percent	53100.00	470.70	501.74		503.01	0.001887	9.92	7802.95	655.06	0.39	6550.74
1	94517	1 percent	53100.00	470.67	501.67		502.64	0.000951	8.55	8989.64	781.33	0.37	6508.91
1	94274	1 percent	53100.00	470.60	501.49		502.43	0.000756	8.67	10140.36	903.77	0.33	6460.51
1	94191	1 percent	53800.00	470.00	501.47	492.42	502.35	0.000714	8.35	10608.63	984.58	0.33	6448.02
1	94130 ROYAL LN.		Bridge										
1	94063	1 percent	53800.00	470.00	501.36		502.06	0.001377	8.85	10636.51	1143.97	0.37	6417.96
1	93725	1 percent	53800.00	470.10	499.83	497.73	501.01	0.003379	11.69	8549.30	1148.59	0.47	6311.37
1	93379	1 percent	53800.00	469.80	498.61		499.97	0.003072	12.84	8670.73	1242.25	0.54	6251.35
1	93068	1 percent	53800.00	469.60	498.29	495.70	499.20	0.001961	11.22	10816.15	1414.51	0.45	6197.18
1	92800	1 percent	53800.00	469.10	497.47	496.04	498.68	0.002832	12.97	9784.06	1551.22	0.52	6152.98
1	92451	1 percent	53800.00	468.90	496.70	494.93	497.54	0.002802	11.55	10778.84	1725.74	0.51	6067.63
1	92135	1 percent	53800.00	468.50	496.15	494.13	496.83	0.001927	10.03	12276.23	1859.99	0.43	5993.01
1	91868	1 percent	53800.00	468.40	495.90	493.47	496.42	0.001552	9.34	13720.52	2045.88	0.39	5935.77
1	91514	1 percent	53800.00	467.80	495.40	492.96	495.89	0.001571	9.46	13880.34	2118.75	0.39	5833.60
1	91485 ROYAL OAKS GOLF		Bridge										
1	91455	1 percent	53800.00	467.80	495.00	492.57	495.55	0.001547	9.05	13482.93	2084.30	0.39	5814.88
1	91254	1 percent	53800.00	467.70	494.77	491.06	495.08	0.001149	7.04	15683.51	2210.42	0.33	5721.69
1	90805	1 percent	54100.00	467.20	494.37	490.78	494.69	0.001122	7.51	15728.16	2112.00	0.33	5602.41
1	90782 ROYAL OAKS GOLF		Bridge										
1	90759	1 percent	54100.00	467.20	494.22		494.53	0.001104	7.51	15838.69	2110.69	0.33	5585.66
1	90454	1 percent	54100.00	467.20	493.94		494.24	0.001304	7.06	14892.63	1919.86	0.35	5507.01
1	90118	1 percent	54100.00	469.07	493.50	490.03	493.92	0.000941	8.67	16120.94	2028.29	0.35	5408.28
1	90098 Royal Oaks Count		Inl Struct										
1	90078	1 percent	54100.00	469.28	493.50		493.82	0.000824	7.35	17004.94	2055.73	0.32	5392.34
1	89771	1 percent	54100.00	466.85	492.81	489.77	493.39	0.001702	9.10	12248.98	2028.88	0.40	5275.49
1	89757 ROYAL OAKS GOLF		Bridge										
1	89743	1 percent	54100.00	466.85	492.69		493.17	0.002187	8.11	11515.15	2007.84	0.37	5265.23
1	89650	1 percent	54000.00	468.50	492.48	488.85	493.03	0.001139	6.37	9323.63	2549.49	0.26	5235.32
1	89549 GREENVILLE AVENU		Bridge										
1	89447	1 percent	54000.00	468.30	491.95	482.17	492.26	0.000314	3.15	12398.35	2503.33	0.14	5184.35
1	88702	1 percent	54000.00	466.00	490.90	489.56	491.92	0.003811	11.61	8580.89	2850.59	0.48	5131.71
1	88309	1 percent	54300.00	465.30	490.94	486.03	491.10	0.000862	4.27	17999.92	2861.43	0.22	4983.98
1	87824	1 percent	54300.00	464.30	490.70	485.76	490.83	0.000647	4.65	20382.31	2528.00	0.19	4824.03
1	87375	1 percent	54300.00	463.80	490.49	485.42	490.61	0.000606	4.64	23133.71	3139.92	0.19	4638.13
1	87013	1 percent	54300.00	463.80	490.31	485.01	490.41	0.000601	4.38	25869.67	3277.63	0.19	4444.14
1	86695	1 percent	54300.00	463.30	490.13		490.19	0.000432	3.87	32059.15	3872.56	0.17	4146.77
1	86219	1 percent	54300.00	461.50	489.82	483.53	489.93	0.000503	4.44	25615.98	3256.68	0.18	3748.92
1	85283	1 percent	54300.00	461.72	489.32	483.20	489.56	0.001029	5.95	16642.70	3005.33	0.23	3464.01
1	85173 WALNUT HILL LANE		Bridge										
1	85062	1 percent	54300.00	461.72	489.04	481.99	489.23	0.000824	5.36	18012.01	2770.14	0.21	3369.37
1	84490	1 percent	54300.00	460.50	488.82	482.42	489.04	0.000746	5.81	19435.46	2719.08	0.23	3256.83
1	84200	1 percent	54300.00	460.40	488.79	481.29	488.91	0.000641	4.82	23379.30	2591.82	0.18	3186.40
1	83920	1 percent	54300.00	460.50	488.53	481.31	488.72	0.000788	5.34	18107.07	1879.09	0.21	3051.23
1	83634	1 percent	54300.00	460.40	488.10	482.76	488.41	0.001854	6.29	13723.04	1737.92	0.28	2958.69
1	83337	1 percent	54300.00	460.20	487.81	481.77	488.16	0.001419	6.18	13897.38	1716.39	0.27	2918.73
1	82978	1 percent	54300.00	460.13	487.73	481.46	487.87	0.000478	3.97	19831.21	2120.24	0.16	2810.44
1	82783	1 percent	54300.00	460.15	487.70	479.77	487.82	0.000365	3.52	20475.25	2093.61	0.14	2762.71
1	82695	1 percent	53800.00	459.70	487.69	480.63	487.81	0.000322	4.06	21268.69	2089.44	0.15	2742.48
1	82610 FAIR OAKS AVE		Bridge										
1	82525	1 percent	53800.00	459.40	484.24	480.93	484.58	0.001379	6.39	13265.13	1855.80	0.28	2705.10
1	82440	1 percent	53800.00	459.60	484.17	480.85	484.45	0.001587	5.30	13370.15	1767.87	0.25	2685.75
1	82276	1 percent	53800.00	459.50	483.79	479.00	484.21	0.001434	6.46	12649.79	1804.39	0.29	2641.36
1	82089	1 percent	53800.00	460.00	483.51	476.75	483.94	0.001479	6.36	12960.93	1968.51	0.28	2588.17
1	81768	1 percent	53800.00	460.20	483.15	477.02	483.50	0.001091	5.65	14505.49	2405.96	0.26	2481.99
1	81313	1 percent	53800.00	460.00	483.05	473.54	483.13	0.000432	2.91	26160.11	3254.03	0.13	2272.66
1	80759	1 percent	53800.00	459.60	482.97	474.79	483.02	0.000141	2.33	33528.56	3471.84	0.10	1968.75
1	80332	1 percent	53800.00	459.10	482.93		482.97	0.000113	2.02	37890.70	3838.68	0.08	1687.09
1	79663	1 percent	53800.00	458.70	482.82		482.87	0.000233	3.38	35545.80	2858.93	0.14	1152.58
1	78750	1 percent	53800.00	457.80	482.67		482.72	0.000332	3.11	34565.12	3002.45	0.14	747.63
1	78236	1 percent	53800.00	457.40	482.44		482.53	0.000570	4.93	26540.12	2760.37	0.19	463.20
1	77408	1 percent	49700.00	456.60	481.93	472.13	482.06	0.000516	4.44	24040.33	2908.59	0.19	

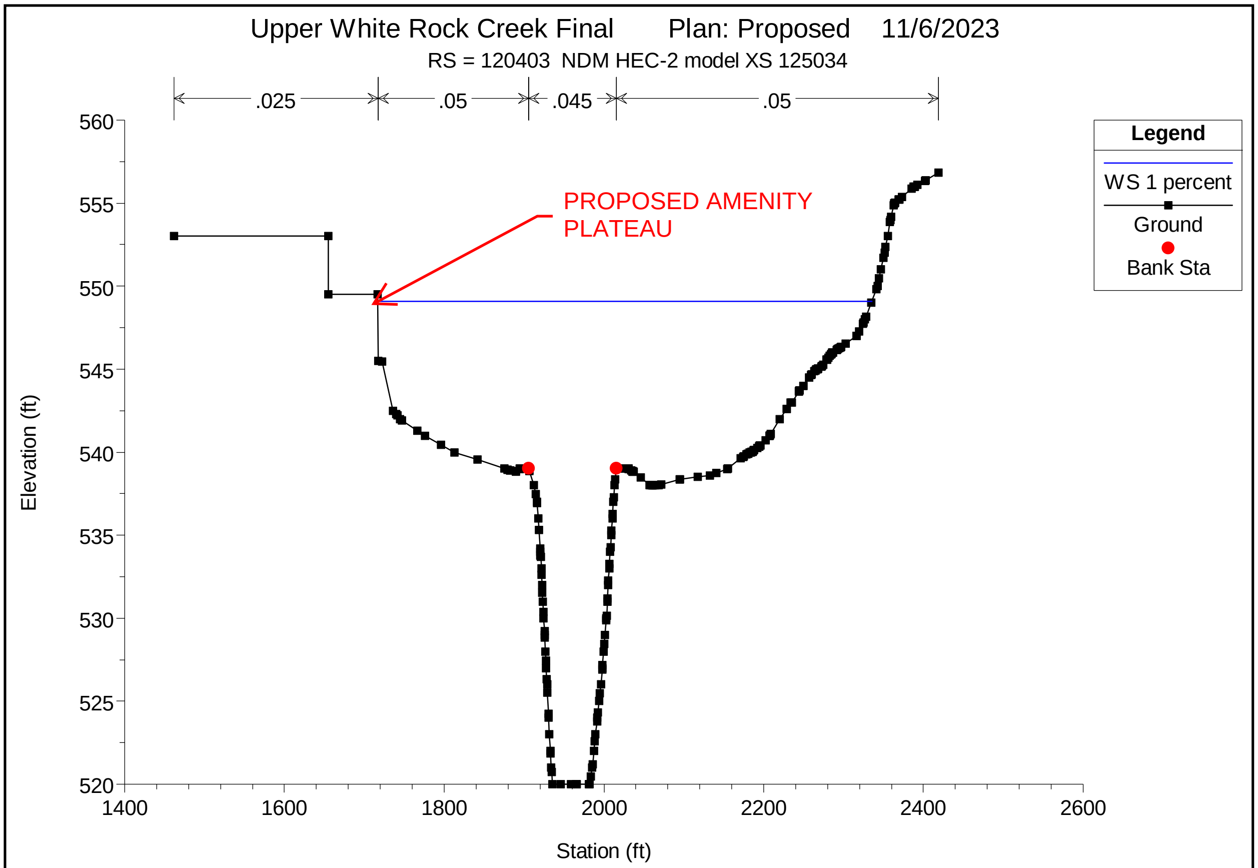

Upper White Rock Creek Final Plan: Proposed 11/6/2023
WRC 1
Legend
WS 1 percent
Ground
Elevation (ft)
560
550
540
530
520
510
500
119117
119298
119404
119526
119591
119664
119885
120125
120213
120261
120333
120403
120552
120681
120771
120828
120978
121123
121220
121281
121317
41000
41500
42000
42500
43000
Main Channel Distance (ft)

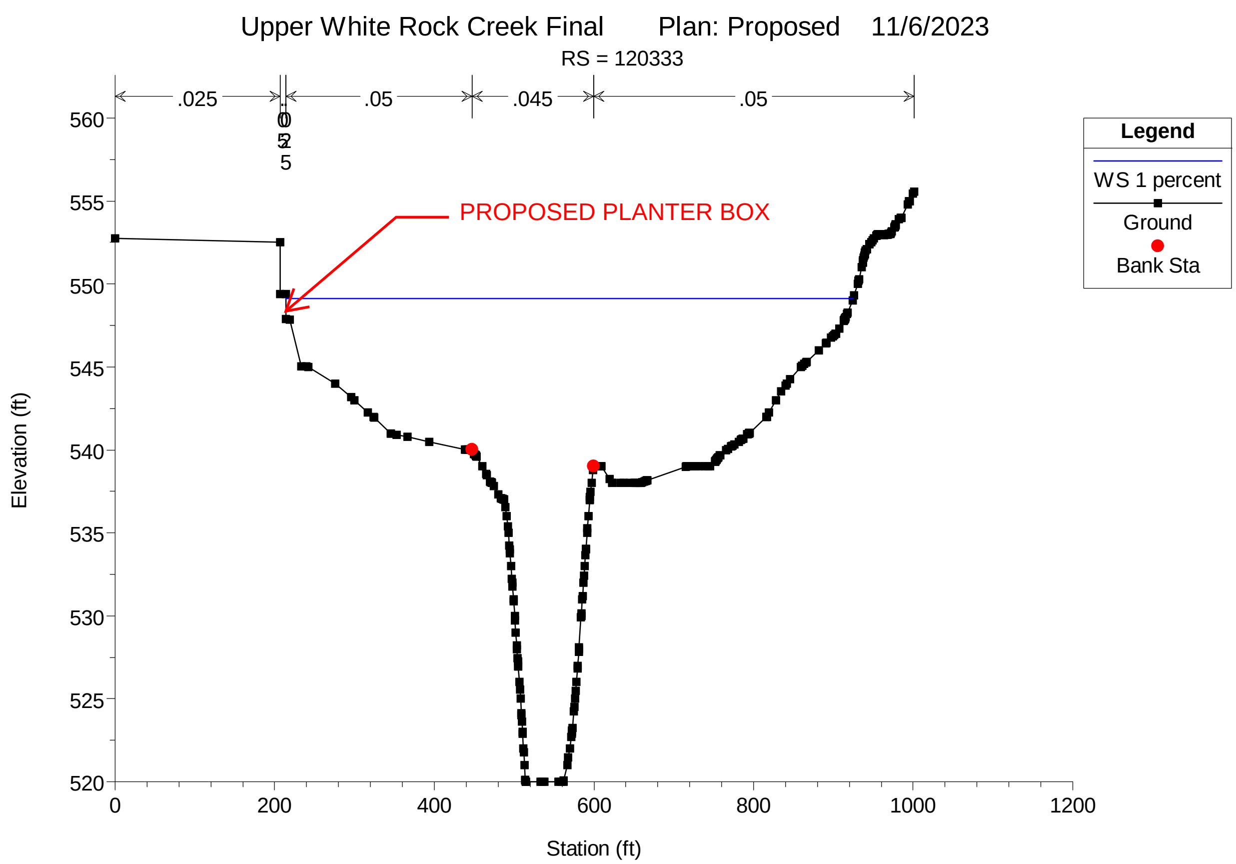

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120828 Halff 2006 XS downstream of Preston Road
.025
.03
.05
.045
.05
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
570
560
550
540
530
520
600
800
1000
1200
1400
1600
Station (ft)

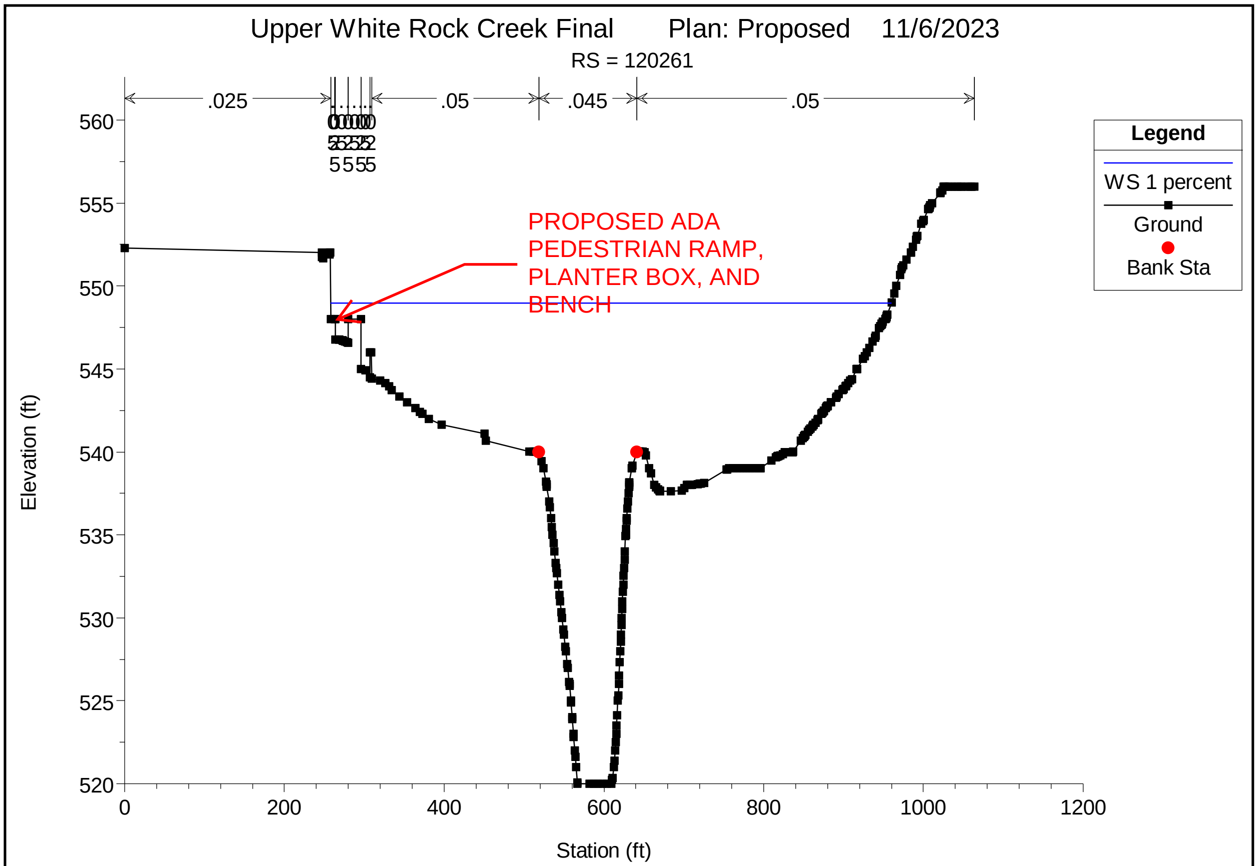

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120771
.025
.03
.036
.045
.05
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000
Station (ft)
BLOCKED OBSTRUCTIONS REPRESENTING PROPOSED DOG PARK FENCE
PERMANENT INEFFECTIVE AREA FOR ASSUMED WORST-CASE SCENARIO WHERE GAPS IN FENCE ARE OBSTRUCTED WITH DEBRIS

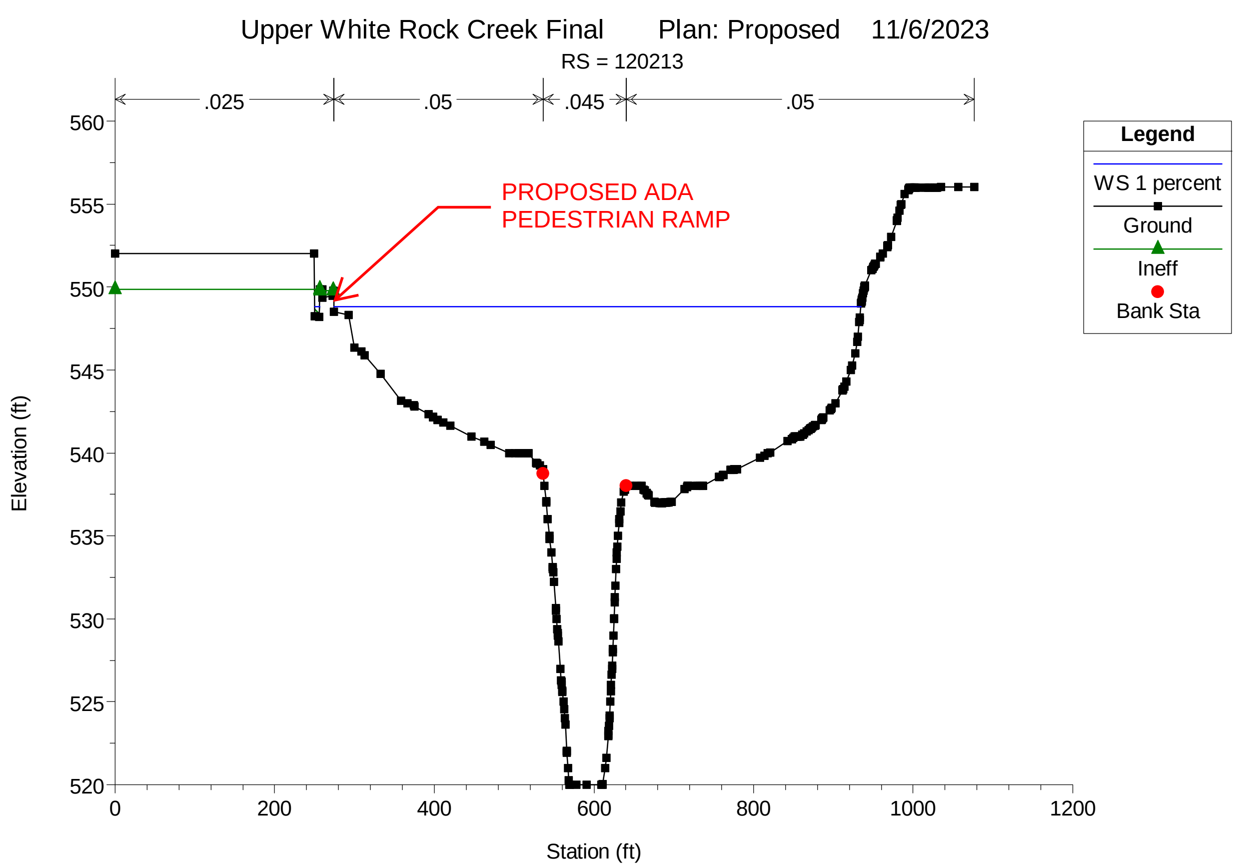

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120681
.025
.03
.04
.045
.05
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
BLOCKED OBSTRUCTIONS REPRESENTING PROPOSED DOG PARK FENCE
PERMANENT INEFFECTIVE AREA FOR ASSUMED WORST-CASE SCENARIO WHERE GAPS IN FENCE ARE OBSTRUCTED WITH DEBRIS

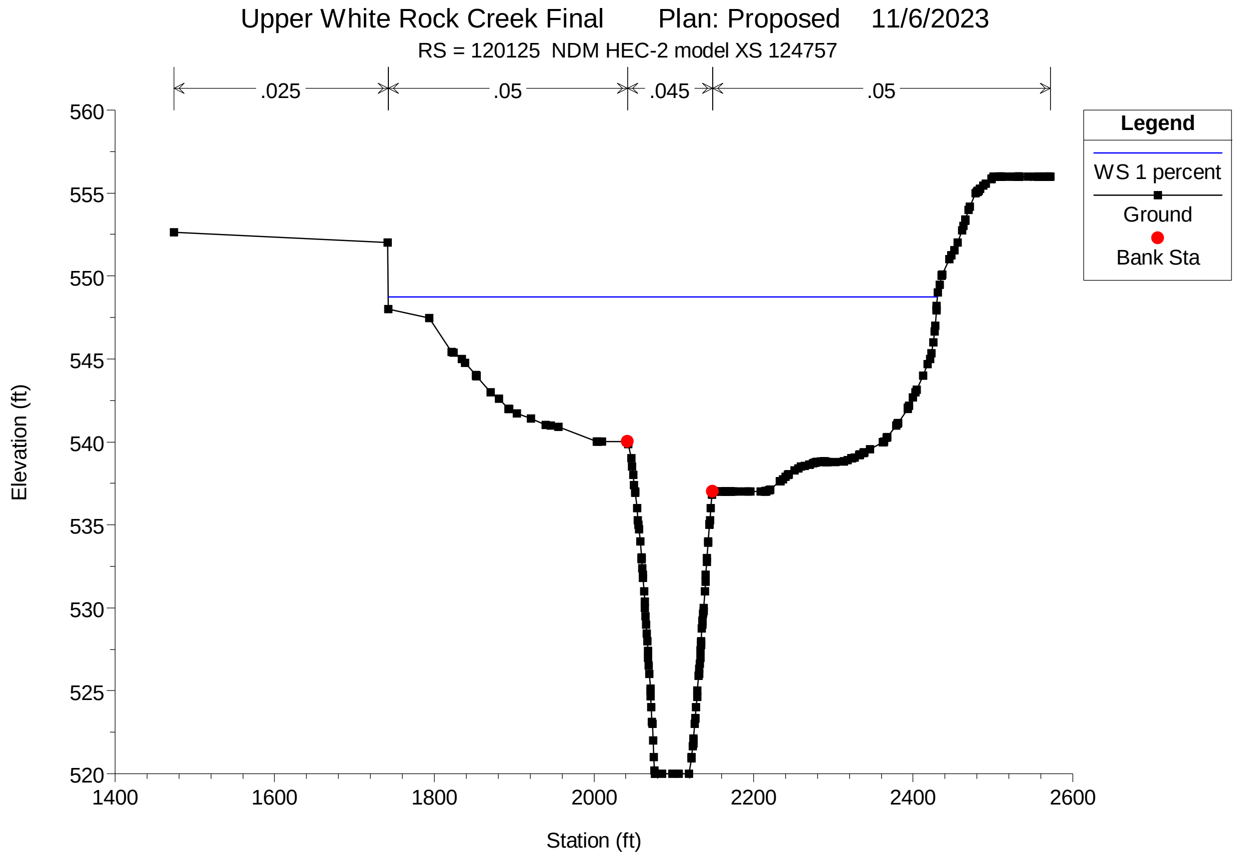

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120552
.025
.04
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
ADA PEDESTRIAN RAMPS

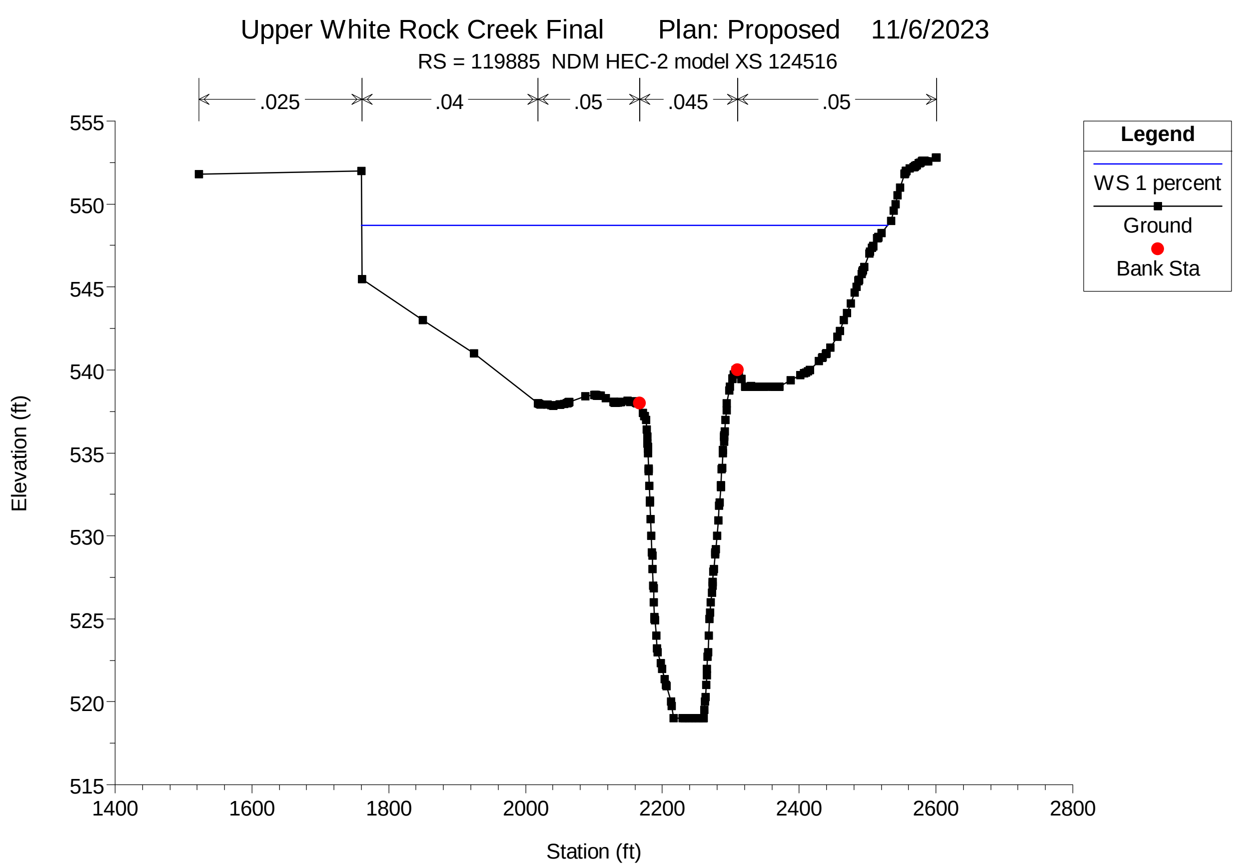

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120403 NDM HEC-2 model XS 125034
.025
.05
.045
.05
PROPOSED AMENITY PLATEAU
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
525
520
1400
1600
1800
2000
2200
2400
2600

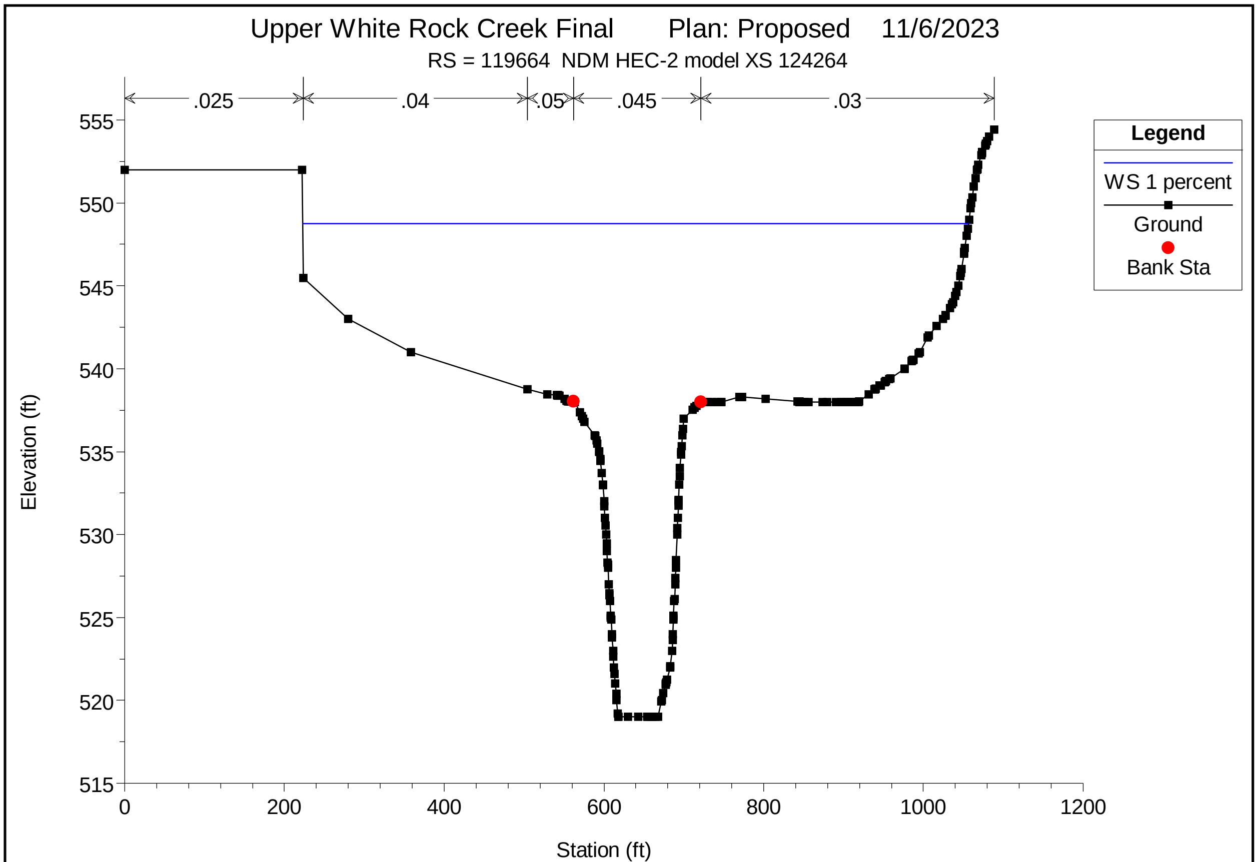

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120333
.025
0.025
.05
.045
.05
PROPOSED PLANTER BOX
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000
1200


Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120261
.025
.05
.045
.05
PROPOSED ADA PEDESTRIAN RAMP, PLANTER BOX, AND BENCH
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000
1200
Station (ft)

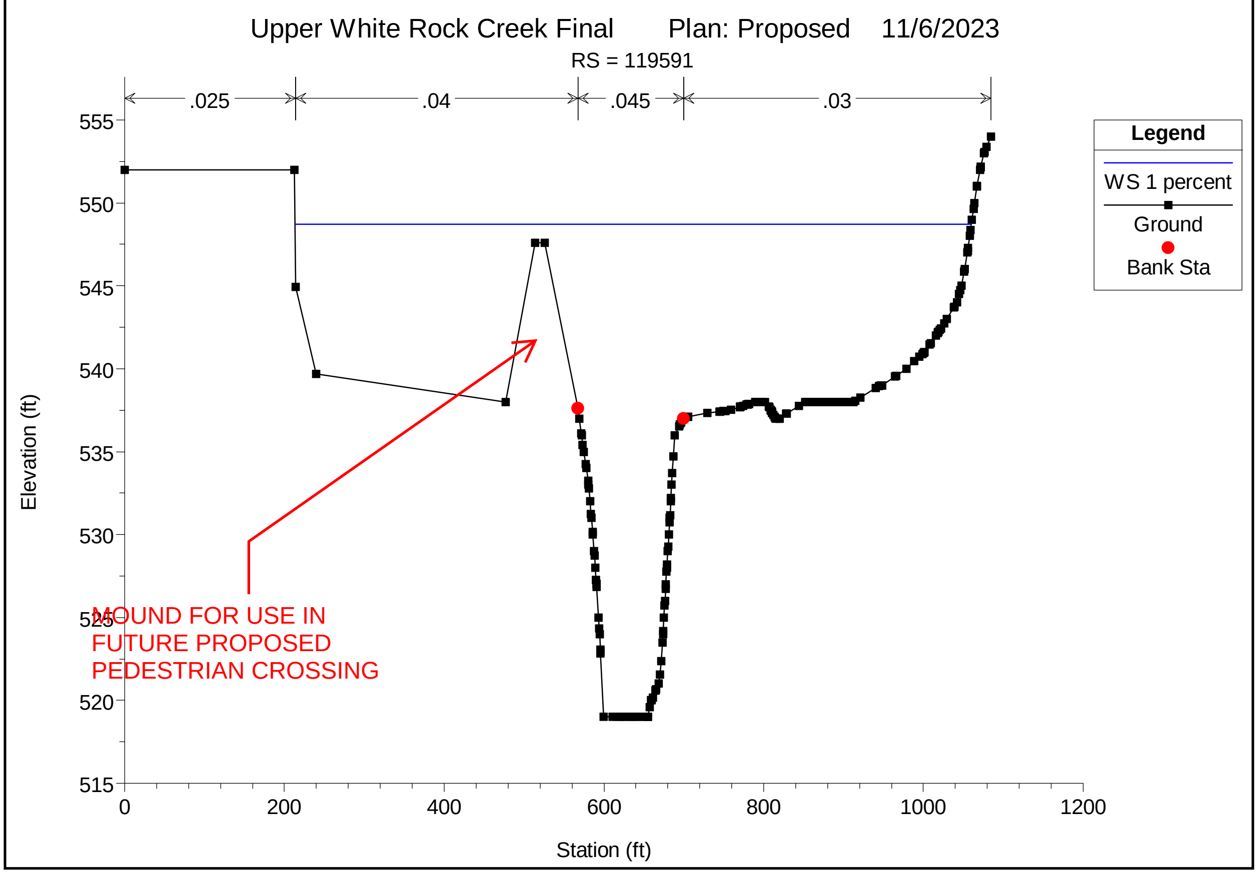

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120213
.025
.05
.045
.05
PROPOSED ADA PEDESTRIAN RAMP
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
560
555
550
545
540
535
530
525
520
0
200
400
600
800
1000
1200
Station (ft)


Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 120125 NDM HEC-2 model XS 124757
.025
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
560
555
550
545
540
535
530
525
520
1400
1600
1800
2000
2200
2400
2600
Elevation (ft)
Station (ft)

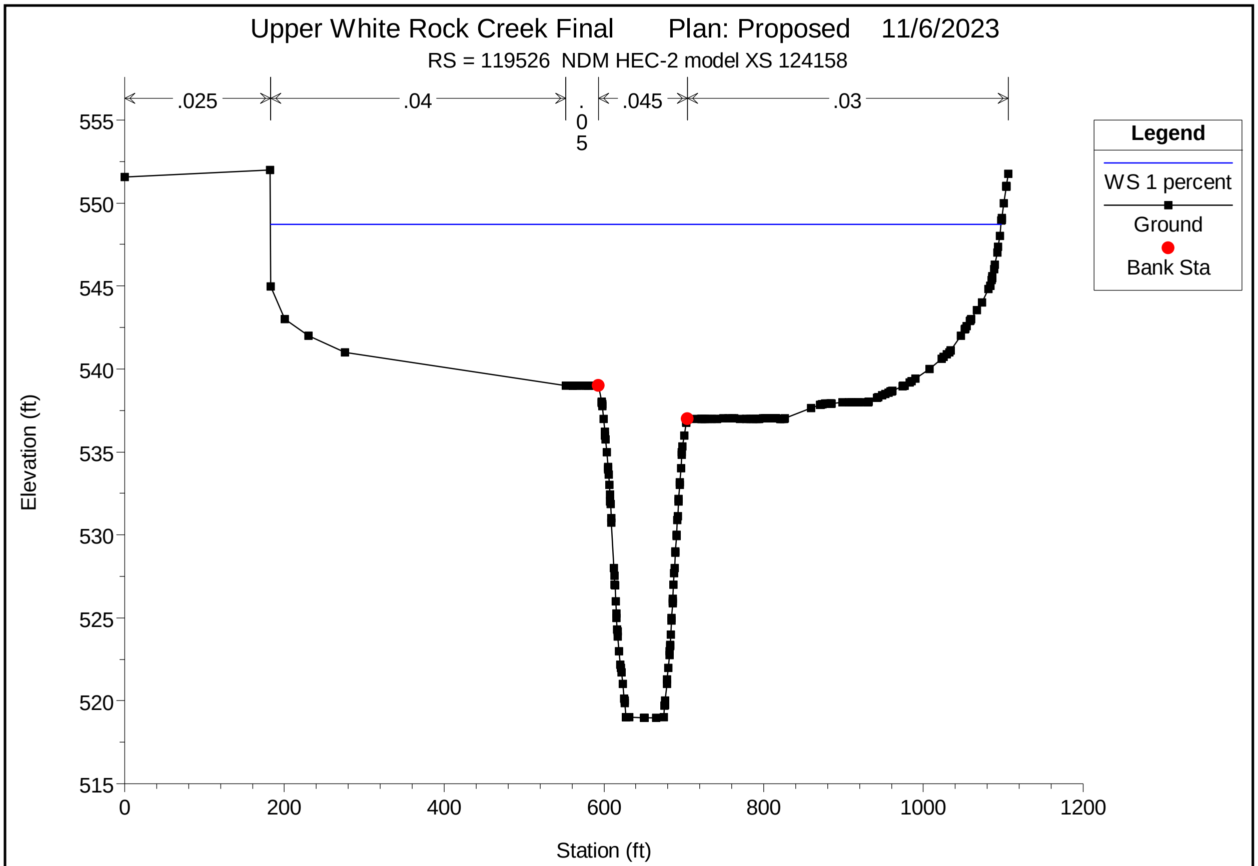

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 119885 NDM HEC-2 model XS 124516
.025
.04
.05
.045
.05
Legend
WS 1 percent
Ground
Bank Sta
555
550
545
540
535
530
525
520
515
1400
1600
1800
2000
2200
2400
2600
2800
Elevation (ft)
Station (ft)

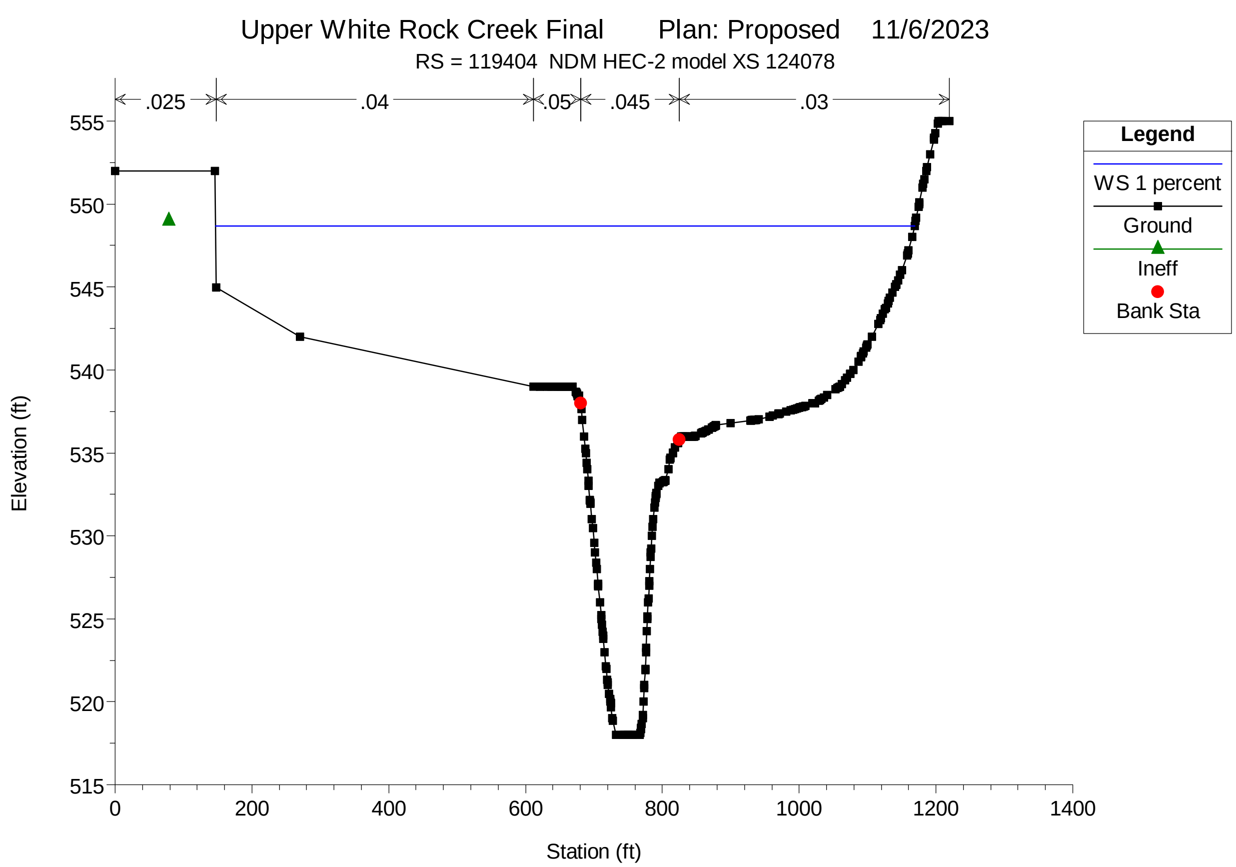


Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 119664 NDM HEC-2 model XS 124264
.025
.04
.05
.045
.03
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
555
550
545
540
535
530
525
520
515
0
200
400
600
800
1000
1200



Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 119591
.025
.04
.045
.03
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
Station (ft)
MOUND FOR USE IN
FUTURE PROPOSED
PEDESTRIAN CROSSING
555
550
545
540
535
530
525
520
515
0
200
400
600
800
1000
1200


Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 119526 NDM HEC-2 model XS 124158
.025
.04
.05
.045
.03
Legend
WS 1 percent
Ground
Bank Sta
Elevation (ft)
555
550
545
540
535
530
525
520
515
0
200
400
600
800
1000
1200
Station (ft)

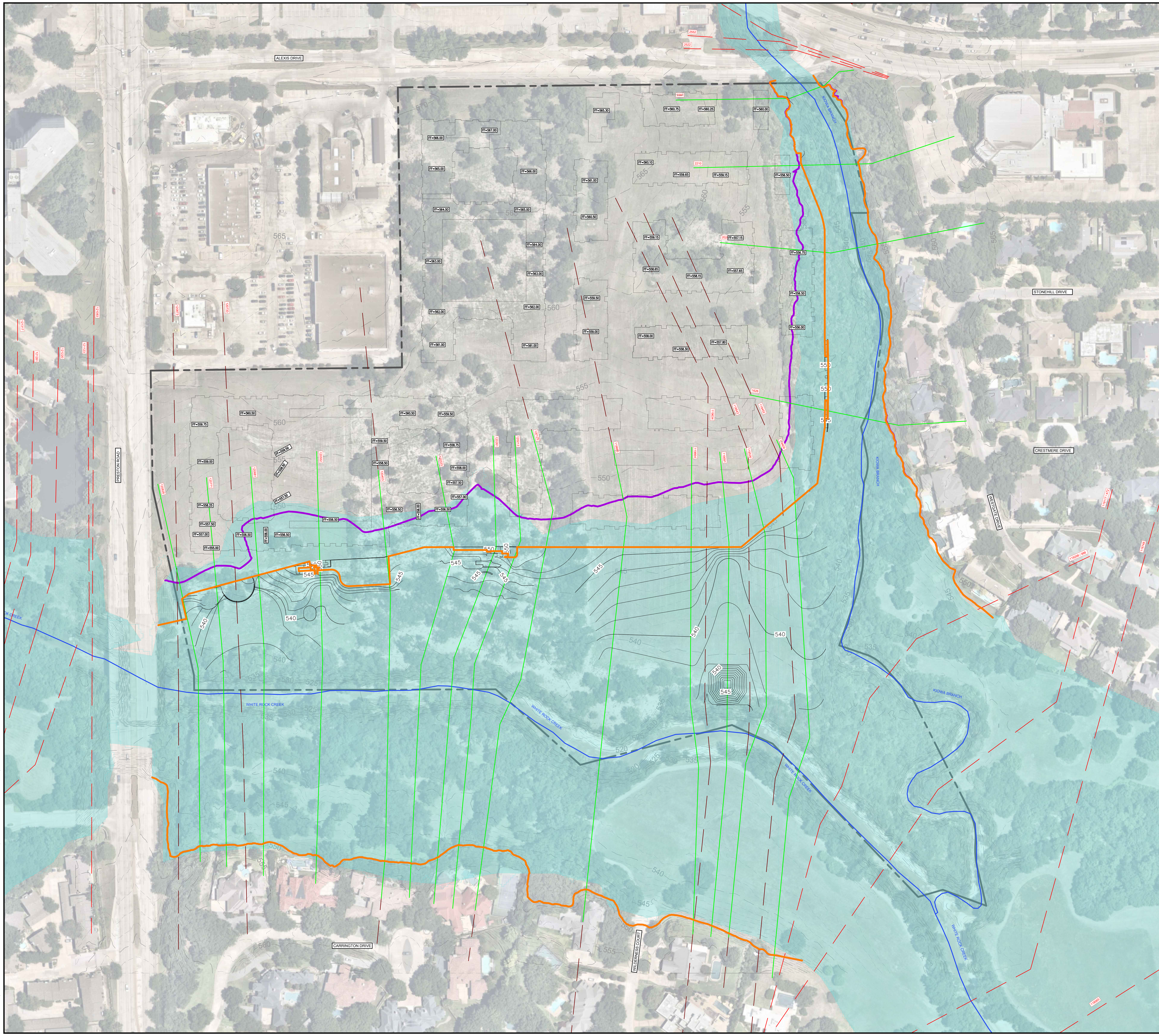

Upper White Rock Creek Final Plan: Proposed 11/6/2023
RS = 119404 NDM HEC-2 model XS 124078
.025
.04
.05
.045
.03
Legend
WS 1 percent
Ground
Ineff
Bank Sta
Elevation (ft)
555
550
545
540
535
530
525
520
515
0
200
400
600
800
1000
1200
1400
Station (ft)

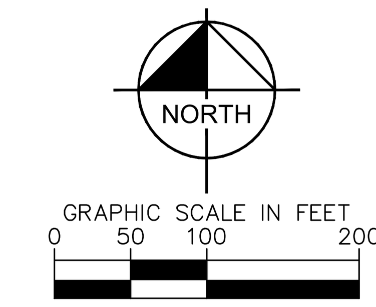
Appendix E:

Engineering Exhibits

100-Year Floodplain Workmap
Landscape and Tree Preservation Plan
Environmental Impact Study

kimley-horn.com 13455 Noel Road, Suite 700 Dallas, TX 75240 972 770 1300





LEGEND	
	PROPERTY BOUNDARY
	PROPOSED BUILDING FOOTPRINTS
	FINISHED FLOOR ELEVATIONS
	KHA CROSS SECTION
	FEMA EFFECTIVE CROSS SECTION
	DELETED FEMA EFFECTIVE CROSS SECTION
	CENTERLINE
	100-YR REVISED EXISTING FLOODPLAIN BOUNDARY
	100-YR PROPOSED FLOODPLAIN BOUNDARY
	100-YR FEMA EFFECTIVE CITY OF DALLAS ZONE AE FLOODLAIN
	1 FT PROPOSED GRADING
	1 FT COMBINED AERIAL AND ON-GROUND TOPOGRAPHY (TNRIS 2019)

IMAGE SOURCE: NEARMAP, MAY 2023

No.	REVISIONS	DATE	BY

Kimley»Horn

13455 NOEL ROAD, TWO GALLERIA OFFICE TOWER, SUITE 700
DALLAS, TEXAS 75240
PHONE: 972-770-1300 FAX: 972-239-3820
TEXAS REGISTERED ENGINEERING FIRM F-928

STATE OF TEXAS
CHRIS B. FERGUSSON
120451
LICENSED
PROFESSIONAL ENGINEER

PROJECT No. 064422706
DATE: NOV 2023
SCALE: AS SHOWN
DESIGNED BY: WPM
DRAWN BY: WPM
CHECKED BY: CBF

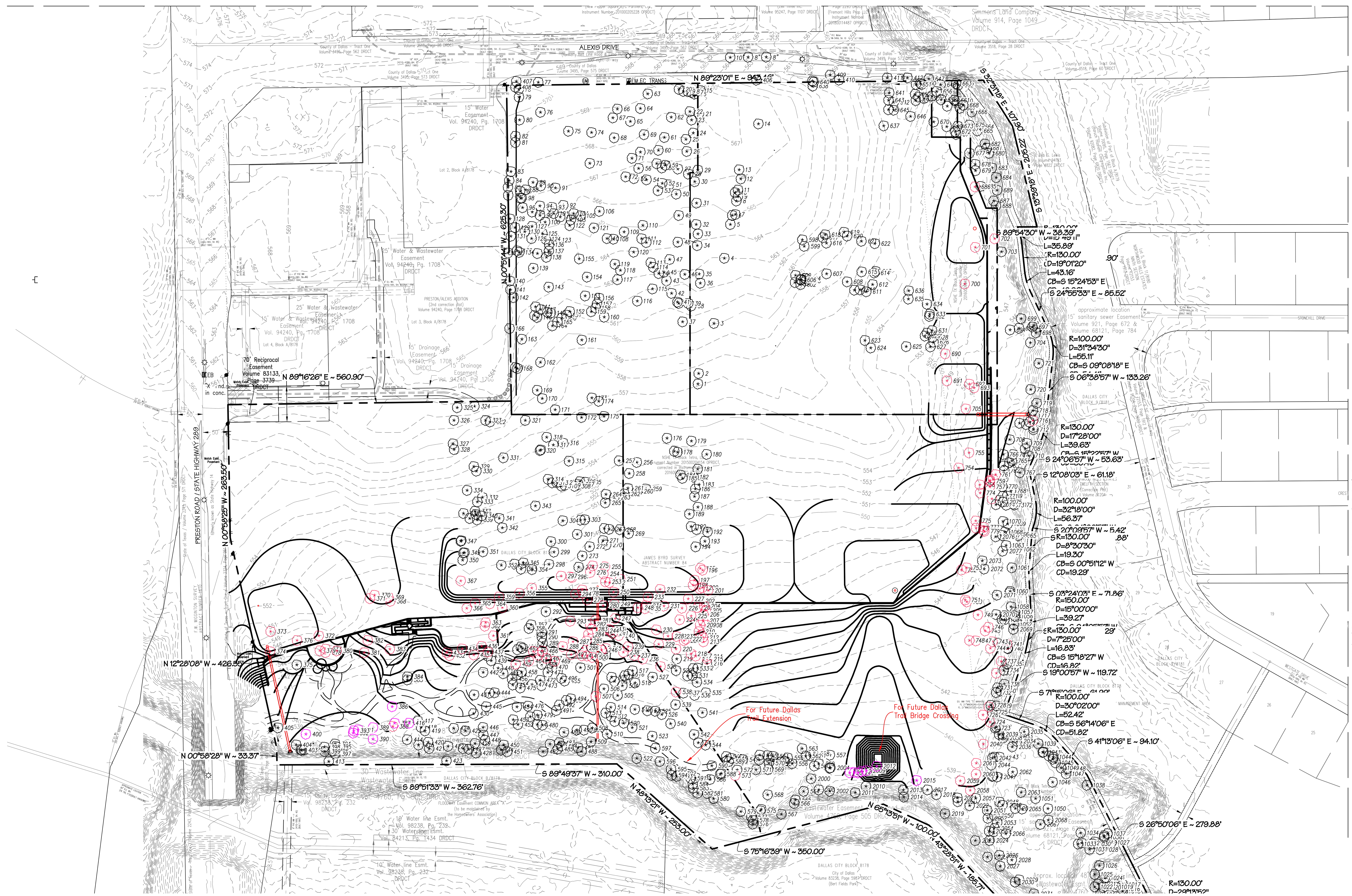
6050 Belt Line Road Fill Permit

CITY OF DALLAS
DALLAS COUNTY, TEXAS

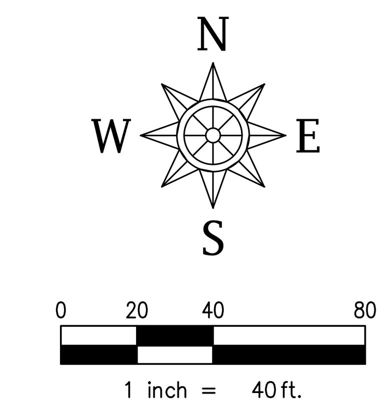
HYDRAULIC WORKMAP

SHEET NUMBER

MATCHLINE SEE SHEET C07.03



MATCHLINE SEE SHEET C07.04



THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

GRADING GENERAL NOTES:

1. All materials and construction shall conform to the City of Dallas Plans and Specifications, except as noted herein and approved by the City.
2. Contractor shall be responsible for maintaining trench safety requirements in accordance with City Standards, Texas State Law, and O.S.H.A. Standards for all excavation in excess of five feet in depth.
3. The location of all utilities located on these plans are taken from existing public records. The exact location and elevation of all public utilities must be determined by the Contractor. It shall be the duty of the Contractor to ascertain whether any additional facilities other than those shown on the plans may be present.
4. Drainage should be maintained away from the foundations, both during and after construction.
5. Backfill for utility lines should be carefully placed so that they will be stable. Where utility lines pass through the parking lot, the top 6" should be compacted similarly to the remainder of the lot. Utility ditches should be visually inspected during the excavation process to ensure that undesirable fill is not used.
6. If rock is encountered in the trench, rock spoil shall not be used in the upper 1.5 feet of the trench.
7. All earthwork operations shall conform to the recommendations per the Geotechnical Report.
8. Proposed spot elevations located at the curb are finished gutter elevations. Add 0.50 feet to elevation for proposed top of curb.
9. Prior to final installation of all structures, Contractor shall verify correct final grade elevations.
10. Traffic Control Plan (TCP) must be submitted to the Department of Public Works for review and approval by Traffic Safety Coordinators prior to start of construction. No traffic lane or sidewalk along any public street or alley is to be closed without first obtaining the appropriate permit(s). Closure of any traffic lane must be restricted to the hours of 9:30 a.m. to 3:30 p.m. workdays (hours may differ in school zones). Contractor must call (214) 948–4290 to request approval of TCP and to obtain a right–of–way permit.

GRADING LEGEND

Tree To Remain
Tree To Be Removed
Tree To Be Removed For City Trail

29.50 Proposed Gutter Spot Elevation
429 Proposed Contour
429 Existing Contour
TC=429.50 Existing Spot Elevation
Direction Of Flow

This plan is released for the purpose of interim review and pricing under the authority of KEVIN S. WIER, P.E. 91219

Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ____________ DATE ______

CONTRACTOR ____________

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

SPIARS ENGINEERING & SURVEYING
765 Custer Road, Suite 100 • Plano, TX 75075 • 972.422.0077
TBPE No F-2121 • TBLPS No. F-10043100 • www.spiarseng.com

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

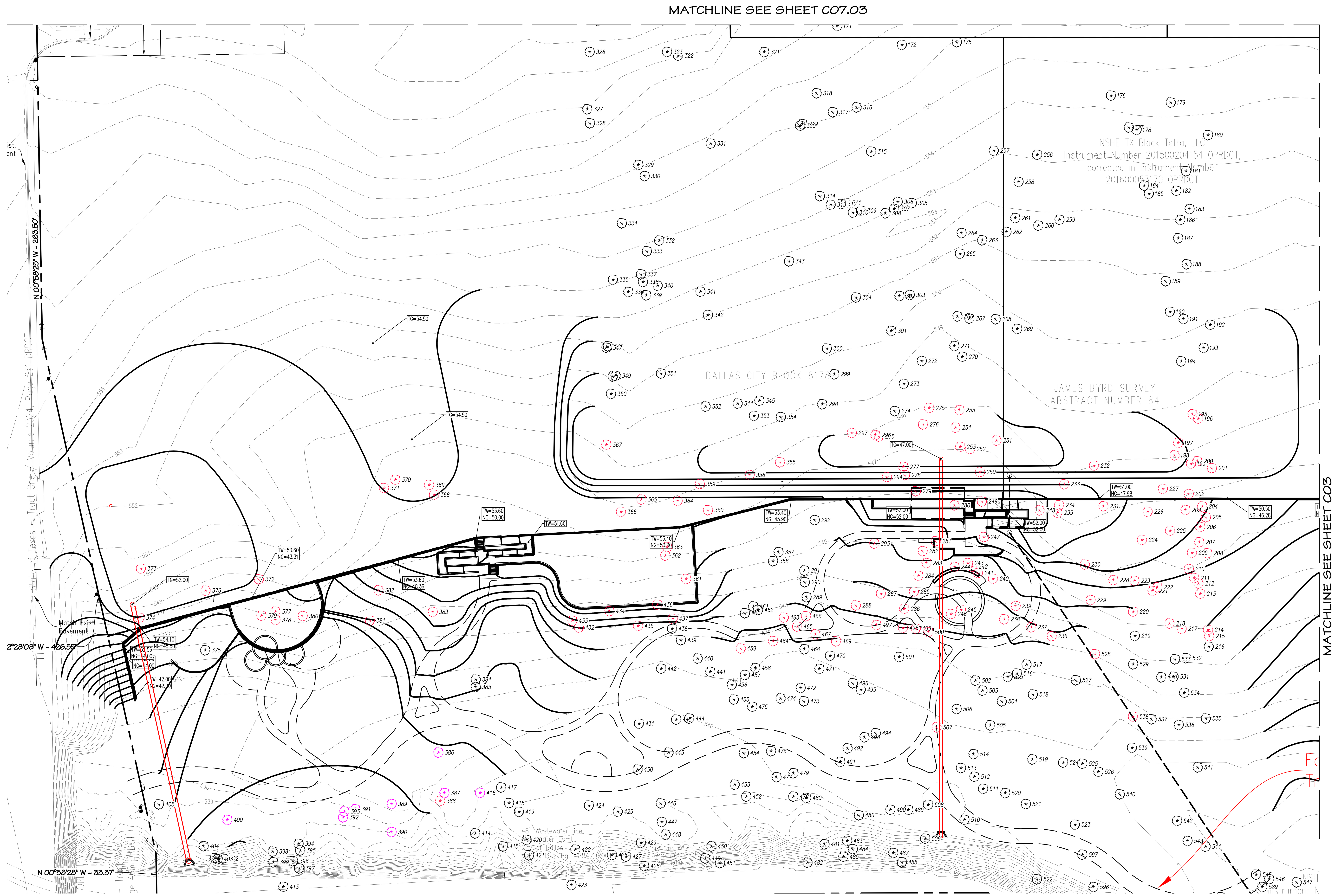
TONTI ALEXIS

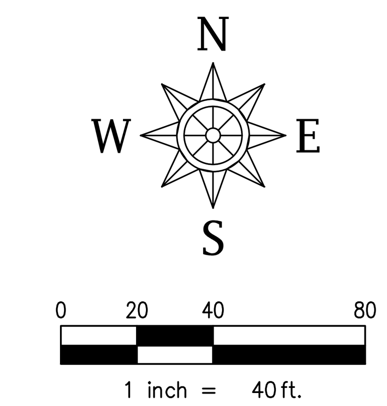
PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	01





THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

GRADING GENERAL NOTES:

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2. Contractor shall be responsible for maintaining trench safety requirements in accordance with City Standards, Texas State Law, and O.S.H.A. Standards for all excavation in excess of five feet in depth.
3. The location of all utilities located on these plans are taken from existing public records. The exact location and elevation of all public utilities must be determined by the Contractor. It shall be the duty of the Contractor to ascertain whether any additional facilities other than those shown on the plans may be present.
4. Drainage should be maintained away from the foundations, both during and after construction.
5. Backfill for utility lines should be carefully placed so that they will be stable. Where utility lines pass through the parking lot, the top 6" should be compacted similarly to the remainder of the lot. Utility ditches should be visually inspected during the excavation process to ensure that undesirable fill is not used.
6. If rock is encountered in the trench, rock spoil shall not be used in the upper 1.5 feet of the trench.
7. All earthwork operations shall conform to the recommendations per the Geotechnical Report.
8. Proposed spot elevations located at the curb are finished gutter elevations. Add 0.50 feet to elevation for proposed top of curb.
9. Prior to final installation of all structures, Contractor shall verify correct final grade elevations.
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GRADING LEGEND

29.50	Proposed Gutter Spot Elevation
429	Proposed Contour
429	Existing Contour
TC=429.50	Existing Spot Elevation
	Direction Of Flow

This plan is released for the purpose of interim review and pricing under the authority of KEVIN S. WIER, P.E. 91219

Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ______________ DATE ______

CONTRACTOR ______________

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

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TBPE No F-2121 • TBLPS No. F-10043100 • www.spiarseng.com

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

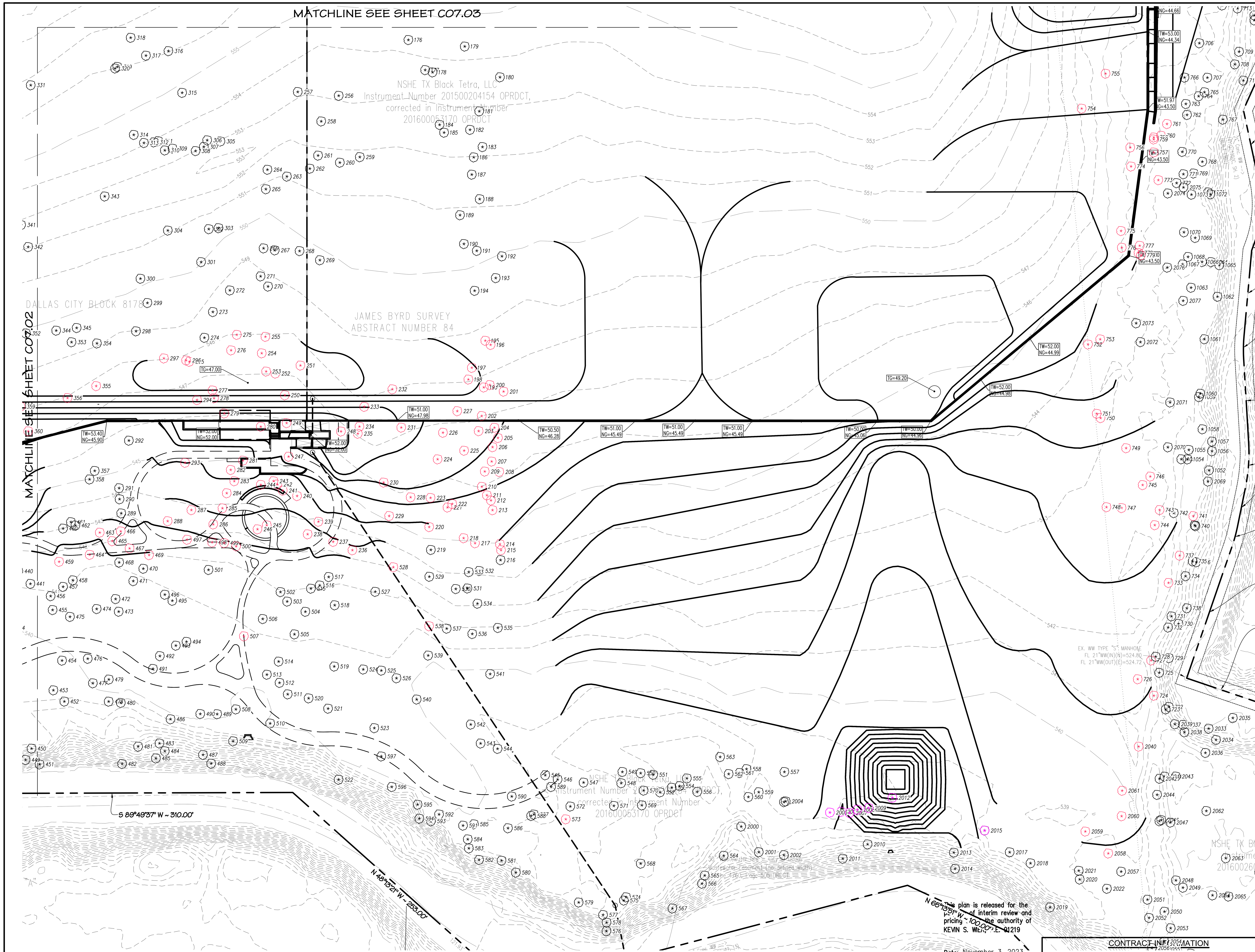
TONTI ALEXIS

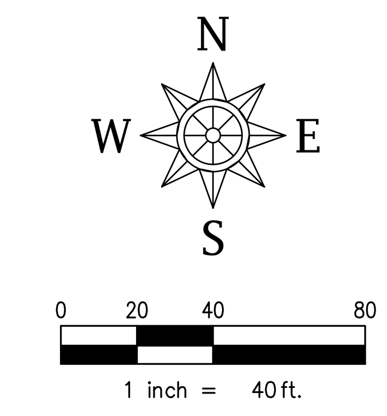
PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	02





THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

GRADING LEGEND

29.50	Proposed Gutter Spot Elevation
429	Proposed Contour
429	Existing Contour
TC=429.50	Existing Spot Elevation
←	Direction Of Flow

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Date: November 3, 2023

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CONTRACT INFORMATION

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Tree Survey

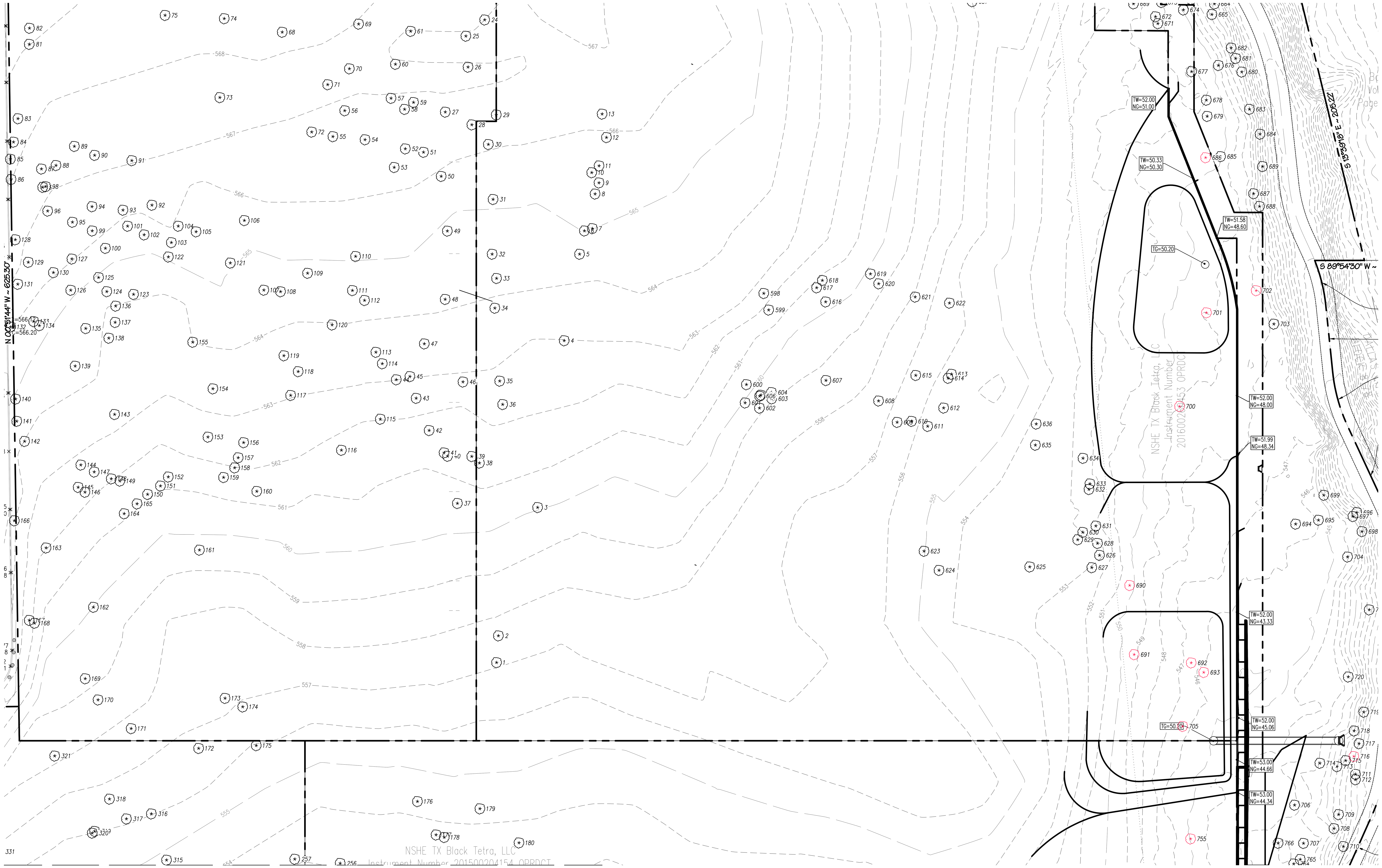
TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

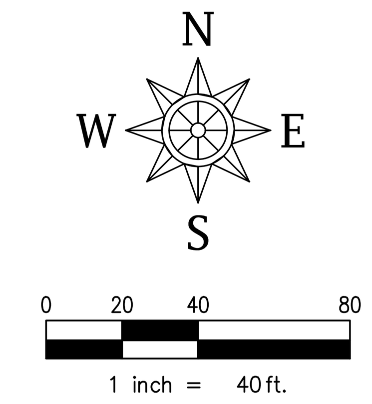
DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	03



MATCHLINE SEE SHEET C07.02



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THIS SPACE RESERVED - ENGINEERING

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Tree Survey

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	04

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
254	16.7	cedar elm	17	No	Dead	7031696	2489652.55	Dead
255	12.7	cedar elm	13	No	Leaning Severe Hazard	7031710	2489655.72	Leaning Severe Hazard
275	13.1	cedar elm	13	No	Stressed	7031712	2489631.21	Stressed
276	11.2	cedar elm	11	No	Stressed	7031699	2489626.27	Flushed Out
277	16.9	cedar elm	17	No	Stressed	7031664	2489610.32	Stressed
278	11.0	cedar elm	11	No	Leaning Moderate/ Broken Top	7031658	2489611.63	Moderate Lean broken top
279	22.5	cedar elm	23	Yes	Stressed	7031645	2489620.47	Stressed
280	11.4	cedar elm	11	No	Stressed	7031633	2489651.73	Stressed
281	12.8	cedar elm	13	No	Declining/rot	7031604	2489636.52	Declining w Rot
282	11.4	cedar elm	11	No	Stressed/ Broken top	7031596	2489625.97	Stressed/ Broken top
283	10.9	cedar elm	11	No	Healthy	7031587	2489629.02	Healthy
284	8.3	cedar elm	8	No	Dead	7031576	2489622.55	Dead
285	13.0	cedar elm	13	No	Declining/Broken Top	7031563	2489618.86	Declining/Broken Top
286	8.6	cedar elm	9	No	Stressed/Broken Top	7031550	2489610.99	Stressed/Broken Top
287	8.7	cedar elm	9	No	Leaning Severe Hazard	7031562	2489592.23	Leaning Severe (Hazard)
288	16.9	cedar elm	10	No	Dead	7031552	2489571.9	Dead
293	10.9	cedar elm	11	No	Leaning Severe Hazard	7031602	2489586.82	Leaning Severe Hazard
294	10.4	cedar elm	10	No	Stressed	7031656	2489597.06	Stressed
295	12.7	cedar elm	13	No	Broken Top/ Some Rot	7031689	2489590.48	Broken Top, Some Rot
296	9.2	cedar elm	9	No	Rot and Leaning Hazard	7031690	2489587.71	Rot and Leaning Hazard
297	12.6	cedar elm	13	No	Stressed	7031692	2489568.67	Stressed
355	12.2	cedar elm	12	No	Healthy	7031668	2489510.61	Healthy. Broken top
356	12.0	cedar elm	12	No	Dead	7031658	2489486.03	Dead
359	16.8	cedar elm	17	No	Healthy	7031651	2489445.72	Healthy, broken top
360	12.6	cedar elm	13	No	Declining Severe	7031629	2489452.31	Declining Severe
361	22.0	cedar elm	22	Yes	Declining, Broken top	7031574	2489434.67	Declining, Broken top
362	9.4	cedar elm	9	No	Declining Severe	7031593	2489417.76	Declining Severe
363	13.5	cedar elm	14	No	Declining	7031600	2489419.28	Declining
364	15.8	cedar elm	16	No	Rotten	7031637	2489427.78	Rot
365	12.8	cedar elm	13	No	Healthy	7031638	2489398.45	Healthy
366	17.2	cedar elm	17	No	Healthy	7031628	2489381.92	Healthy
367	14.0	cedar elm	14	No	Diseased	7031682	2489370.05	Beetle Damage
368	13.6	sugarberry	14	Yes	Damaged Severe	7031642	2489230.74	Damaged Severe
369	17.9	astern red ceda	18	No	Damaged Severe	7031650	2489226.71	Damaged Severe
370	8.4	green ash	8	No	Leaning Severe Hazard	7031654	2489199.42	Leaning Severe Hazard
371	23.2	astern red ceda	23	No	Healthy	7031647	2489190.27	Healthy
372	27.9	Osage-orange	28	Yes	Declining Rot	7031574	2489089	Declining w Rot
373	19.7	post oak	20	No	On Storm Line and Broken Top	7031582	2488993.61	On Storm Line and Broken Top
374	18.1	cedar elm	18	No	Healthy	7031542	2488992.49	Healthy
376	8.3	cedar elm	8	No	Healthy	7031564	2489045.95	Healthy
377	11.6	cedar elm	12	No	Healthy	7031547	2489102.45	Healthy
378	14.3	cedar elm	14	No	Leaning Severe Hazard	7031541	2489102.49	Leaning Severe Hazard
379	10.4	cedar elm	10	No	Healthy	7031544	2489091.06	Healthy
380	15.5	cedar elm	16	No	Leaning Severe Hazard	7031544	2489124.48	Leaning Severe Hazard
381	10.0	sugarberry	10	No	Dead	7031540	2489178.87	Dead
382	13.3	cedar elm	13	No	Leaning Severe Hazard	7031565	2489185.83	Leaning Severe Hazard
383	15.7	sugarberry	16	Yes	Dead	7031547	2489229.66	Dead
386	24.6	pecan	24	Yes	Damaged, Rot on Trunk + Dallas Trail	7031433	2489234.27	Damaged, Rot on Trunk + Dallas Trail
387	13.1	cedar elm	13	No	Declining + Dallas Trail	7031401	2489239.1	Declining + Dallas Trail
388	9.2	cedar elm	3	No	Declining Severe + Dallas Trail	7031394	2489235.66	Declining Severe + Dallas Trail
389	12.6	cedar elm	13	No	Stressed + Dallas Trail	7031392	2489196.43	Stressed + Dallas Trail
390	14.6	Chinaberry	5	No	Gone	7031369	2489196.39	Gone, Fell over and was removed (storm clean up)
391	9.9	cedar elm	10	No	For Dallas Trail	7031387	2489167.07	Removed for Dallas Trail
392	9.3	cedar elm	9	No	Stressed + Dallas Trail	7031381	2489157.18	Stressed & Removed for Dallas Trail
393	8.9	cedar elm	9	No	Dallas Trail and Declining/ Leaning Severe Hazard	7031386	2489158.2	Declining, Leaning Severe Hazard & Removed for Dallas Trail

THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

N W E S

0 20 40 80

1 inch = 40 ft.

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SPIARS ENGINEERING & SURVEYING

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Tree Survey

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	06

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
400	8.0	pecan	8	No	For Dallas Trail	7031379	2489063.54	Removed for Dallas Trail
416	10.0	pecan	10	No	Damaged Severe	7031401	2489267.93	Damaged Severe
432	15.1	Osage-orange	15	No	Rot	7031534	2489347.85	Rot
433	11.2	sugarberry	11	No	Healthy	7031540	2489342.67	Healthy, broken top
434	19.7	cedar elm	20	No	Rot	7031548	2489372.58	Rot
435	16.9	cedar elm	17	No	Healthy	7031536	2489395.77	Healthy
436	17.0	cedar elm	17	No	Healthy	7031553	2489411.26	Healthy, broken top
437	14.3	cedar elm	14	No	Declining	7031542	2489423.74	Declining
459	16.0	cedar elm	16	No	Rotten	7031518	2489478.8	has Rot
463	11.7	cedar elm	12	No	Healthy	7031543	2489513.66	Healthy, Leaning
464	12.7	cedar elm	13	No	Healthy	7031524	2489505.03	Healthy
465	11.5	cedar elm	12	No	Healthy	7031535	2489524.41	Healthy
466	12.6	cedar elm	13	No	Healthy	7031544	2489531.67	Healthy
467	12.0	cedar elm	12	No	Healthy	7031529	2489539.22	Healthy, broken top
469	15.2	cedar elm	15	No	Declining, Rot	7031523	2489555.95	Declining, Rot
497	16.1	cedar elm	16	No	Healthy	7031537	2489588.54	Healthy
498	10.5	cedar elm	11	No	Healthy	7031534	2489610.05	Healthy
499	15.4	cedar elm	15	No	Damaged Severe	7031534	2489620.38	Damaged Severe
500	11.9	cedar elm	12	No	Healthy	7031531	2489630.59	Healthy, broken top
538	20.9	cedar elm	21	No	On Storm Line	7031462	2489796.09	ON Storm Line
573	10.9	green ash	11	No	On Storm Line	7031297	2489913.26	ON Storm Line
686	10.6	honey-locust	11	No	?	7032463	2490387.75	Could not Access
690	8.9	cedar elm	9	No	?	7032132	2490329.01	Could not Access
691	11.3	cedar elm	11	No	?	7032079	2490332.51	Could not Access
692	9.5	cedar elm	10	No	?	7032072	2490376.61	Could not Access
693	9.3	green ash	9	No	?	7032065	2490386.3	Could not Access
705	8.0	cedar elm	8	No	?	7032023	2490370	Could not Access
716	12.3	astern red ceda	12	No	?	7032000	2490502.38	Could not Access
724	15.6	cedar elm	16	No	?	7031403	2490417.55	Could not Access
726	11.1	astern red ceda	11	No	?	7031417	2490403.68	Could not Access
727	8.7	cedar elm	9	No	?	7031433	2490415.18	Could not Access
733	12.4	chinqapin oak	12	No	?	7031499	2490430.11	Could not Access
735	9.0	astern red ceda	9	No	?	7031518	2490450.79	Could not Access
736	22.5	green ash	23	Yes	?	7031517	2490453.89	Could not Access
737	9.2	chinqapin oak	9	No	?	7031523	2490439.63	Could not Access
741	9.8	Osage-orange	10	No	?	7031557	2490451.33	Could not Access
743	9.0	sugarberry	9	No	?	7031562	2490422.47	Could not Access
744	8.1	sugarberry	8	No	?	7031549	2490418.32	Could not Access
745	8.0	green ash	8	No	?	7031583	2490407.92	Could not Access
746	9.3	astern red ceda	9	No	?	7031591	2490414.43	Could not Access
747	8.2	astern red ceda	8	No	?	7031564	2490389.85	Could not Access
748	9.0	pecan	9	No	?	7031564	2490376.9	Could not Access
749	8.4	Bradford pear	8	No	?	7031615	2490393.72	Could not Access
750	8.6	astern red ceda	9	No	?	7031641	2490371.86	Could not Access
751	10.9	astern red ceda	11	No	?	7031644	2490368.51	Could not Access
752	8.2	astern red ceda	8	No	?	7031704	2490361.06	Could not Access
753	8.0	astern red ceda	8	No	?	7031708	2490371.5	Could not Access
754	15.5	astern red ceda	16	Yes	?	7031906	2490355.63	Could not Access
755	8.0	astern red ceda	8	No	?	7031936	2490376.14	Could not Access
756	9.6	astern red ceda	10	No	?	7031873	2490397.29	Could not Access
757	11.0	astern red ceda	11	No	?	7031869	2490417.38	Could not Access
758	8.6	astern red ceda	9	No	?	7031881	2490417.48	Could not Access

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
759	8.3	astern red ceda	8	No	?	7031880	2490417.42	Could not Access
760	10.8	astern red ceda	11	No	?	7031883	2490423.66	Could not Access
761	11.2	astern red ceda	11	No	?	7031893	2490428.77	Could not Access
773	9.1	green ash	9	No	?	7031845	2490421.38	Could not Access
774	13.2	astern red ceda	13	No	?	7031856	2490397.97	Could not Access
775	8.6	astern red ceda	9	No	?	7031801	2490389.39	Could not Access
776	11.0	astern red ceda	11	No	?	7031787	2490390.01	Could not Access
777	8.9	astern red ceda	9	No	?	7031788	2490405.38	Could not Access
778	8.5	astern red ceda	9	No	?	7031782	2490404.36	Could not Access
779	9.1	astern red ceda	9	No	?	7031780	2490406.45	Could not Access
1000	10.7	black willow	11	No	?	7030847	2490721.8	Could not Access
2005	14.1	American elm	14	No	For Dallas Trail	7031303	2490139.76	Being Removed for Future Dallas trail
2006	15.1	astern red ceda	15	No	For Dallas Trail	7031303	2490149.38	Being Removed for Future Dallas trail
2007	21.7	green ash	22	No	For Dallas Trail +Damaged Severe	7031302	2490156.67	Being Removed for Future Dallas trail
2008	14.2	green ash	14	No	For Dallas Trail	7031305	2490163.21	Removed for Dallas Trail- also has Barb Wire Cutting through it.
2009	13.6	American elm	14	No	For Dallas Trail	7031306	2490172.9	Being Removed for Future Dallas trail
2012	8.6	American elm	9	No	For Dallas Trail	7031315	2490193.32	Being Removed for Future Dallas trail
2015	11.1	astern red ceda	11	No	For Dallas Trail	7031287	2490272.36	Being Removed for Future Dallas trail
2016	8.5	astern red ceda	9	No	For Dallas Trail	7031287	2490272.43	Being Removed for Future Dallas trail
2040	12.3	astern red ceda	12	No	?	7031359	2490404.5	Could not Access
2058	11.2	astern red ceda	11	No	?	7031268	2490378.43	Could not Access
2059	18.8	green ash	19	No	?	7031286	2490358.75	Could not Access
2060	11.4	astern red ceda	11	No	?	7031299	2490389.87	Could not Access
2061	9.5	astern red ceda	10	No	?	7031321	2490390.33	Could not Access

THIS SPACE RESERVED - BLDG INSPECTION

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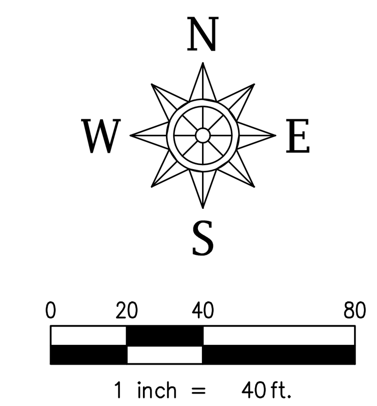

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Tree Survey

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	07

Tree Number	Diameter at Breast Height (Inches)	Species	Canopy Radius (Feet)	Multiple Trunks	General Condition	Northing	Easting	11.10.23 Condition Update
195	20.2	cedar elm	20	No	Dead	7031707	2489844.24	Rotten/ Hollow
196	10.7	cedar elm	11	No	Leaning Severe Hazard	7031704	2489848.83	Leaning Severe
197	9.2	cedar elm	9	No	Leaning Severe Hazard	7031684	2489832.68	Leaning Severe
198	21.9	cedar elm	22	No	Healthy	7031674	2489829.72	Healthy
199	12.1	cedar elm	12	No	Healthy	7031667	2489842.97	Healthy
200	14.5	cedar elm	15	No	Leaning Moderate	7031669	2489848.12	Leaning Moderate
201	17.8	cedar elm	18	No	Declining	7031663	2489859.93	Declining
202	14.3	cedar elm	14	No	Healthy	7031643	2489841.2	Healthy
203	12.1	cedar elm	12	No	Healthy	7031630	2489838.54	Healthy
204	15.6	cedar elm	16	No	Leaning	7031632	2489852.09	Leaning Moderate
205	9.7	cedar elm	10	No	Dead	7031624	2489855.13	Rotten
206	16.1	cedar elm	16	No	Healthy	7031616	2489850.49	Healthy
207	15.1	cedar elm	15	No	Diseased	7031604	2489849.73	Beetle Damage
208	15.7	cedar elm	16	No	Healthy	7031595	2489856.24	Healthy
209	8.9	cedar elm	9	No	Declining & Leaning	7031595	2489843.81	Declining & Leaning
210	10.8	cedar elm	11	No	Healthy	7031582	2489841.24	Healthy
211	10.8	cedar elm	11	No	Declining Broken Top	7031575	2489845.61	Broken Top (severe)
212	13.9	cedar elm	14	No	Leaning Severe Hazard	7031570	2489849.11	Leaning Severe
213	15.6	cedar elm	16	No	Healthy	7031562	2489850.46	Healthy
214	20.9	cedar elm	21	No	Dead	7031533	2489856.81	Rotten
215	10.6	cedar elm	11	No	Healthy	7031528	2489857.74	Healthy
217	15.2	cedar elm	15	No	Healthy	7031533	2489835.46	Healthy
218	11.8	cedar elm	12	No	Healthy	7031538	2489825.66	Healthy
220	18.2	cedar elm	18	Yes	Declining Broken Top	7031547	2489796.16	Declining/Broken Top
221	8.4	cedar elm	8	No	Healthy	7031564	2489811.83	Heathy/Broken Top (minor)
222	14.9	cedar elm	15	No	Healthy	7031567	2489815.88	Healthy
223	11.0	cedar elm	11	No	Declining	7031572	2489797.33	Declining
224	14.6	cedar elm	15	No	Declining/Broken Top/ Rot	7031605	2489803.37	Declining/minor Rot, Broken Top (labeled as second 226 in field)
225	10.5	cedar elm	11	No	Declining	7031613	2489826.09	Declining
226	19.6	cedar elm	20	No	Declining	7031628	2489807.95	Declining/ Some Rot
227	12.8	cedar elm	13	No	Declining	7031647	2489820.24	Declining/ Some Rot
228	14.2	cedar elm	14	No	Healthy	7031573	2489780.22	Healthy
229	12.4	cedar elm	4	No	Dead	7031557	2489761.81	Dead Stump
230	11.8	cedar elm	12	No	Declining	7031586	2489757.11	Declining
231	12.6	cedar elm	13	No	Declining Severe	7031633	2489772.2	Declining Severe
232	10.5	cedar elm	11	No	Healthy	7031665	2489764.54	Healthy
233	12.0	cedar elm	12	No	Healthy	7031650	2489740.46	Healthy
234	8.5	green ash	9	No	Healthy	7031633	2489736.35	Healthy
235	12.0	cedar elm	12	No	Declining Severe	7031627	2489734.96	Declining Severe
236	12.9	cedar elm	13	No	Healthy	7031528	2489730.3	Healthy
237	15.4	cedar elm	13	No	Declining Severe	7031535	2489713.83	Declining Severe
238	11.3	cedar elm	11	No	Healthy	7031541	2489691.91	Healthy
239	16.5	cedar elm	17	Yes	Stressed	7031552	2489701.18	Flushed out/Stresed
240	10.6	cedar elm	11	No	Stressed	7031574	2489682.88	Flushed Out, Broken Top
241	8.6	cedar elm	9	No	Declining/ Stressed	7031579	2489670.61	Flushed out/Stresed
242	12.2	cedar elm	12	No	Dead	7031584	2489666.01	Gone, Fell over and was removed (storm clean up)
243	8.7	cedar elm	9	No	Declining/ Rot	7031587	2489662.62	Declining w Rot
244	10.5	cedar elm	11	No	Declining Broken Top	7031584	2489651.77	Declining w/ Broken Top
245	11.3	cedar elm	11	No	Healthy	7031549	2489656.88	Healthy
246	9.2	cedar elm	9	No	Declining/Broken top	7031545	2489648.92	Declining/Broken top
247	15.0	cedar elm	15	No	Stressed	7031608	2489675.59	Stressed/ Flushed Out
248	14.5	cedar elm	15	No	Damaged Severe	7031629	2489720.53	Trunk severely damaged at ground
249	13.0	cedar elm	13	No	Healthy	7031636	2489673.9	Healthy, broken top
250	10.6	cedar elm	11	No	Stressed	7031660	2489672.38	Stressed
251	19.8	cedar elm	20	No	Damaged Moderate	7031686	2489685.72	Damaged Moderate
252	16.3	cedar elm	16	No	Declining	7031679	2489664.26	Declining
253	13.2	cedar elm	13	No	Broken Top	7031681	2489656.31	Broken Top

THIS SPACE RESERVED - BLDG INSPECTION

THIS SPACE RESERVED - ENGINEERING

N
W E
S

0 20 40 80
1 inch = 40 ft.

This plan is released for the purpose of interim review and pricing under the authority of KEVIN S. WIER, P.E. 91219

Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION
CONTRACT NO. ______ DATE ______
CONTRACTOR ______

REVISIONS			
REV NO.	DATE	DESCRIPTION	BY

SPIARS ENGINEERING & SURVEYING

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Tree Survey

TONTI ALEXIS

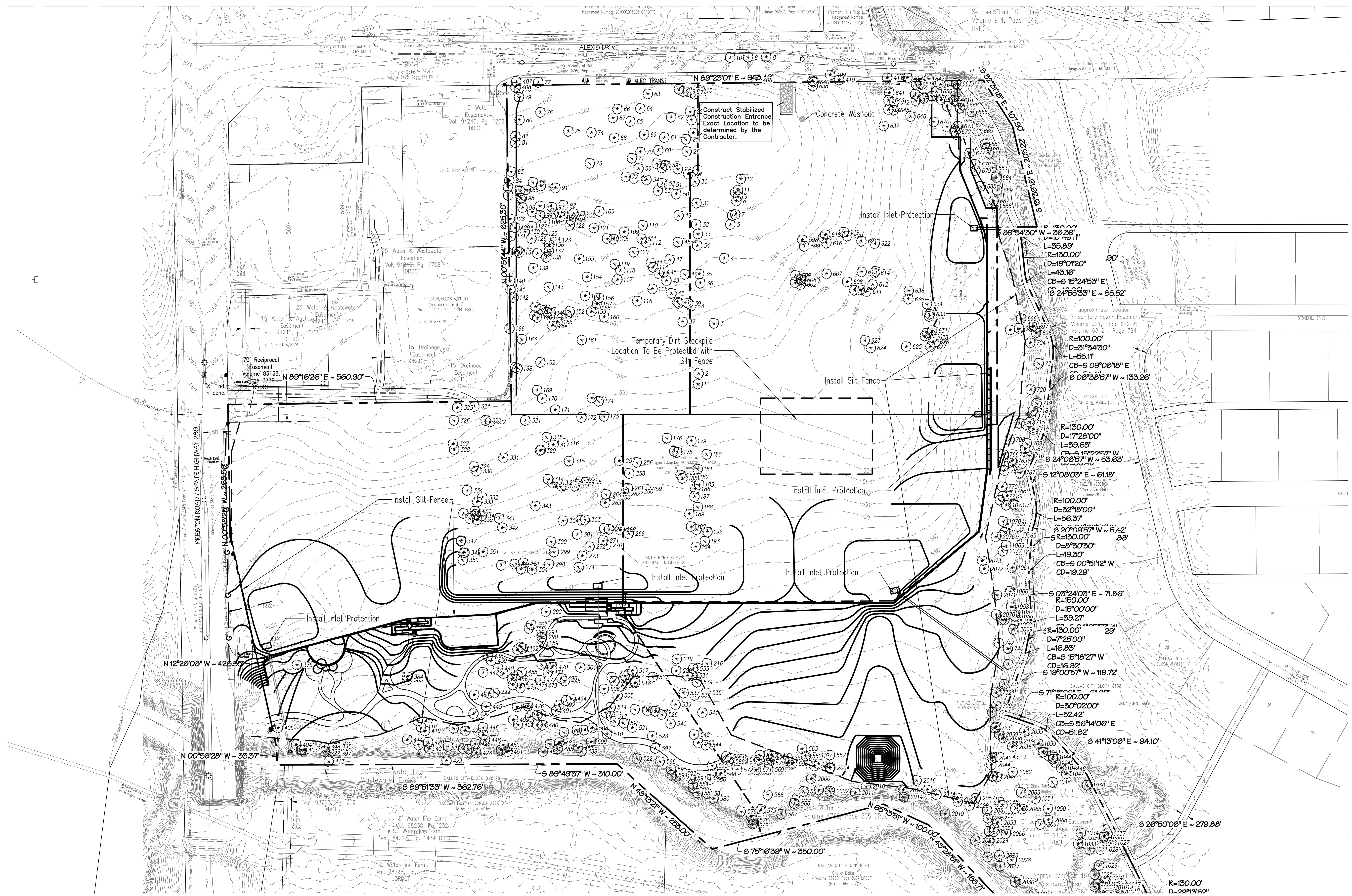
PRESTON ROAD & ALEXIS DRIVE

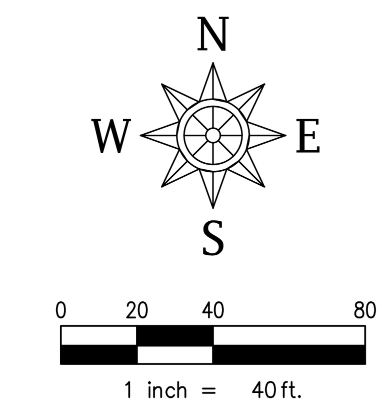
DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	

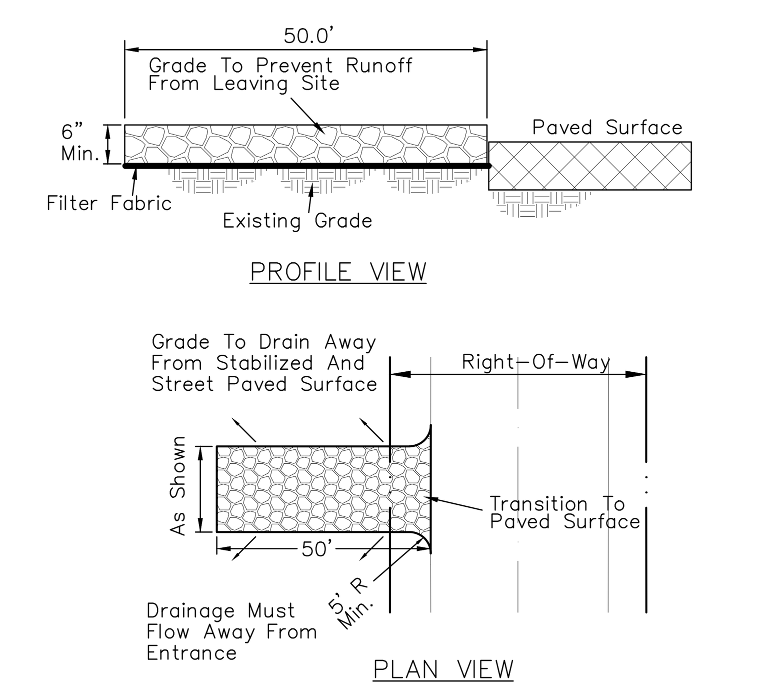
MATCHLINE SEE SHEET C07.03





THIS SPACE RESERVED - BLDG INSPECTION

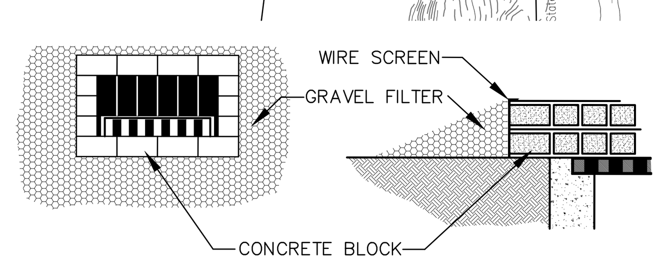
THIS SPACE RESERVED - ENGINEERING



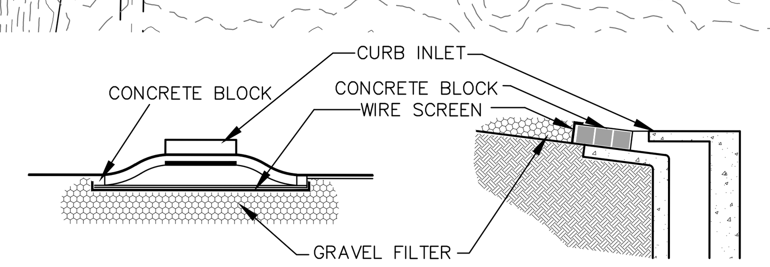
STABILIZED CONSTRUCTION ENTRANCE

CONSTRUCTION ENTRANCE NOTES

1. Stone shall be 3 to 5 inch diameter crushed rock or acceptable crushed Portland Cement Concrete.
2. When necessary, vehicles shall be cleaned to remove sediment prior to entrance onto a public roadway. When washing is required, it shall be done on a area stabilized with crushed stone, with drainage flowing away from both the street and the stabilized entrance. All sediment shall be prevented from entering any storm drain, ditch, or watercourse using approved methods.
3. The entrance shall maintained in a condition which will prevent tracking or flowing of sediment onto paved surfaces. This may require periodic top dressing with additional stone as conditions demand. All sediment spilled, dropped, washed, or tracked onto paved surfaces must be removed immediately.
4. The entrance must be properly graded, or incorporate a drainage swale to prevent runoff from leaving the construction site.



DROP INLET PROTECTION



CURB INLET PROTECTION

Note:
All sidewalks (existing and proposed) shall comply with Texas Accessibility Standards (TAS) and Americans with Disabilities Act (ADA).

This plan is released for the purpose of interim review and pricing under the authority of KEVIN S. WIER, P.E. 91219

Date: November 3, 2023
It is not to be used for construction.

CONTRACT INFORMATION

CONTRACT NO. ____________ DATE ________

CONTRACTOR ____________

REVISIONS

REV NO.	DATE	DESCRIPTION	BY

SPIARS ENGINEERING & SURVEYING

PLAT NO.	BLDG PERMIT NO.	DEV ENGINEERING TRACKING NOS.	
S223-070	-	WW23-206	DP23-087

Erosion Control Plan

TONTI ALEXIS

PRESTON ROAD & ALEXIS DRIVE

DEVELOPMENT SERVICES

CITY OF DALLAS, DALLAS COUNTY, TEXAS

REVIEW BY:	DRAWN BY:	DATE	FILE	NUMBER	SHEET
KSW	BLM	March, 2023	TBD	TBD	07

Appendix F:

Supplemental Information

Landscape Plans
Structural Retaining Wall Details
Digital Files (GIS Shapefiles – streamlines, floodplain limits, cross sections, existing and proposed grading, property boundary)
Site Photographs

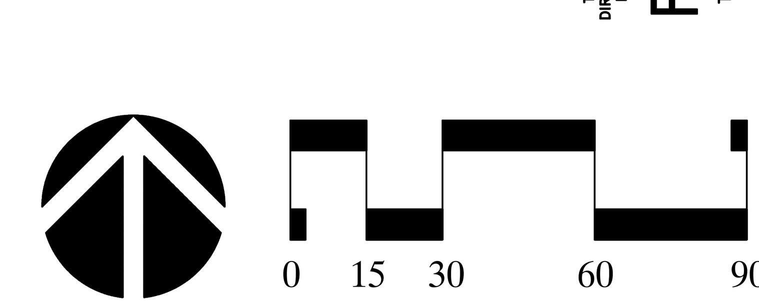
kimley-horn.com 13455 Noel Road, Suite 700 Dallas, TX 75240 972 770 1300

File Name: LAYOUT - Preston + Alexis - construction.dwg
Plot Date: 10/20/2023 - 11:59am

THIS DRAWING HAS BEEN PREPARED UNDER THE DIRECT SUPERVISION OF RICHARD B. ARTHUR, TEXAS REGISTRATION #176 AND IS CONSIDERED TO BE

PRELIMINARY

THIS DRAWING MAY NOT BE USED FOR REGULATORY APPROVAL, PERMIT, OR CONSTRUCTION WITHOUT THE LANDSCAPE ARCHITECTS OFFICIAL SEAL



ENVIRO DESIGN
LANDSCAPE ARCHITECTURE
SITE PLANNING
7424 Greenville Ave. Suite 200 Dallas, TX 75231 (214) 987-3010

RICHARD B. ARTHUR

NOT FOR REGULATORY APPROVAL, PERMITTING OR CONSTRUCTION

REVISIONS

PRESTON + ALEXIS

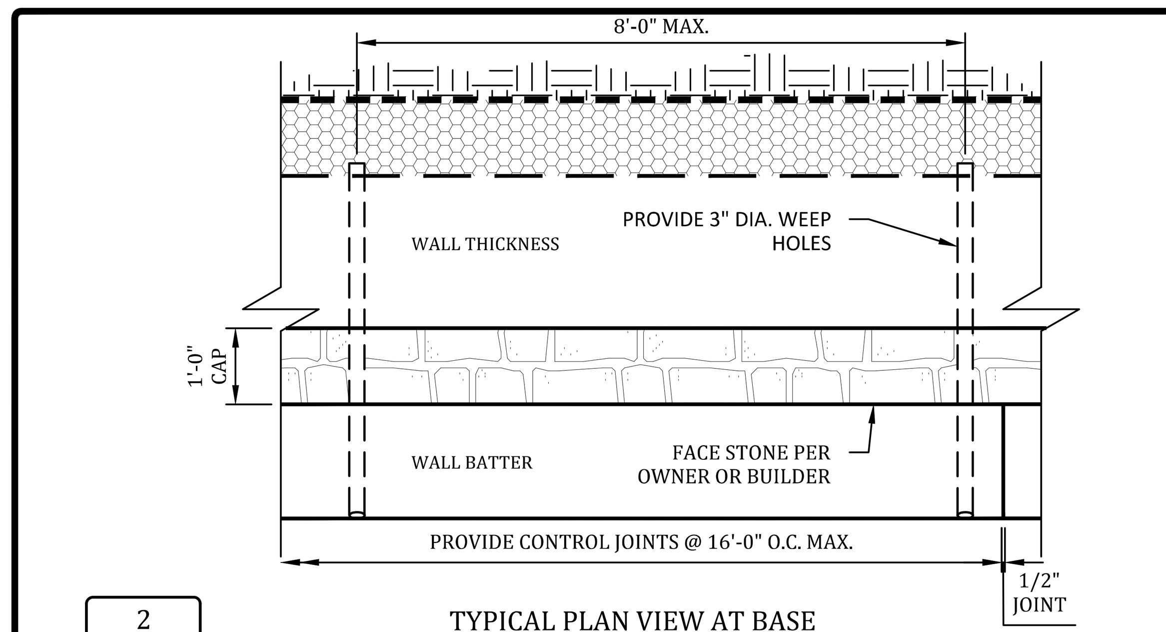
TONTI PROPERTIES
DALLAS, TEXAS

SCALE
1" = 30'-0"

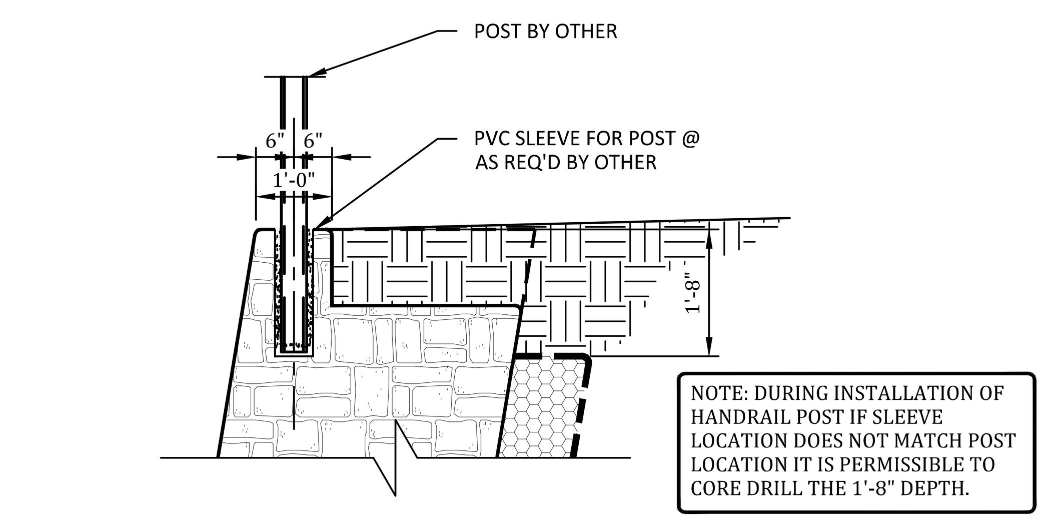
DATE
06-13-23

TITLE
WALK/WALL DRAWING TITLE

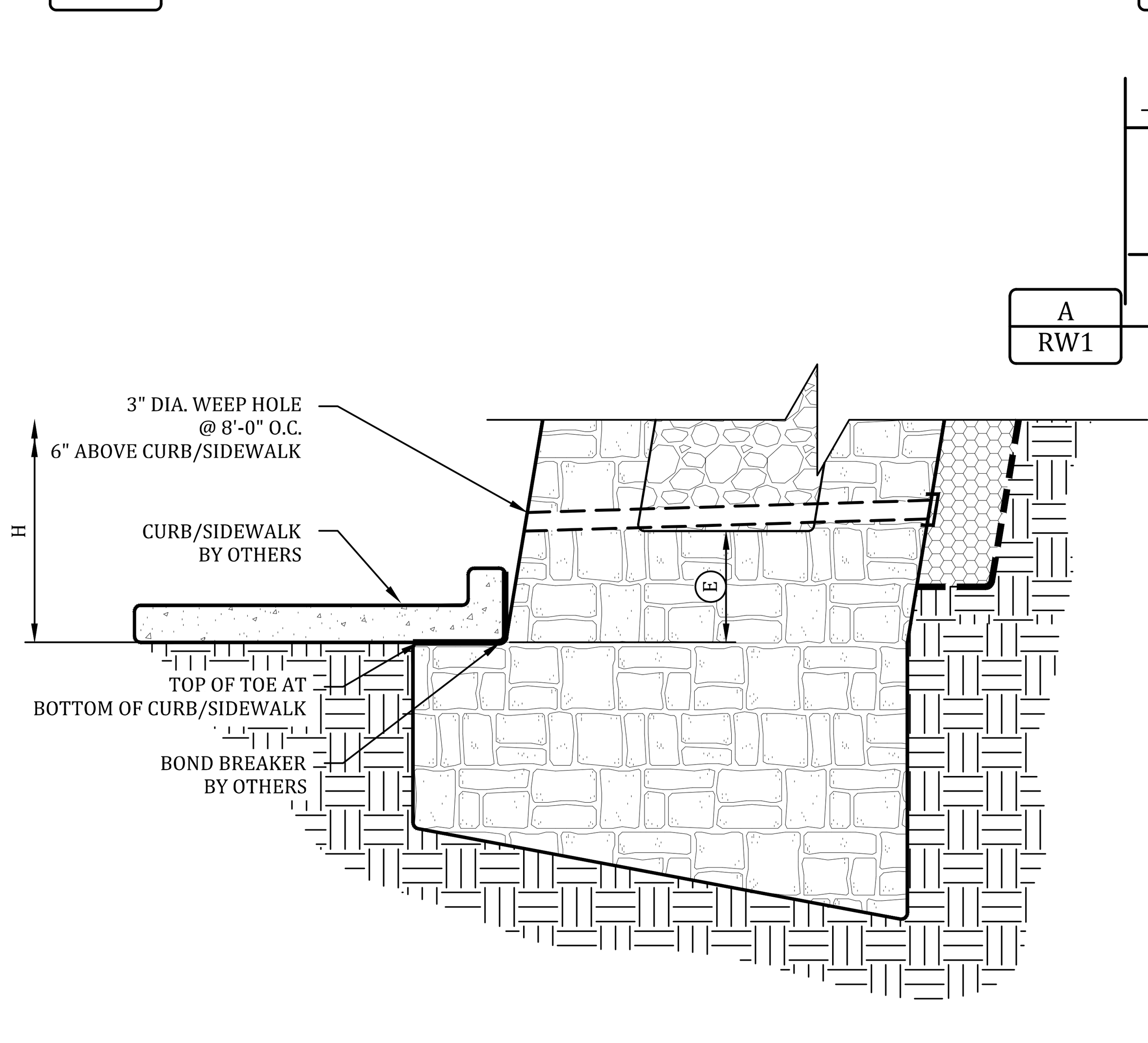
SHEET
1TR OF 1



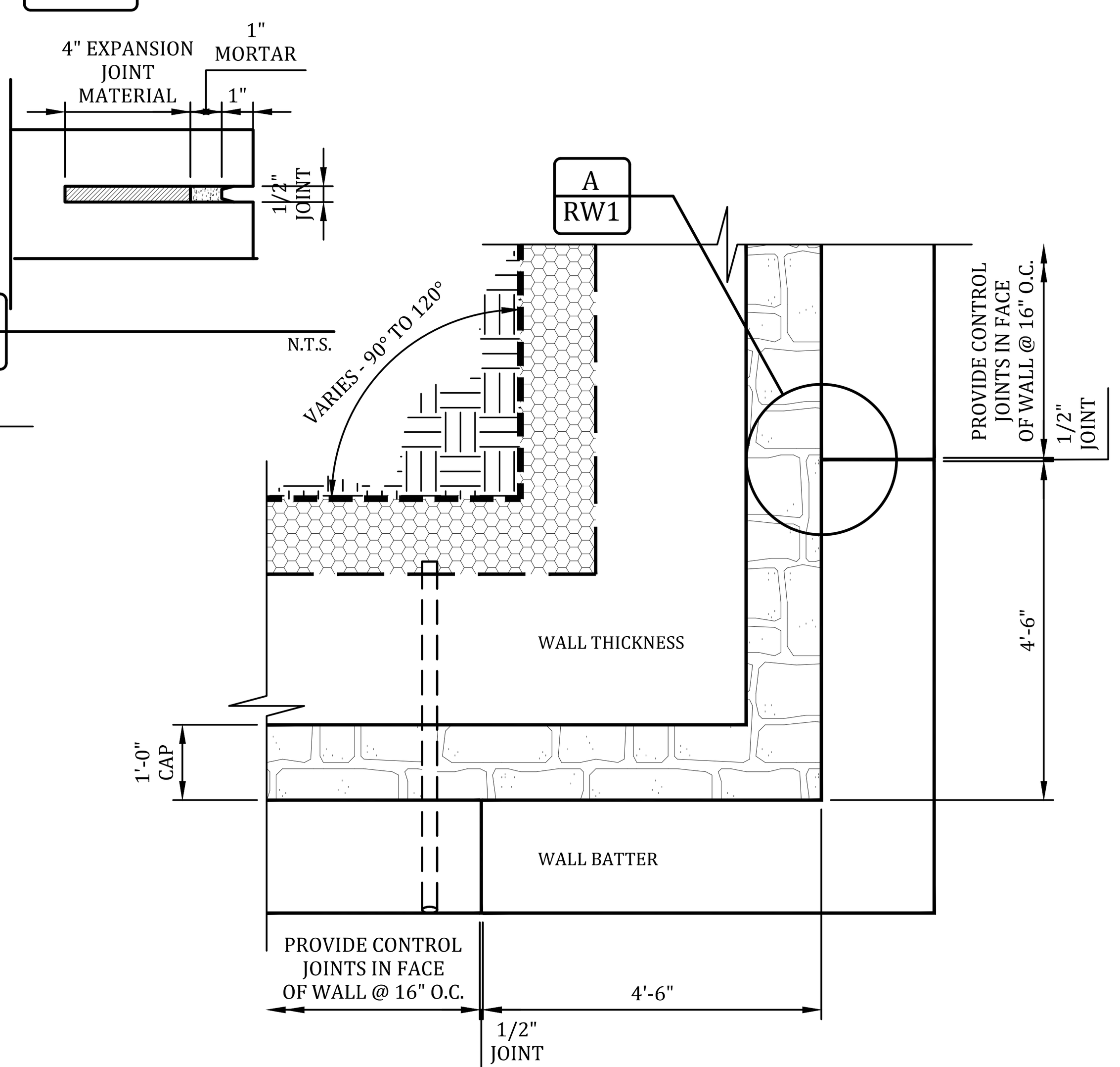
2
RW1
TYPICAL PLAN VIEW AT BASE
N.T.S.



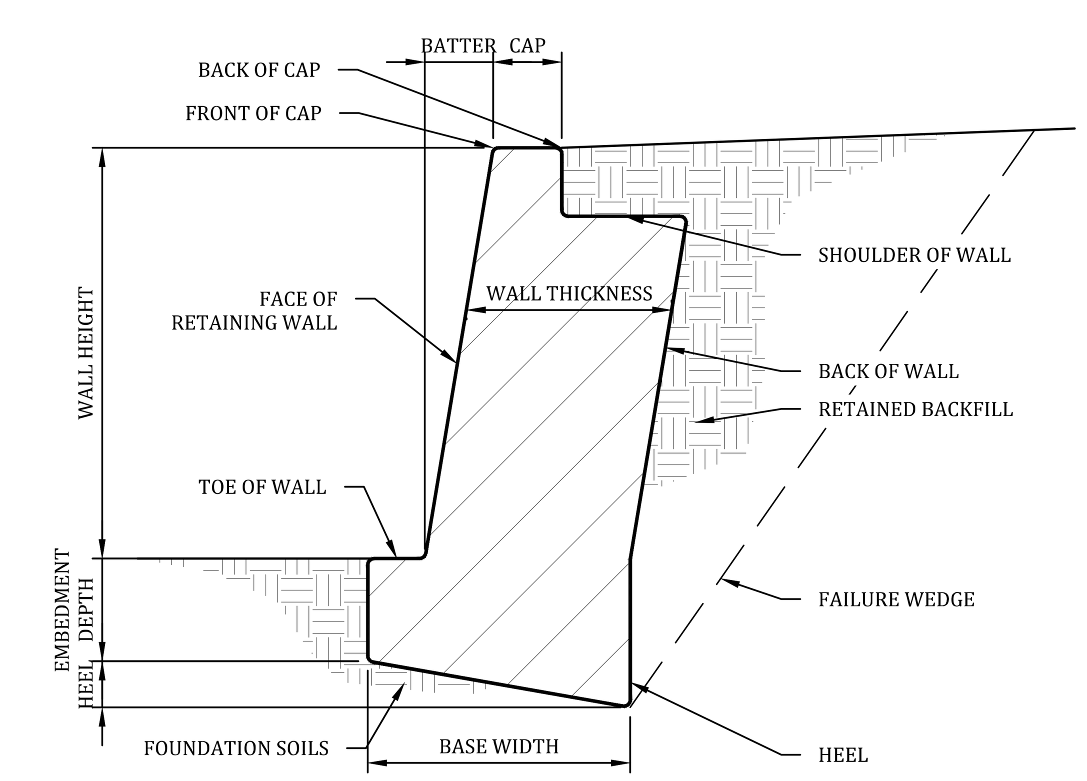
1
RW1
WALL SECTION W/ HANDRAIL POST
CONTRACTOR OPTION
N.T.S.



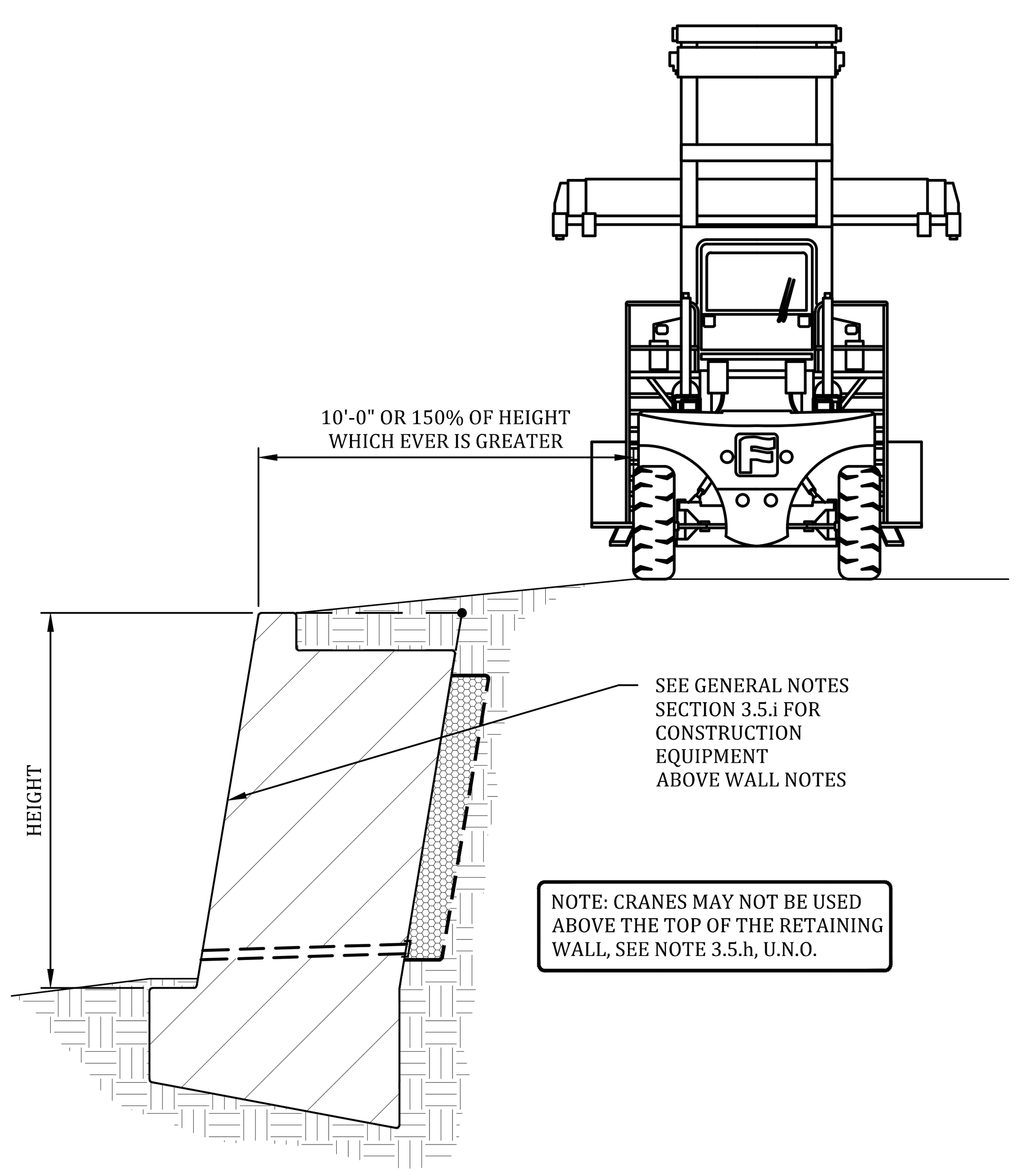
4
RW1
CROSS SECTION OF WALL
WITH CURB/SIDEWALK AT BASE OF WALL
N.T.S.



3
RW1
TYPICAL PLAN VIEW AT CORNER
N.T.S.



LEGEND



5
RW1
CONSTRUCTION EQUIPMENT ABOVE WALL - MINIMUM DISTANCE
N.T.S.

GENERAL NOTES

1. Design

1.1. Design Codes

International Building Code, 2021 Edition

1.2. Geotechnical Report

Firm: Alpha Testing, Inc.
Report No. G223552-Updated Dated: April 24, 2023
Allowable Bearing Capacity 1500 psf and 4000 psf

1.3. Design Parameters

Soil Parameters:

Soil Type*	Friction Angle	Cohesion (psf)	Unit Weight (pcf)
Retained Backfill (On site clay)	26 deg	0 psf	120 pcf
Foundation Soils (1500 psf)	26 deg	0 psf	120 pcf
Foundation Soils (4000 psf)	35 deg	0 psf	135 pcf

*See materials below for a description of each Soil Type.

Factors of Safety:

External Stability

a.	Minimum Factor of Safety Against Base Sliding (Static Condition)	1.5
b.	Minimum Factor of Safety Against Overturning	2.0
c.	Minimum Factor of Safety Against Global Stability	1.5
d.	Minimum Factor of Safety for Bearing Capacity	3.0

Design Loading:

Lateral earth pressures are calculated using Coulombs Lateral Earth Pressure Theory. Designs have been performed to accept loading per the proposed loading conditions based on the Civil Grading Plans. A live loading of 250 psf has been used for all walls supporting areas subject to firelane loading.

Retaining walls should not have solid fence (such as wood fence) placed on top of wall other than that shown on these plans. Retaining walls shall not have additional surcharge placed above wall other than that shown on these plans. Retaining walls shall not have slope at base or top of wall that exceed that which is shown on these plans. The retaining walls noted above require special design.

2. Materials

2.1. Soil Types

2.1.a. Retained Backfill
2.1.a.a. On site clayey soils
2.1.a.b. Properly compacted on-site fill soils, verification by others.

2.1.b. Foundation Soils (Allowable Bearing = 1500 psf min.)
2.1.b.a. Bearing on Stiff Natural Undisturbed Clayey or Sandy Soils or Compacted and Tested Fill Soils.
2.1.b.b. Friction Angle between Base of Wall and Soil - 17°
2.1.b.c. Bearing in fill soils. Fill soils supporting the retaining walls have to be placed in accordance with the recommendations for the fill placement per the geotechnical report.

2.1.c. Foundation Soils (Allowable Bearing = 4000 psf min.)
2.1.c.a. Bearing on Bedrock
2.1.c.b. Friction Angle between Base of Wall and Soil - 23°
2.1.c.c. Bedrock Passive Pressure at toe = 400 psf

2.1.d. Drainage Material
2.1.d.a. Free draining granular backfill, clean, non-plastic, relatively well-graded.

2.2. Dimension Stone

2.2.a. Average Density of masonry wall varies from 135 pcf to 145 pcf.
2.2.b. Stone size varies from 4" to 18".
2.2.c. Face stone shall be coordinated between contractor and owner/developer.
2.2.d. Recycled concrete 4" to 18" may be used in place of dimension stone, contractors option. The recycled concrete shall be free of dirt and concrete dust such that mortar can bond the material together. It shall also be mostly free of rebar. Some rebar is acceptable as long as it does not prevent the material from being placed tightly together.

2.3. Rebar/Welded Wire Fabric (If Required)

2.3.a. All steel reinforcement shall be new billet steel conforming to ASTM a-615, Grade 60 with f_y = 60 ksi.
2.3.b. All reinforcement shall not have deleterious material on it.
2.3.c. All welded wire fabric shall have a minimum of f_y=65 ksi and be hot dip galvanized.

2.4. Drainage Materials

2.4.a. Weep pipes shall be PVC or corrugated HDPE pipe.
2.4.b. Drainage zone shall be separated from retained backfill by mirafi 140N filter fabric or approved equal.

2.5. Portland Cement Mortar for Retaining Wall Construction

The Portland cement used for construction of the masonry stone retaining walls shall be provided with the following proportions per cubic yard of concrete. The Portland Cement mortar supplier shall provide "batch tickets" clearly indicating the appropriate amount of materials are provided in each truck load. The batch tickets shall clearly indicate the amount batched, the date, the project name and shall be provided to Falkofske Engineering, Inc. for review, documentation, and file.

Contents	Amount per cubic yard	Specific Gravity	Volume (ft^3)
Type 1 Portland Cement:	451 lbs	3.15	2.29
Type F Fly Ash:	113 lbs	2.93	0.62
Fine Aggregate (sand):	2746 lbs	2.59	16.99
Potable Water:	367 lbs	44 Gallons	5.88
Sika Air (or equivalent):	(AS REQ'D) oz	4.5%	1.22
			27.0 Total

2.6. Portland Cement Mortar for Retaining Wall Construction (Hand Mixing)

It is acceptable to hand mix mortar on site. The hand mixed mortar shall be in accordance with TMS 402/602-16 Building Code Requirements and Specification for Masonry Structures on SC-1 Part 2.1. This is a proportion specification by volume, and is as follows:

1-part Portland Cement
$\frac{1}{4}$ to $\frac{1}{2}$ part lime (optional)
2-1/4 to 3 parts the sum of the separate volumes of cementitious materials - aggregate ratio measured in damp, loose conditions.

For instance, 1 cu. ft. of Portland Cement, $\frac{1}{2}$ cu. ft. of lime and (1.5 x 3) 4.5 cu. ft. of sand could be used to make Type S mortar. Falkofske Engineering, Inc. would recommend that boxes be built for sand so that the proportions can be easily controlled. For instance, a box made with 2 x 6 boards with an interior square dimension of 1'-5.5" would create a box of 1 cu. ft.

If the contractor does not want to use lime, the ratio would be 1-part Portland Cement to 3-parts sand.

3. Construction

3.1. Preparation Work

3.1.a. Prior to grading or excavation of the site, confirm the location of the retaining walls and all underground features, including utility location within the area of construction. Ensure surrounding structures are protected from effects of wall excavation, and construction.
3.1.b. Coordinate installation of underground utilities and other improvements with wall installation.

3.2. Excavation

3.2.a. If a mortared footing is over-excavated, then the dimension stone shall be placed mortared. If a dry stone footing is over excavated, then the dimension stone does not need to be mortared.
3.2.b. Fill over-excavated area in front of the wall footing with compacted on site soils before the wall construction exceeds 4 feet in height.
3.2.c. In area where the walls are installed in a cut, the required excavation shall extend horizontally to the extent of the width of the retaining wall. The wall may be built to the cut. If the wall is over cut, then soil shall either be compacted or the drainage zone may be widened.

3.3. Wall Construction

3.3.a. The wall shall be constructed to the dimensions as shown on these plans. Front leads, back leads, and string lines shall be set for each wall. Care shall be taken to install the mortar zones to the correct thickness, and to place drainage behind the wall as required.
3.3.b. Face of wall control joints shall be installed at a maximum of 16'-0" o.c. per these plans.
3.3.c. Weep pipes shall be placed at 8'-0" o.c. max.
3.3.d. Face rock type shall be coordinated between the architect, owner, and retaining wall contractor.

3.4. Retained Backfill Placement

3.4.a. Retained backfill shall be placed per the recommendations of the geotechnical engineer, but should not be less than 93% Standard Proctor Maximum Dry Density (ASTM D698).
3.4.b. Fill should be placed in maximum 8" thick compacted lifts.
3.4.c. Large compaction equipment (equipment heavier than 7,500 lb) shall remain a minimum of 1.5x the height of the wall away from the back of the wall for a period of 2 weeks from the time of construction.
3.4.d. After a period of 2 weeks from the time of construction large compaction equipment may be used behind the wall but shall stay a minimum of 5'-0" away from the back of the wall.
3.4.e. Soil placed with in 5'-0" of the back of the wall shall be placed using handheld compaction equipment.
3.4.f. If the wall is in a cut situation the wall may be built up to the cut. If the wall is overcut the drainage zone may be widened to the cut or compacted fill may be placed between the drainage zone and the cut.

3.5. Retaining Wall Performance, Maintenance and Other Comments

3.5.a. Control Joints are provided in the retaining wall to allow for minor movements due to settlement and shrink swell of the soils. Some cracking may occur in the face of the retaining wall. This cracking, if minor (less than 3/8"), may be cosmetically repaired as desired.
3.5.b. The retaining walls are designed to allow surface water to flow over the tops of the retaining walls. Care should be taken during and after construction to not allow water to pond behind the retaining walls, as this can have a negative impact on the stability of the retaining walls. Retaining walls are often constructed early in the site development phase. Water maintenance above the top of them is the general contractors responsibility prior to the site being finished. If necessary temporary swales, replacement of eroded soils, and other water maintenance items may be necessary to protect the retaining walls.
3.5.c. If downspouts are located near the back of the retaining wall they should either be plumbed through the retaining wall to drain below the wall or collected and tied into the storm sewer system. Perforated subsurface pipes shall not be used behind the retaining walls.
3.5.d. Positive drainage (sheet flow) over the top of the walls shall be maintained throughout the life of the structure. If swales are placed behind the wall they shall remain clean and free draining. If water is found to be ponding in the swale it shall be maintained to allow water to freely drain as soon as possible.
3.5.e. Any broken sprinklers behind the retaining wall shall be turned off and repaired as soon as possible.
3.5.f. Over time erosion below or above the retaining wall can occur. Eroded soils shall be replaced and maintained to protect and extend the life of the retaining walls.
3.5.g. Weep holes shall be maintained to be able to freely drain throughout the life of the retaining wall.
3.5.h. Cranes shall not be used above the retaining wall without approval from our office. Cranes apply very large loads to the retaining walls and require special design considerations.
3.5.i. Construction equipment used above retaining walls after they are finished can damaged the walls. Care shall be taken to protect the walls during site development. Below is a list of some considerations that should be made to protect the walls.
3.5.i.a. Examples of construction equipment that have been shown to cause damage include skytraks, telehandlers, concrete trucks, skid steers, excavators, and others.
3.5.i.b. Walls shall be a minimum of 2 weeks old prior to equipment use above wall.
3.5.i.c. Equipment shall not be used on wet/saturated soils above the wall where rutting occurs. This condition increases the likelihood of damage to the retaining walls.
3.5.i.d. Equipment maybe used when it is at least 10'-0" from the front of cap of walls or 150% of the wall height which ever is greater.
3.5.i.e. If equipment needs to be used closer than stated in item 3.5.i.d, our office shall be contacted to verify the wall can support the weight of the construction equipment. The construction equipment type and weights will need to be provided. Additionally, mats or plywood will need to be provided to protect the backfill and wall.

3.6. Cold Weather Construction of Retaining Walls

3.6.a. Construction Requirements for ambient air temperatures between 40°F and 32°:

3.6.a.a. Water and aggregates used in mortar shall not be heated above 140°F.
3.6.a.b. Mortar sand or mixing water shall be heated to produce mortar temperatures between 40°F and 120°F at the time of mixing.
3.6.a.c. Heat grout materials when the temperature of the materials is below 32°F.
3.6.a.d. Newly constructed masonry shall be completely covered with weather-resistive membrane for 24 hours after being completed.

3.6.b. Construction Requirements for ambient air temperatures between 32°F and 25°F:

3.6.b.a. The guidelines above for construction requirements for temperatures between 40°F and 32°F and the following shall be met.
3.6.b.b. The mortar temperature shall be maintained above freezing until used in masonry stone retaining wall.
3.6.b.c. Visible ice and snow shall be removed from the top surface of existing foundations and masonry to receive new construction. These surfaces shall be heated to above freezing, using methods that do not result in damage.

3.6.c. Construction Requirements for ambient air temperatures between 25°F and 20°F:

3.6.c.a. The guidelines above for construction requirements for temperatures between 40°F and 32°F, the construction guidelines for temperatures between 32°F and 25°F , and the following shall be met.
3.6.c.b. Masonry (raw stone) surfaces under construction shall be heated to 40°F.
3.6.c.c. Wind breaks or enclosures shall be provided when the wind velocity exceeds 15 miles per hour.
3.6.c.d. Newly constructed masonry shall be completely covered with weather-resistive insulating blankets, or equal protection, for 48 hours after being completed.

The above procedures are in compliance with The Masonry Society TMS 602 specifications for cold weather construction of masonry structures.

3.7. Hot Weather Construction of Retaining Walls

3.7.a. Above 100°F or above 90°F with a wind velocity greater than 8 mph:

3.7.a.a. Preparation (Hand Mixing or at Batch Plant)
3.7.a.a.a. Maintain sand piles in a damp loose condition.
3.7.a.a.b. Provide necessary conditions and equipment to produce mortar having a temperature below 120°F.

3.7.a.b. Construction
3.7.a.b.a. Maintain temperature of mortar below 120°F.
3.7.a.b.b. Maintain mortar consistency by re-tempering with cool water.
3.7.a.b.c. When hand mixing mortar use mortar within 2 hours of initial mixing.
3.7.a.b.d. When batch mixing and using retarder, mortar on site that is not in use, shall be covered with plastic sheeting to prevent moisture lost.

3.7.b. Above 115°F or above 105°F with a wind velocity greater than 8 mph:

3.7.b.a. Preparation (Hand Mixing or at Batch Plant)
3.7.b.a.a. Items noted above under section 3.7.a.a. shall be met in addition to the requirements below.
3.7.b.a.b. Shade materials and mixing equipment from direct sunlight.

3.7.b.b. Construction
3.7.b.b.a. Items noted above under section 3.7.a.b. shall be met in addition to the requirements below.
3.7.b.b.b. When hand mixing mortar cool mixing water shall be used. Ice may be added to the water, but complete melting must take place before mixing with other materials.

4. Construction Observations

4.1. Construction Observations by Falkofske Engineering, Inc.

4.1.a. Falkofske Engineering, Inc. will perform construction observation, but only as a means of verification of the contractors quality control performance.
4.1.b. Falkofske Engineering, Inc. will act as the Special Inspector for this project. Contractor shall contact Falkofske Engineering to set up inspections, at least 1 day before construction starts
4.1.c. All required materials testing shall be performed by an approved materials testing laboratory.
4.1.d. Falkofske Engineering, Inc. is not responsible for means, methods, and material furnished by the retaining wall contractor.

4.2. Construction Observations by Others

4.2.a. Construction observations are required by the city shall be coordinated by the contractor.

NO.	DATE	REVISION	BY

	DATE	BY
DES.	10-19-23	JAJ
DRN.	10-19-23	TKA
CHK.	10-19-23	JAJ

Falkofske Engineering, Inc.
Structural Engineering Consultants
Texas Registration F-4038
722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FALKOFSKE ENGINEERING

MASONRY RETAINING WALLS
PRESTON AND ALEXIS MULTIFAMILY DEVELOPMENT
PRESTON ROAD AND SOUTH OF ALEXIS DRIVE
DALLAS, TEXAS

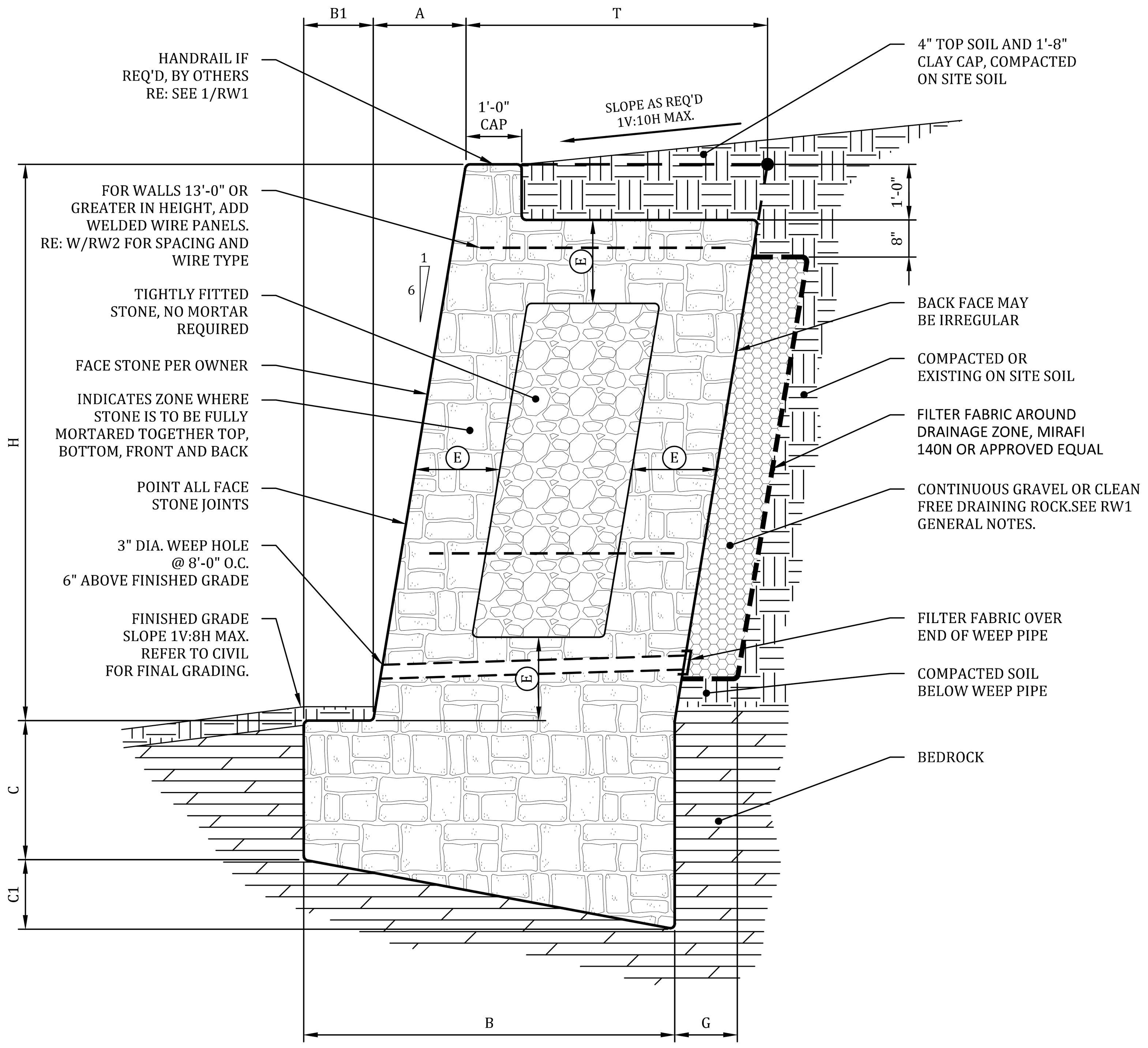
TONTI PROPERTIES
4949 WESTGROVE DRIVE, SUITE 100
DALLAS, TEXAS 75248

FOR PERMITTING AND ILLUSTRATION PURPOSES ONLY, NOT FOR CONSTRUCTION

JORGE A JIMENEZ
135575
LICENSED
PROFESSIONAL ENGINEER

JOB NO. 639.23

RW1



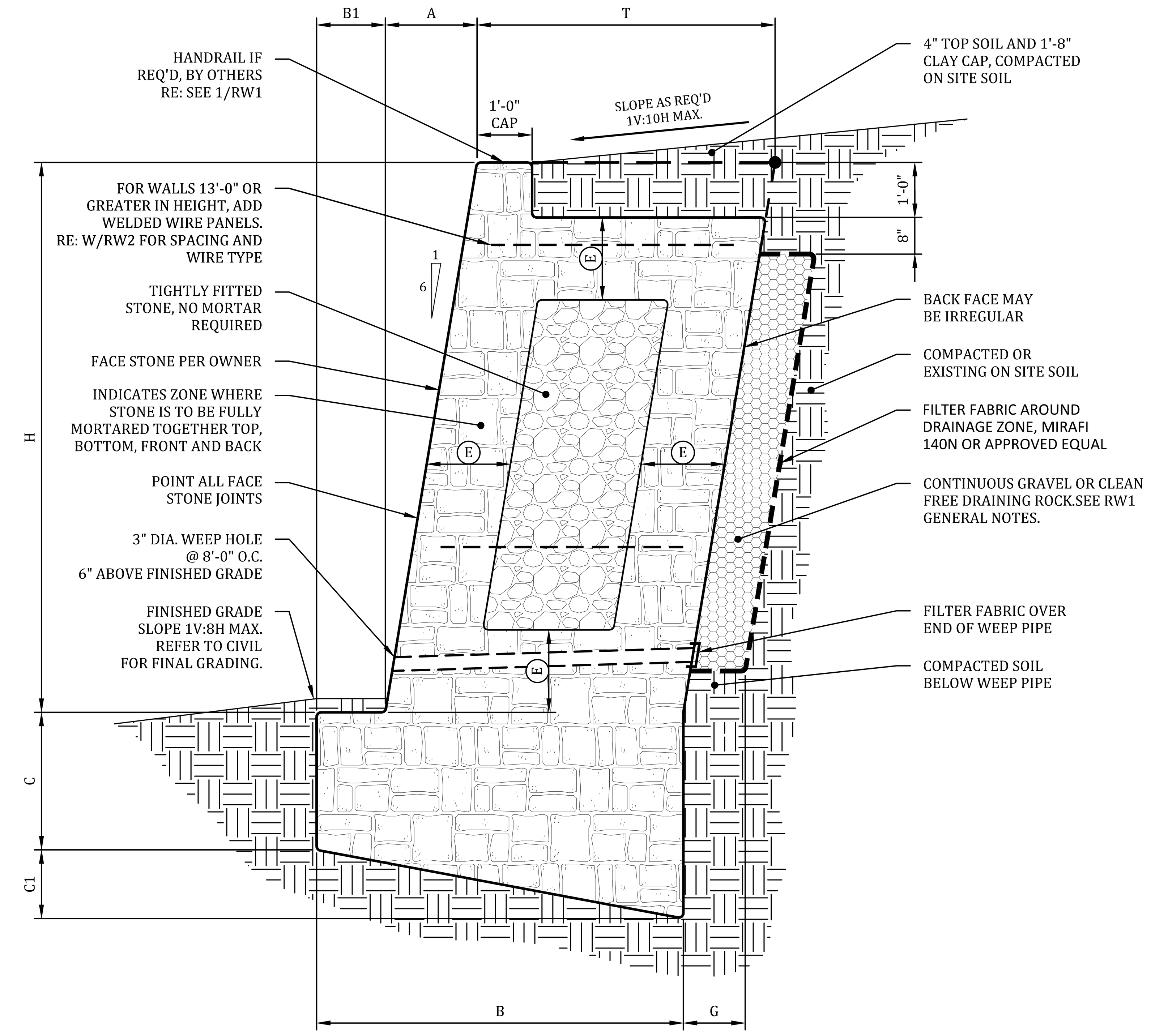
MASONRY WALL SCHEDULE 4000 PSF - BEARING CAPACITY (BEDROCK, SEE GENERAL NOTES SHEET RW1)									
WALL HEIGHT H	BASE WIDTH B	WALL TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	WALL BATTER A	FULLY MORTARED ZONE E	WALL THICKNESS T	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'-0"	1'-2"	0'-2"	0'-6"	0'-3"	0'-2"	FULLY MORTARED	1'-0"	1'-0"	4000 psf
2'-0"	1'-2"	0'-2"	0'-6"	0'-3"	0'-4"	FULLY MORTARED	1'-0"	1'-0"	
3'-0"	1'-5"	0'-3"	0'-9"	0'-3"	0'-6"	FULLY MORTARED	1'-2"	1'-0"	
4'-0"	1'-9"	0'-4"	0'-9"	0'-4"	0'-8"	FULLY MORTARED	1'-5"	1'-0"	
5'-0"	2'-5"	0'-5"	1'-0"	0'-6"	0'-10"	0'-8"	2'-0"	1'-0"	
6'-0"	2'-10"	0'-6"	1'-0"	0'-6"	1'-0"	0'-10"	2'-4"	1'-0"	
7'-0"	3'-4"	0'-7"	1'-0"	0'-8"	1'-2"	0'-10"	2'-9"	1'-0"	
8'-0"	3'-10"	0'-8"	1'-3"	0'-9"	1'-4"	1'-0"	3'-2"	1'-0"	
9'-0"	4'-3"	0'-9"	1'-3"	0'-9"	1'-6"	1'-0"	3'-6"	1'-0"	
10'-0"	4'-9"	0'-10"	1'-6"	0'-11"	1'-8"	1'-2"	3'-11"	1'-0"	
WALL DESIGN CRITERIA									
BEARING Q_a	TOP SLOPE β	BOTTOM SLOPE β_1	ACTIVE PRESSURE φ_a	PASSIVE PRESSURE φ_p	BASE FRICTION ANGLE δ	BACK OF WALL SLOPE α	SURCHARGE q		
4000 psf	5.71°	7.13°	26°	400 psf	23°	99.46°	0 psf		

USE THIS SCHEDULE FOR 2/RW2

2
RW2

TYPICAL WALL SECTION - BEARING IN BEDROCK
1V:10H MAX SLOPE ABOVE WALL
1V:8H MAX SLOPE BELOW WALL

N.T.S.



MASONRY WALL SCHEDULE 1500 PSF - BEARING CAPACITY (STIFF NATURAL UNDISTURBED SOILS OR COMPACTED AND TESTED SOILS, SEE GENERAL NOTES SHEET RW1)									
WALL HEIGHT H	BASE WIDTH B	WALL TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	WALL BATTER A	FULLY MORTARED ZONE E	WALL THICKNESS T	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'-0"	1'-2"	0'-2"	0'-6"	0'-3"	0'-2"	FULLY MORTARED	1'-0"	1'-0"	1500 psf
2'-0"	1'-4"	0'-4"	0'-9"	0'-3"	0'-4"	FULLY MORTARED	1'-0"	1'-0"	
3'-0"	1'-8"	0'-6"	0'-9"	0'-4"	0'-6"	FULLY MORTARED	1'-2"	1'-0"	
4'-0"	2'-2"	0'-8"	1'-0"	0'-5"	0'-8"	FULLY MORTARED	1'-6"	1'-0"	
5'-0"	2'-11"	0'-10"	1'-3"	0'-7"	0'-10"	0'-8"	2'-1"	1'-0"	
6'-0"	3'-5"	1'-0"	1'-6"	0'-8"	1'-0"	0'-10"	2'-5"	1'-0"	
7'-0"	4'-0"	1'-2"	1'-9"	0'-9"	1'-2"	0'-10"	2'-10"	1'-0"	
8'-0"	4'-7"	1'-4"	2'-0"	0'-10"	1'-4"	1'-0"	3'-3"	1'-0"	
9'-0"	5'-4"	1'-6"	2'-3"	1'-0"	1'-6"	1'-0"	3'-10"	1'-0"	
10'-0"	6'-0"	1'-8"	2'-6"	1'-1"	1'-8"	1'-2"	4'-4"	1'-0"	
WALL DESIGN CRITERIA									
BEARING Q_a	TOP SLOPE β	BOTTOM SLOPE β_1	ACTIVE PRESSURE φ_a	PASSIVE PRESSURE φ_p	BASE FRICTION ANGLE δ	BACK OF WALL SLOPE α	SURCHARGE q		
1500 psf	5.71°	7.13°	26°	26°	17°	99.46°	0 psf		

USE THIS SCHEDULE FOR 1/RW2

1
RW2

TYPICAL WALL SECTION - BEARING IN CLAYEY OR SANDY SOILS
1V:10H MAX SLOPE ABOVE WALL
1V:8H MAX SLOPE BELOW WALL

N.T.S.

NO.	DATE	REVISION	BY

	DATE	BY
DES.	10-19-23	JAJ
DRN.	10-19-23	TKA
CHK.	10-19-23	JAJ

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MASONRY RETAINING WALLS
PRESTON AND ALEXIS MULTIFAMILY DEVELOPMENT
PRESTON ROAD AND SOUTH OF ALEXIS DRIVE
DALLAS, TEXAS

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JORGE A JIMENEZ
135575
LICENSED
PROFESSIONAL ENGINEER

JOB NO. 639.23

RW2

Appendix G:

Digital Models

HEC-RAS Models