IGEL, TREVOR, 7/22/2022 12:15 PM

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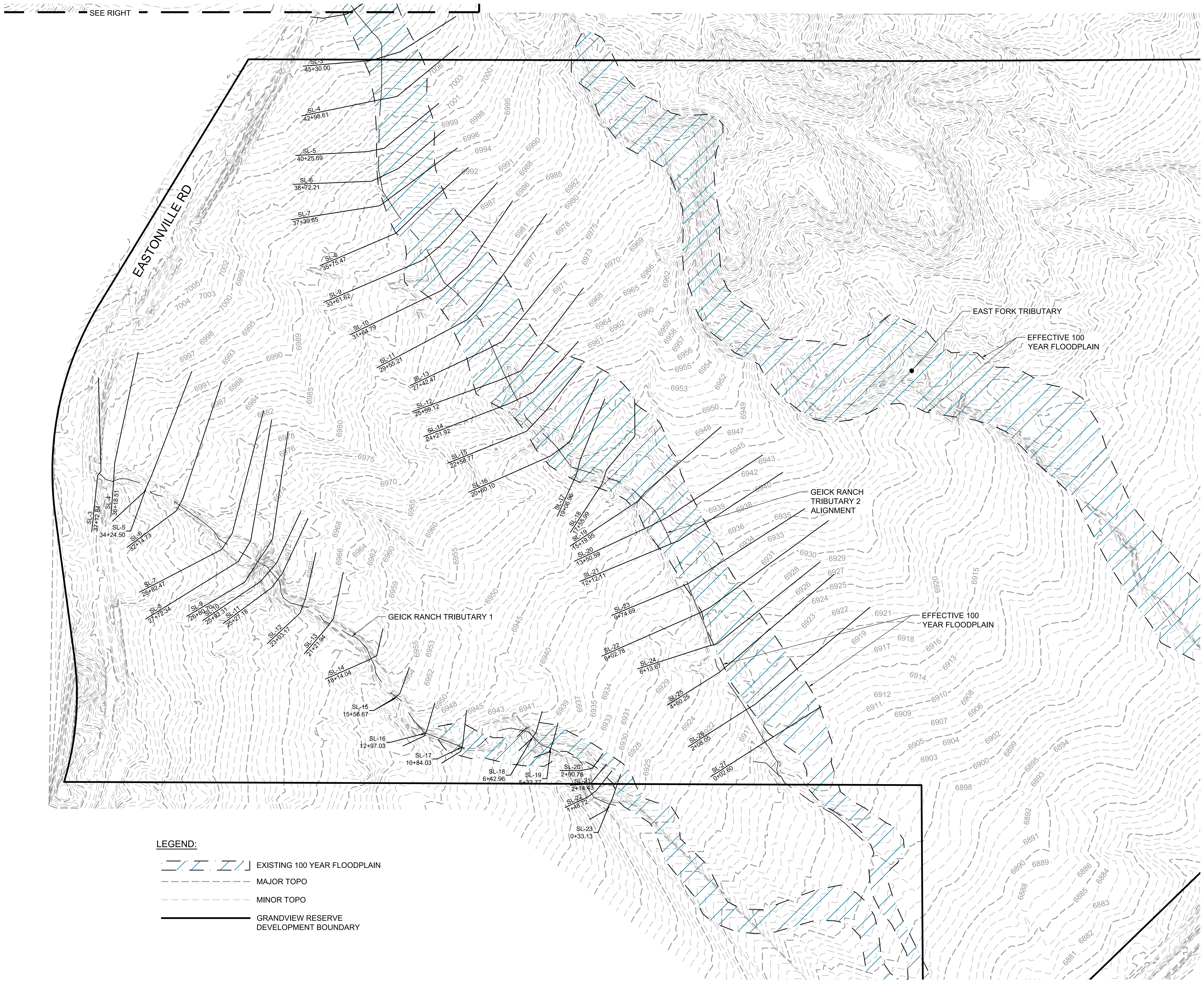
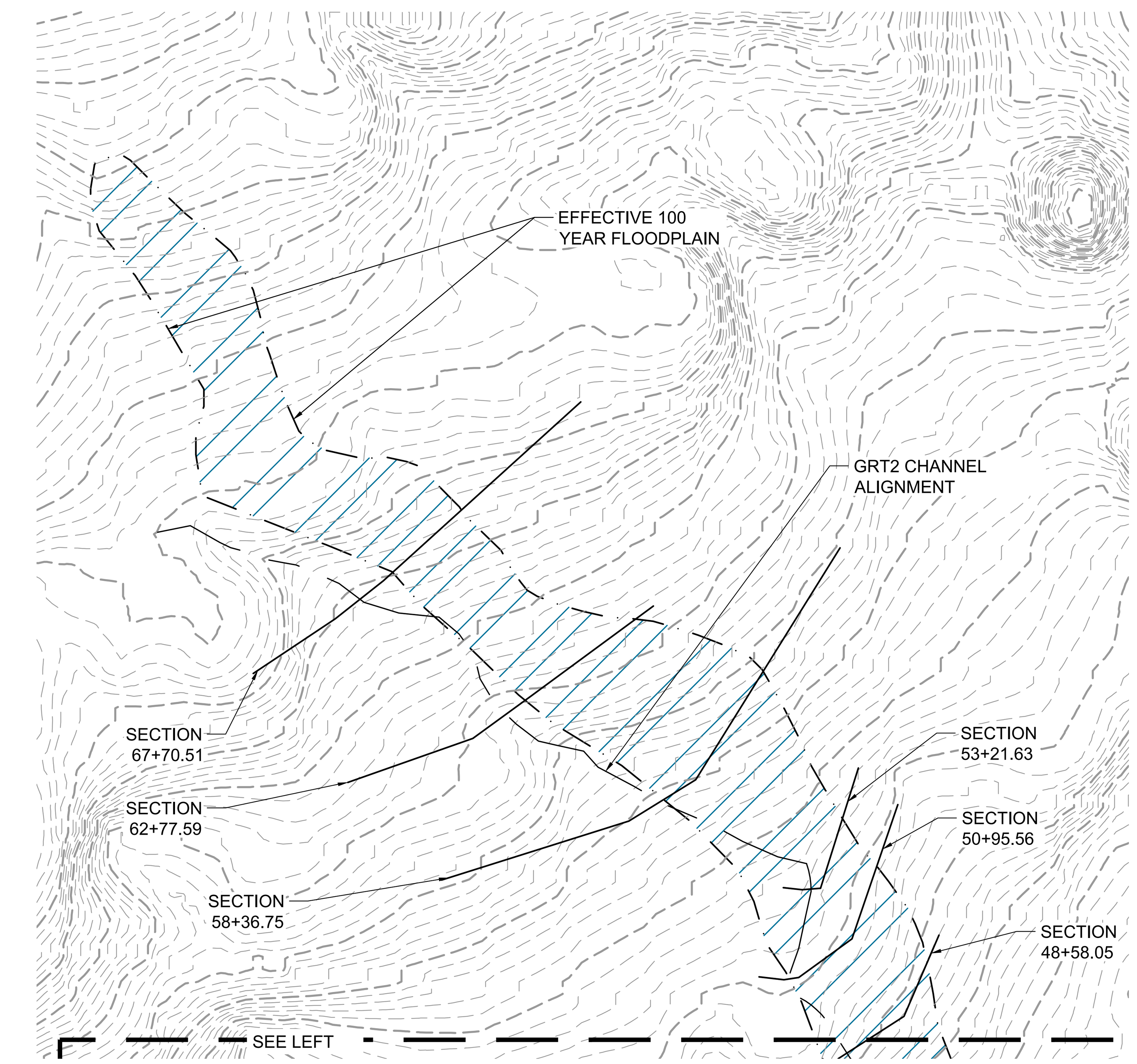




COLORADO LICENSED PROFESSIONAL ENGINEER GREGORY L. PANZA 37081 07-22-22

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

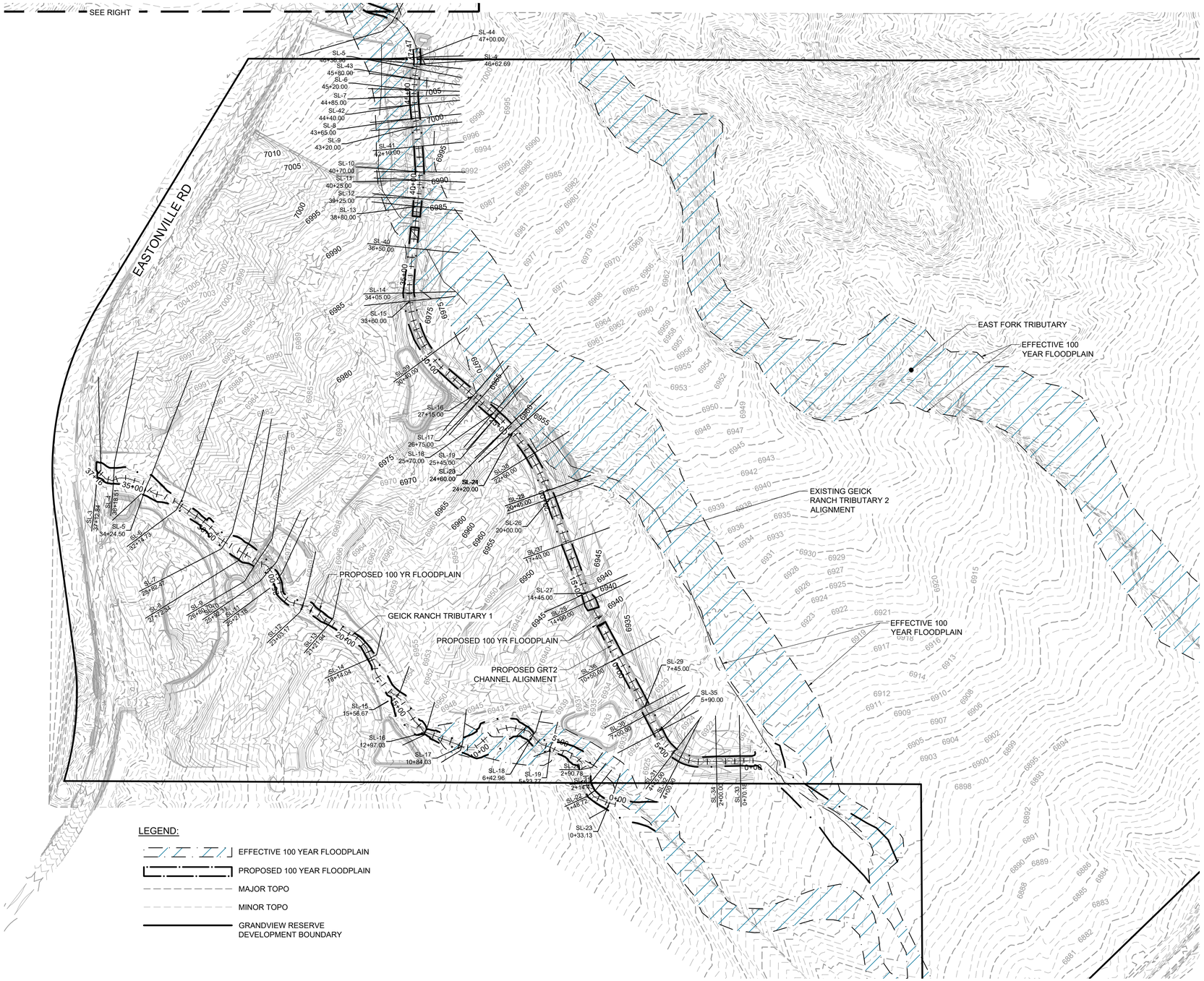
NAVD88 6866.33

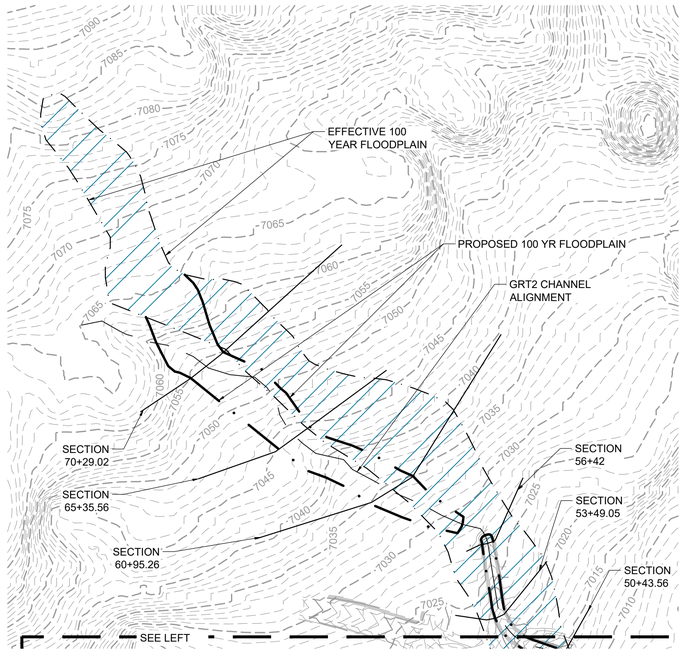
NORTH 0 150 300

HRGreen

Job No.:	201662	EXISTING FLOODPLAIN EXHIBIT
Prepared By:	SJF	
Date:	7/22/2022	

FIG.1





LEGEND:

- EFFECTIVE 100 YEAR FLOODPLAIN
- PROPOSED 100 YEAR FLOODPLAIN
- MAJOR TOPO
- MINOR TOPO
- GRANDVIEW RESERVE DEVELOPMENT BOUNDARY

COLORADO LICENSED
GREGORY L. PAYNE
37081
7-22-22
PROFESSIONAL ENGINEER

NOTES:

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   NAVD88

NORTH
0 300
150

HRGreen

Job No.:	201662
Prepared By:	SJF
Date:	7/22/2022

FLOODPLAIN EXHIBIT

FIG.2

Appendix C
Annotated Firm

NOTES TO USERS

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

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

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

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

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

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

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

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

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

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

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

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

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

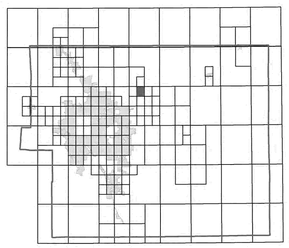
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

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

Panel Location Map



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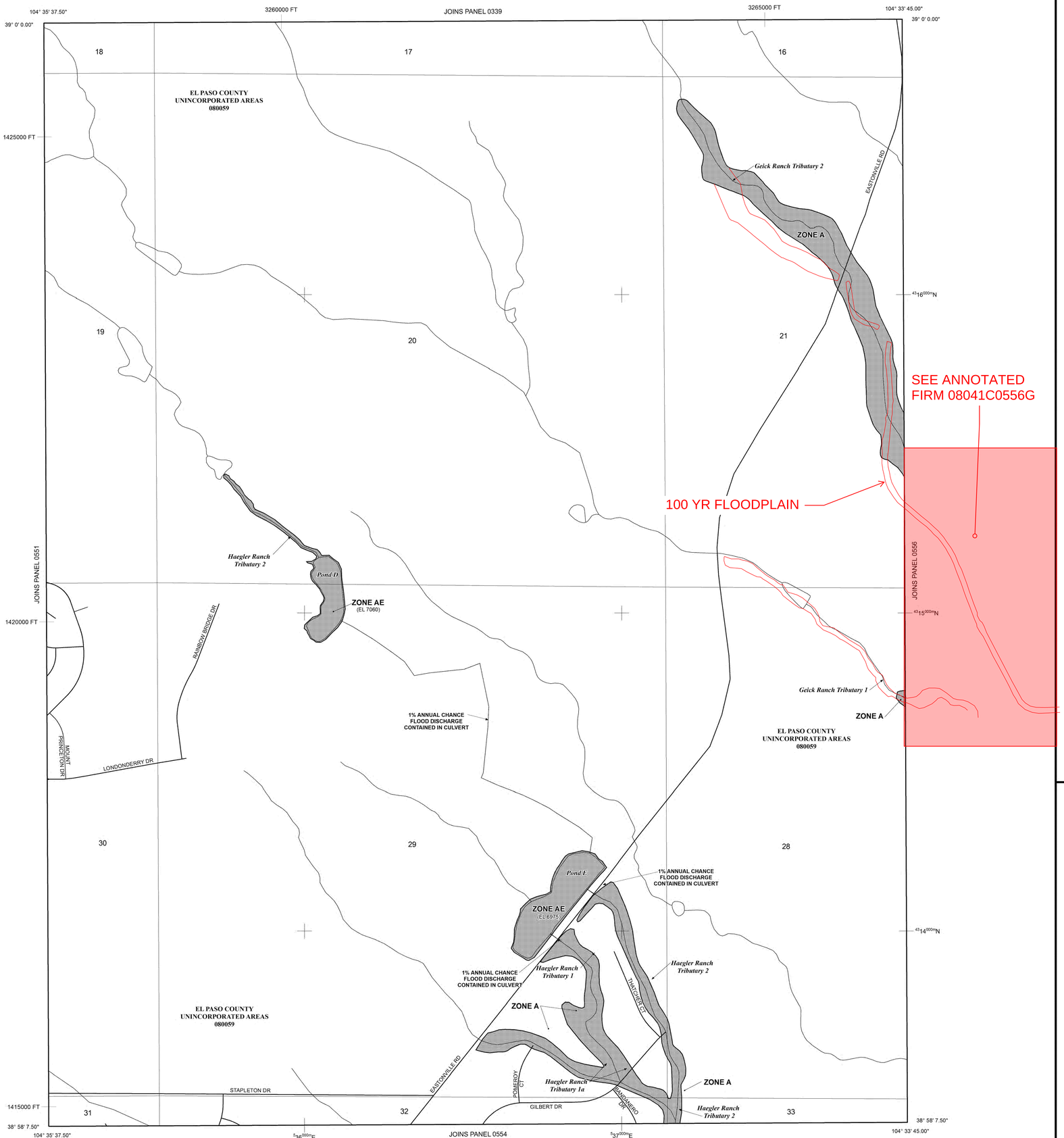
Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST.

LEGEND

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

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

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

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

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

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

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0552G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 552 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0552	G

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

MAP NUMBER
08041C0552G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

NOTES TO USERS

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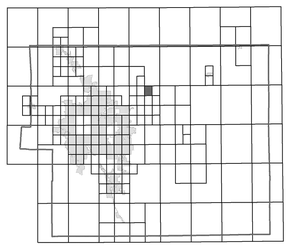

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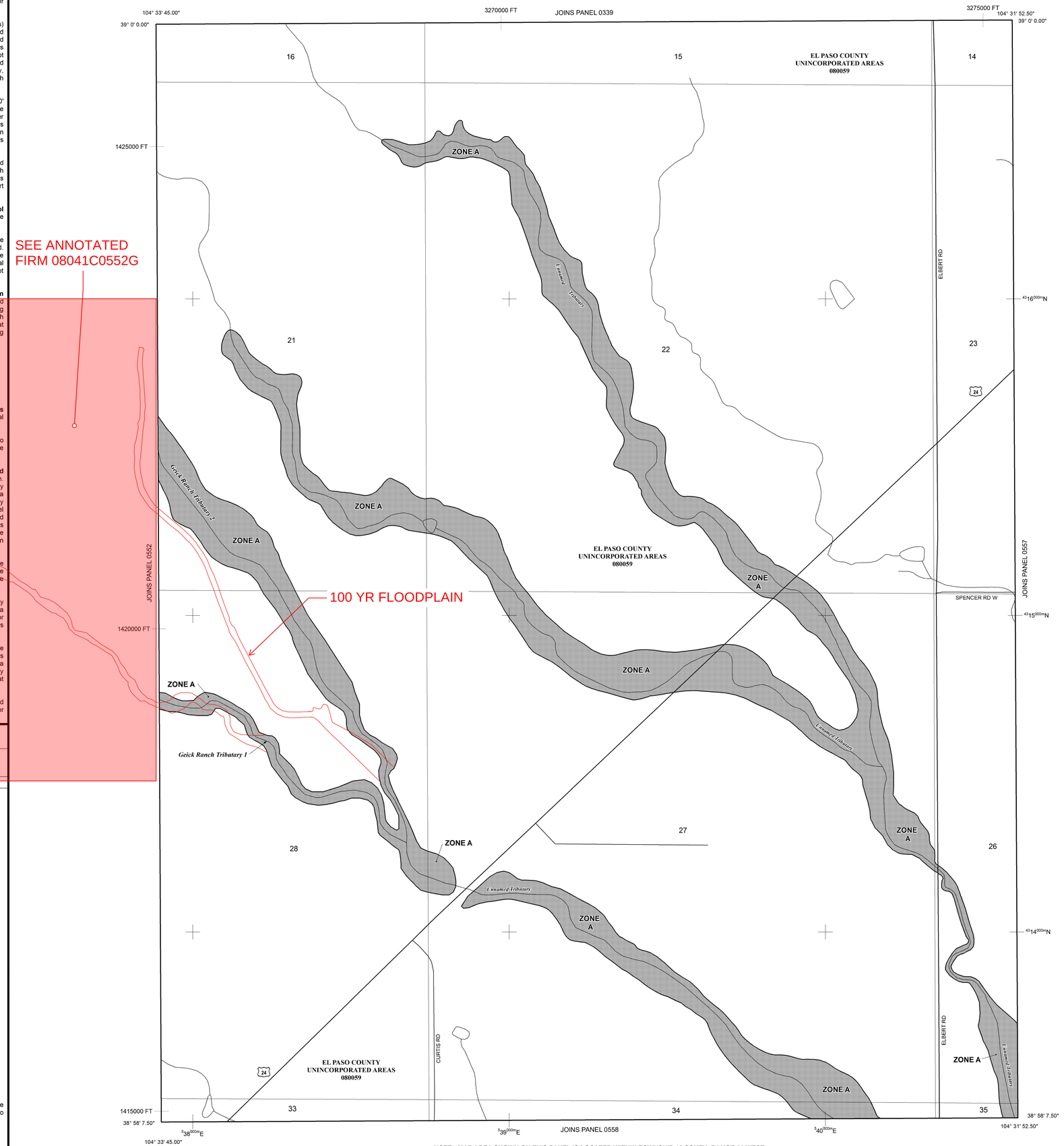

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST.

LEGEND

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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

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	Floodway boundary
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	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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

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DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

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

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

PANEL 0556G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 556 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0556	G

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

MAP NUMBER
08041C0556G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

Appendix D
Proposed Plans

GRANDVIEW RESERVE (DRAINAGE A & B)
GIECK RANCH TRIBUTARY, 1 GIECK RANCH TRIBUTARY 2

SECTIONS 21, 22, 27 & 28, TOWNSHIP 12 S, RANGE 64 W
CITY OF FALCON, EL PASO COUNTY, STATE OF COLORADO

SHEET INDEX		
PAGE NUMBER	SHEET NUMBER	SHEET TITLE
01	TS1	TITLE SHEET
02	GN1	GENERAL NOTES
03	UP1	OVERALL UTILITY PLAN
04	GR1	TRIBUTARY 1 Grading
05	GR2	TRIBUTARY 2 Grading
06	GR3	TRIBUTARY 2 Grading
07	GR4	TRIBUTARY 2 Grading
08	GR5	TRIBUTARY 2 Grading
09	GR6	TRIBUTARY 2 Grading
10	GR7	TRIBUTARY 2 Grading
11	EC1	INITIAL EROSION CONTROL
12	EC2	INITIAL EROSION CONTROL
13	EC3	FINAL EROSION CONTROL
14	EC4	FINAL EROSION CONTROL
15	PP1	DRAINAGE TRIBUTARY 1 PLAN AND PROFILE
16	PP2	DRAINAGE TRIBUTARY 2 PLAN AND PROFILE
17	PP3	DRAINAGE TRIBUTARY 2 PLAN AND PROFILE
18	PP4	DRAINAGE TRIBUTARY 2 PLAN AND PROFILE
19	PP5	DRAINAGE CULVERTS PLAN AND PROFILE
20	PP6	DRAINAGE CULVERT PLAN AND PROFILE
21	CS1	TRIBUTARY 2 CROSS SECTIONS
22	CS2	TRIBUTARY 2 CROSS SECTIONS
23	CS3	TRIBUTARY 2 CROSS SECTIONS
24	CS4	TRIBUTARY 2 CROSS SECTIONS
25	CS5	TRIBUTARY 2 CROSS SECTIONS
26	CS6	TRIBUTARY 2 CROSS SECTIONS
27	CS7	TRIBUTARY 2 CROSS SECTIONS
28	CS8	TRIBUTARY 2 CROSS SECTIONS
29	CS9	TRIBUTARY 2 CROSS SECTIONS
30	CS10	TRIBUTARY 2 CROSS SECTIONS
31	CS11	TRIBUTARY 2 CROSS SECTIONS
32	DT1	DETAILS
33	DT2	DETAILS
34	DT3	DETAILS
35	DT4	DETAILS

SYMBOLS, ABBREVIATIONS, AND LINETYPES LEGEND

- CWA — CONCRETE WASHOUT AREA
- CF — CONSTRUCTION FENCE
- IP — INLET PROTECTION
- OP — OUTLET PROTECTION
- SF — SILT FENCE
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOC — LIMITS OF CONSTRUCTION
- CD — CHECK DAM
- SM — SEEDING AND MULCHING
- SB — SEDIMENT BASIN
- SR — SURFACE ROUGHENING
- ECB — EROSION CONTROL BLANKET
- CIP — CULVERT INLET PROTECTION
- RS — ROCK SOCK
- STORM INLET TYPE R
- STORM END SECTION
- STORM MANHOLE
- SANITARY MANHOLE
- FIRE HYDRANT
- LIGHT POLE
- WATER VALVE
- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DRAINAGE
- 5250 — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- WATERMAIN
- SANITARY SEWER
- SANITARY SERVICE

ARV	AIR RELEASE VALVE
CP	CATHODIC PROTECTION
STA	STATION
MUE	MULTI USE EASEMENT
APRX	APPROXIMATE
PR	PROPOSED
FT	FEET
DIA	DIAMETER
LF	LINEAL FEET
EL	ELEVATION

VICINITY MAP

SCALE: 1" = 5000'

BASIS OF BEARINGS:

THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

BENCHMARK:

DESIGNATION = F 24
PID = JK0240
DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
CONTROL POINT COORDINATE SYSTEM: NAVD88
NORTHING: 1421049.80
EASTING: 3273631.55
ELEVATION: 6866.33

LEGAL DESCRIPTION:

A TRACT OF LAND BEING PORTIONS OF THE SOUTH HALF OF SECTION 21, SOUTH HALF OF SECTION 22, NORTH HALF OF SECTION 28 AND SECTION 27, TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 21; THENCE NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST ON THE EAST LINE OF SAID SECTION, A DISTANCE OF 2645.09 FEET TO THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF SAID SECTION 21, SAID POINT BEING THE POINT OF BEGINNING; THENCE NORTH 89 DEGREES 41 MINUTES 03 SECONDS EAST ON THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 22, A DISTANCE OF 3938.20 FEET; THENCE SOUTH 00 DEGREES 41 MINUTES 58 SECONDS EAST ON THE EAST LINE OF THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 22, A DISTANCE OF 2117.66 FEET TO A POINT ON THE NORTHWESTERLY RIGHT OF WAY LINE OF THE ROCK ISLAND REGIONAL TRAIL AS GRANTED TO EL PASO COUNTY IN THAT WARRANTY DEED RECORDED OCTOBER 21, 1994 IN BOOK 6548 AT PAGE 892, RECORDS OF EL PASO COUNTY, COLORADO; THENCE ON SAID NORTHWESTERLY RIGHT OF WAY, THE FOLLOWING FIVE (5) COURSES:

(1) SOUTH 45 DEGREES 55 MINUTES 49 SECONDS WEST, A DISTANCE OF 758.36 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 22;
(2) NORTH 89 DEGREES 38 MINUTES 06 SECONDS EAST ON SAID SOUTH LINE, A DISTANCE OF 36.18 FEET;
(3) SOUTH 45 DEGREES 55 MINUTES 49 SECONDS WEST, A DISTANCE OF 3818.92 FEET TO A POINT ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 27;
(4) SOUTH 89 DEGREES 39 MINUTES 01 SECONDS WEST ON SAID NORTH LINE, A DISTANCE OF 36.17 FEET;
(5) SOUTH 45 DEGREES 55 MINUTES 49 SECONDS WEST, A DISTANCE OF 855.35 FEET TO A POINT ON THE EASTERLY LINE OF SAID SECTION 28;

THENCE NORTH 00 DEGREES 21 MINUTES 45 SECONDS WEST ON THE EAST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 28, A DISTANCE OF 591.16 FEET TO THE NORTHEAST CORNER OF SAID SOUTHEAST QUARTER; THENCE NORTH 00 DEGREES 21 MINUTES 38 SECONDS WEST ON THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 28, A DISTANCE OF 1319.24 FEET TO THE SOUTH LINE OF THE NORTH HALF OF THE NORTH HALF OF SAID SECTION 28; THENCE NORTH 89 DEGREES 47 MINUTES 08 SECONDS WEST ON SAID SOUTH LINE, A DISTANCE OF 4692.55 FEET TO A POINT ON THE EASTERLY RIGHT OF WAY LINE OF EXISTING EASTONVILLE ROAD (60.00 FOOT WIDE); THENCE ON SAID EASTERLY RIGHT OF WAY AS DEFINED BY CERTIFIED BOUNDARY SURVEY, AS RECORDED JULY 18, 2001 UNDER RECEPTION NO. 201900096, THE FOLLOWING FIVE (5) COURSES:

(1) ON THE ARC OF A CURVE TO THE LEFT, WHOSE CENTER BEARS NORTH 73 DEGREES 08 MINUTES 46 SECONDS WEST, HAVING A DELTA OF 24 DEGREES 31 MINUTES 32 SECONDS, A RADIUS OF 1630.00 FEET, A DISTANCE OF 697.73 FEET TO A POINT OF TANGENT;
(2) NORTH 07 DEGREES 40 MINUTES 18 SECONDS WEST, A DISTANCE OF 777.34 FEET TO A POINT OF CURVE;
(3) ON THE ARC OF A CURVE TO THE RIGHT, HAVING A DELTA OF 39 DEGREES 01 MINUTES 10 SECONDS, A RADIUS OF 1770.00 FEET, A DISTANCE OF 1205.40 FEET TO A POINT OF TANGENT;
(4) NORTH 31 DEGREES 20 MINUTES 52 SECONDS EAST, A DISTANCE OF 1517.37 FEET TO A POINT OF CURVE;
(5) ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 02 DEGREES 07 MINUTES 03 SECONDS, A RADIUS OF 1330.00 FEET, A DISTANCE OF 49.15 FEET TO A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 21;

THENCE SOUTH 89 DEGREES 50 MINUTES 58 SECONDS EAST ON SAID NORTH LINE, A DISTANCE OF 3635.53 FEET TO THE POINT OF BEGINNING;

ENGINEER'S STATEMENT
THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND belief. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

_____ _____
ENGINEER OF RECORD SIGNATURE DATE

OWNER'S STATEMENT
I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN AND ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

_____ _____
OWNER SIGNATURE DATE

EL PASO COUNTY:
COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/ OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/ OR ACCURACY OF THIS DOCUMENT. FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL, AS AMENDED.
IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

_____ _____
COUNTY PROJECT ENGINEER SIGNATURE DATE

HRGreen

5619 DTC PARKWAY, SUITE 1150 | GREENWOOD VILLAGE, COLORADO 80111
Phone: 720.602.4999 | Toll Free: 800.728.7805 | HRGreen.com

ENGINEER CONTACT(S):
HR GREEN DEVELOPMENT, LLC
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5619 DTC PARKWAY, SUITE 1150
GREENWOOD VILLAGE, CO 80111
PH: 720-602-4999
gpanza@hrgreen.com

HR GREEN Xrefs: xgt-1-dh01, 01-XL-CONCEPT

DRAWN BY: CMM JOB DATE: 7/25/2022
APPROVED: TBI JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\TITLE SHEET

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TITLE SHEET

SHEET TS1

01

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
   A. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   B. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
   C. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
   D. CDOT M & S STANDARDS
4. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
5. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ONSITE AND OFFSITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
6. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT (PCD) - INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
8. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
11. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
12. SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
13. SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY AND MUTCD CRITERIA. [IF APPLICABLE, ADDITIONAL SIGNING AND STRIPING NOTES WILL BE PROVIDED.]
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DPW, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL PLANS

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.
2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON-SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.
8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF-SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.
14. DURING DEWATERING OPERATIONS, UNCONTAMINATED GROUNDWATER MAY BE DISCHARGED ON-SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.
15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ON-SITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ON-SITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.
24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON-SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY [COMPANY NAME, DATE OF REPORT] AND SHALL BE CONSIDERED A PART OF THESE PLANS.
29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD – PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

CHANNEL DESIGN PARAMETERS

Design Parameter	Grandview Reserve Design Value	Design Value From MHFD	El Paso County
	5 ft	5 ft	5 ft
Roughness values	EPC Table 10-2	Per Table 8-5	EPC Table 10-2
Maximum 5-year velocity, main channel (within bankfull channel width) (ft/s)	5 ft/s	5 ft/s	EPC Table 10-3 and 10-4
Maximum 100-year velocity, main channel (within bankfull channel width) (ft/s)	7 ft/s	7 ft/s	EPC Table 10-3 and 10-4
Froude No., 5-year, main channel (within bankfull channel width)	0.7	0.7	
Froude No., 100-year, main channel (within bankfull channel width)	0.8	0.8	0.9 (From section 10.7)
Maximum shear stress, 100-year, main channel (within bankfull channel width)	1.2 lb/sf	1.2 lb/sf	
Minimum bankfull capacity of bankfull channel (based on future development conditions)	70% of 2 year, 10.5 cfs	70% of 2-year discharge or 10% of 100-yr discharge, whichever is greater*	10-yr storm, to be concrte lined or rip rap, ECM 10.5.4
Minimum bankfull channel geometry1		Per Table 8-2	
Design Channel Type	C4		
Entrenchment Ratio	2.7-31.65 (x=5.26)		
Width to depth ratio	13.5-75.0 (x=29.28)		
Sinuosity	1.43-2.80 (x=1.92)		
Slope	0.0001-0.0184 (x=0.0045)		
D50	12-14mm (~0.5 in)		
d84	32-48mm (~1.6in)		
Meander Length2	34-92 (x=56)		
Belt Width2	18-55 (x=32)		
Radius of Curvature2	7-28 (x=11)		
Minimum Floodplain Terrace	6 ft		
Maximum overbank side slope	4(H):1(V)	4(H):1(V)	4(H):1(V) when grassed, 2(H):1(V) when concrete, 2.5(H):1(V) when riprap
Maximum bankfull side slope	2.5(H):1(V)	2.5(H):1(V)	
Minimum bottom width	3.8 ft		At least twice depth, but not less than 8 ft for channels conveying at least 400 cfs
Freeboard	1.5 ft	18 inch min	freeboard in ft = 1.0 + 0.025 (velocity in fps)(depth in ft)0.33, to be 12 inch minimum

*THE DESIGN'S BANKFULL CROSS SECTION GEOMETRY WAS ESTIMATED ASSUMING 70% OF THE 2-YEAR FLOW (AN OPTION DESCRIBED IN MILE HIGH FLOOD DISTRICT'S DESIGN MANUAL VOLUME 1). LEOPOLD (A VIEW OF THE RIVER, 1994; FLUVIAL PROCESSES ON GEOMORPHOLOGY, 1992) SHOWED A VERY STRONG CORRELATION BETWEEN THE EFFECTIVE DISCHARGE CHANNEL AND FIELD-DETERMINED BANKFULL GEOMETRY WHERE THE OBSERVED EQUILIBRIUM CHANNEL'S SPILL-OVER POINT TO THE FLOODPLAIN. THIS POINT IS MOST OFTEN CORRELATED TO A FLOW RETURN INTERVAL BETWEEN 1.0-2.0 YEARS WITH AN AVERAGE OF 1.5-YEARS (THOUGH EXCEPTIONS DO EXIST). AS WE DO NOT HAVE GAUGE DATA TO PERFORM A FLOW FREQUENCY ANALYSIS FOR THIS PROJECT'S CHANNEL, NOR A SUITABLE REFERENCE REACH TO SERVE AS AN ANALOGUE WITH WHICH TO SCALE USING DIMENSIONLESS RATIOS RELATED TO THE BANKFULL WIDTH, WE HAVE CHOSEN TO USE THE 2-YEAR FREQUENCY RAINFALL TO APPROXIMATE THE HYDROLOGIC CONDITION OF THE WATERSHED THAT WOULD RESULT IN THE 1.5-1.8 YR FLOW INTERVAL (APPROXIMATELY 70% OF THE 2-YR FLOW INTERVAL).

MILE HIGH FLOOD DISTRICT'S (MHFD) DESIGN MANUAL VOLUME 1 ALSO PRESENTS THE OPTION OF USING 10% OF THE 100-YR DISCHARGE TO SIZE THE BANKFULL CHANNEL'S CAPACITY. IN THE CASE OF THIS PROJECT, WE HAVE NOT OPTED FOR THIS ALTERNATIVE. OUR CONCERN IS THAT THE RESULTING CHANNEL CROSS SECTIONAL AREA DERIVED FROM THIS ALTERNATIVE WOULD BE OVERSIZED AND LEAD TO SEDIMENT ACCUMULATION ON THE BED THROUGH TIME (AGGRADATION). AGGRADATION OCCURS WHEN INSUFFICIENT STREAM POWER IS PRESENT TO TRANSPORT SEDIMENT THROUGH THE CHANNEL, WHICH CAN RESULT FROM AN OVERSIZED BANKFULL CHANNEL. IN THESE CASES, MID-CHANNEL BARS CAN FORM WHICH PUSH FLOWS INTO THE BANKS INCREASING THE RISK OF EROSION AND LATERAL MIGRATION OF THE CHANNEL.

EXISTING FLOWS FOR MAIN STEM (DRAINAGE A)

STATION	2-YR STORM	5-YR STORM	100-YR STORM
37+13	23 cfs	67 cfs	413 cfs
25+92	26.45 cfs	80.03 cfs	479.80 cfs
15+57	26.45 cfs	80.03 cfs	479.80 cfs

EXISTING FLOWS FOR MAIN STEM TRIBUTARY (DRAINAGE B)

STATION	2-YR STORM	5-YR STORM	100-YR STORM
45+30	19 cfs	59 cfs	280 cfs
22+59	20.14 cfs	68.95 cfs	390.70 cfs
6+14	22.14 cfs	85.99 cfs	597.42 cfs

FUTURE FLOWS FOR MAIN STEM (DRAINAGE A)

STATION	2-YR STORM	5-YR STORM	100-YR STORM
37+13	23 cfs	67 cfs	413 cfs
25+92	23 cfs	67 cfs	413 cfs
15+57	27.75 cfs	67.69 cfs	466.95 cfs

FUTURE FLOWS FOR MAIN STEM TRIBUTARY (DRAINAGE B)

STATION	2-YR STORM	5-YR STORM	100-YR STORM
47+49	19 cfs	59 cfs	280 cfs
36+50	31.72 cfs	60.52 cfs	395.83 cfs
5+54	33.53 cfs	63.16 cfs	553.68 cfs

DRAWN BY: TBI | JOB DATE: 5/26/2022
APPROVED: CMM | JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\GENERAL NOTES

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NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

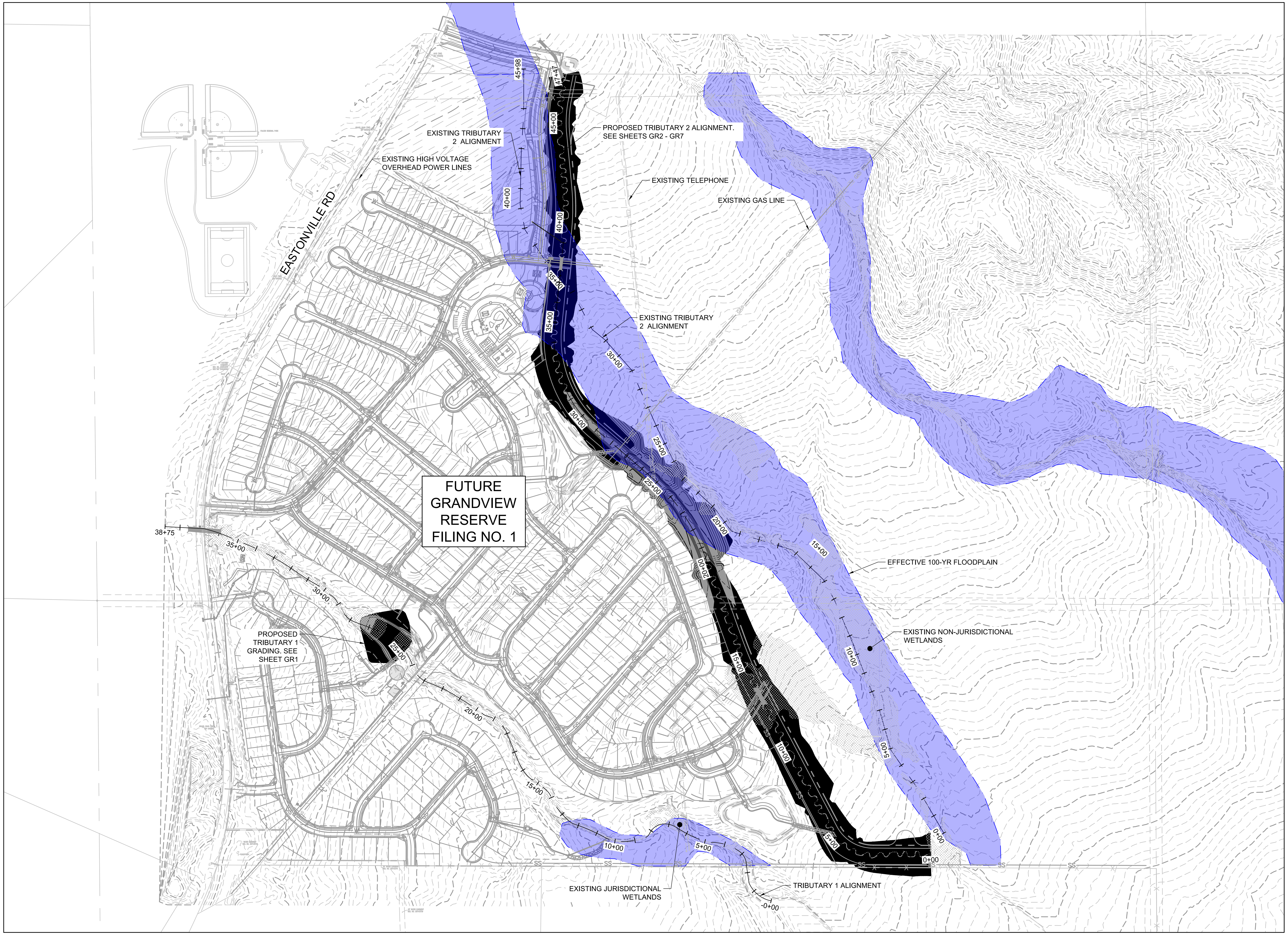
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
GENERAL NOTES

SHEET GN1 | 02

HR GREEN Xrefs: xgr-1-dh01

HR GREEN Xrefs: xgt-1-dh01; OUP KEY; HRG1X_PUtil; HRG1X_EBase; HRG_PLotLines



NORTH

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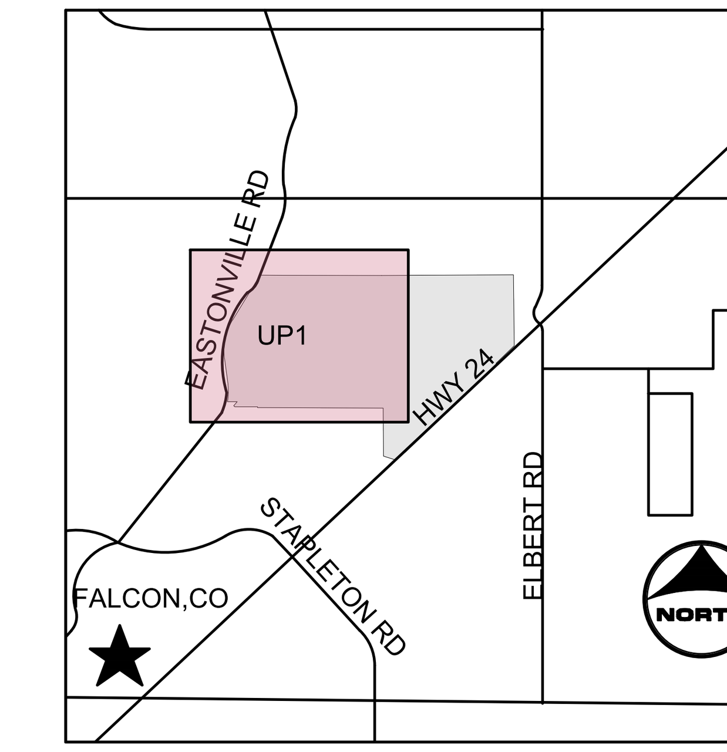

KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 FUTURE MAJOR CONTOUR
- FUTURE MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION
- WATERMAIN
- WATER VALVE
- SANITARY SEWER
- SANITARY SERVICE
- SANITARY MANHOLE
- LIGHT POLE
- FIRE HYDRANT
- EXISTING WETLANDS

NOTES:

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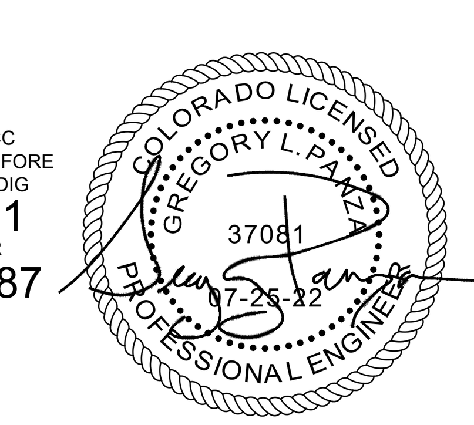
2. BENCHMARK:
DESIGNATION = F 24
PID = JK0240
DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
CONTROL POINT COORDINATE SYSTEM: NAVD88
NORTHING: 1421049.80
EASTING: 3273631.55
ELEVATION: 6866.33

811
UNCC
CALL BEFORE YOU DIG
811
OR
1-800-922-1987
Utility Notification Center of Colorado



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APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
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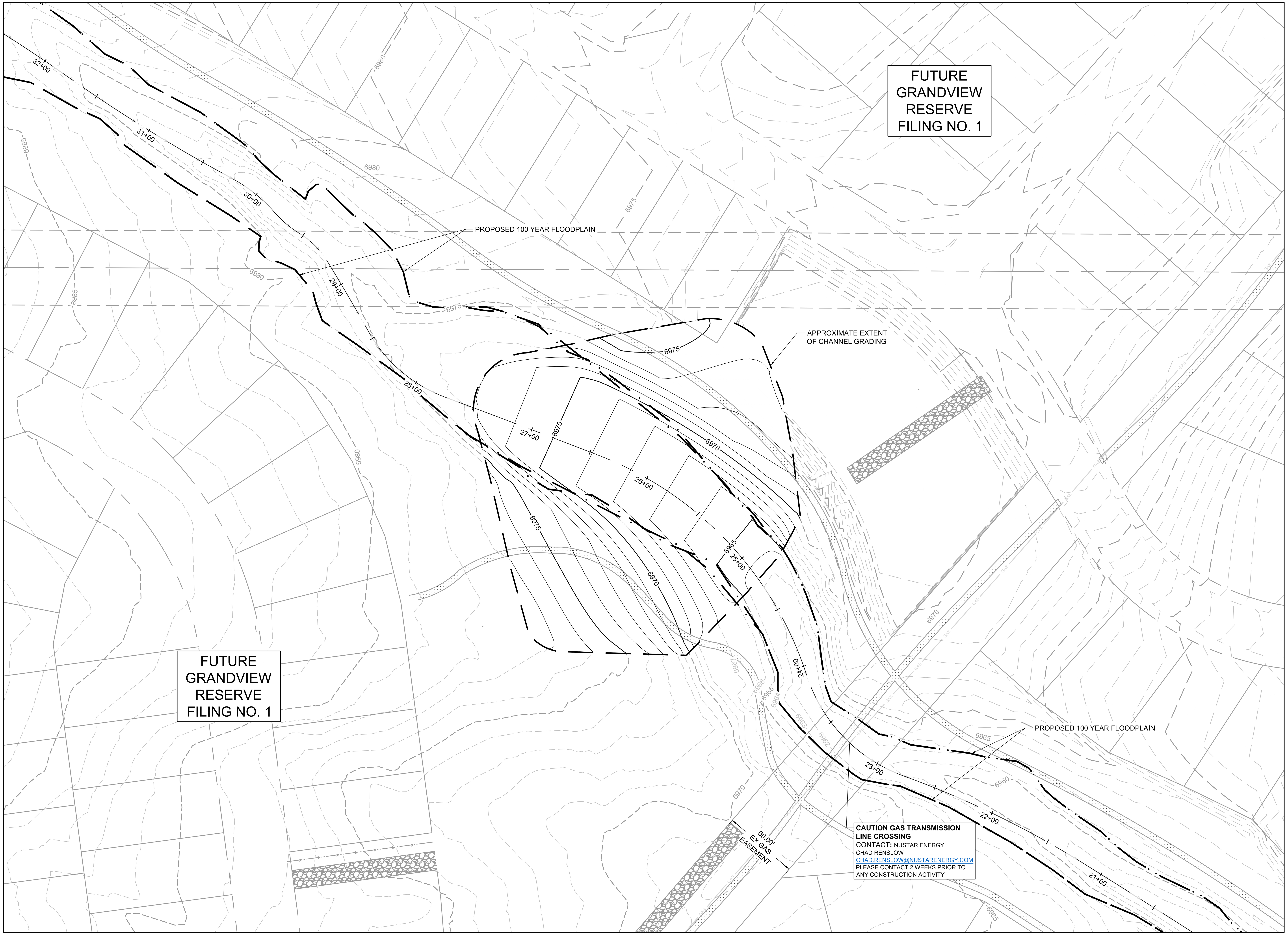
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

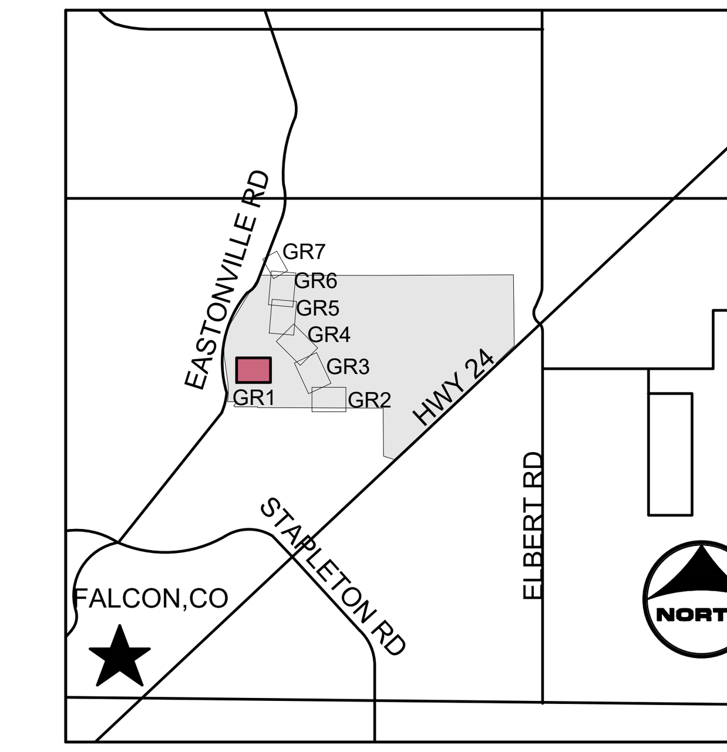
CONSTRUCTION DOCUMENTS
OVERALL UTILITY PLAN

SHEET
UP1

03



CAUTION GAS TRANSMISSION LINE CROSSING
CONTACT: NUSTAR ENERGY
CHAD RENSLOW
CHAD.RENSLOW@NUSTARENERGY.COM
PLEASE CONTACT 2 WEEKS PRIOR TO ANY CONSTRUCTION ACTIVITY



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- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

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   EASTING: 3273631.55
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811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED PROFESSIONAL ENGINEER GREGORY L. PANZA 37081

HR GREEN Xrefs: xgrl-1-ifr01; GRADING KEY: HRG1 20X_PBase; 01-XC-PR_100YR_FP_DELINEATION; 01-XC-PR_100YR_FP_DELINEATION_A; HRG1 20X_EBase

DRAWN BY:	TBI	JOB DATE:	7/25/2022
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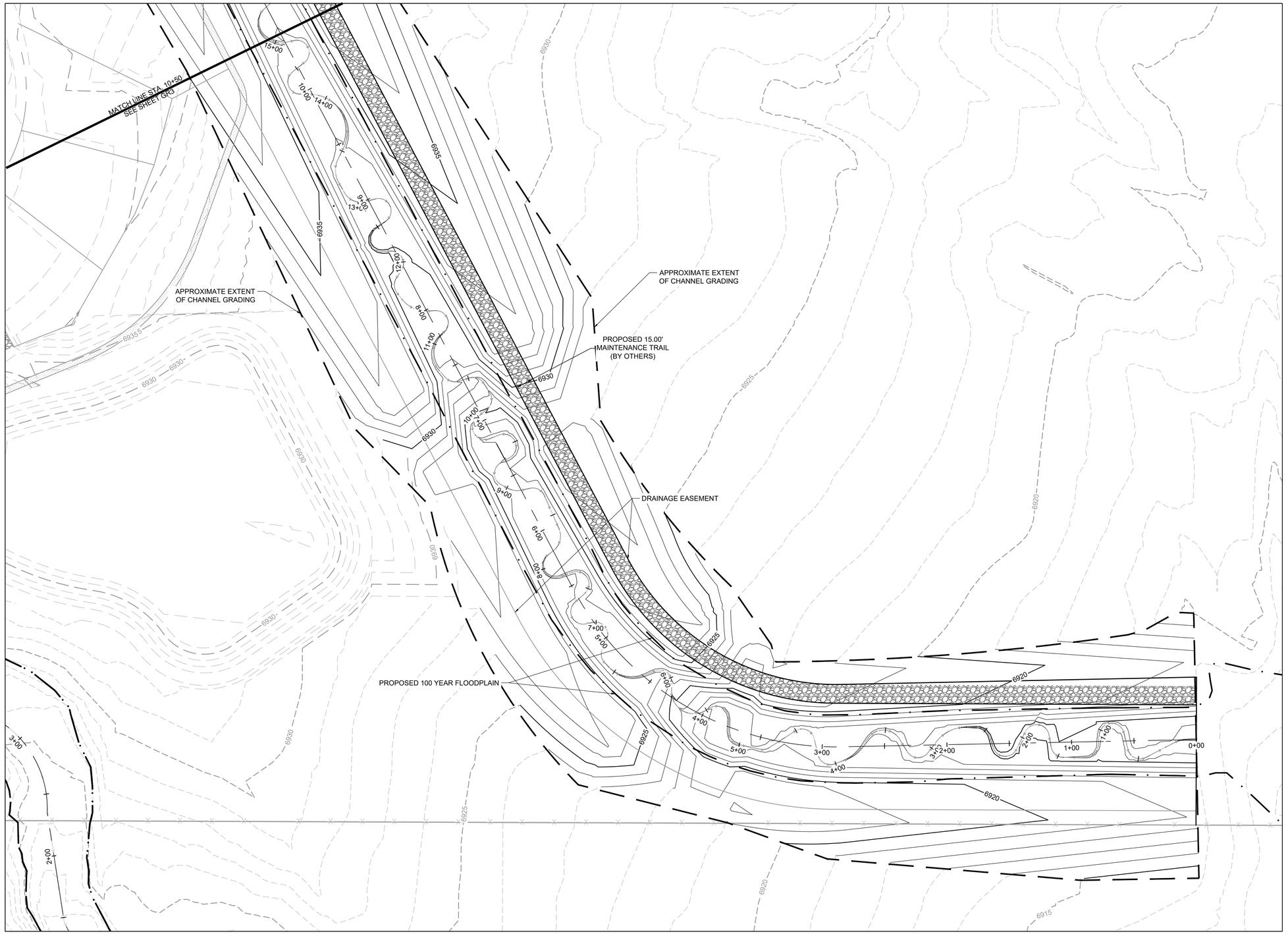
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

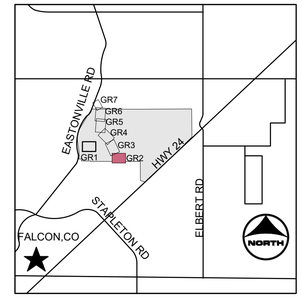
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 1 GRADING

SHEET GR1

04





KEYMAP

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- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
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- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

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   ELEVATION: 6866.33

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PAYNE 37061 7-25-22 PROFESSIONAL ENGINEER

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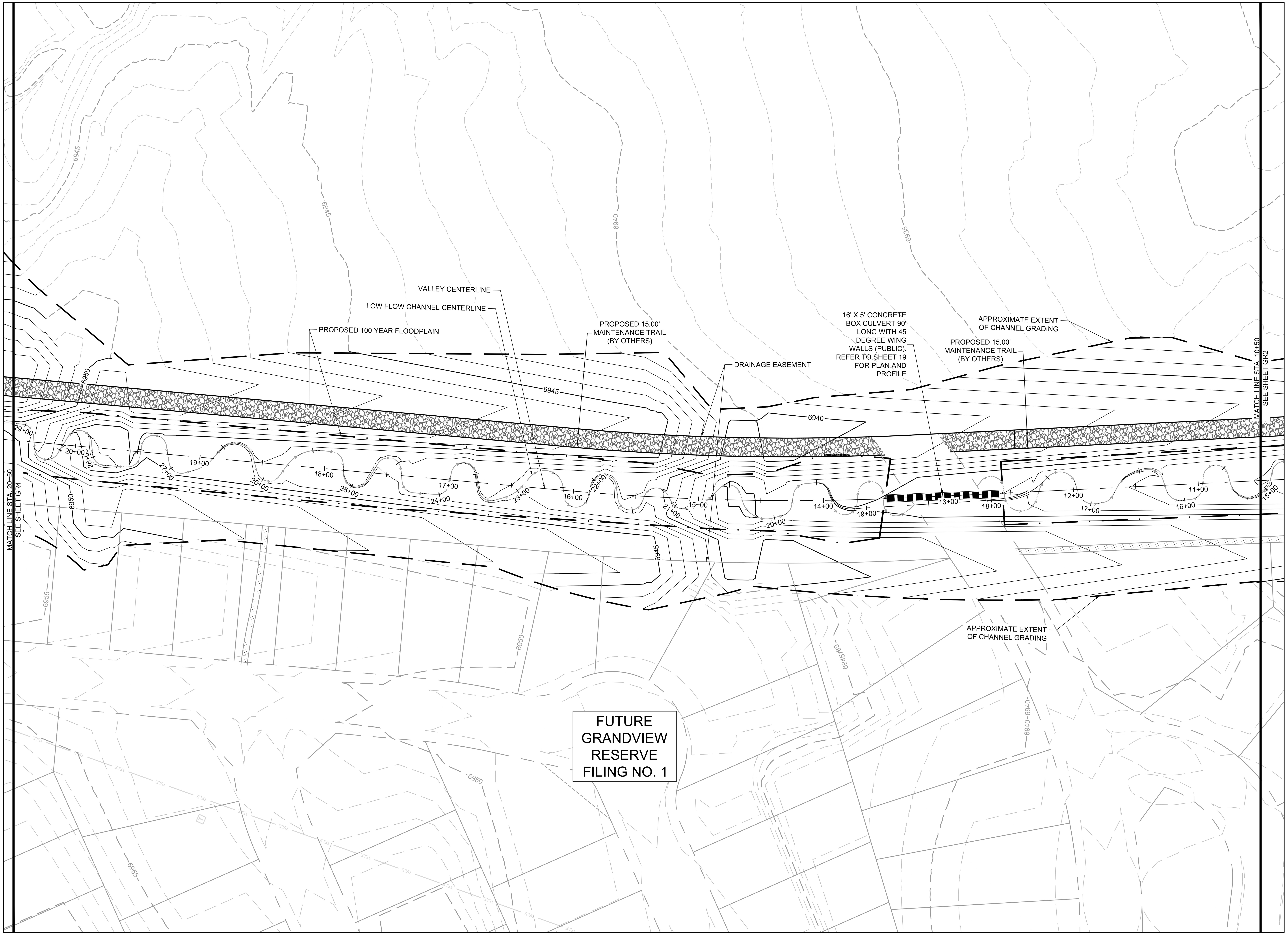
HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

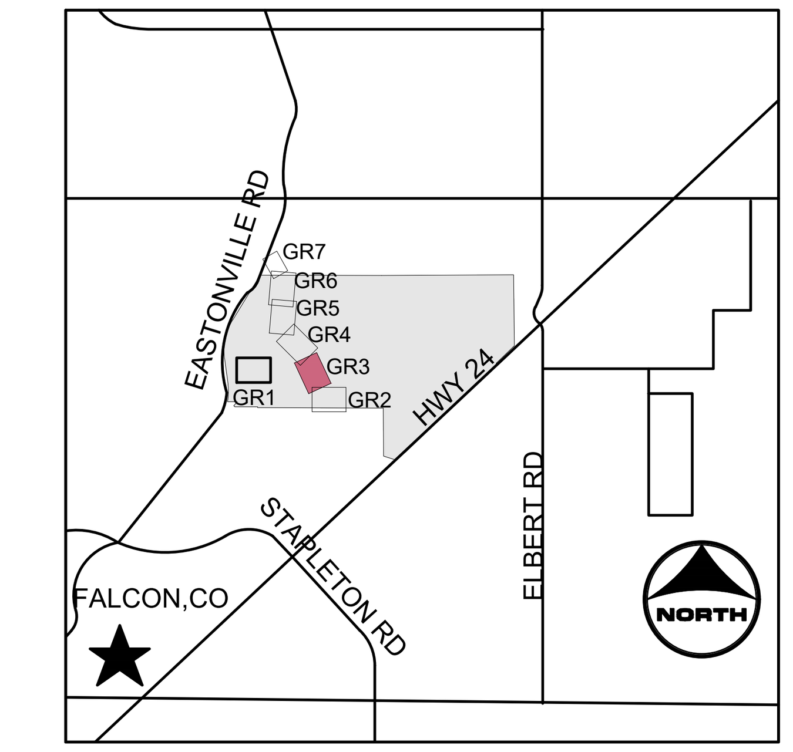
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 2 GRADING

SHEET GR2 | 05

HR GREEN Xrefs: xgl-1-dh01_GRADING KEY; HRG1 20X_ PBase; 01-XC-PR_ 100YR_FP_DELINEATION; 01-XC-PR_ 100YR_FP_DELINEATION_A_HRG1 20X_ EBase





KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
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- 5250 FUTURE MAJOR CONTOUR
- FUTURE MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

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811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PANZA 37081 PROFESSIONAL ENGINEER 07-26-22

HR GREEN Xrefs: xgt-1-dr01: GRADING KEY: HRG1 20X_PBase: 01-XC-PR_100YR_FP_DELINEATION: 01-XC-PR_100YR_FP_DELINEATION_A: HRG1 20X_EBase

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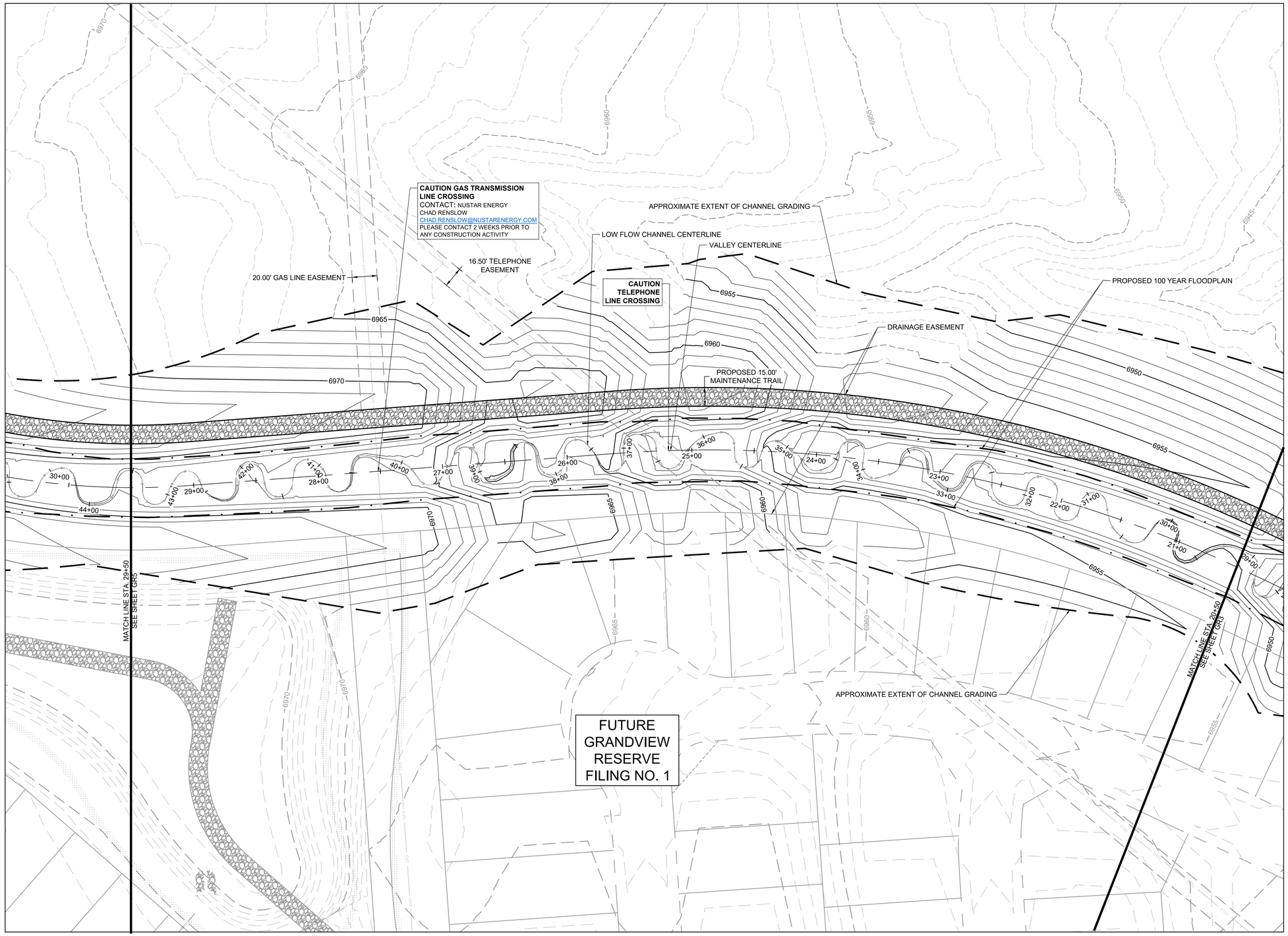
HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

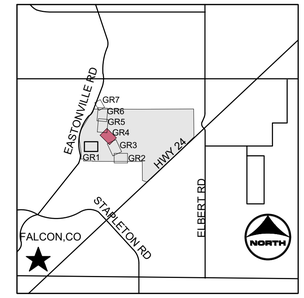
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 2 GRADING

SHEET GR3

06





KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- PROPOSED MAJOR CONTOUR
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811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PAZ 37081 PROFESSIONAL ENGINEER 7/25/22

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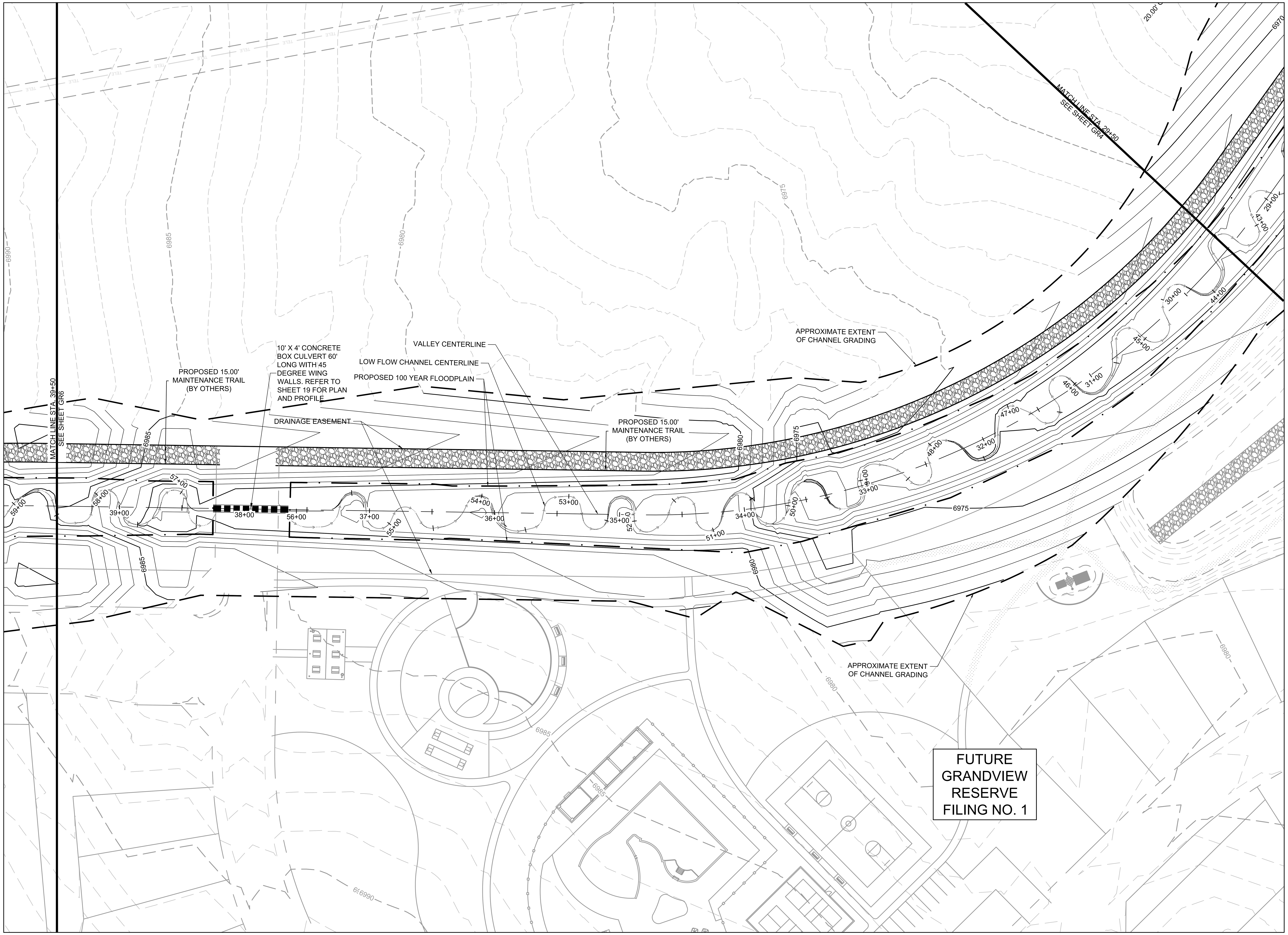
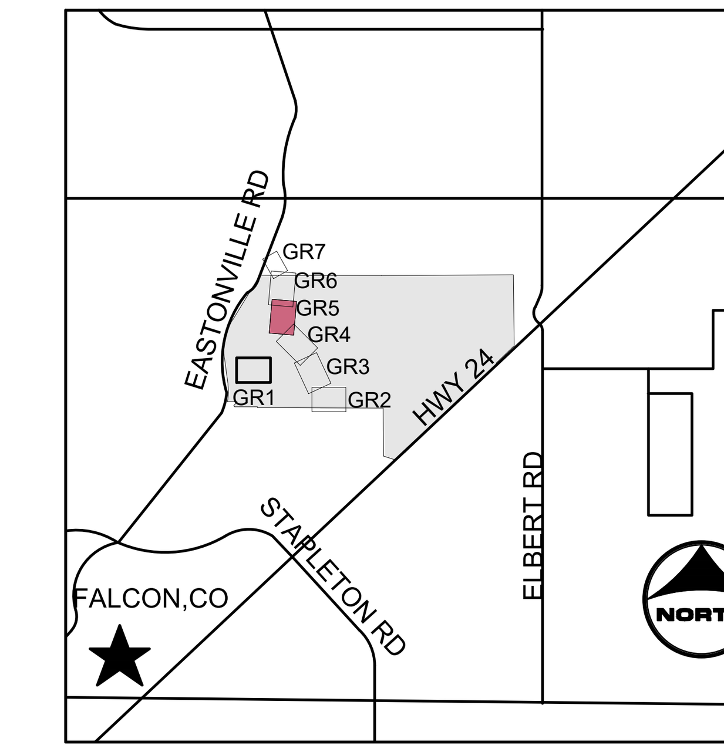
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 2 GRADING

SHEET GR4 | 07





KEYMAP

PROJECT LEGEND:

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- ROAD CENTERLINE
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811
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Utility Notification Center of Colorado

COLORADO LICENSED PROFESSIONAL ENGINEER
GREGORY L. PANZA
37081

HR GREEN Xrefs: xgt-1-dr01; GRADING KEY: HRG1 20X_PBase: 01-XC-PR_100YR_FP_DELINEATION: 01-XC-PR_100YR_FP_DELINEATION_A: HRG1 20X_EBase

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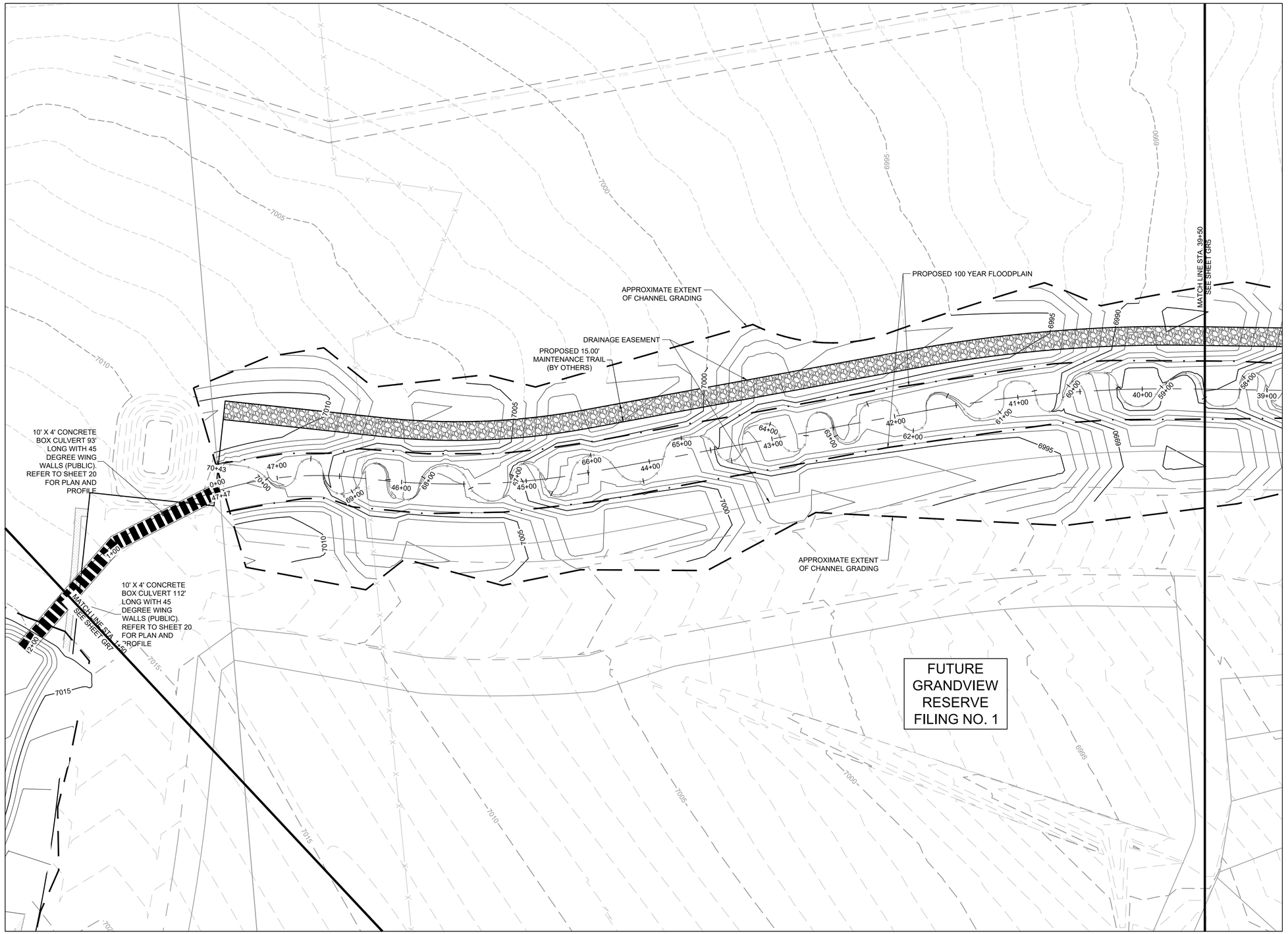
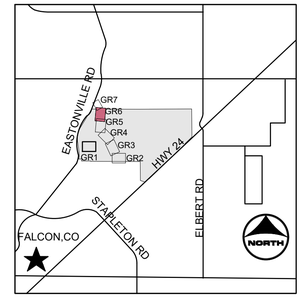
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 2 GRADING

SHEET
GR5
08





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- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
2. BENCHMARK:
   DESIGNATION = F 24
   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. BAZ 37081 PROFESSIONAL ENGINEER 11-25-22

0 40 20

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\GRADING		

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 2 GRADING

SHEET GR6 09

APPROXIMATE CONSTRUCTION EASEMENT

PROPOSED BOUNDARY

APPROXIMATE 100 YEAR FLOODPLAIN

APPROXIMATE EXTENT OF CHANNEL GRADING

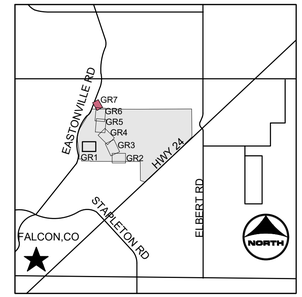
MATCH LINE STA 1+50
SEE SHEET GR6

10' X 4' CONCRETE BOX CULVERT 93' LONG WITH 45 DEGREE WING WALLS (PUBLIC). REFER TO SHEET 20 FOR PLAN AND PROFILE

10' X 4' CONCRETE BOX CULVERT 112' LONG WITH 45 DEGREE WING WALLS (PUBLIC). REFER TO SHEET 20 FOR PLAN AND PROFILE

RD

0 30
15



KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- FUTURE MAJOR CONTOUR
- FUTURE MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
2. BENCHMARK:
   DESIGNATION = F 24
   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PAYNE 37061 PROFESSIONAL ENGINEER 7/25/22

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\GRADING		

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NO.	DATE	BY	REVISION DESCRIPTION

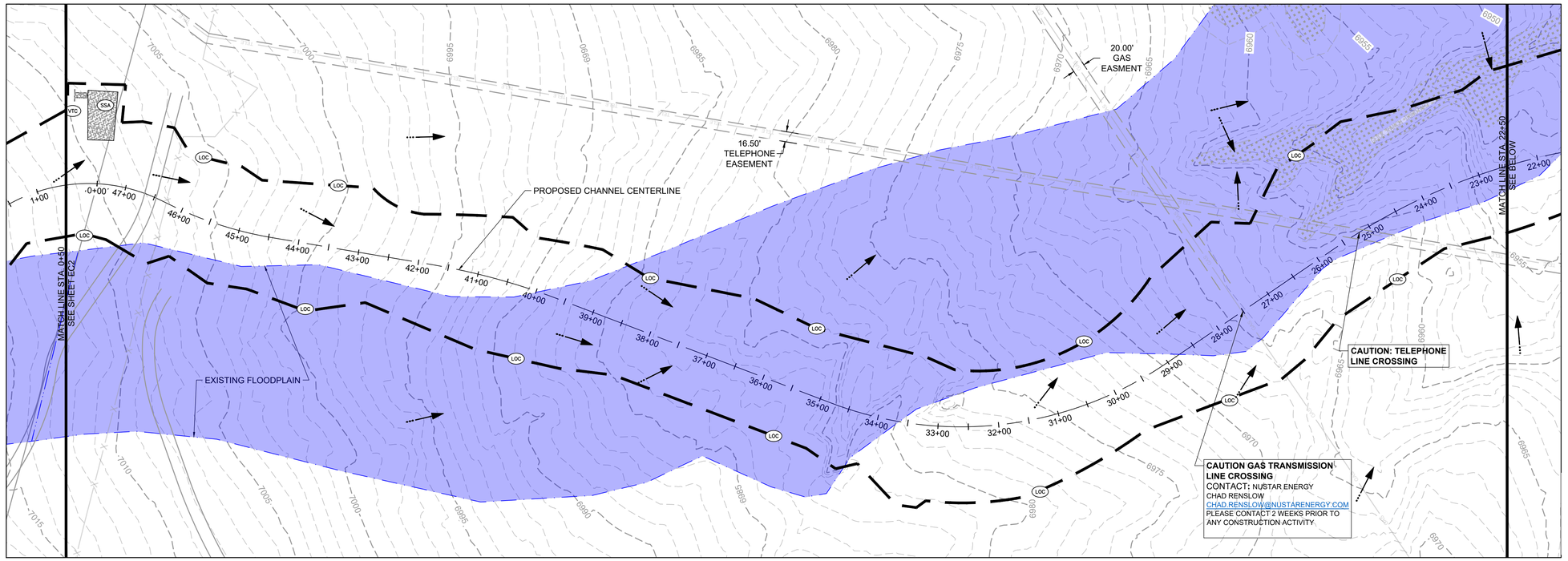
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

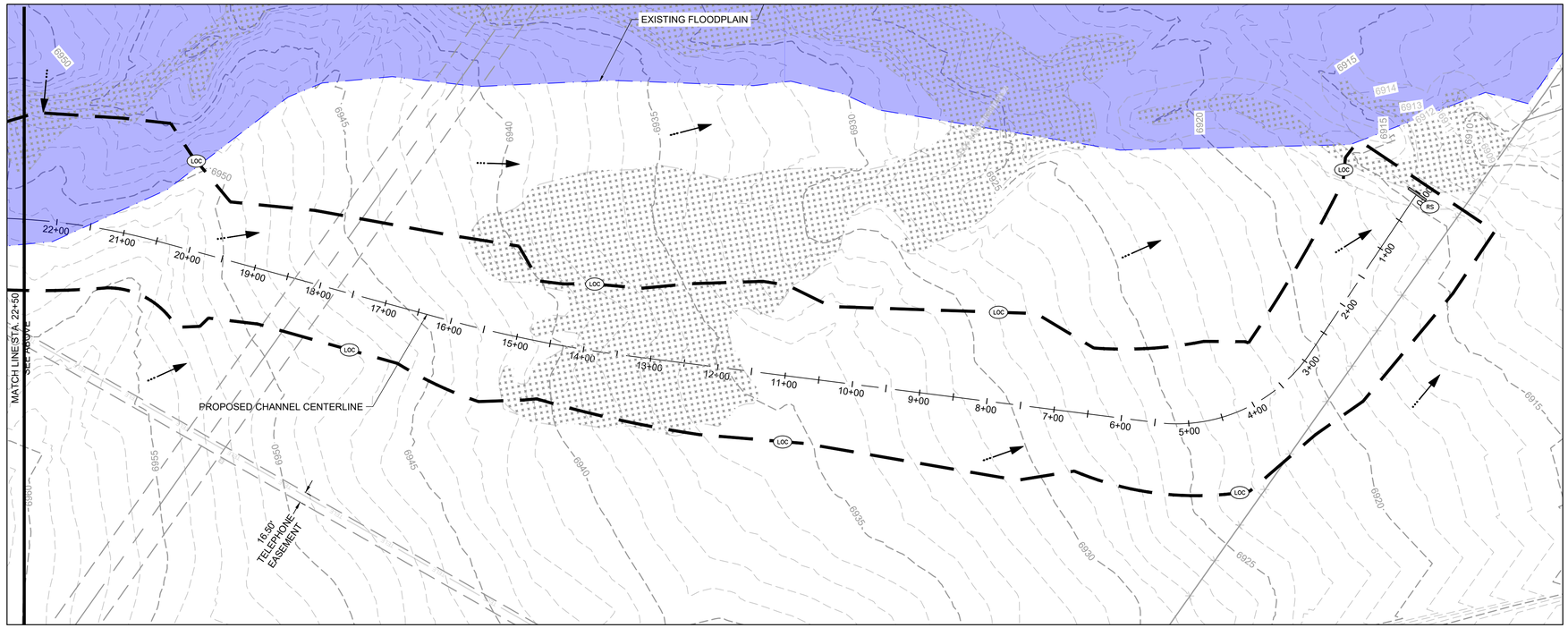
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

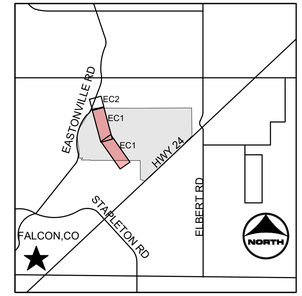
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 GRADING

SHEET GR7 10

HR GREEN Xrefs: xgr1-dh01 GRADING KEY; HRG1 20X_PBase; 01-XC-PR_100YR_FP_DELINEATION; 01-XC-PR_ 100YR_FP_DELINEATION; A; HRG1 20X_EBase







KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN
- EXISTING WETLANDS

BMP LEGEND:

CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
DD	DIVERSION DITCH
IP	INLET PROTECTION
OP	OUTLET PROTECTION
SF	SILT FENCE
SSA	STABILIZED STAGING AREA
VTC	VEHICLE TRACKING CONTROL
LOC	LIMITS OF CONSTRUCTION
CD	CHECK DAM
SM	SEEDING AND MULCHING
SB	SEDIMENT BASIN
SR	SURFACE ROUGHENING
ECB	EROSION CONTROL BLANKET
CIP	CULVERT INLET PROTECTION
RS	ROCK SOCK

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
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   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33
3. EXISTING VEGETATION CONSISTS OF NATIVE GRASSES.

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY C. FAY 37081 PROFESSIONAL ENGINEER 9-25-22

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\INITIAL EROSION CONTROL		

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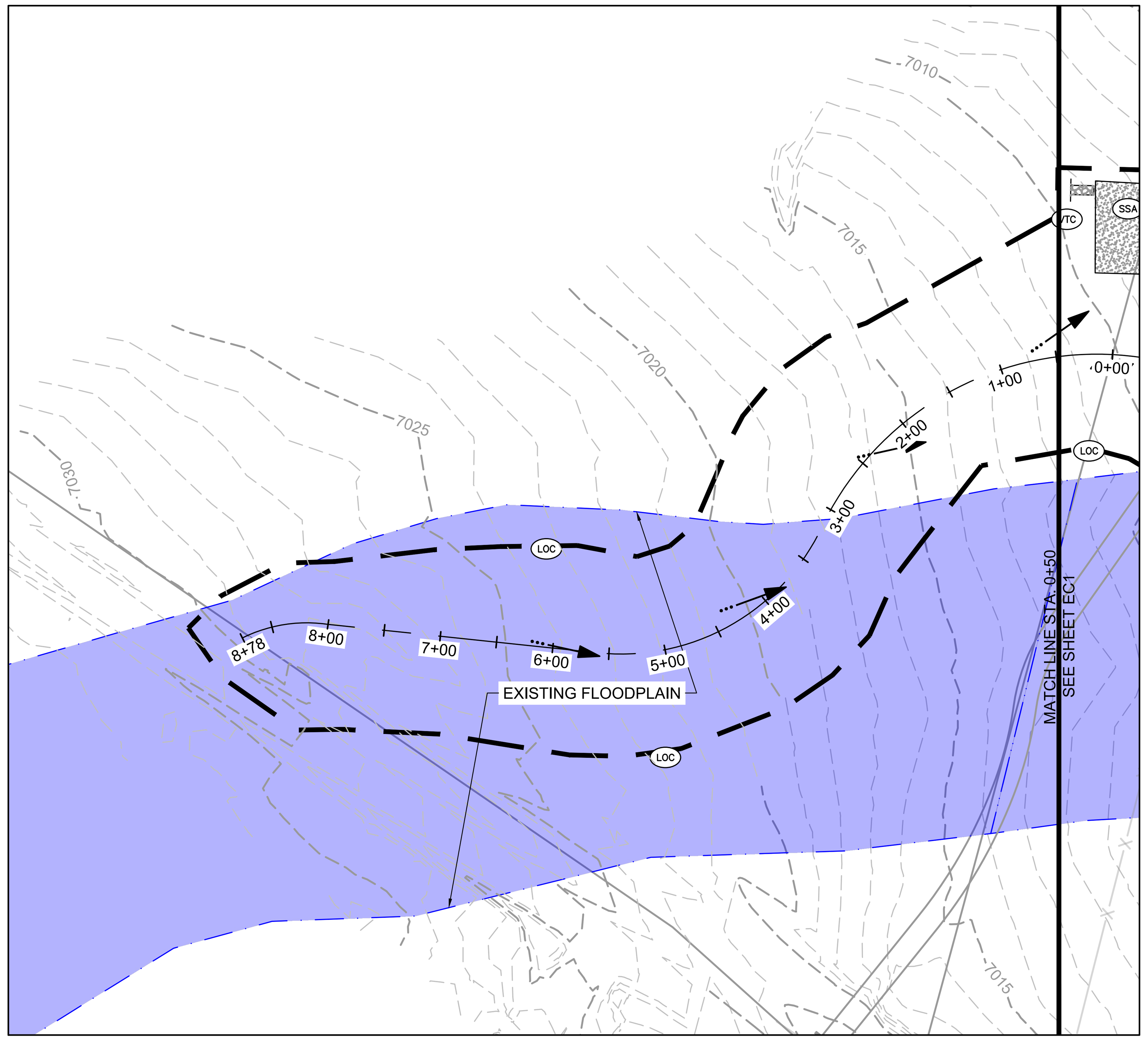
NO.	DATE	BY	REVISION DESCRIPTION

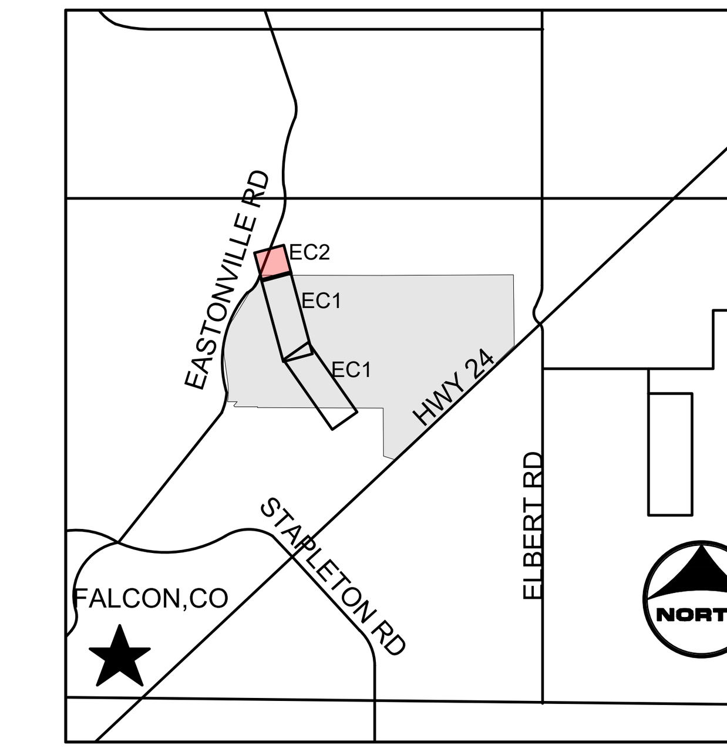
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
INITIAL EROSION CONTROL

SHEET EC1 | 11





KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN
- EXISTING WETLANDS

BMP LEGEND:

- CWA CONCRETE WASHOUT AREA
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- IP INLET PROTECTION
- OP OUTLET PROTECTION
- SF SILT FENCE
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL
- LOC LIMITS OF CONSTRUCTION
- CD CHECK DAM
- SM SEEDING AND MULCHING
- SB SEDIMENT BASIN
- SR SURFACE ROUGHENING
- ECB EROSION CONTROL BLANKET
- CIP CULVERT INLET PROTECTION
- RS ROCK SOCK

NOTES:

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   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33
3. EXISTING VEGETATION CO[illegible] GRASSES.

NORTH

0 50 100

811

UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987

Utility Notification Center of Colorado

COLORADO LICENSED PROFESSIONAL ENGINEER GREGORY L. PANZA 37081 07-25-22

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\INITIAL EROSION CONTROL		

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NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

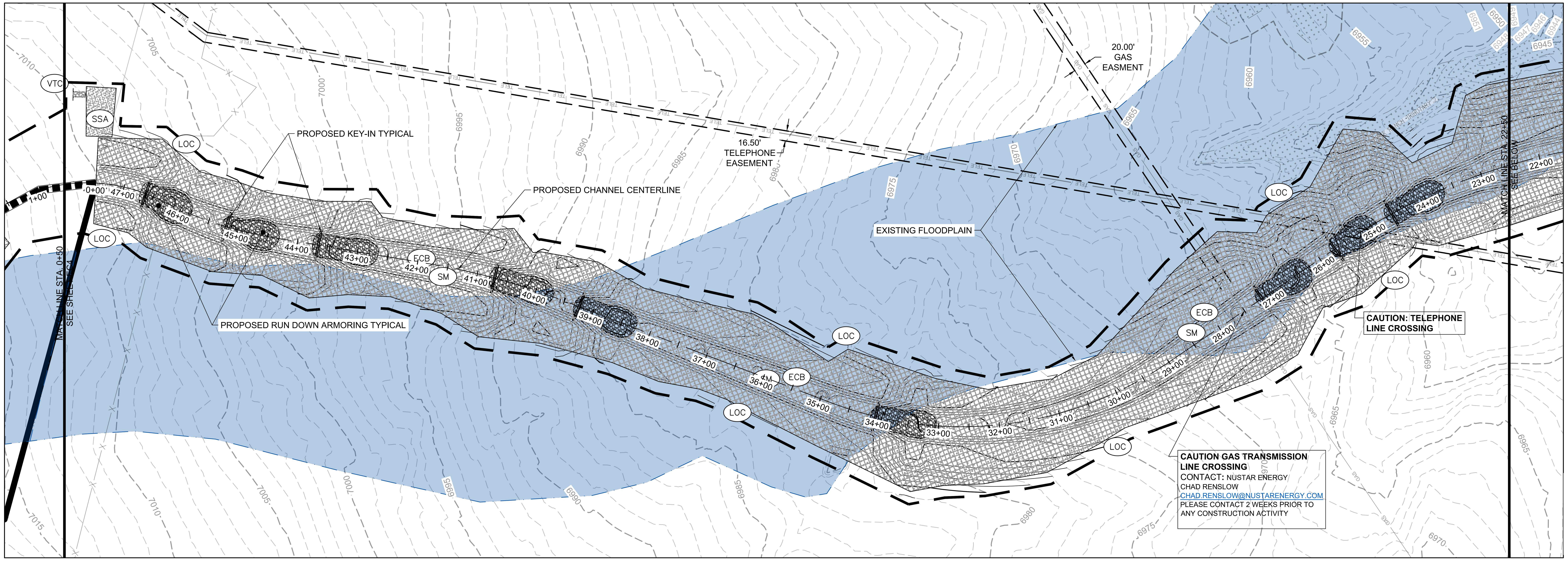
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

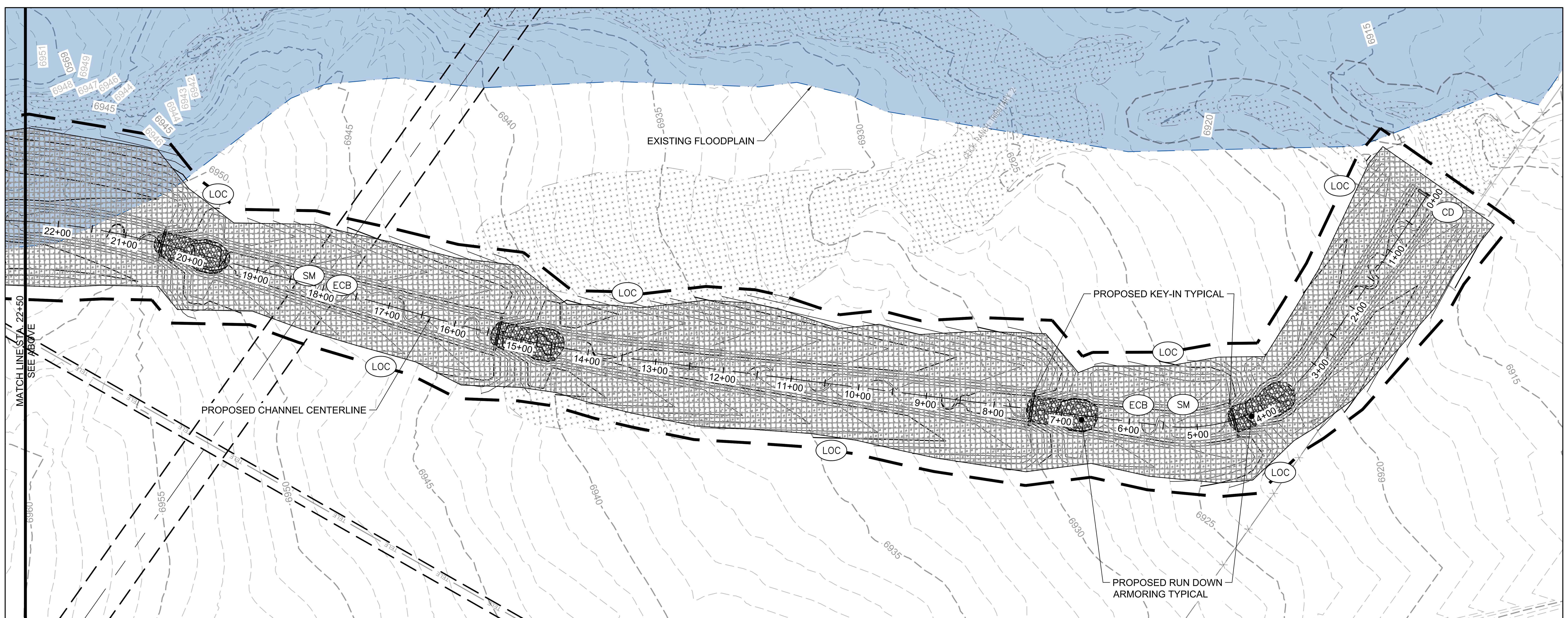
CONSTRUCTION DOCUMENTS
INITIAL EROSION CONTROL

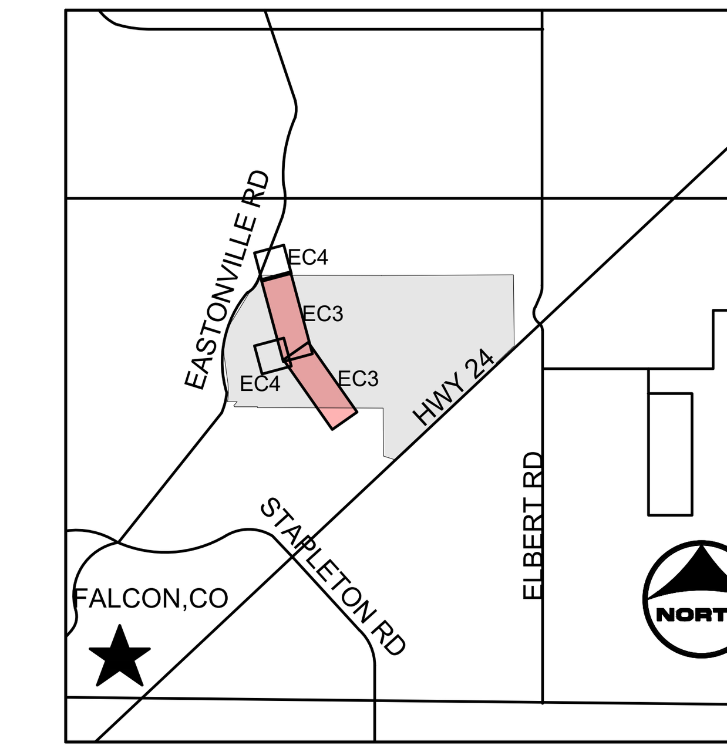
SHEET EC2

12

HR GREEN Xrefs: xgt-1-gr01: INITIAL EROSION CONTROL KEY: 01-XC-INITIAL-EC: HRG1-20X_EBase







KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN
- EXISTING WETLANDS

BMP LEGEND:

- CWA CONCRETE WASHOUT AREA
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- IP INLET PROTECTION
- OP OUTLET PROTECTION
- SF SILT FENCE
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL
- LOC LIMITS OF CONSTRUCTION
- CD CHECK DAM
- SM SEEDING AND MULCHING
- SB SEDIMENT BASIN
- SR SURFACE ROUGHENING
- ECB EROSION CONTROL BLANKET
- CIP CULVERT INLET PROTECTION
- RS ROCK SOCK

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
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   DESIGNATION = F 24
   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33
3. EXISTING VEGETATION CONSISTS OF NATIVE GRASSES.

0 50 100

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987
Utility Notification Center of Colorado

COLORADO LICENSED PROFESSIONAL ENGINEER GREGORY L. PANZA 37081

HR GREEN Xrefs: xgt-1-dh01; FINAL EROSION CONTROL KEY; 01-XC-FINAL-EC; 01_XC_RIPRAP; HRG1-20X_EBase

DRAWN BY: TBI	JOB DATE: 7/21/2022	BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 — 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.
APPROVED: CMM	JOB NUMBER: 201662.03	
CAD DATE: 7/25/2022		
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\FINAL EROSION CONTROL		

NO.	DATE	BY	REVISION DESCRIPTION

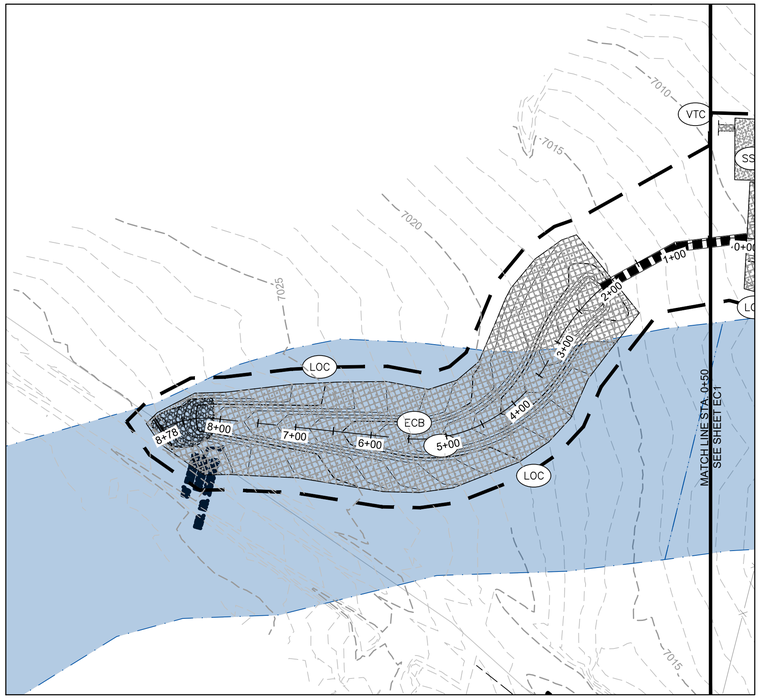
HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

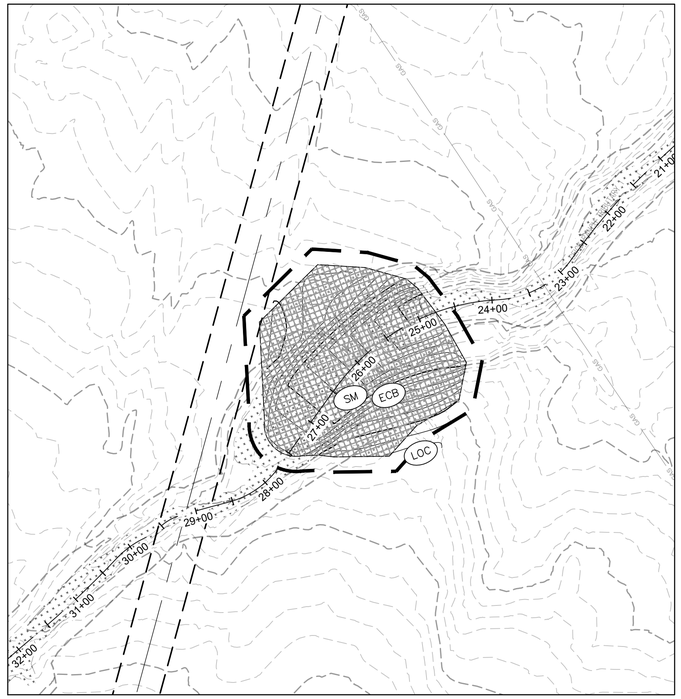
CONSTRUCTION DOCUMENTS
FINAL EROSION CONTROL

SHEET EC3

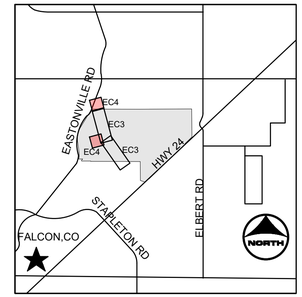
13



TRIBUTARY 2



TRIBUTARY 1



KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED DETENTION BASIN
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODWAY
- EFFECTIVE 100-YR FLOODPLAIN
- EXISTING WETLANDS

BMP LEGEND:

- CWA CONCRETE WASHOUT AREA
- CF CONSTRUCTION FENCE
- DD DIVERSION DITCH
- IP INLET PROTECTION
- OP OUTLET PROTECTION
- SF SILT FENCE
- SSA STABILIZED STAGING AREA
- VTC VEHICLE TRACKING CONTROL
- LOC LIMITS OF CONSTRUCTION
- CD CHECK DAM
- SM SEEDING AND MULCHING
- SB SEDIMENT BASIN
- SR SURFACE ROUGHENING
- ECB EROSION CONTROL BLANKET
- CIP CULVERT INLET PROTECTION
- RS ROCK SOCK

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
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   PID = JK0240
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   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33
3. EXISTING VEGETATION CONSISTS OF NATIVE GRASSES.

NORTH
0 100
50

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PAYNE 37081 PROFESSIONAL ENGINEER 7-25-22

DRAWN BY: TBI JOB DATE: 7/21/2022
APPROVED: CMM JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\FINAL EROSION CONTROL

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NO.	DATE	BY	REVISION DESCRIPTION

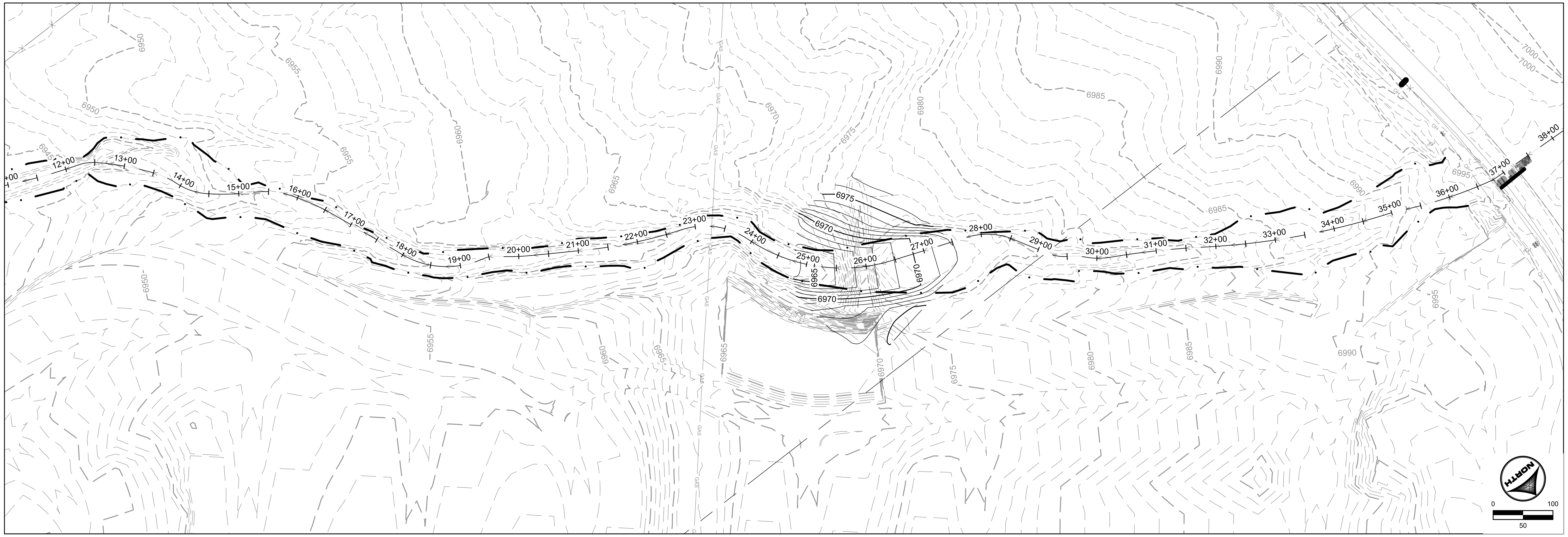
HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
FINAL EROSION CONTROL

SHEET EC4

14



KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED D
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 FUTURE MAJOR CONTOUR
- FUTURE MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
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- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

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2. BENCHMARK:
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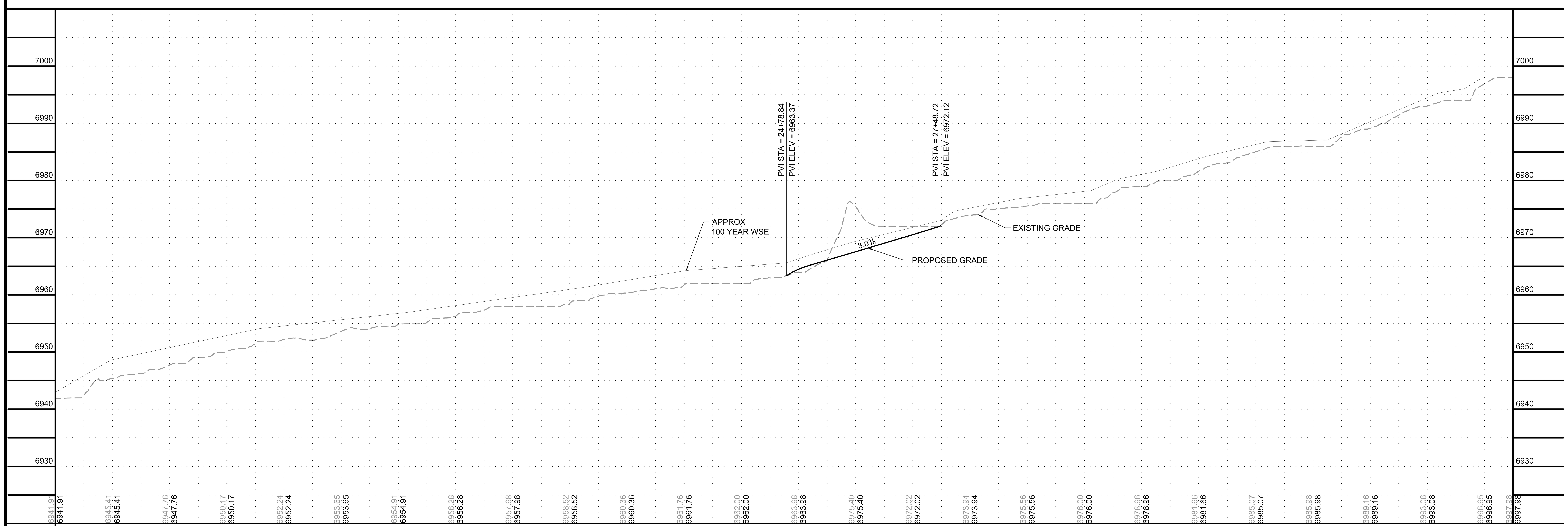
   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33
3. ALIGNMENT NOT FOR USE IN CONSTRUCTION. REFER TO NORTHINGS AND EASTINGS



HORIZONTAL 0 25 50

VERTICAL 0 2.5 5

UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PANZA 37081 07-25-22 PROFESSIONAL ENGINEER

[illegible]

HR GREEN Xrefs: xgt-1-dh01; P&P KEY; 01_XC_RIPRAP; HRG1X_EBase; 01-XC_Wingwalls

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
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CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\PLAN AND PROFILE		

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NO.	DATE	BY	REVISION DESCRIPTION

HRGreen

HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

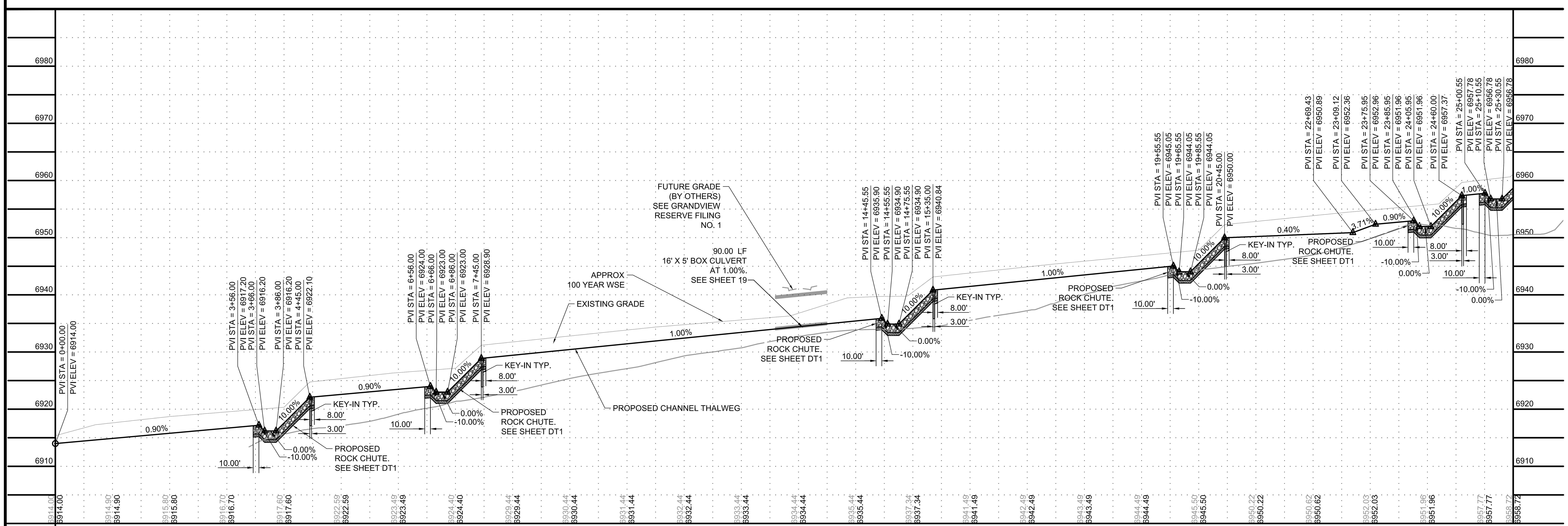
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS

DRAINAGE TRIBUTARY 1 PLAN AND PROFILE

SHEET PP1

15



KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED D
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 FUTURE MAJOR CONTOUR
- FUTURE MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
2. BENCHMARK:
   DESIGNATION = F 24
   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.80
   EASTING: 3273631.55
   ELEVATION: 6866.33
3. ALIGNMENT NOT FOR USE IN CONSTRUCTION. REFER TO NORTHINGS AND EASTINGS

HORIZONTAL 0 50 100 — VERTICAL 0 5 10

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED PROFESSIONAL ENGINEER GREGORY L. PANZA 37081

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\PLAN AND PROFILE		

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

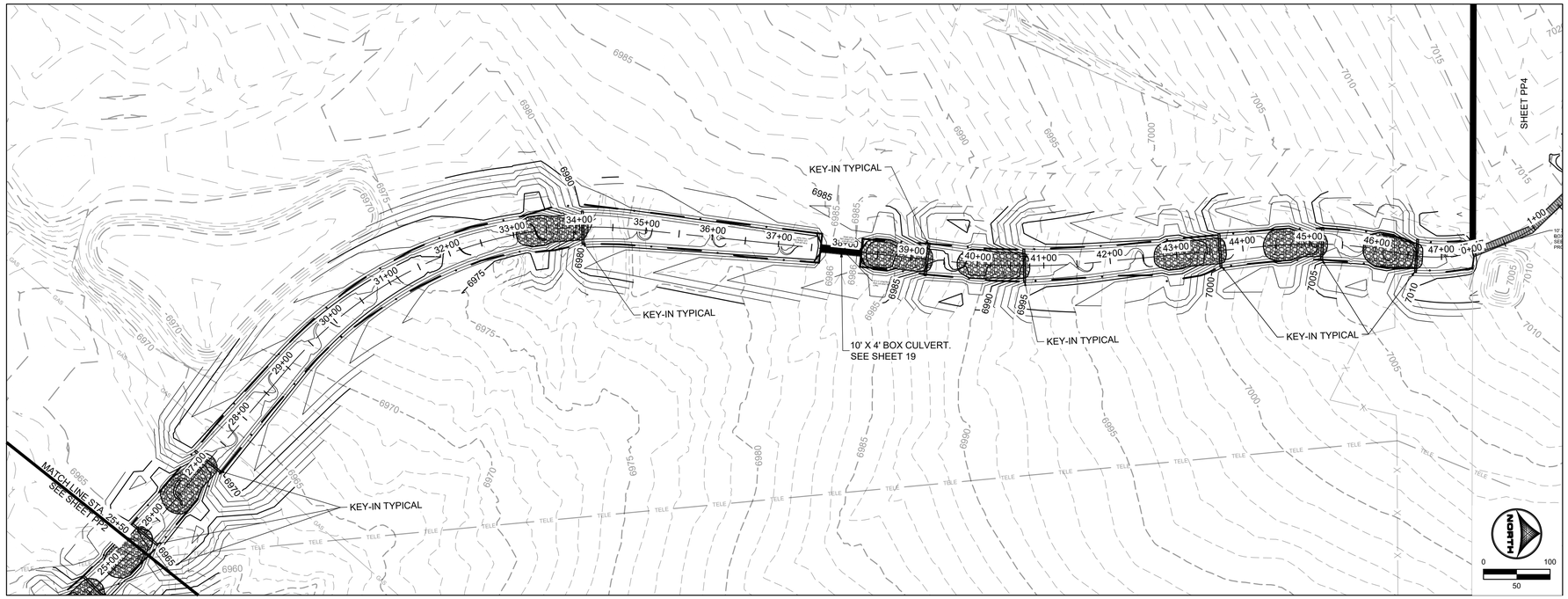
HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

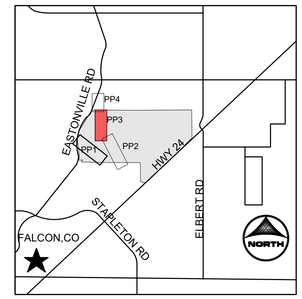
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
DRAINAGE TRIBUTARY 2 PLAN AND PROFILE

SHEET PP2 16

HR GREEN Xrefs: xgt-1-dh01: PAP KEY: 01_XC_RIPRAP: HRG1X_EBase: 01-XC_Wingwalls





KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED D
- 5250 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 5250 FUTURE MAJOR CONTOUR
- FUTURE MINOR CONTOUR
- 5250 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- FLOW ARROW
- EFFECTIVE 100-YR FLOODPLAIN
- EFFECTIVE 100-YR FLOODWAY
- POTENTIAL WALL
- STORM SEWER
- STORM INLET TYPE R
- STORM MANHOLE
- STORM END SECTION

NOTES:

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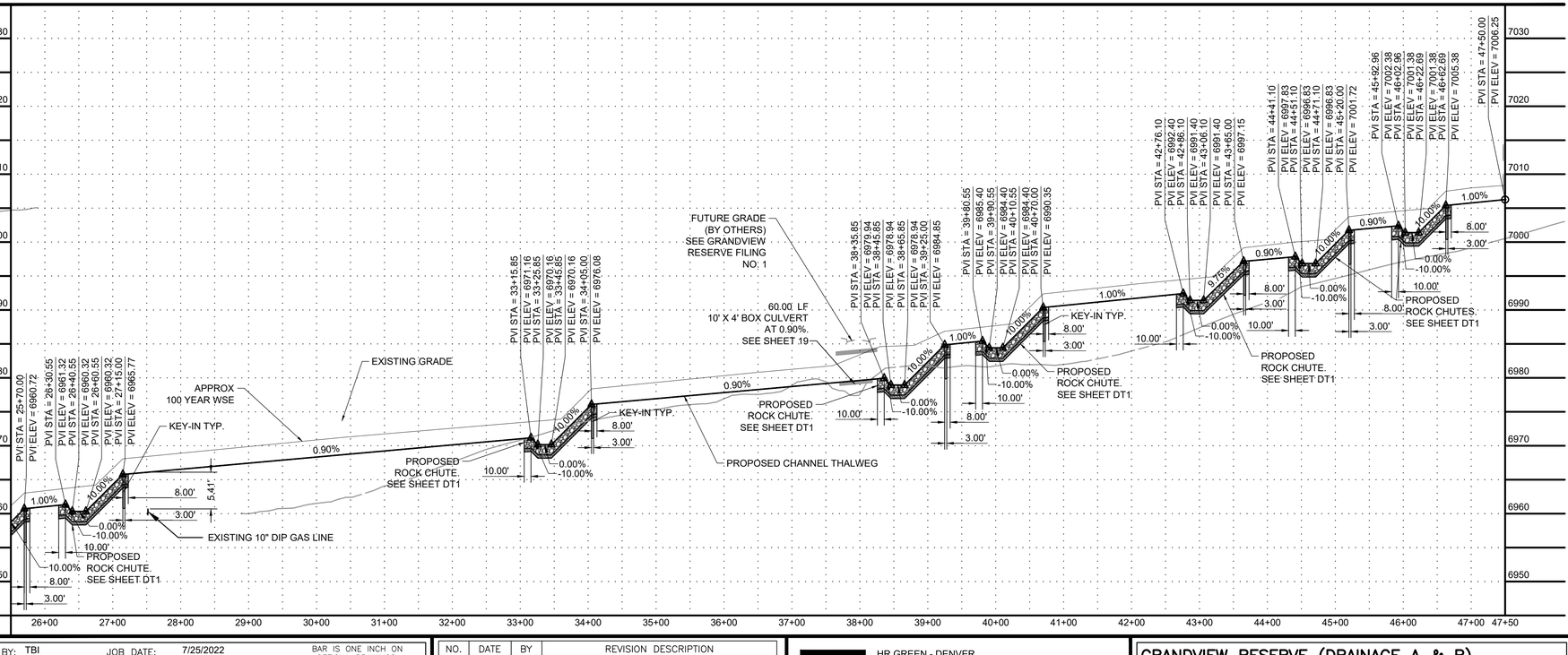

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PAYNE 37081 PROFESSIONAL ENGINEER 7-25-22

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DENVER CO 80111
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GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

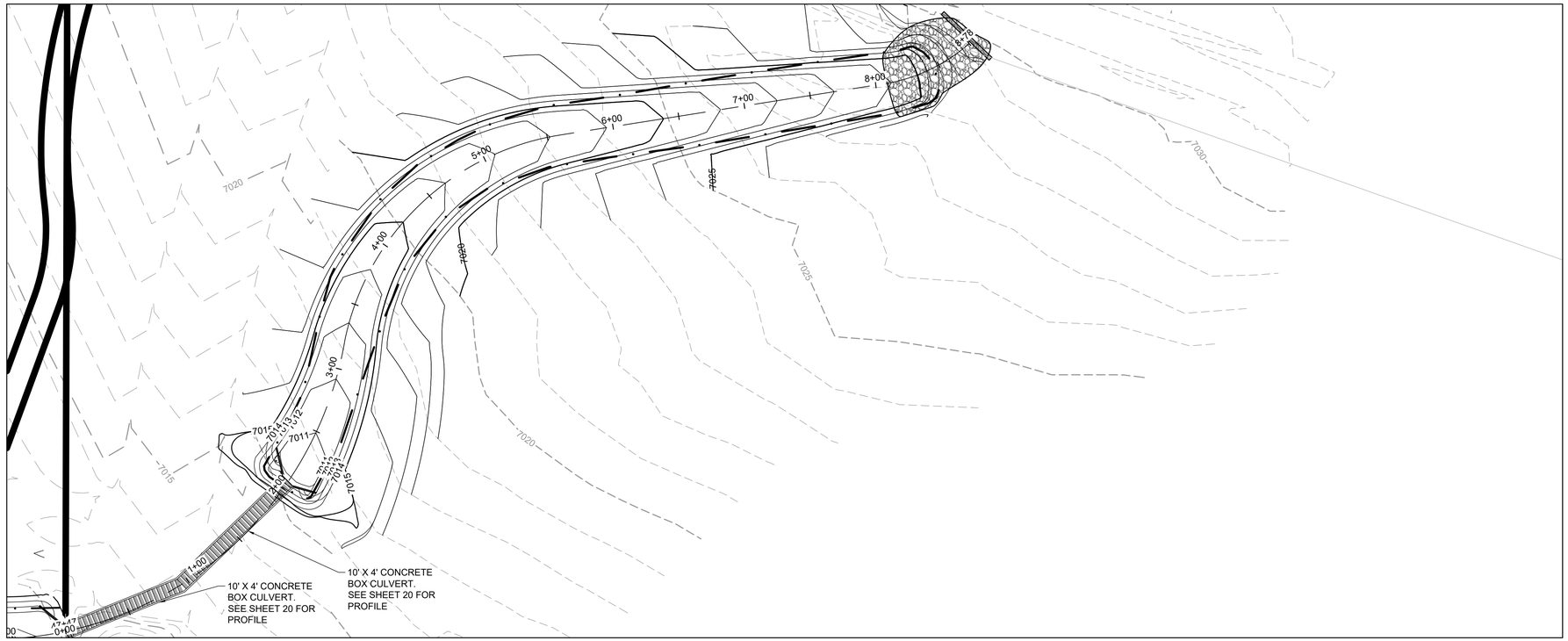
CONSTRUCTION DOCUMENTS

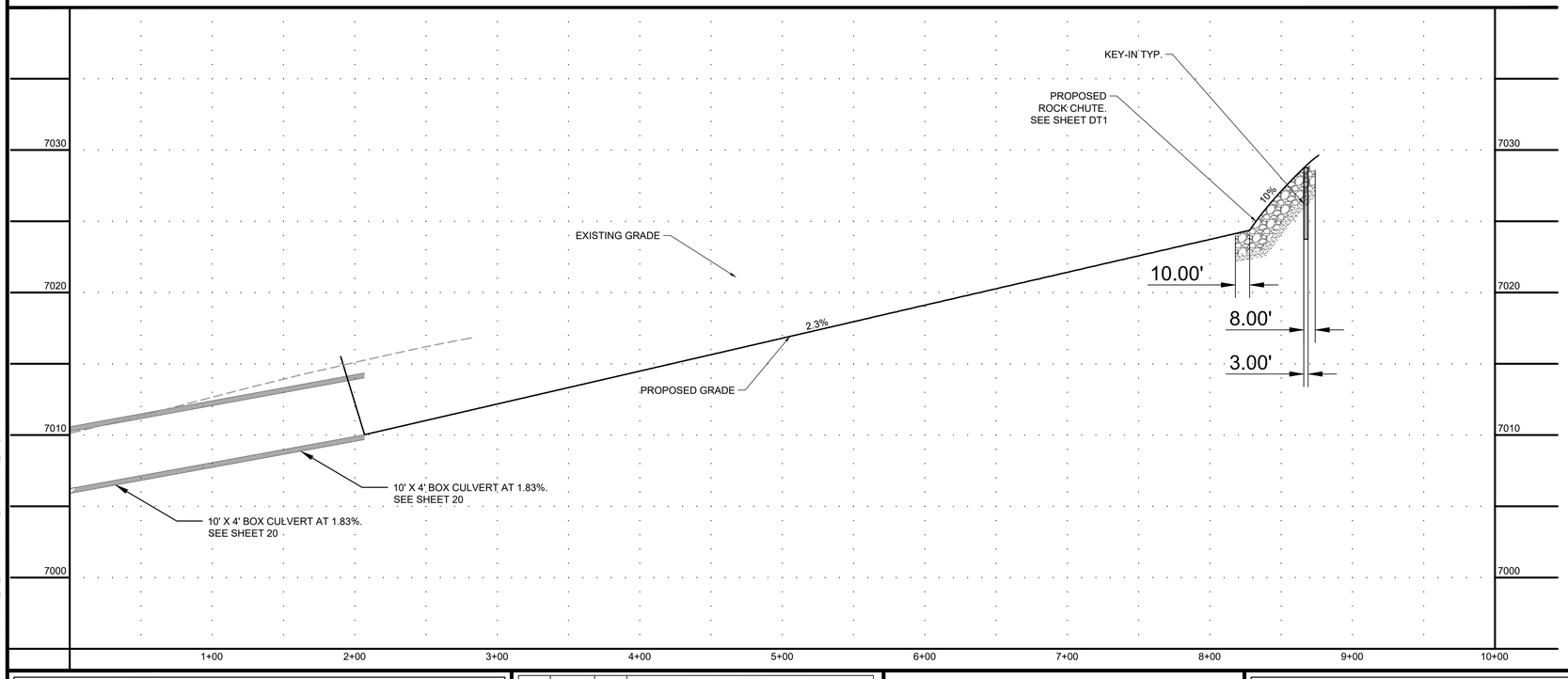
DRAINAGE TRIBUTARY 2 PLAN AND PROFILE

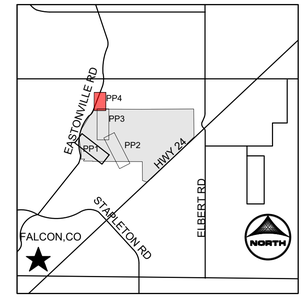
SHEET PP3

17

HR GREEN Xrefs: xg1-dt01: P&P KEY -01_XC_RIPRAP- HRG1X_EBase -01-XC_Wingwalls







KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- ROAD CENTERLINE
- RIGHT-OF-WAY LINE
- PROPOSED D
- 5250 PROPOSED MAJOR CONTOUR
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NORTH
0 50
25

HORIZONTAL 0 50 25
VERTICAL 0 5 2.5

811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

COLORADO LICENSED GREGORY L. PAYA 37081 7-25-22 PROFESSIONAL ENGINEER

DRAWN BY:	TBI	JOB DATE:	7/25/2022
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HRGreen
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DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

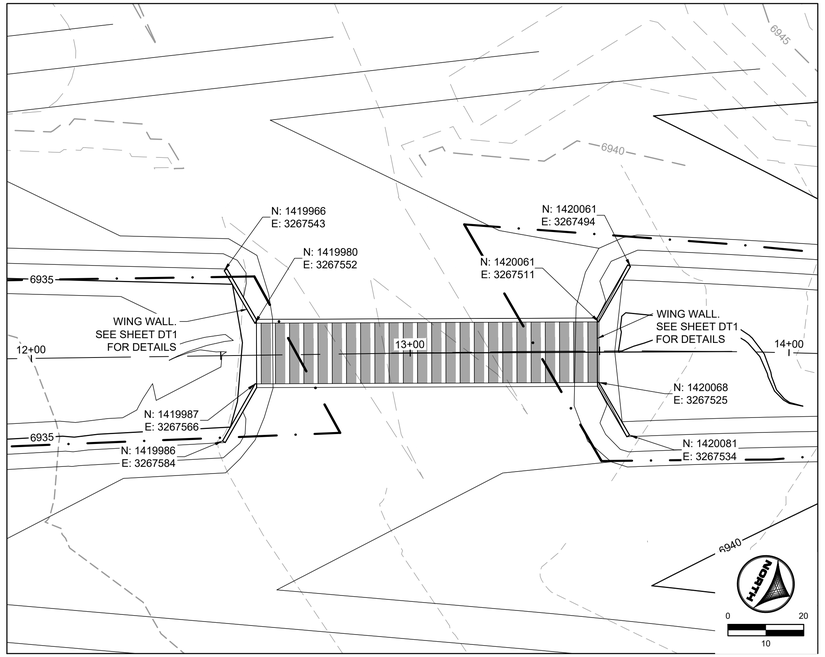
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

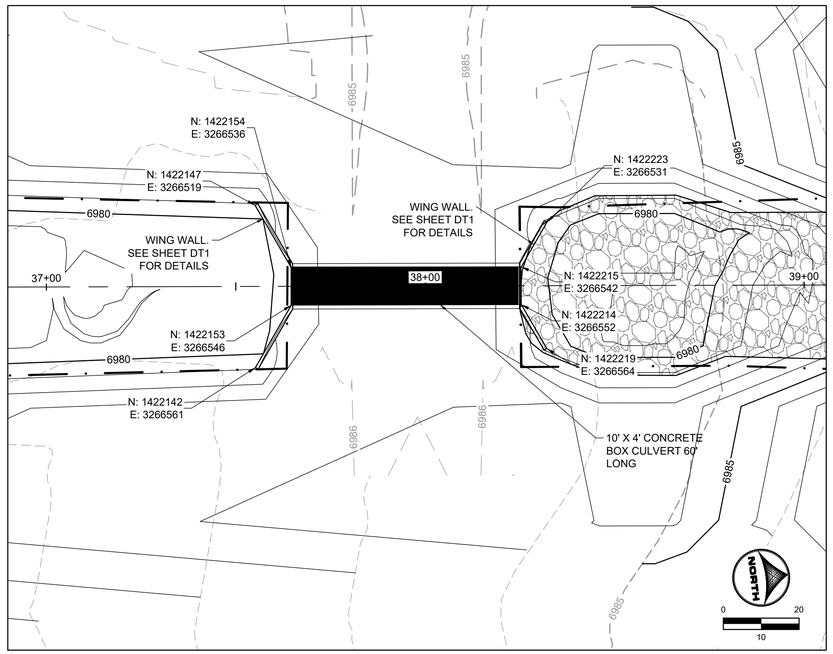
CONSTRUCTION DOCUMENTS
DRAINAGE TRIBUTARY 2 PLAN AND PROFILE

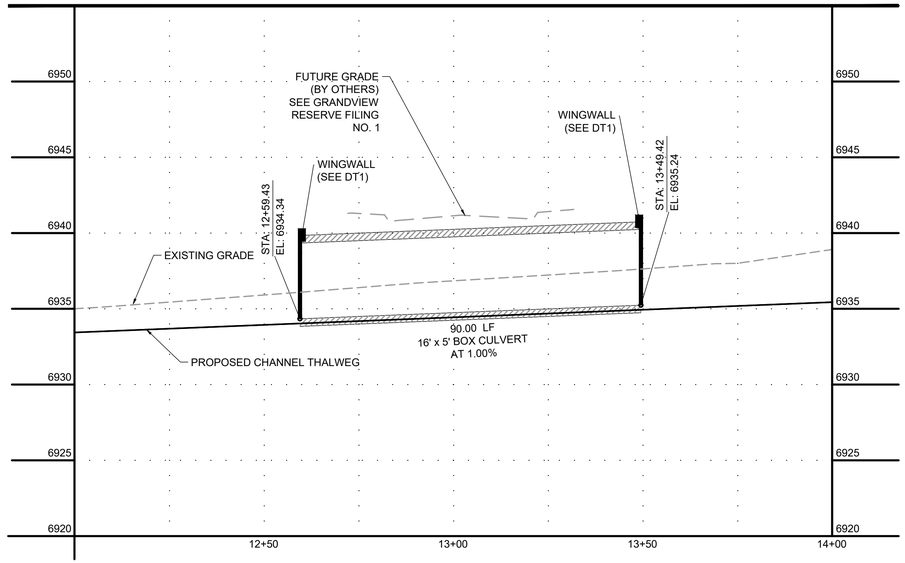
SHEET PP4

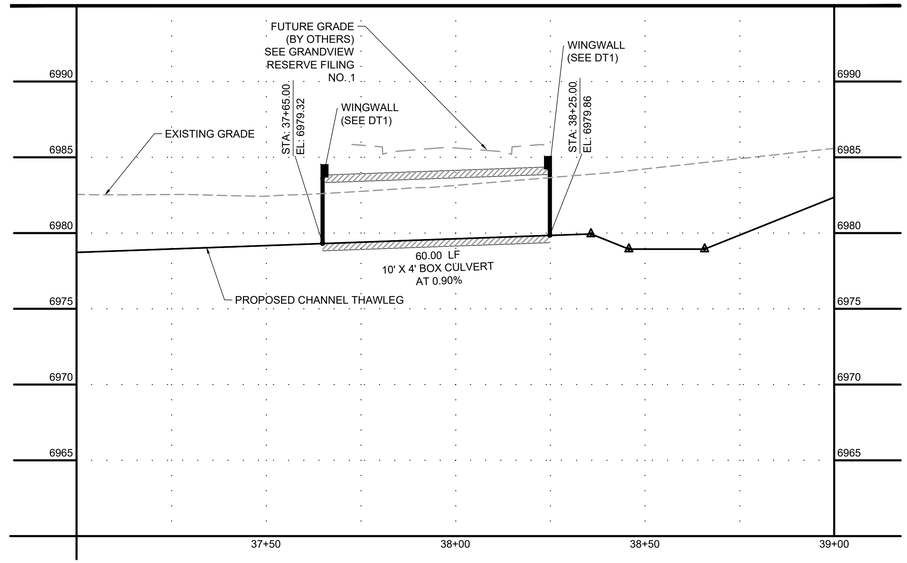
18

HR GREEN X-refs: xg-1-db01; P&P KEY; 01_XC_RIPRAP; HRG1X_EBase; 01-XC_Wingwalls

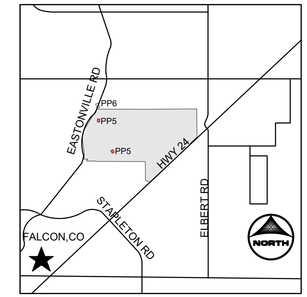








HORIZONTAL 0 20 10 VERTICAL 0 5 2.5



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COLORADO LICENSED GREGORY L. PAYNE 37081 PROFESSIONAL ENGINEER

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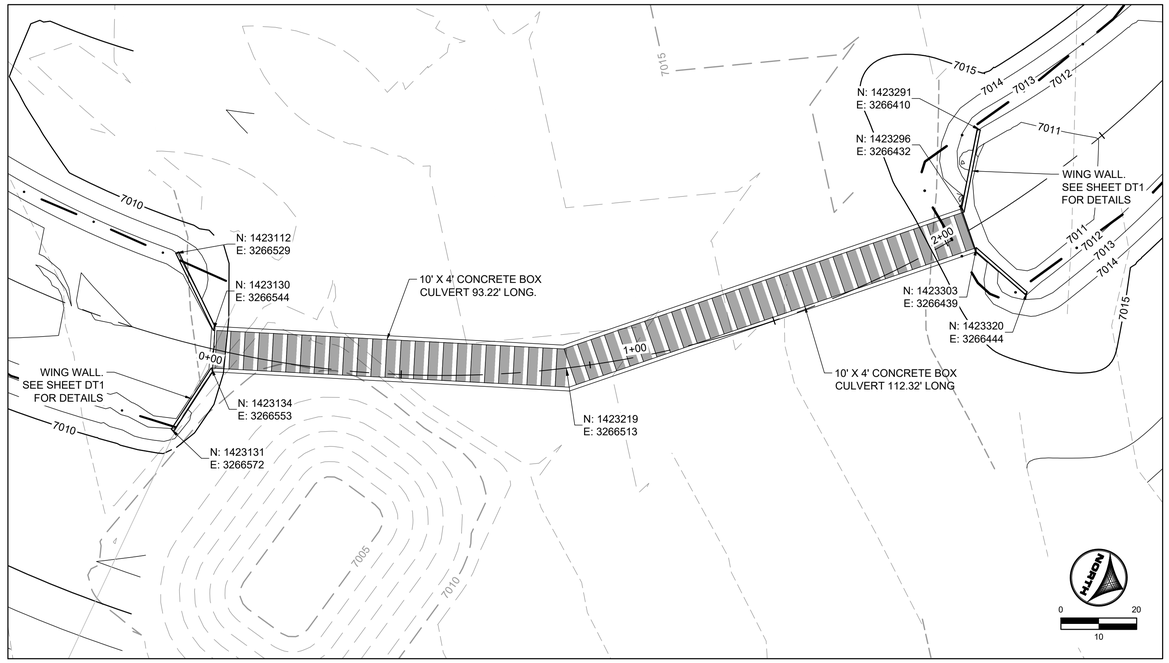
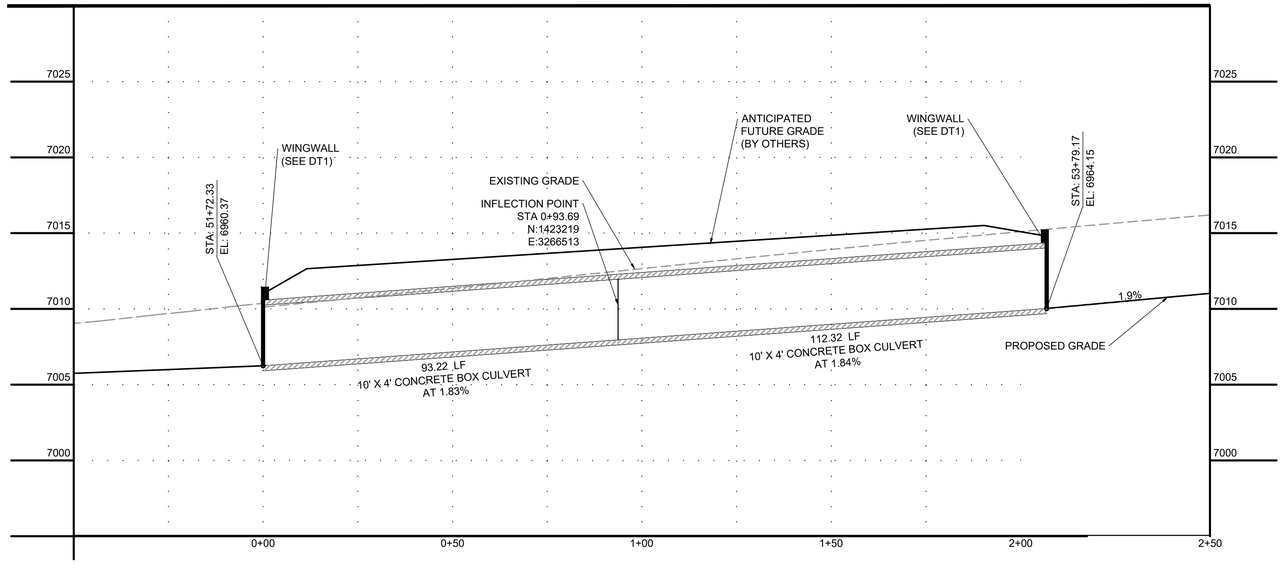
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

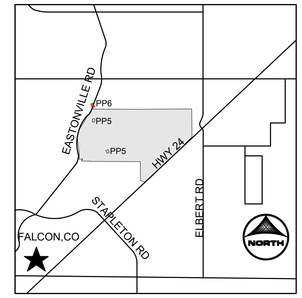
CONSTRUCTION DOCUMENTS
DRAINAGE CULVERTS PLAN AND PROFILE

SHEET PP5 19

HR GREEN Xrefs: xgr-1-dh01; P&P KEY: 01_XC_RIPRAP; HRG1X_EBase; 01-XC_Wingwalls







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COLORADO LICENSED GREGORY L. PAYNE 37081 PROFESSIONAL ENGINEER 7-25-22

HORIZONTAL 0 20 10 VERTICAL 0 5 2.5

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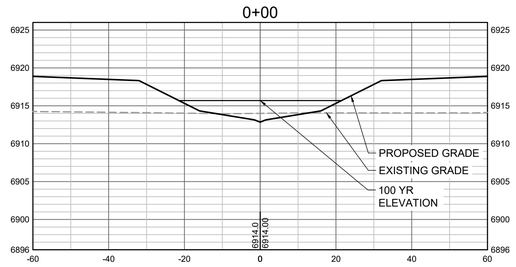
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

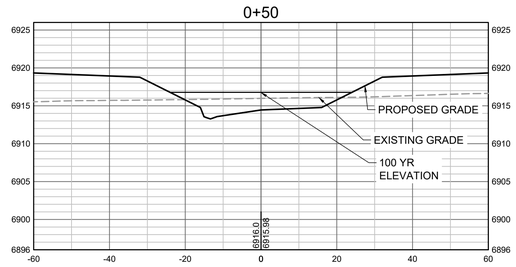
CONSTRUCTION DOCUMENTS
DRAINAGE CULVERT PLAN AND PROFILE

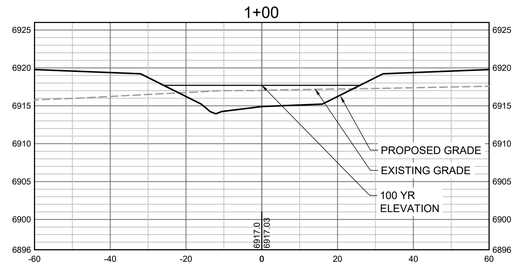
SHEET PP6

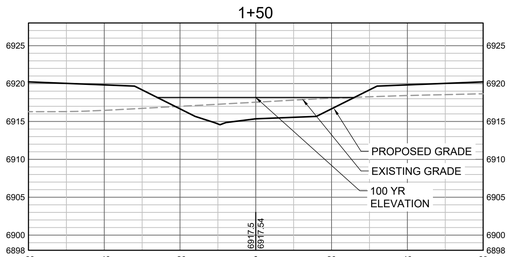
20

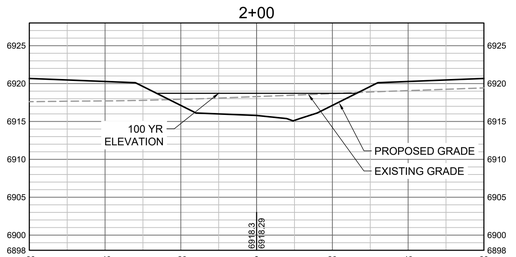
HR GREEN Xrefs: xgh-1-db01 P&P KEY 01_XC_RIPRAP, HRG1X_EBase, 01-XC_Wingwalls

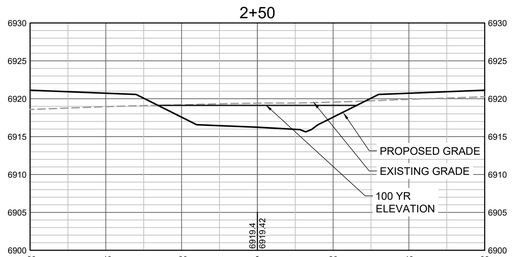


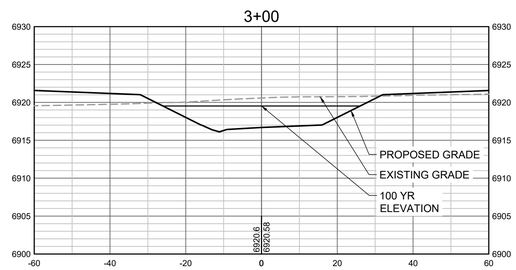


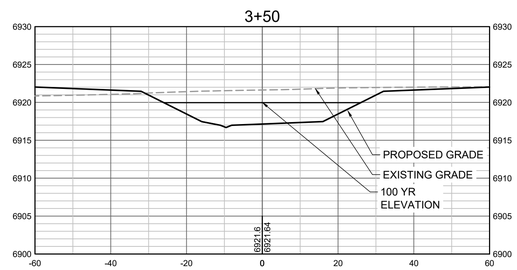


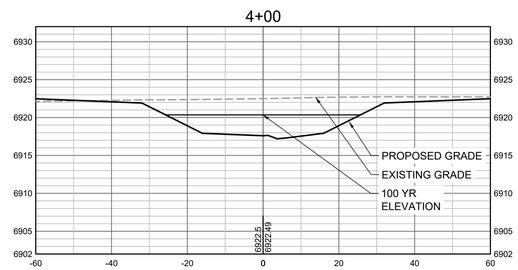












PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 20 10 VERTICAL 0 10 5

HR GREEN Xrefs: xgr-1-dh01

DRAWN BY: TBI JOB DATE: 7/22/2022
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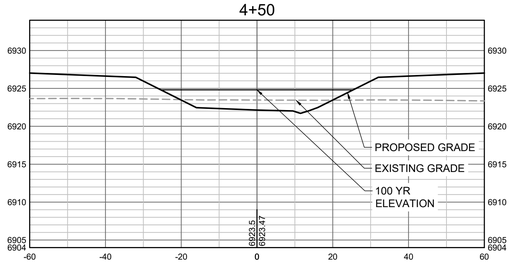
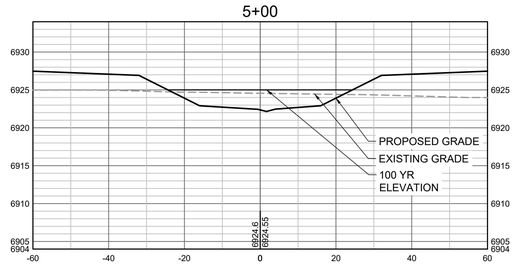
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

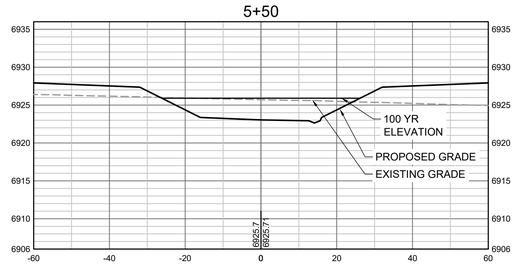
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

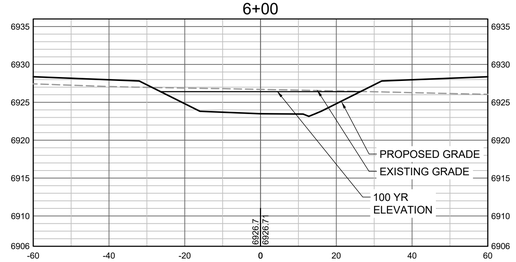
SHEET CS1

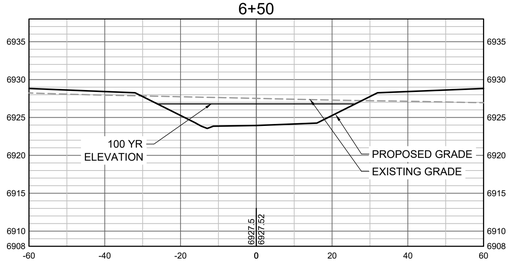
21

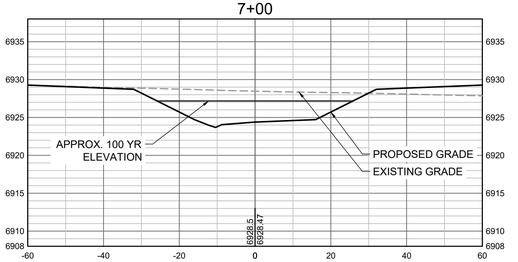


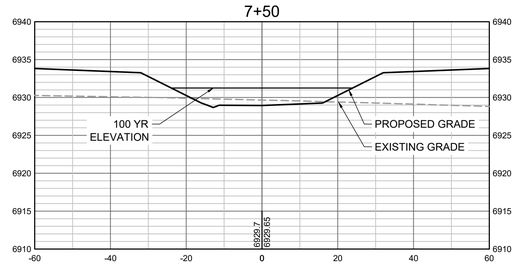


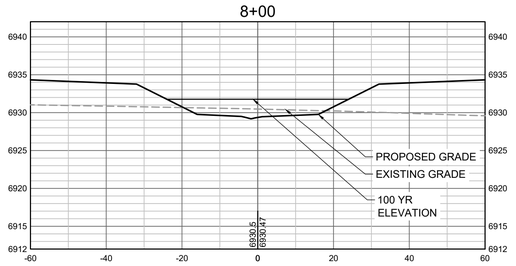


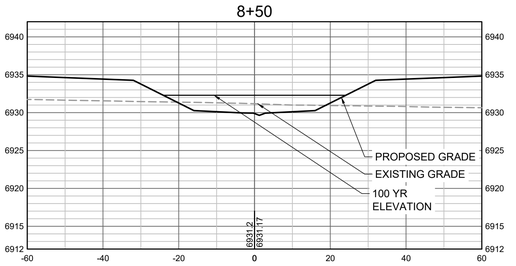












PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 20 10 VERTICAL 0 10 5

HR GREEN Xrefs: xgl-t-dh01

DRAWN BY:	TBI	JOB DATE:	7/22/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS		

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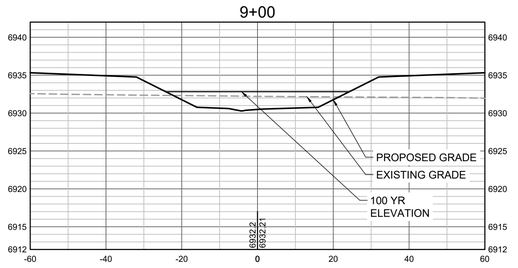
FAX: 844.273.1057

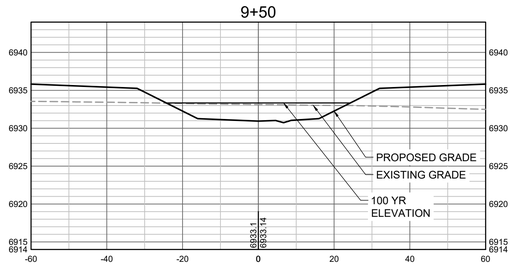
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

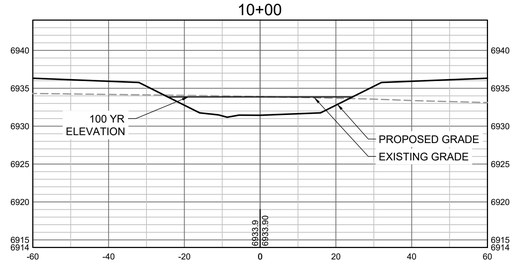
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

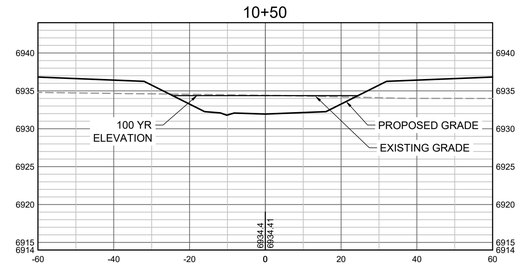
SHEET CS2

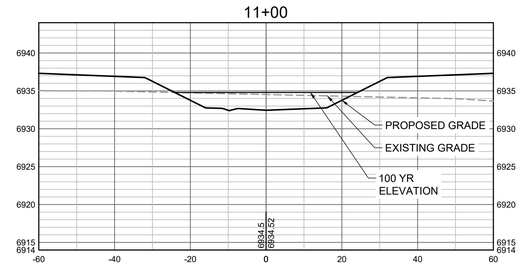
22

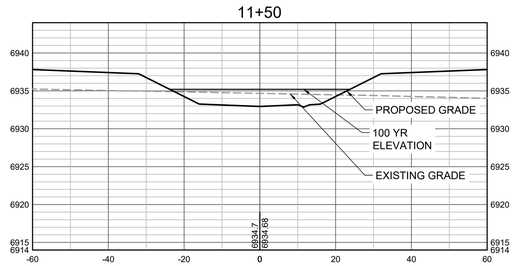


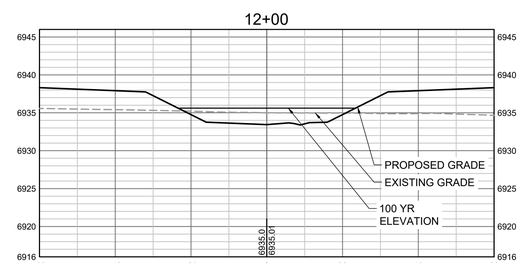


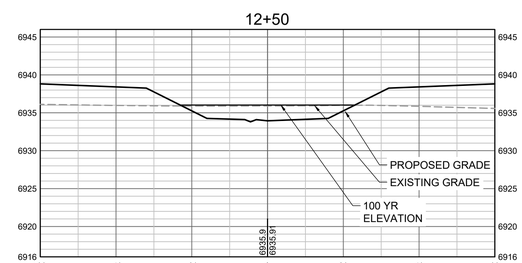


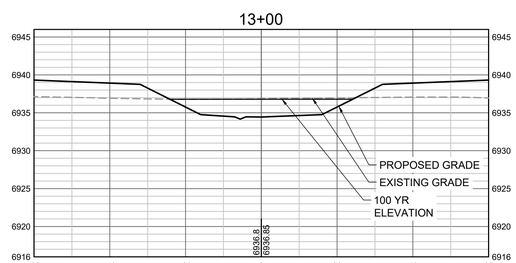












PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 20 10
VERTICAL 0 10 5

DRAWN BY:	TBI	JOB DATE:	7/22/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS		

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PHONE: 720.602.4999
FAX: 844.273.1057

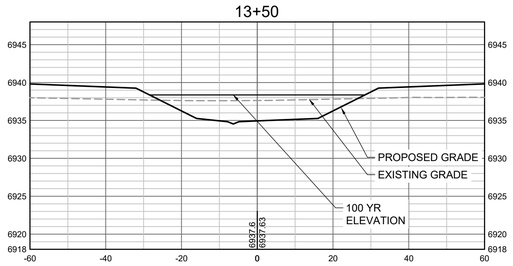
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

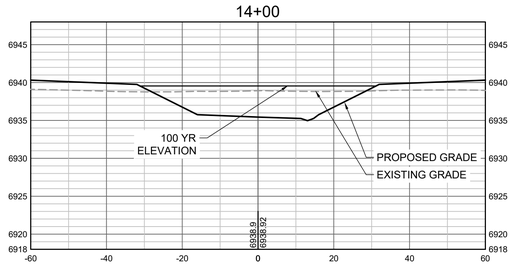
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

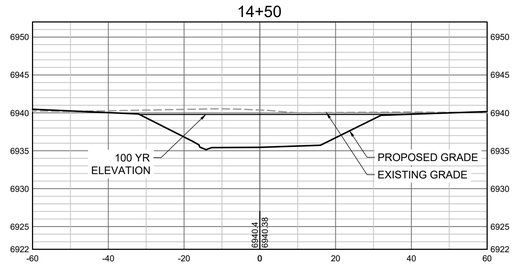
SHEET CS3

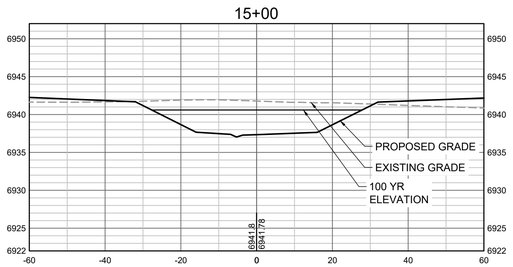
23

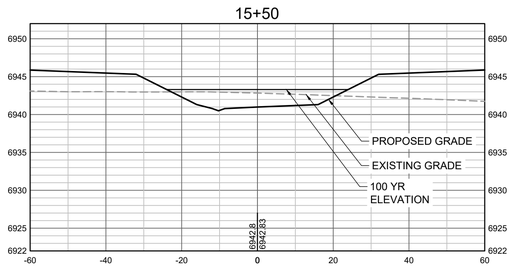
HR GREEN Xrefs: xgr-1.dwl01

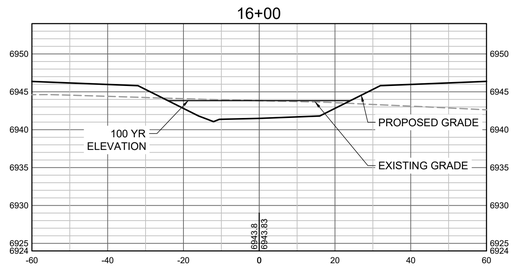


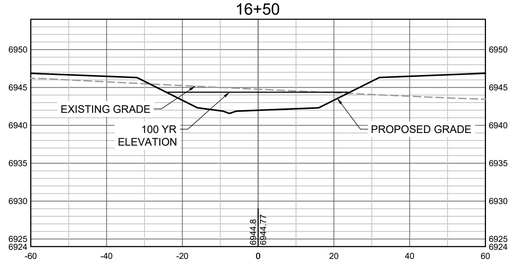


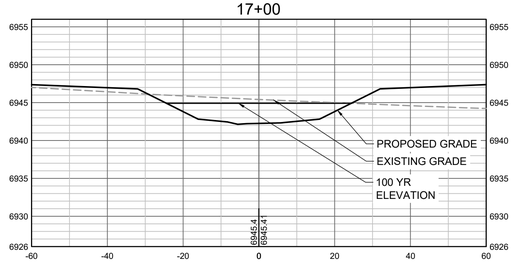


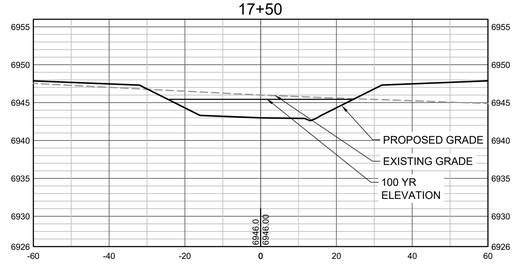












PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 20 10 VERTICAL 0 10 5

DRAWN BY: TBI JOB DATE: 7/22/2022
APPROVED: CMM JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS

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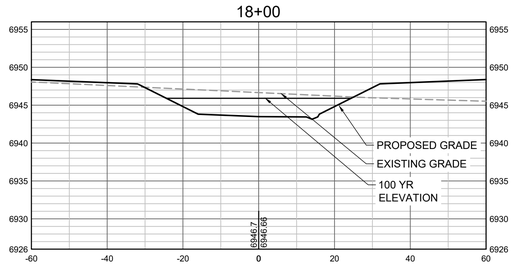
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

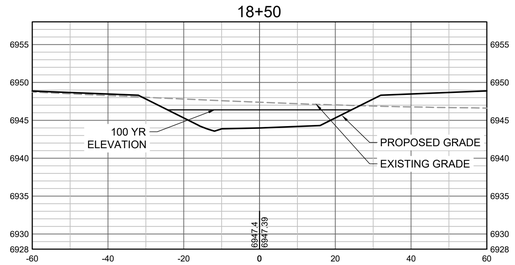
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

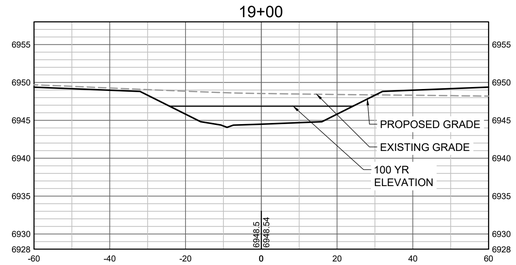
SHEET CS4

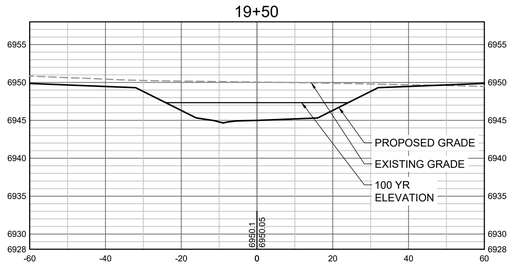
24

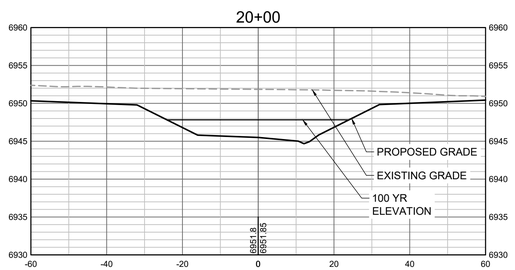
HR GREEN Xrefs: xgi-1-dh01

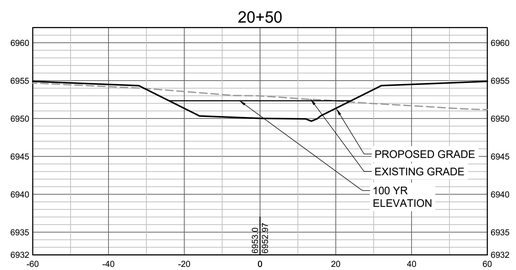


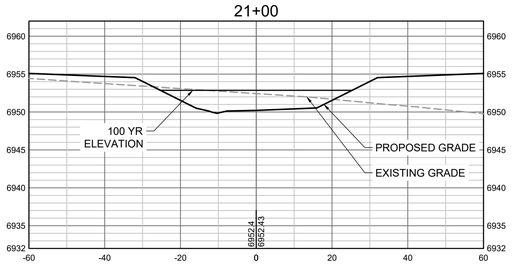


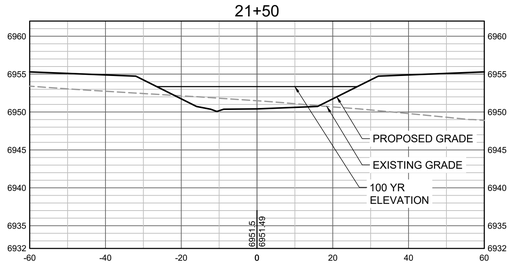


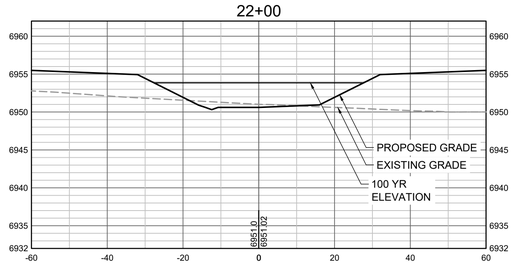












PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 20 10
VERTICAL 0 10 5

DRAWN BY: TBI
APPROVED: CMM
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS
JOB DATE: 7/22/2022
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5619 DTC PARKWAY SUITE 1150
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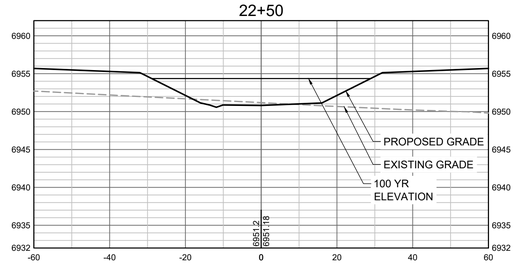
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

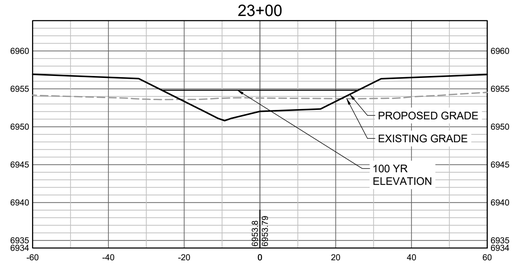
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

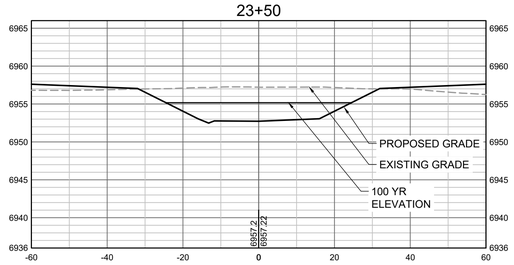
SHEET CS5

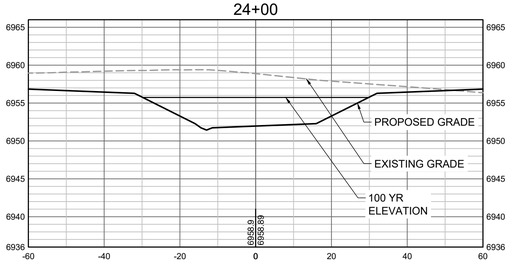
25

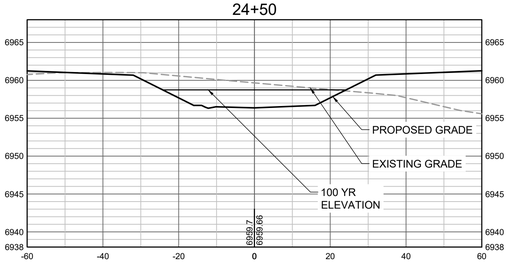
HR GREEN Xrefs: xgi-1-dh01

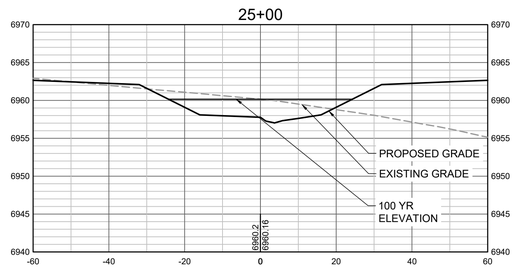


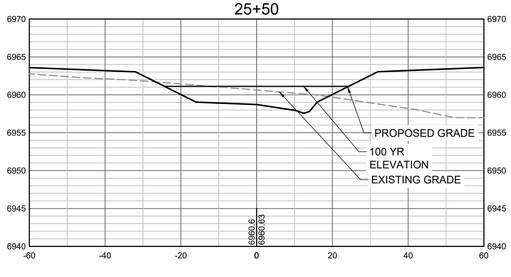


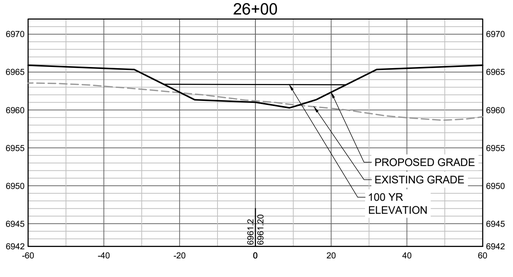


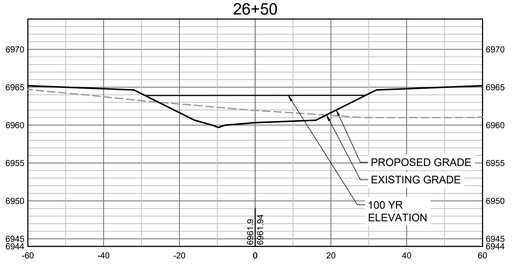












PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 20 10 VERTICAL 0 10 5

DRAWN BY:	TBI	JOB DATE:	7/22/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
CAD FILE:	J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS		

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FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

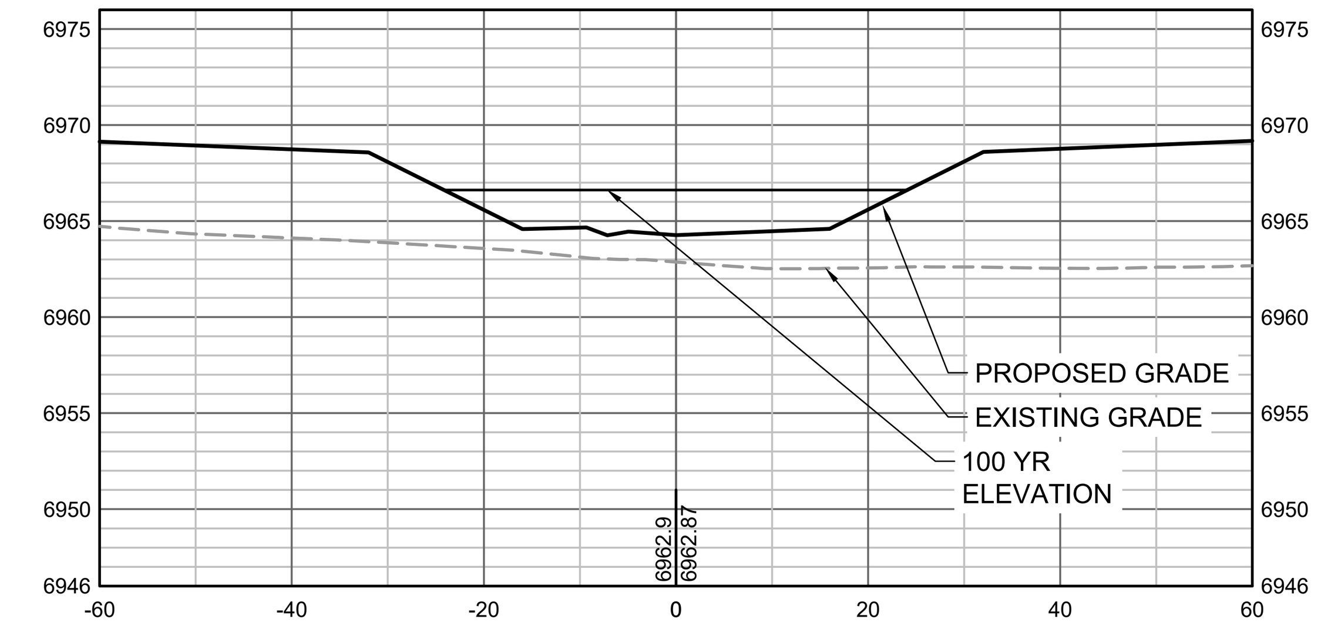
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

SHEET CS6

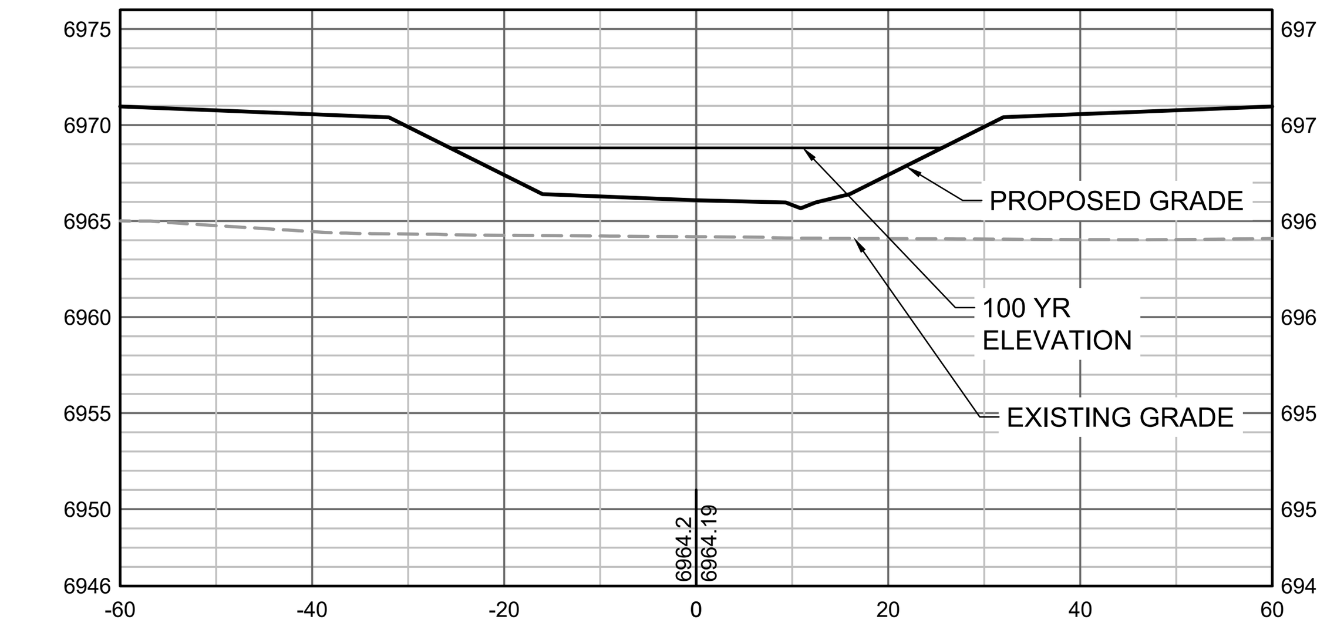
26

HR GREEN Xrefs: xgr-1-db01

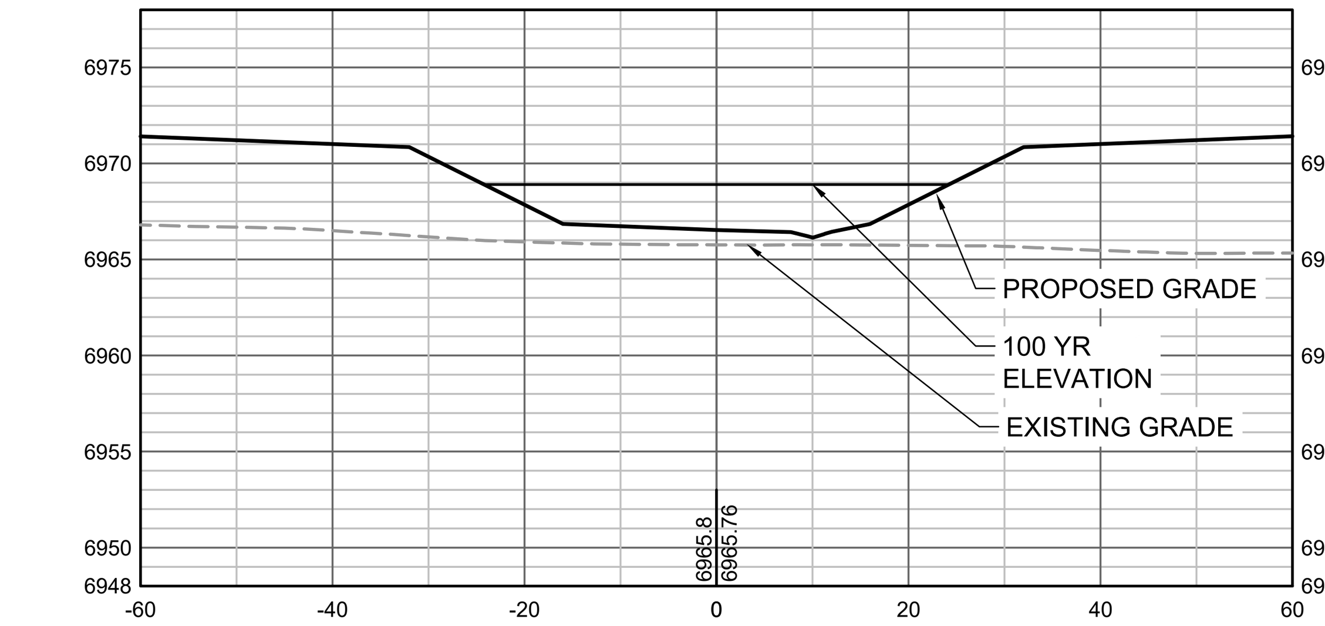
27+00



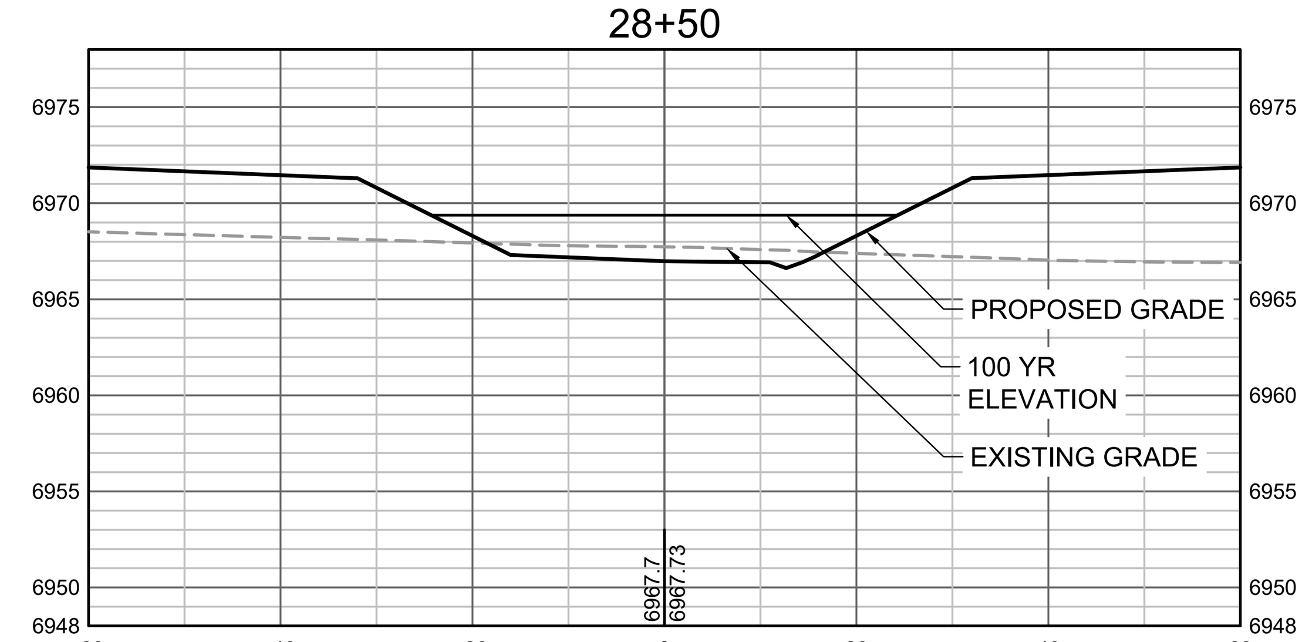
27+50



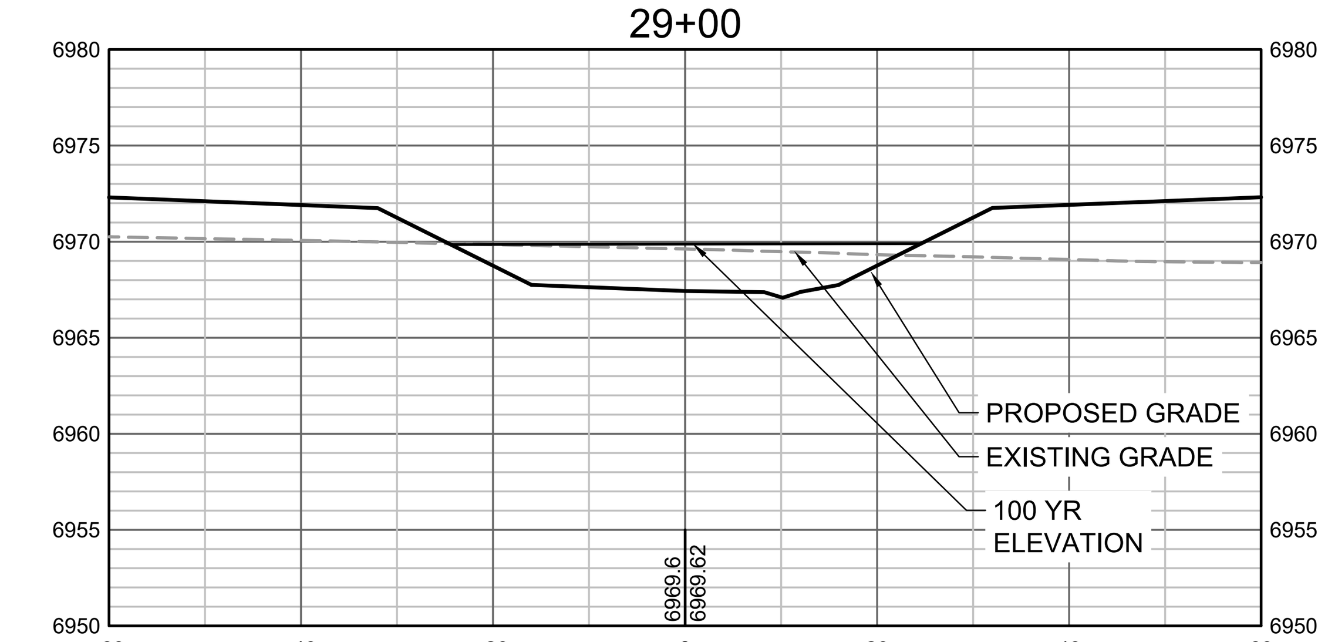
28+00



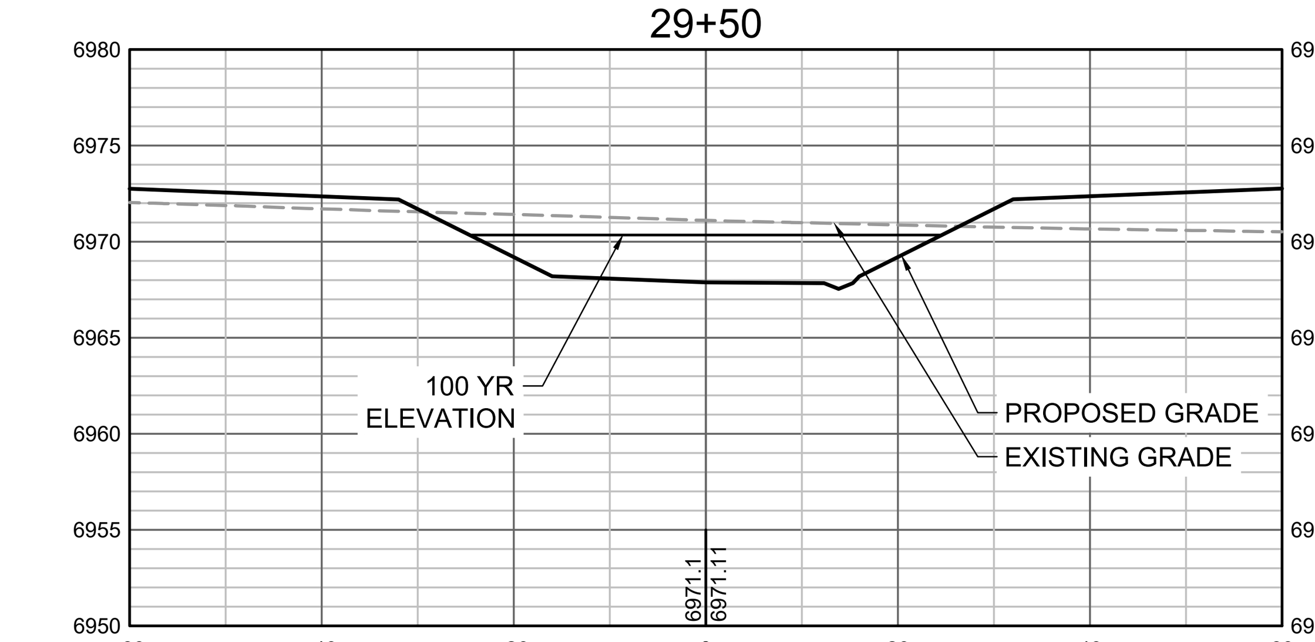
28+50



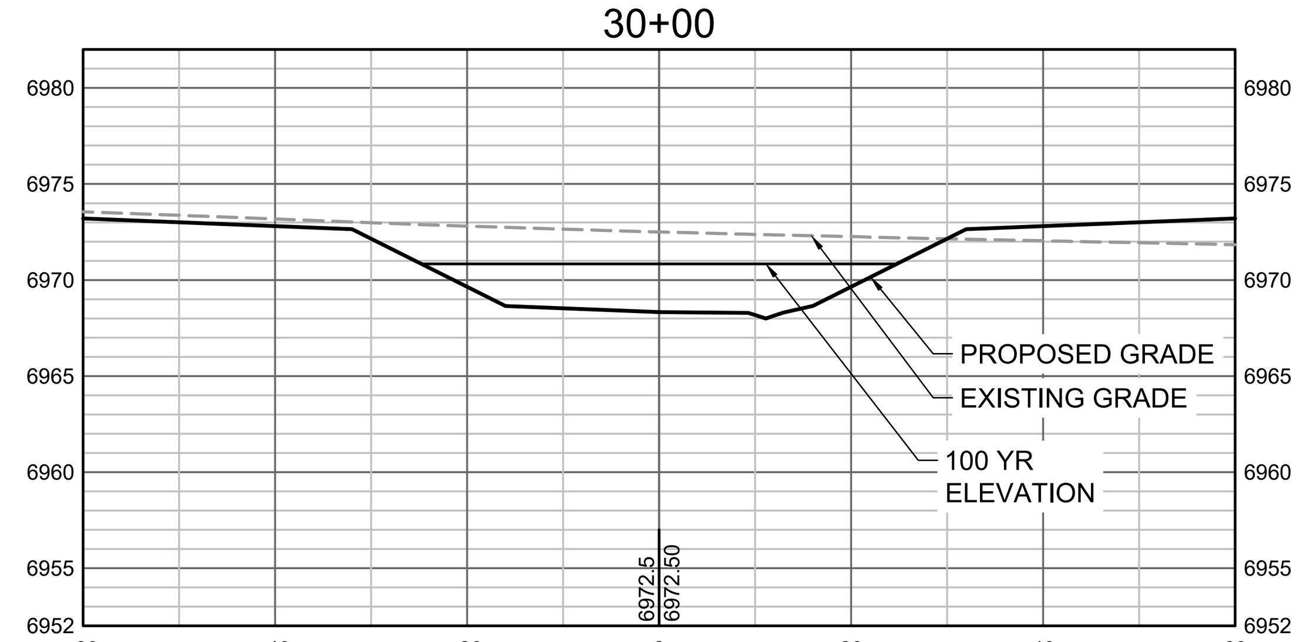
29+00



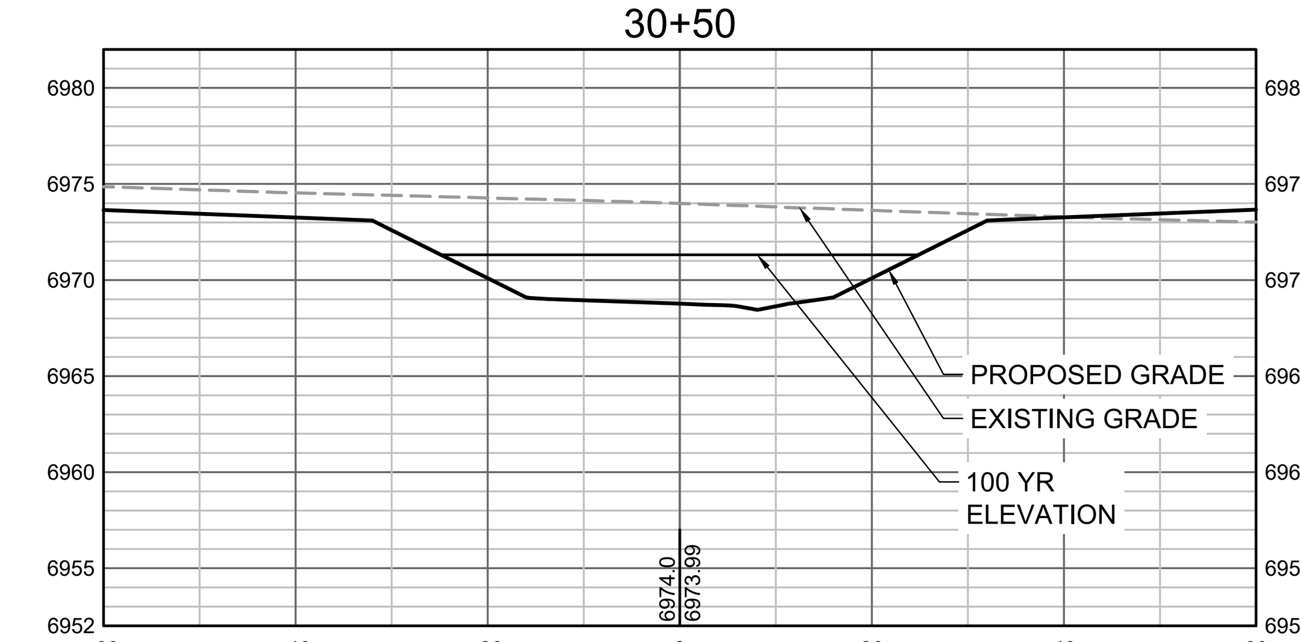
29+50



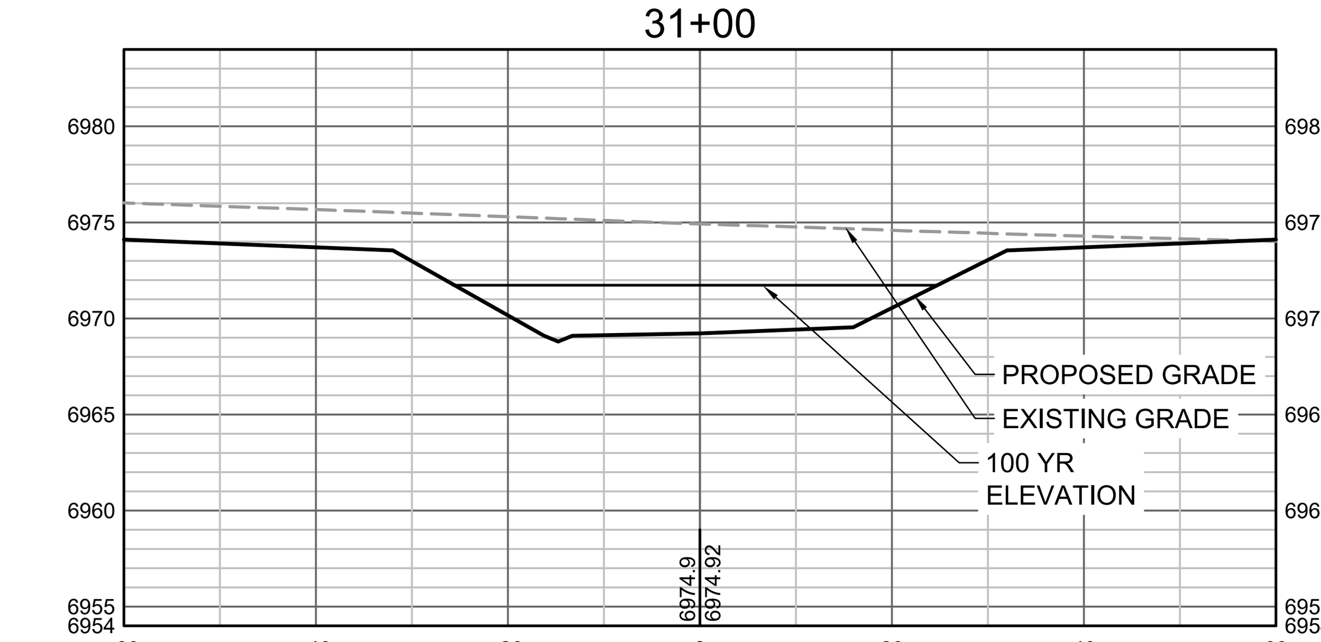
30+00



30+50



31+00



PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 10 20 — VERTICAL 0 5 10

DRAWN BY: TBI	JOB DATE: 7/22/2022	BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.	
APPROVED: CMM	JOB NUMBER: 201662.03		
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NO.	DATE	BY	REVISION DESCRIPTION

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FAX: 844.273.1057

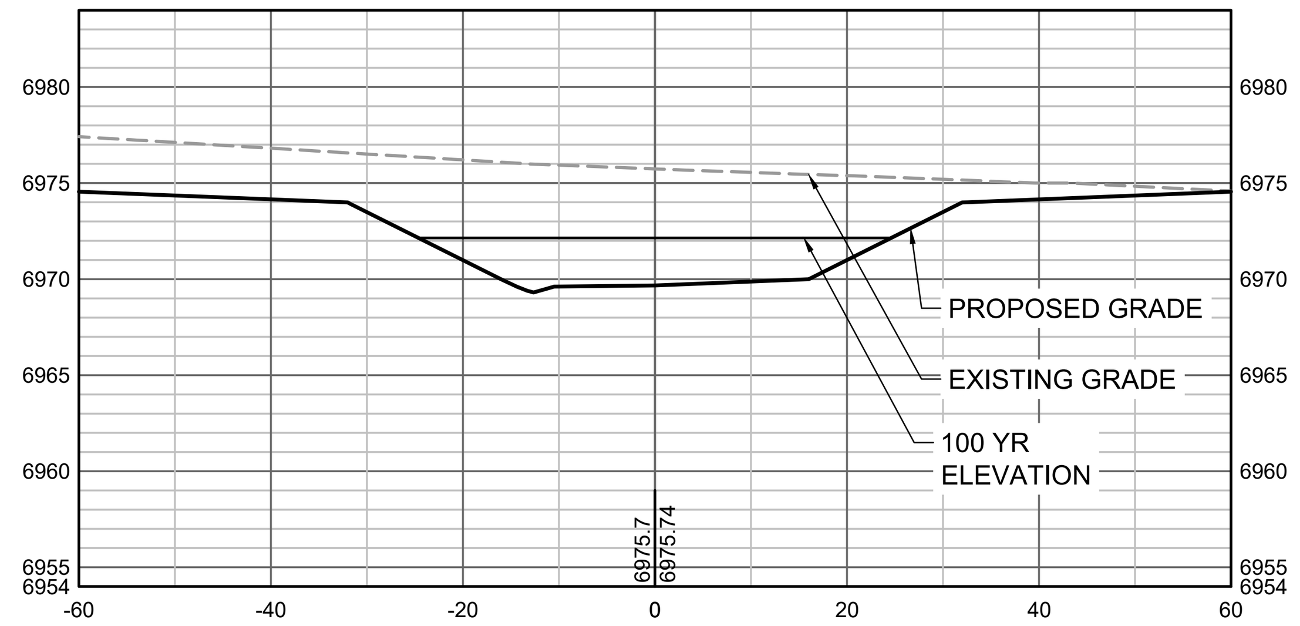
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

SHEET CS7 | 27

HR GREEN Xrefs: xgt-1-dr01

31+50



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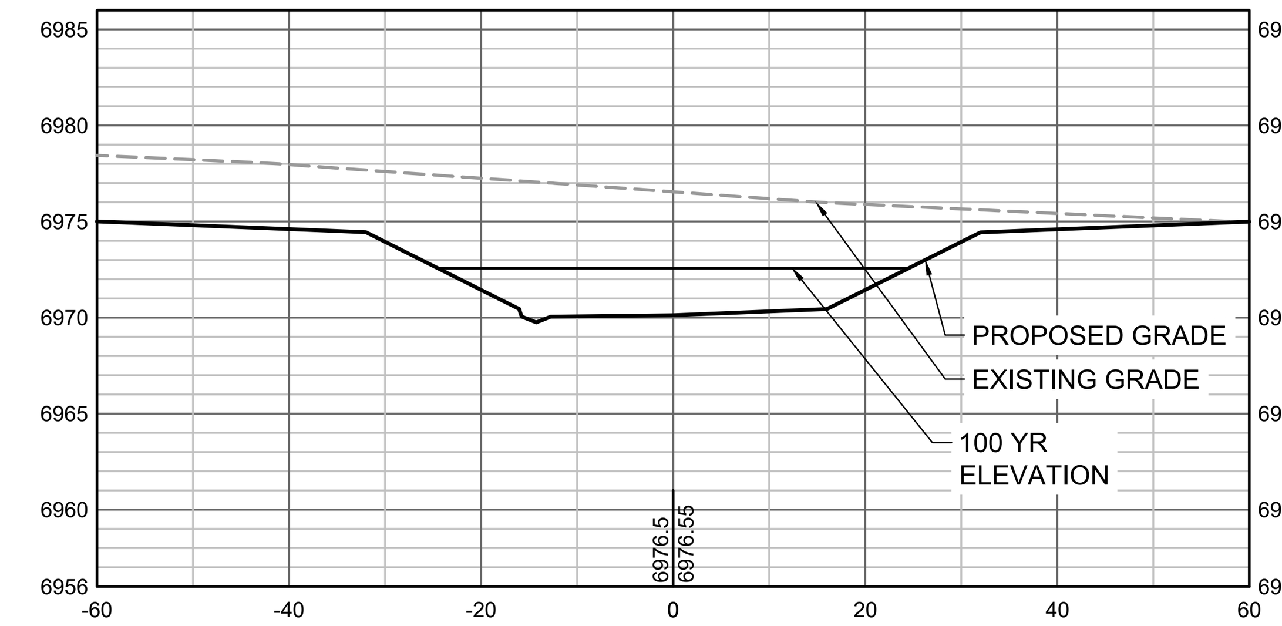

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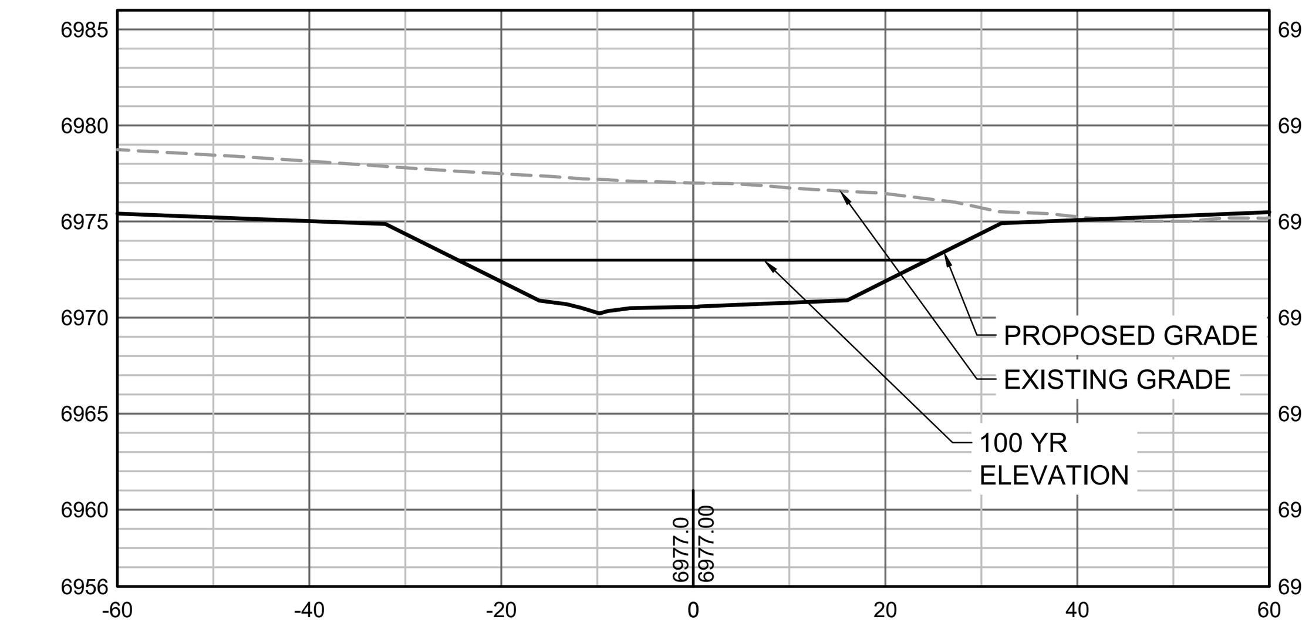

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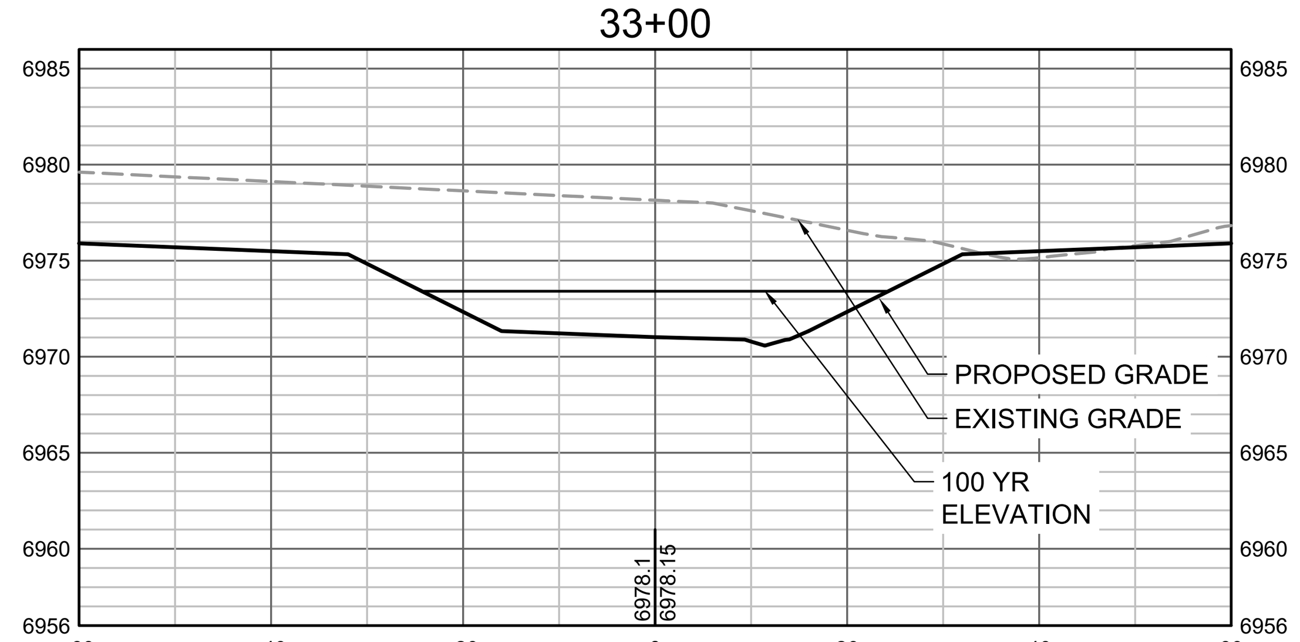

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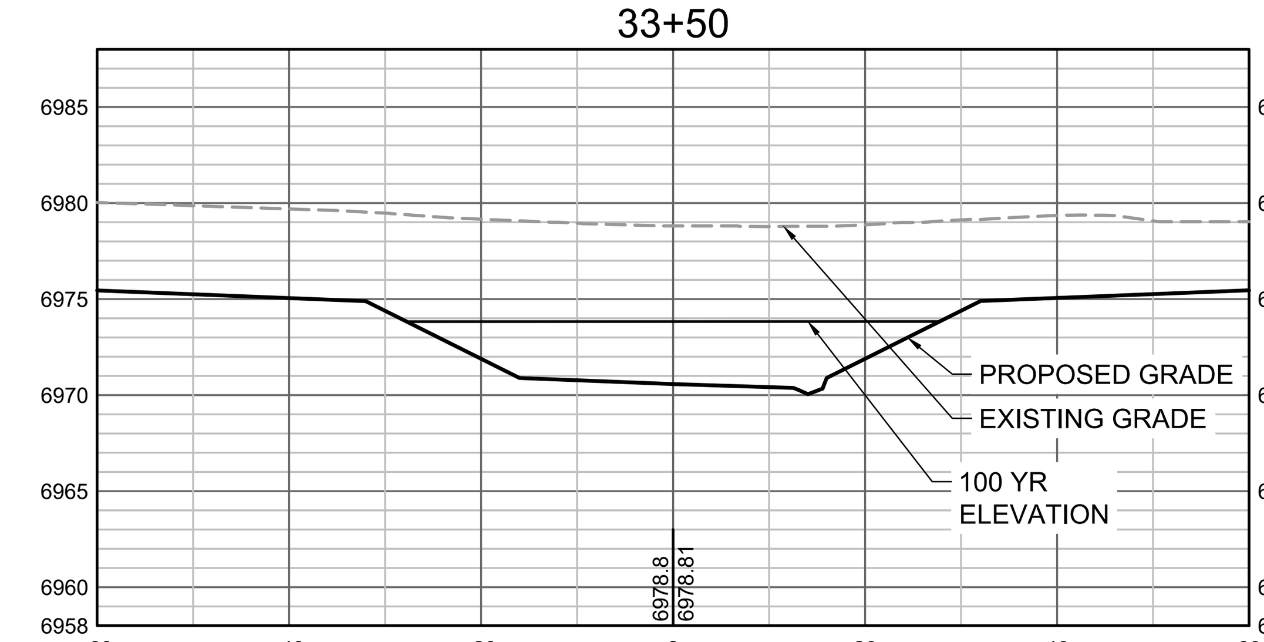

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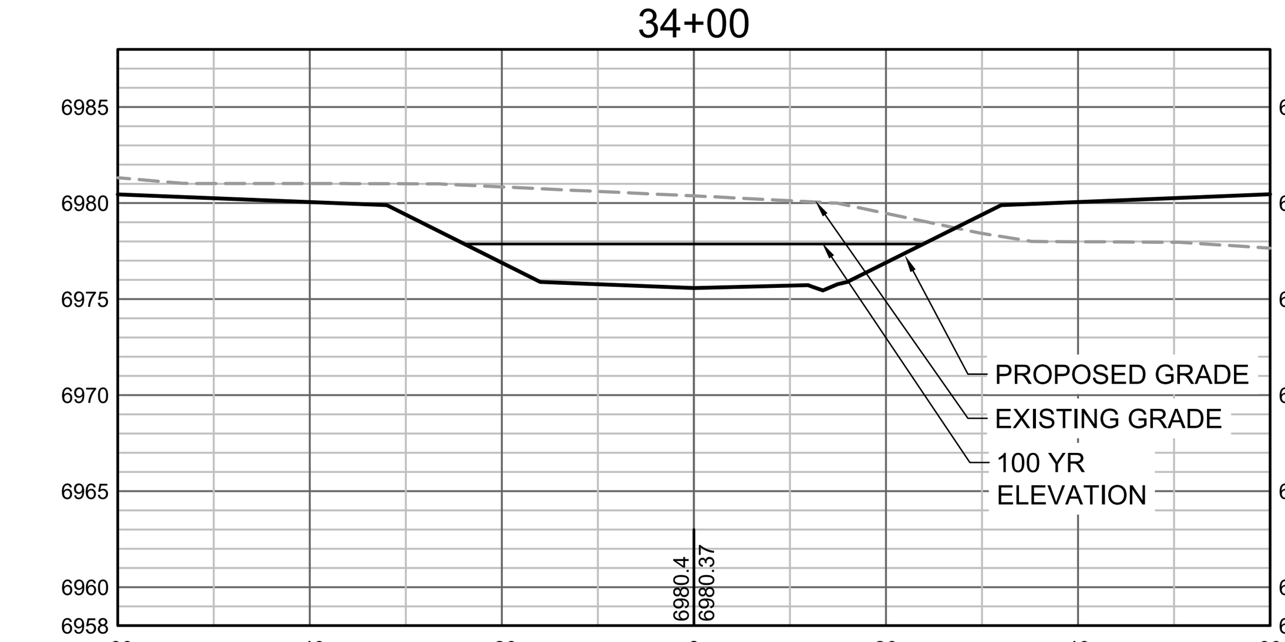

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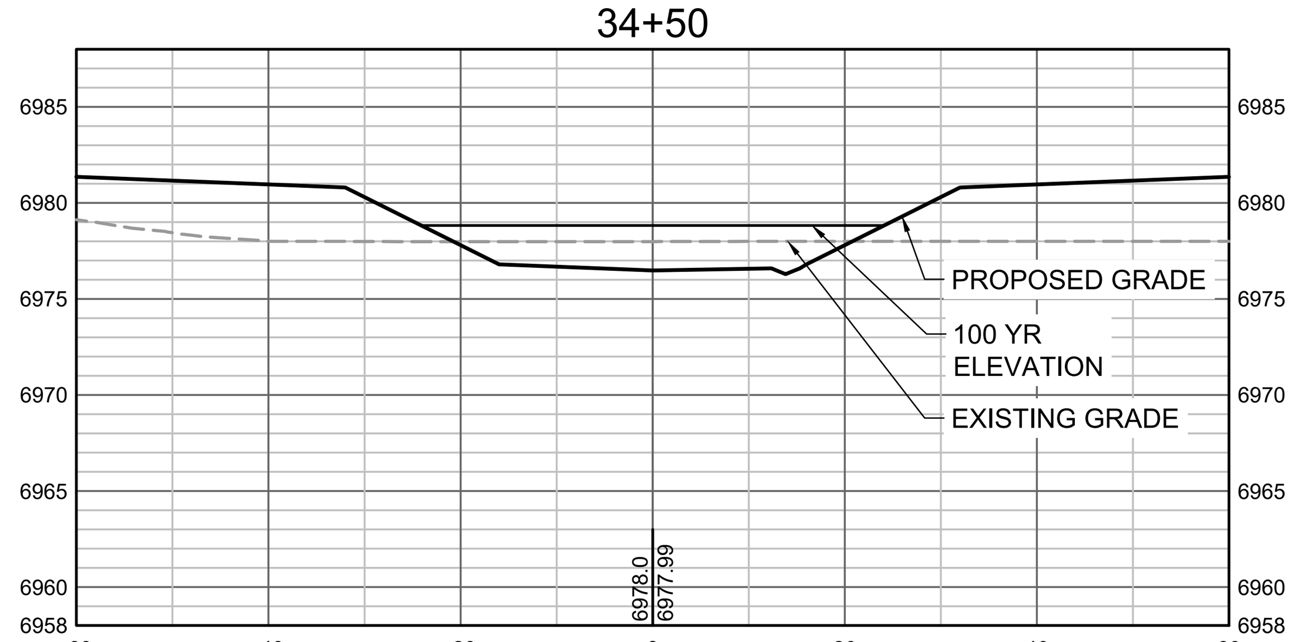

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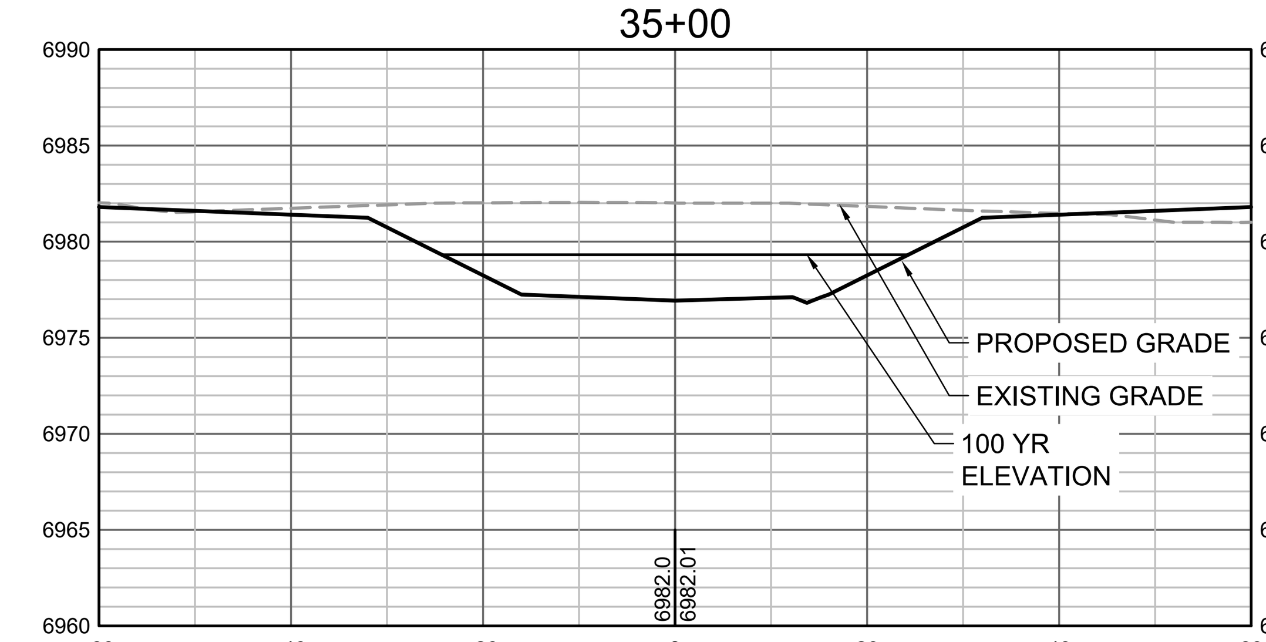

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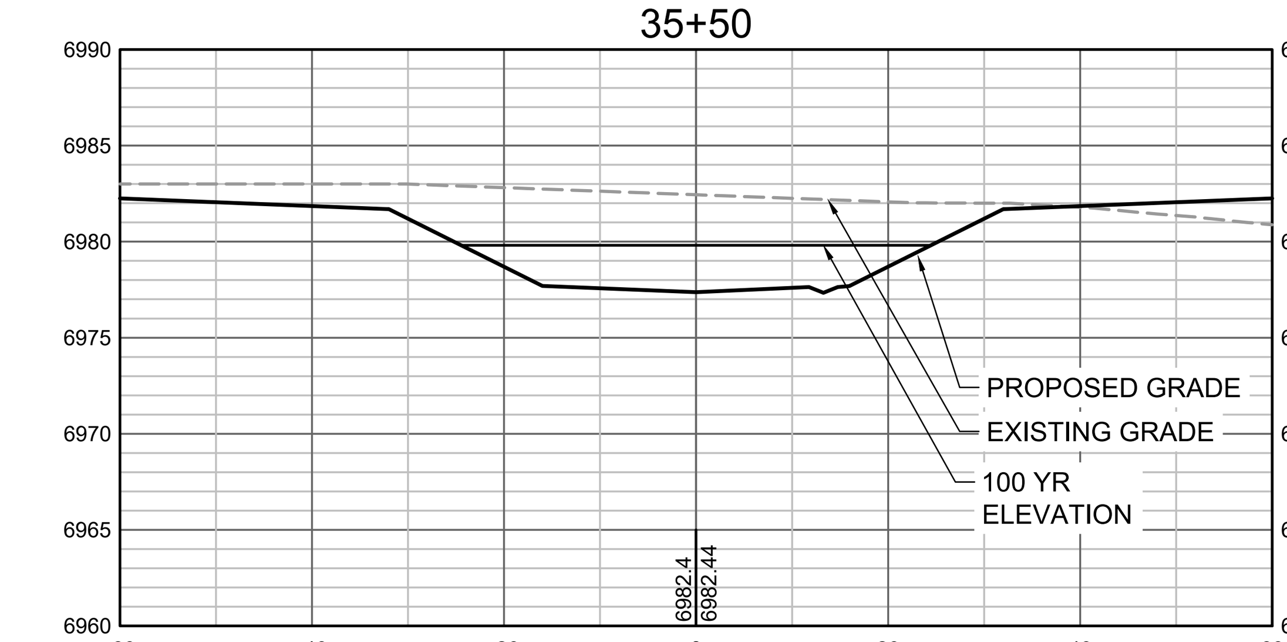

PROPOSED GRADES TO TIE INTO GRANDVIEW RESERVE FILING 1. REFER TO THE GRANDVIEW RESERVE FILING 1 PLAN SET FOR CONTINUATION OF GRADING THAT IS BEING TIED INTO OUTSIDE OF CHANNEL GRADING LIMITS.

HORIZONTAL 0 10 20

VERTICAL 0 5 10

DRAWN BY: TBI	JOB DATE: 7/22/2022	BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1"	
APPROVED: CMM	JOB NUMBER: 201662.03	IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.	
CAD DATE: 7/25/2022			
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS			

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GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

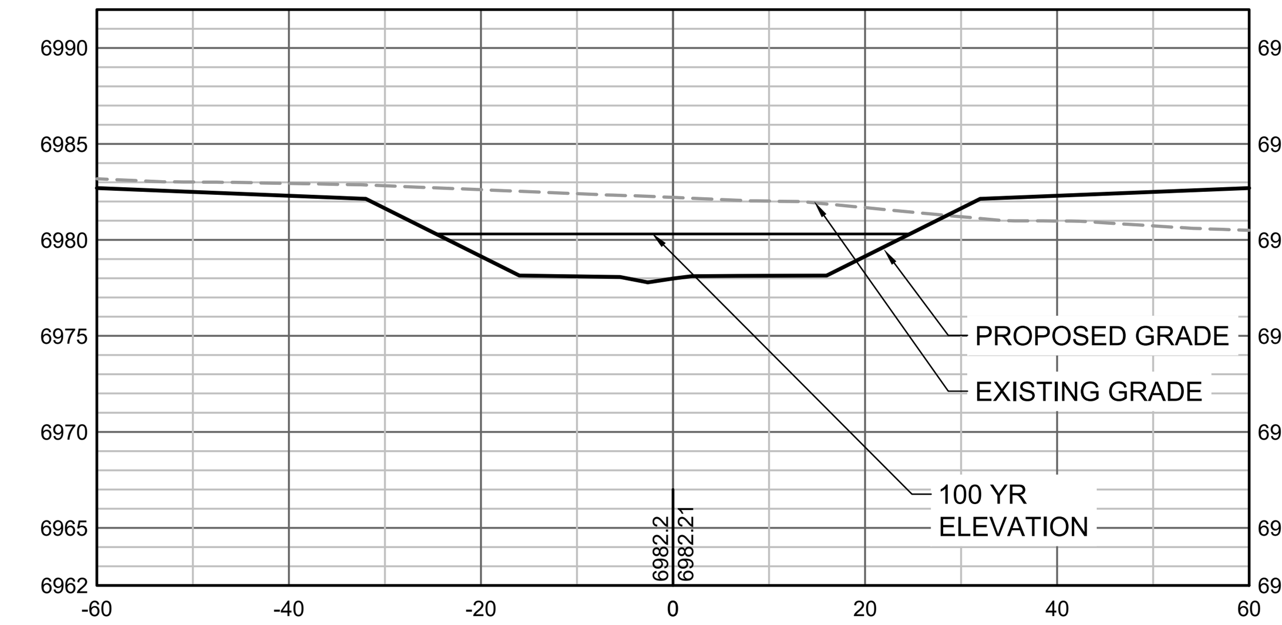
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

SHEET CS8

28

HR GREEN Xrefs: xgt-1-dh01

36+00



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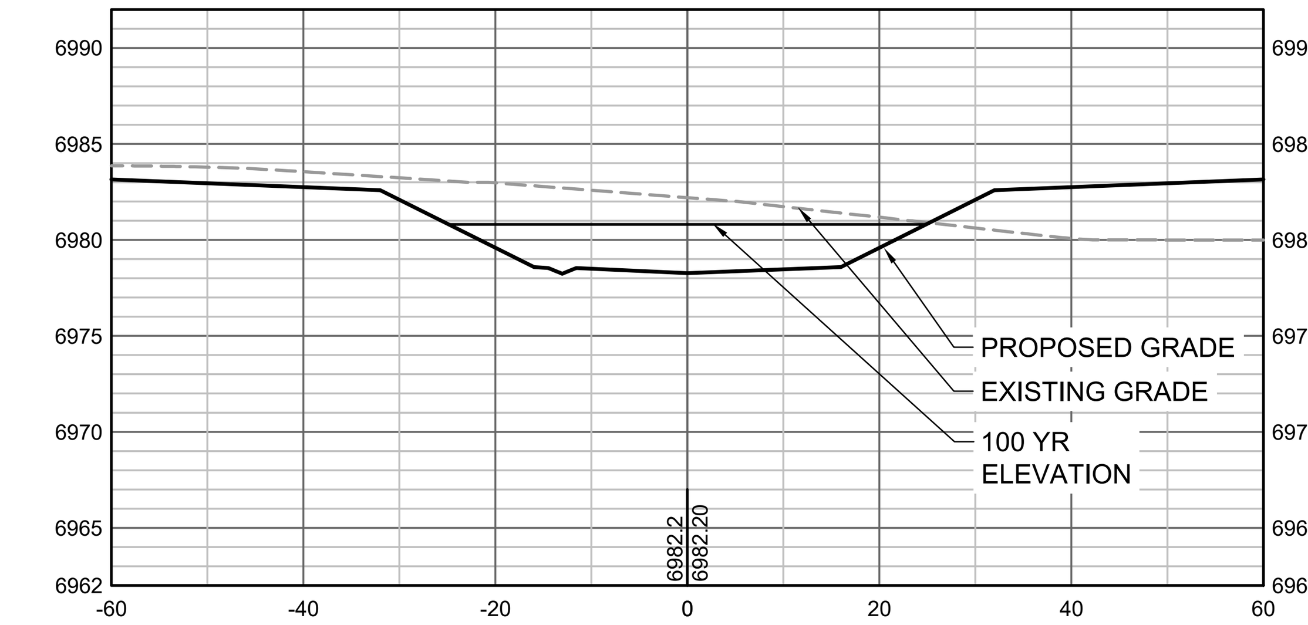

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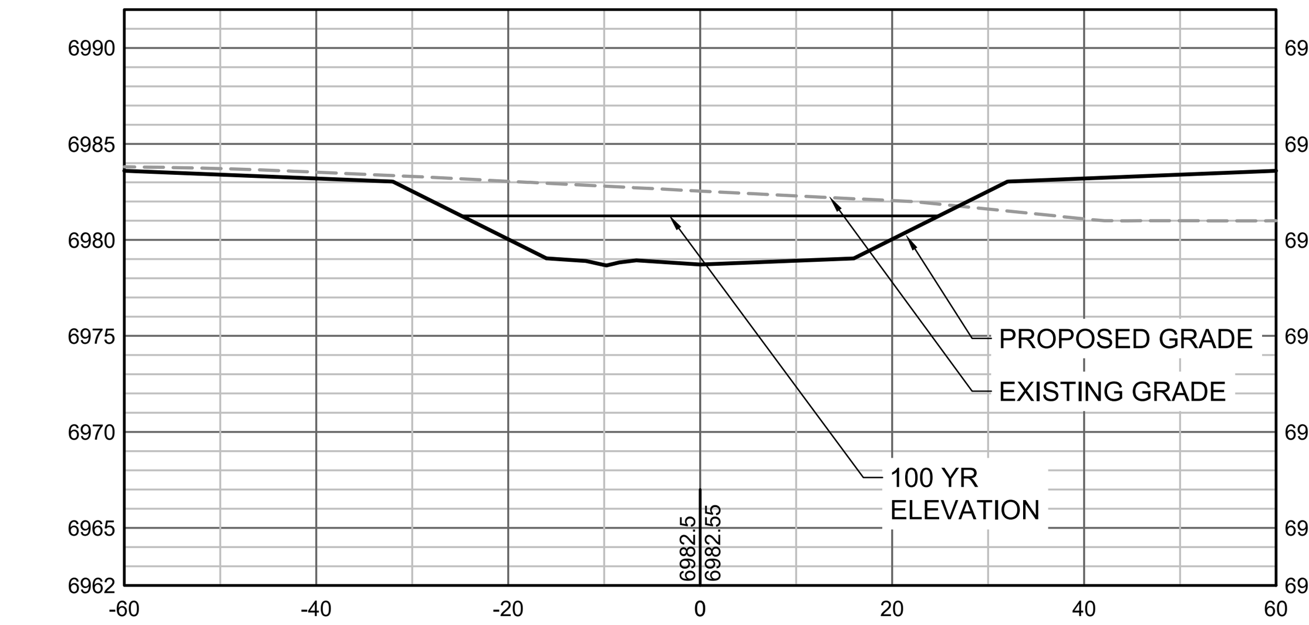

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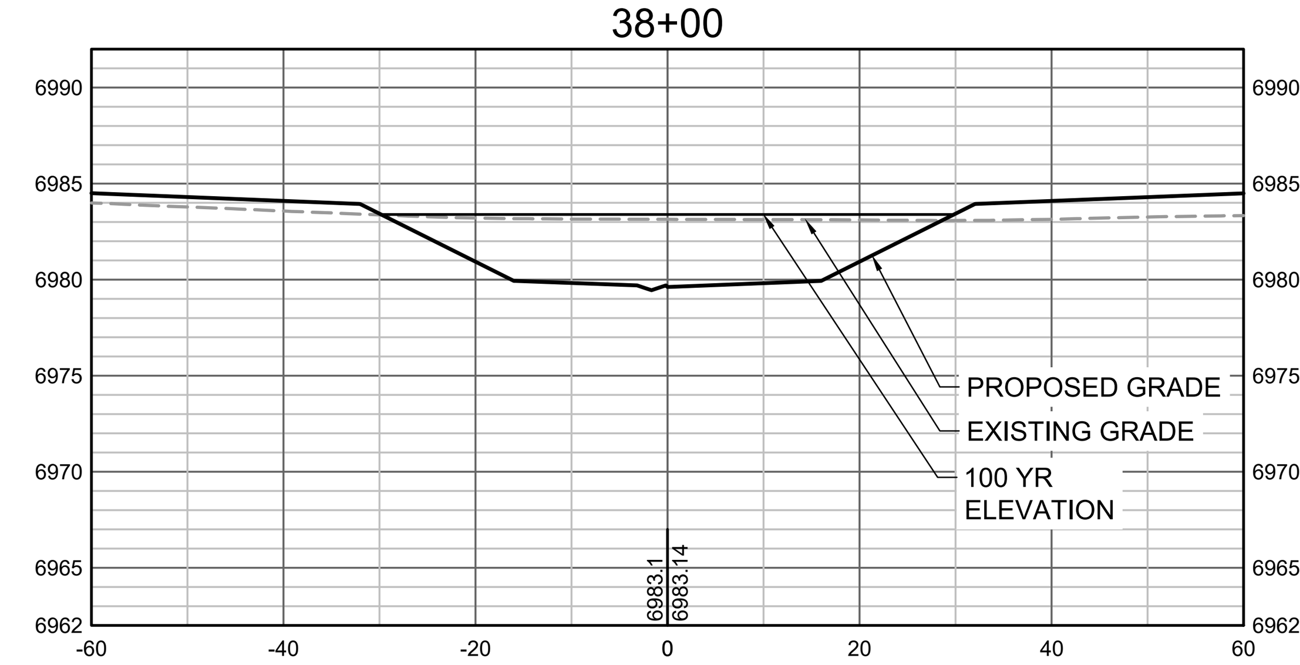

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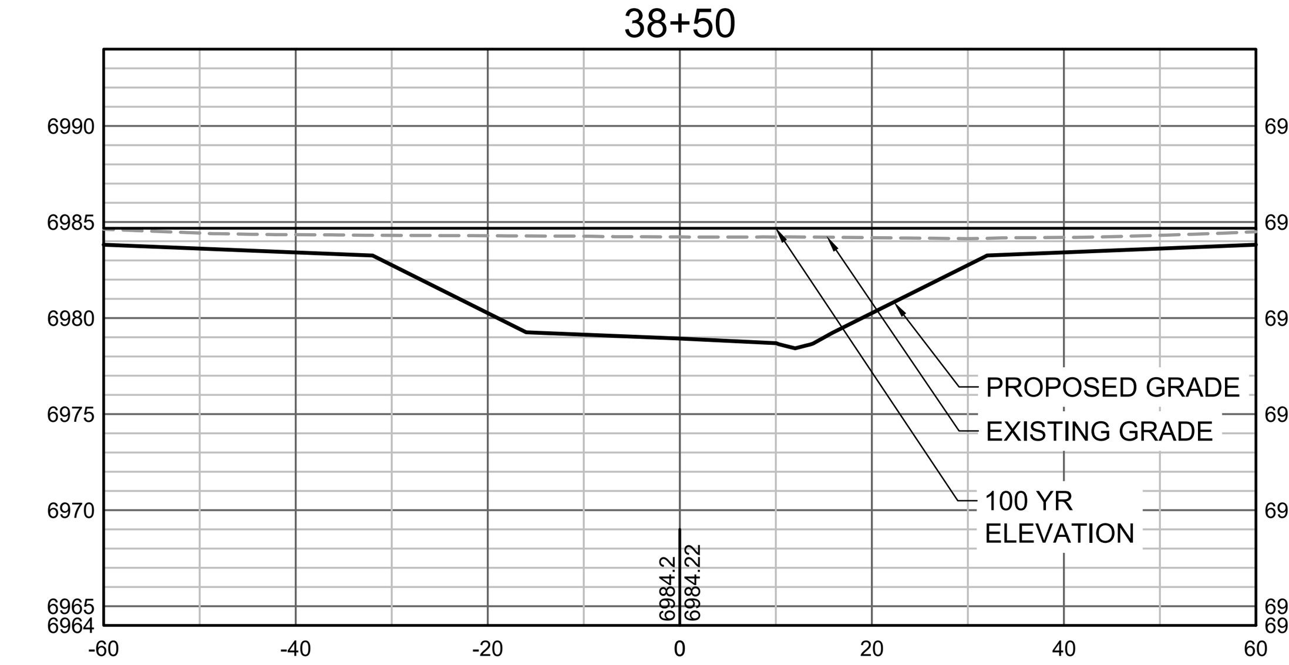

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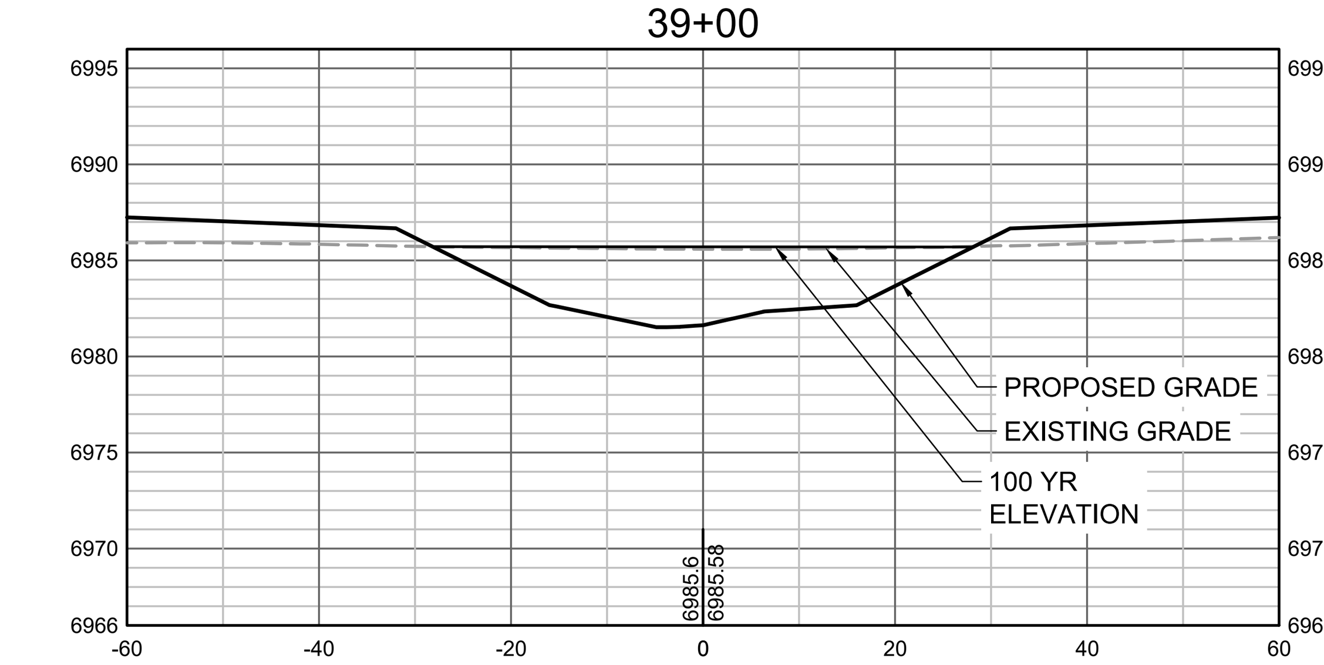

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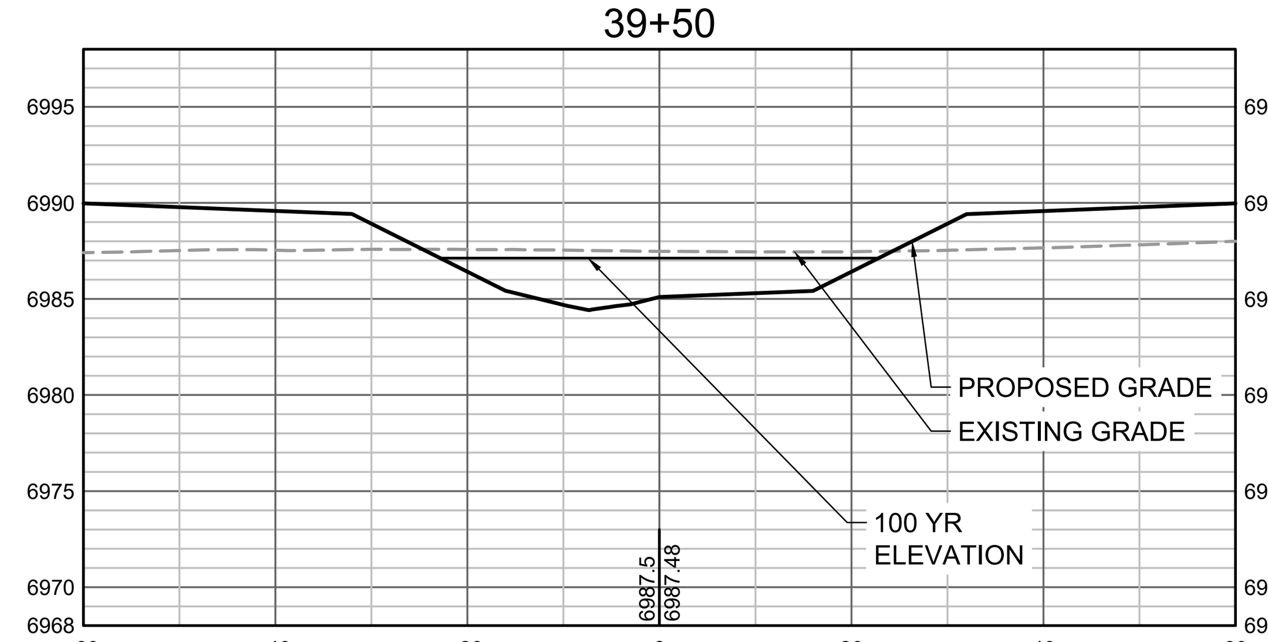

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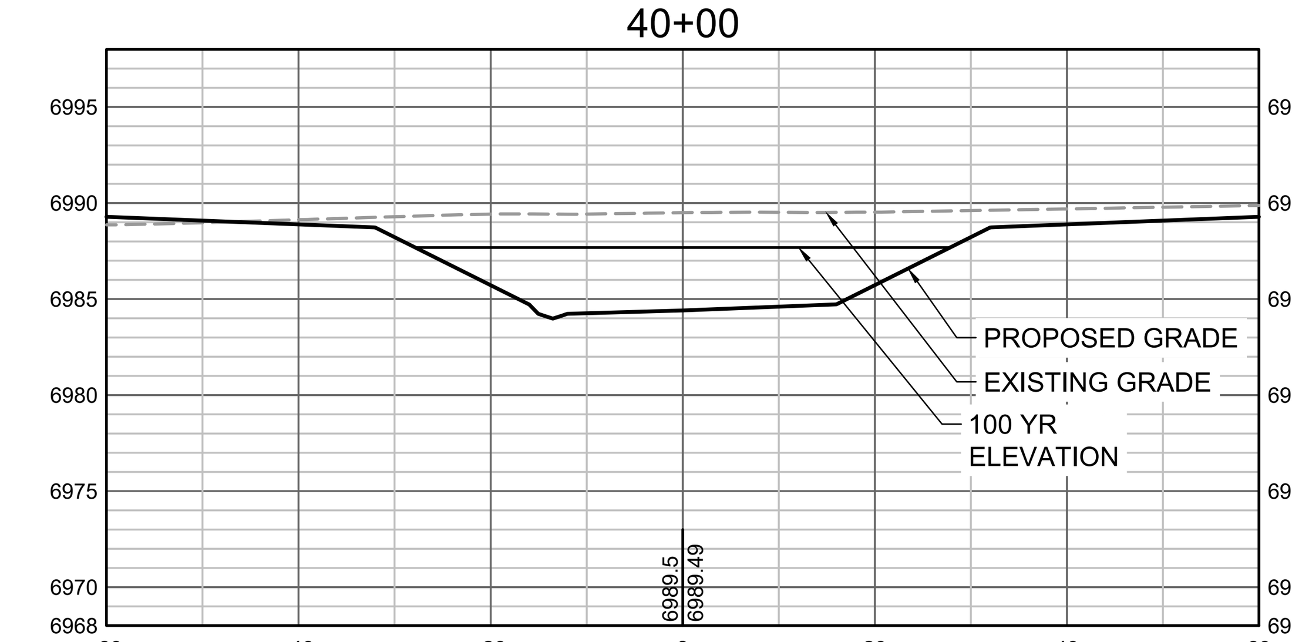

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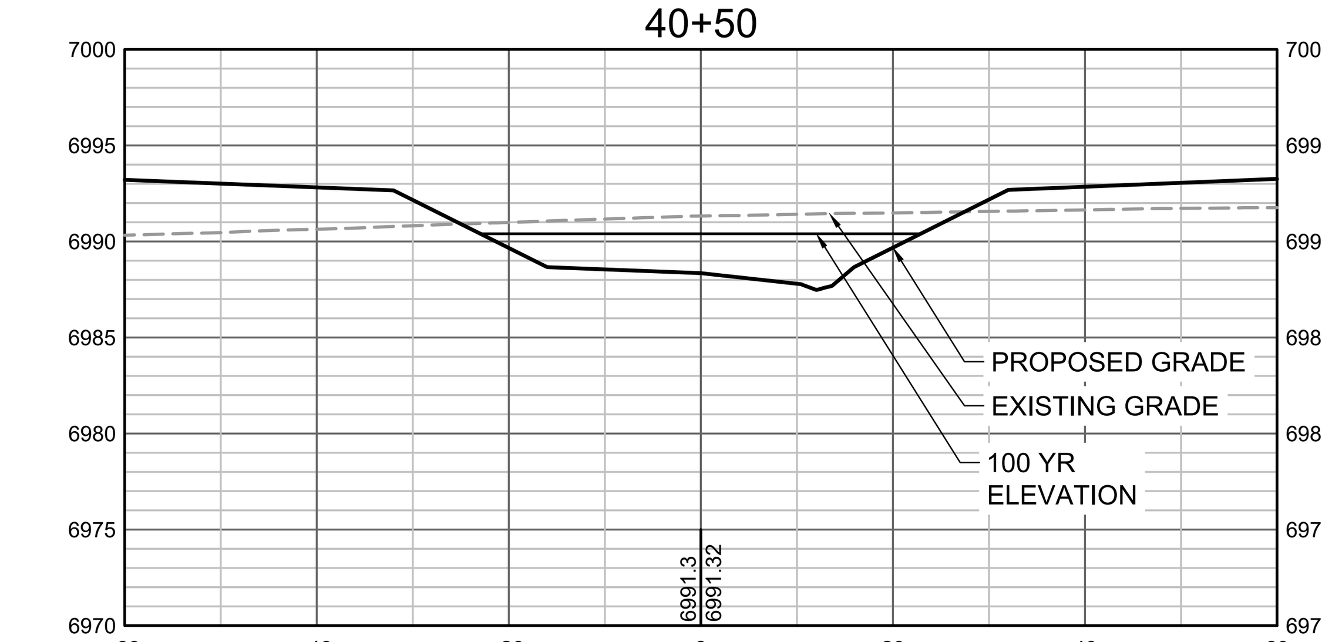

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HORIZONTAL 0 10 20 — VERTICAL 0 5 10

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APPROVED: CMM — JOB NUMBER: 201662.03
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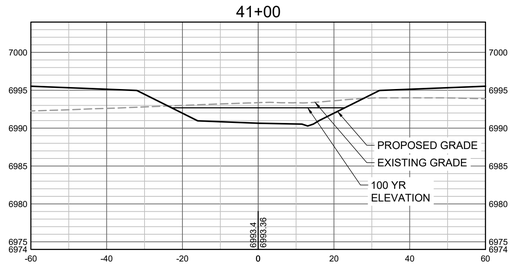
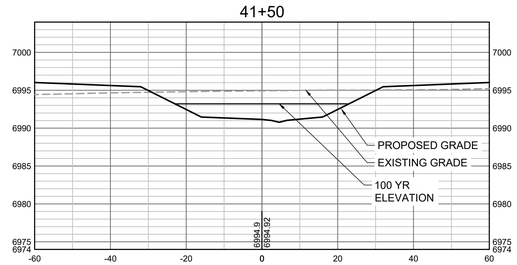
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

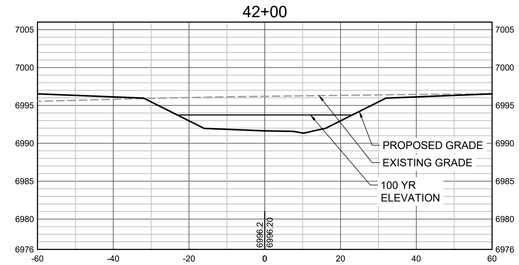
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

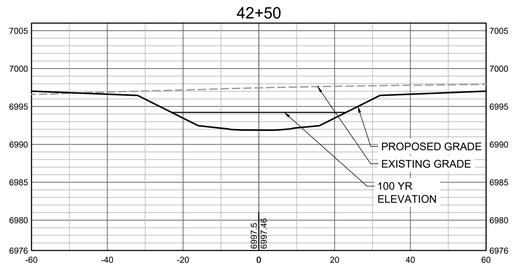
SHEET CS9

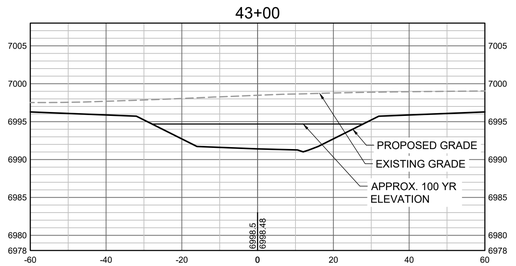
HR GREEN Xrefs: xgt-1-dh01

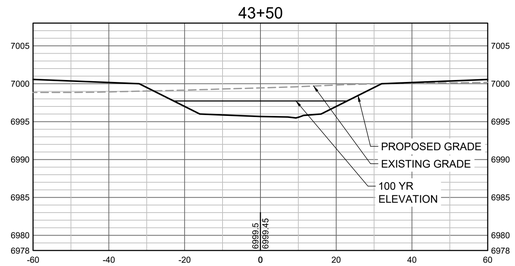


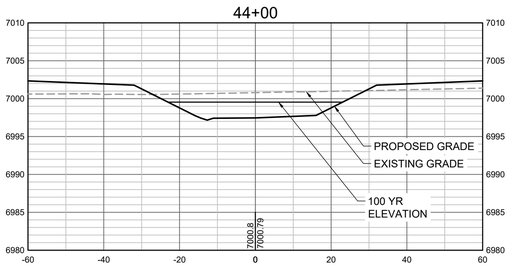


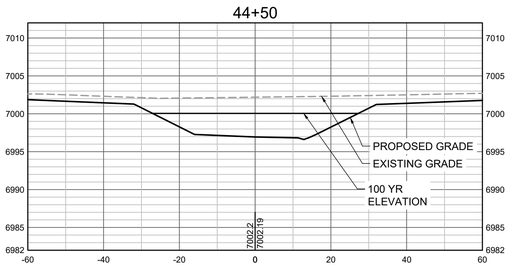


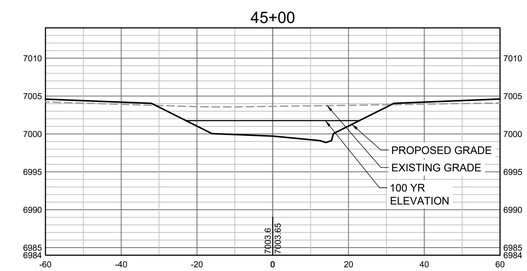












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HORIZONTAL 0 20 10 VERTICAL 0 10 5

HR GREEN Xrefs: xgl-1-dh01

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APPROVED: CMM JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\CROSS SECTIONS

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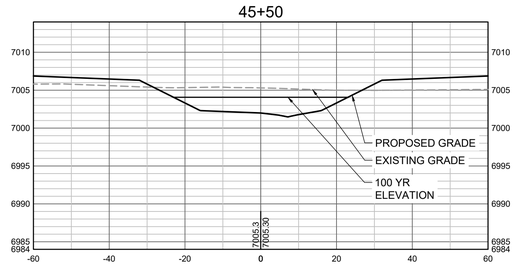
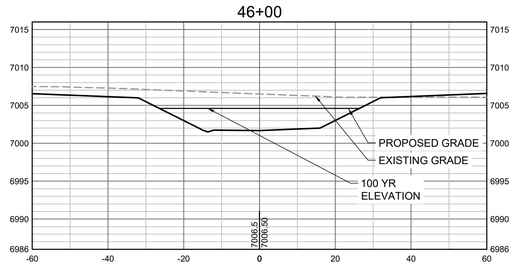
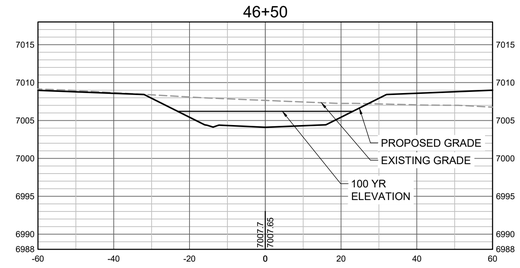
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

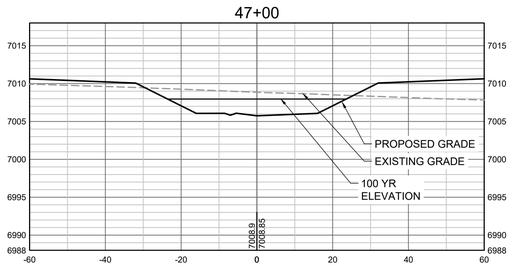
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

SHEET CS10









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HORIZONTAL 0 10 20

VERTICAL 0 5 10

DRAWN BY: TBI JOB DATE: 7/22/2022
APPROVED: CMM JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
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GRANDVIEW RESERVE (DRAINAGE A & B)
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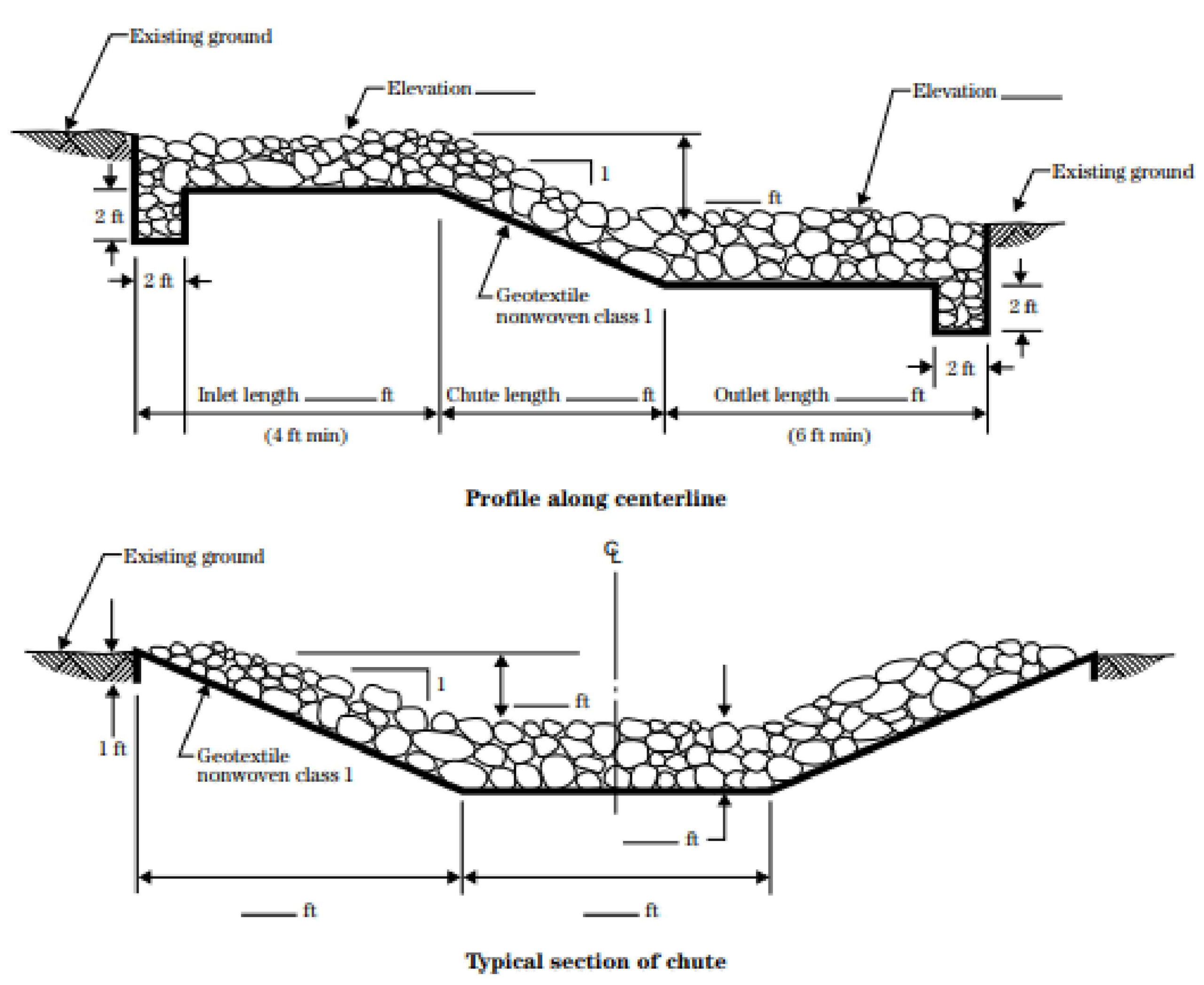
CONSTRUCTION DOCUMENTS
TRIBUTARY 2 CROSS SECTIONS

SHEET CS11

31

HR GREEN Xrefs: xgl-t-db01

Figure TS14P–32 Design drawings for rock chute grade control structure



TS14P–16 (210–VI–NEH, August 2007)

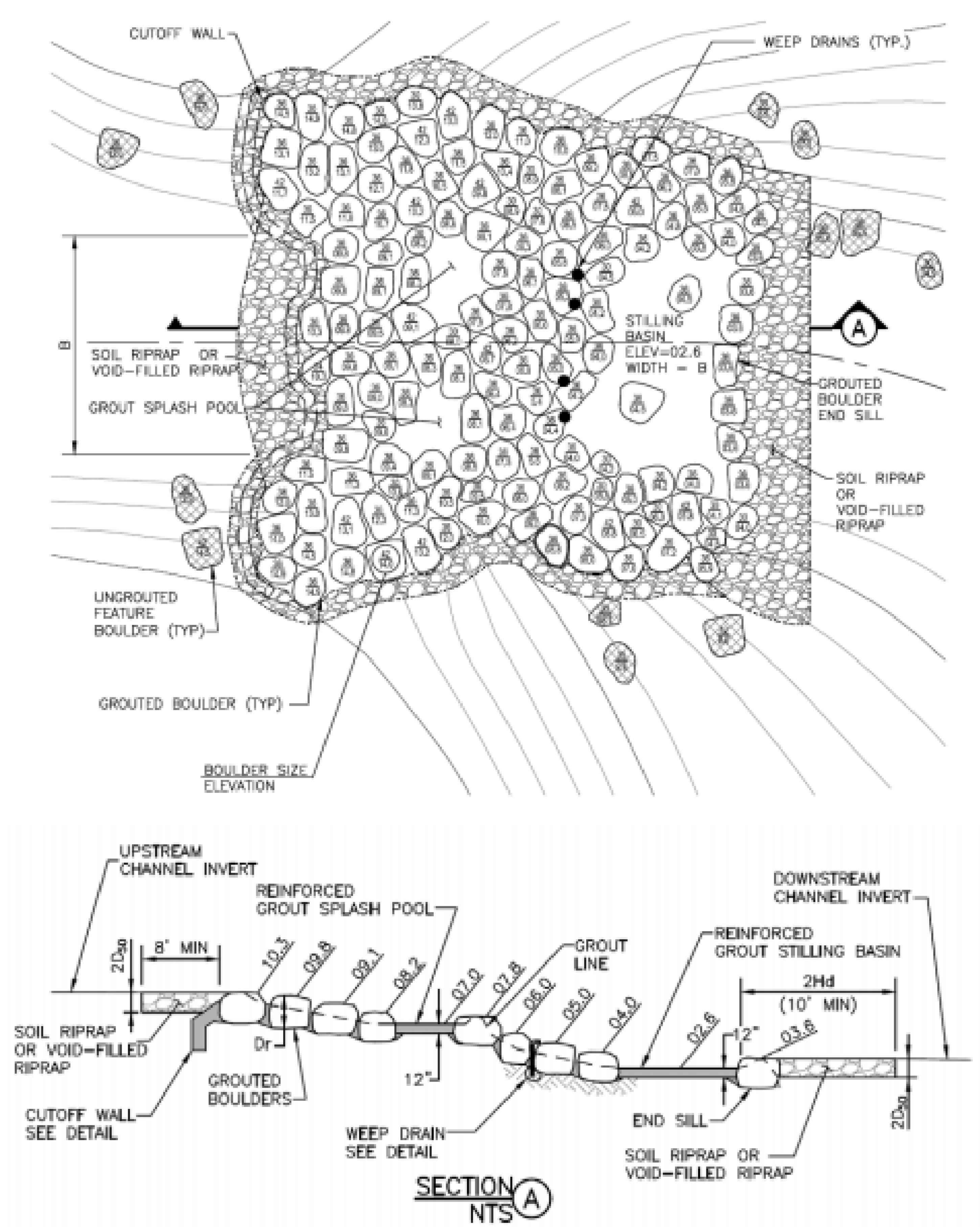
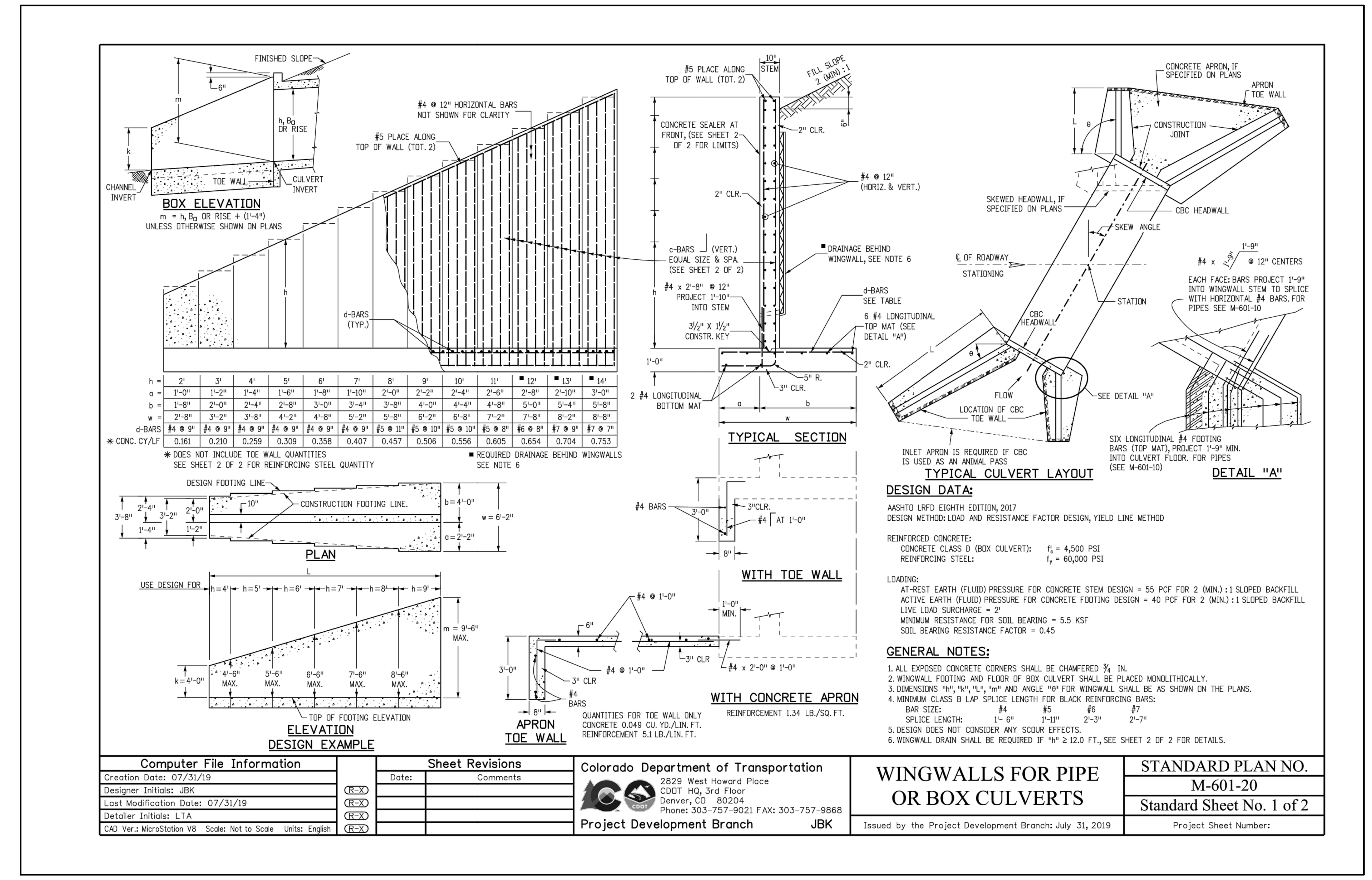
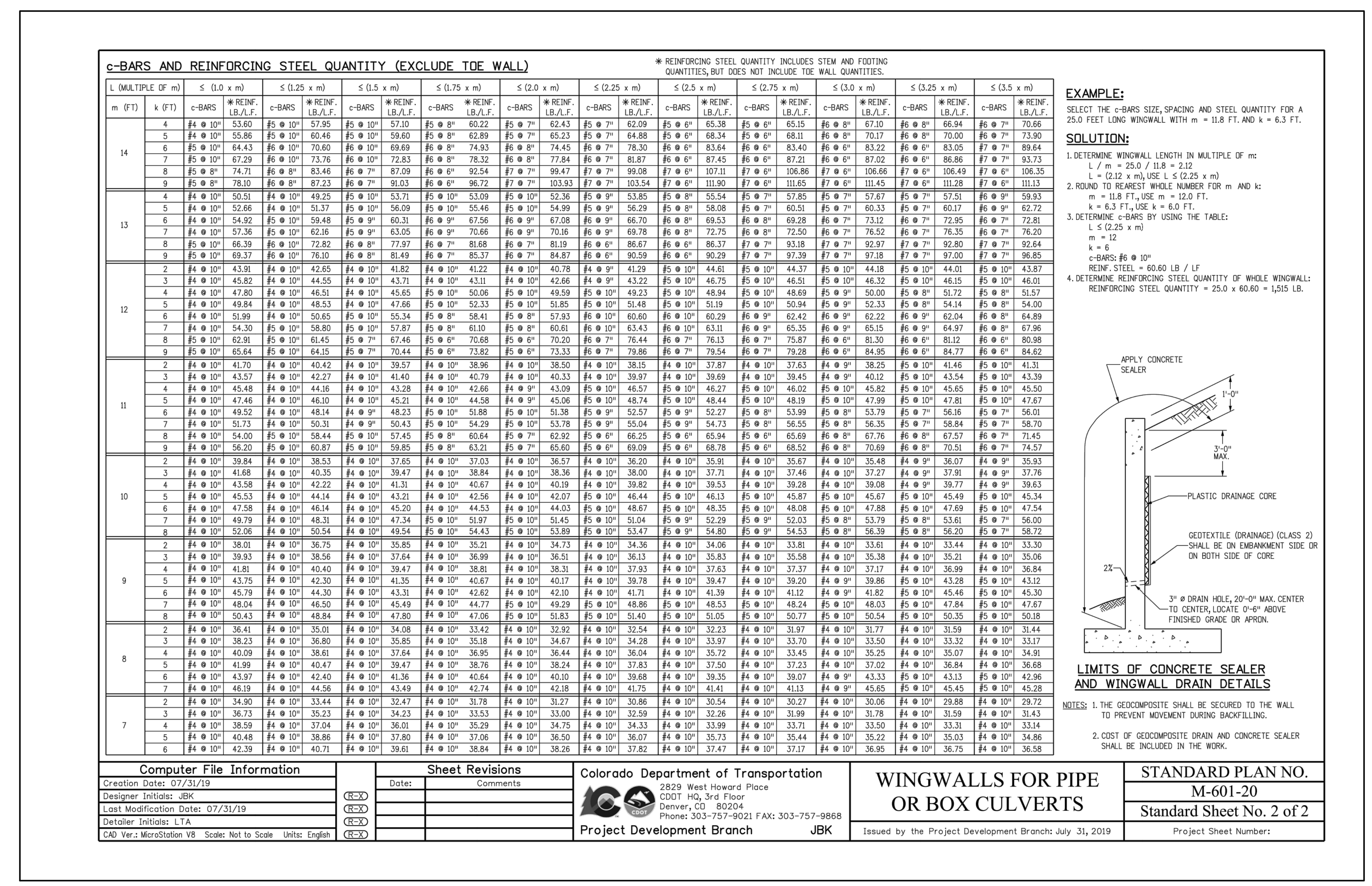


Figure 9-14. Example of complex grouted stepped boulder drop structure





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GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

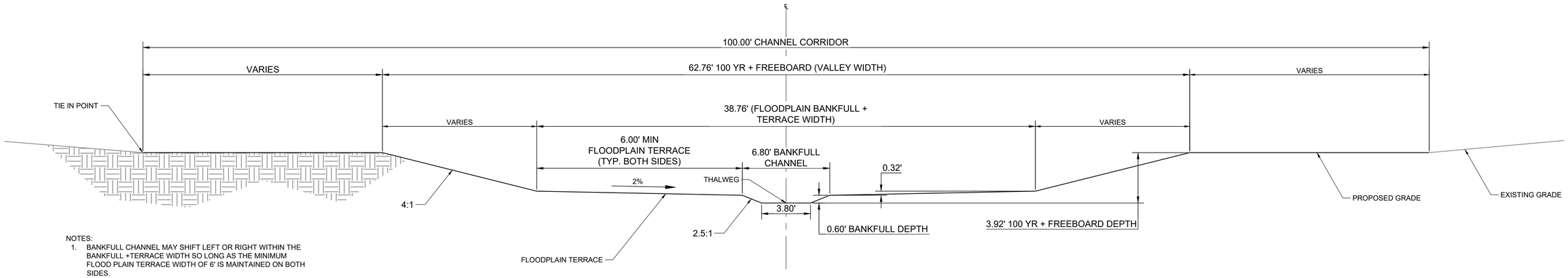
CONSTRUCTION DOCUMENTS

DETAILS

SHEET DT1

32

HR GREEN Xrefs: xgt-1-dt01



NOTES:
1. BANKFULL CHANNEL MAY SHIFT LEFT OR RIGHT WITHIN THE BANKFULL +TERRACE WIDTH SO LONG AS THE MINIMUM FLOOD PLAIN TERRACE WIDTH OF 6' IS MAINTAINED ON BOTH SIDES.
2. VALLEY WIDTH MAY SHIFT WITHIN THE 100' CHANNEL CORRIDOR.
3. SEE PROFILES FOR ELEVATION AT THALWEG.

1 TYPICAL CROSS SECTION

SCALE: N.T.S.

HR GREEN X-refs: xgr-1-db01

DRAWN BY:	TBI	JOB DATE:	7/25/2022
APPROVED:	CMM	JOB NUMBER:	201662.03
CAD DATE:	7/25/2022		
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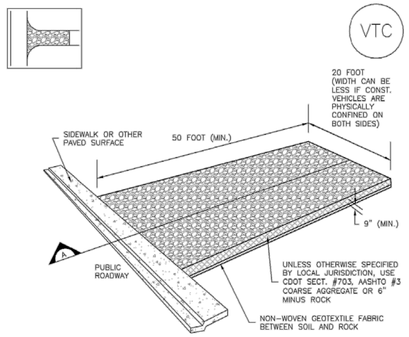
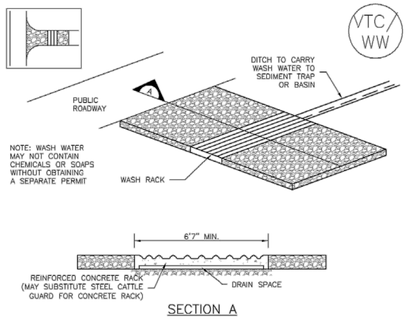
GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
DETAILS

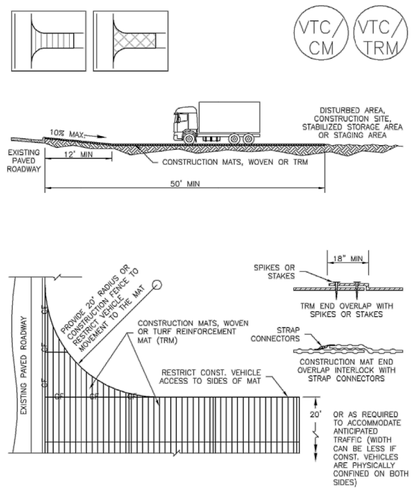
SHEET DT2



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK



VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

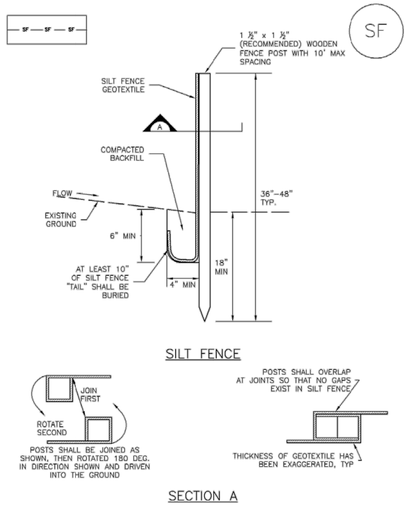
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)



SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

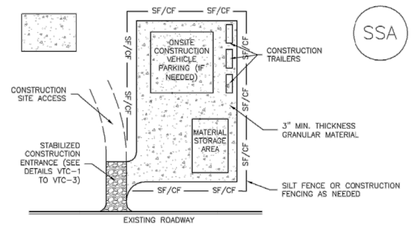
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

HR GREEN Xrefs: xgt-1-dh01

DRAWN BY: TBI JOB DATE: 7/25/2022
APPROVED: CMM JOB NUMBER: 201662.03
CAD DATE: 7/25/2022
CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\DETAILS

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

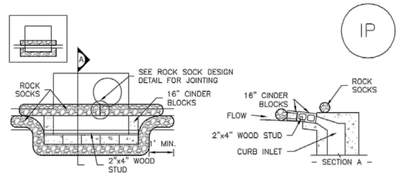
HRGreen
HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
DETAILS

SHEET DT3

34



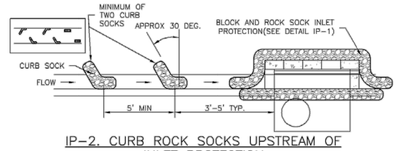
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

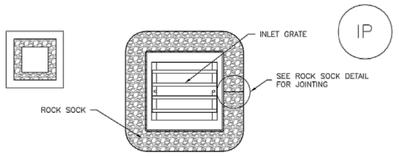
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.

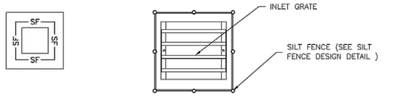


IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



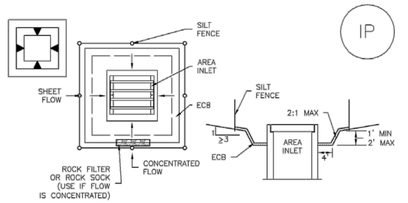
IP–4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



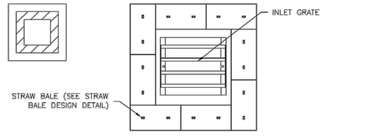
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

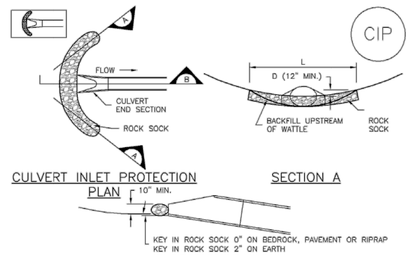


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR –LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR: –LOCATION OF INLET PROTECTION. –TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

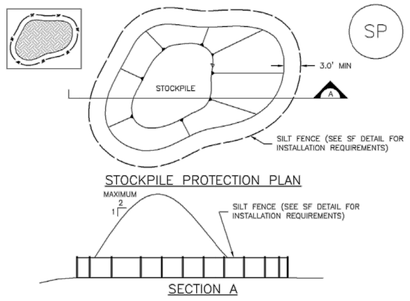
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.



SP–1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR: –LOCATION OF STOCKPILES. –TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30–60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

HR GREEN Xrefs: xg1-alb01

DRAWN BY: TBI | JOB DATE: 7/25/2022 | APPROVED: CMM | JOB NUMBER: 201662.03 | CAD DATE: 7/25/2022 | CAD FILE: J:\2020\201662.03\CAD\Dwgs\C\DETAILS

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HR GREEN - DENVER
5619 DTC PARKWAY SUITE 1150
DENVER CO 80111
PHONE: 720.602.4999
FAX: 844.273.1057

GRANDVIEW RESERVE (DRAINAGE A & B)
DR HORTON
FALCON, COLORADO

CONSTRUCTION DOCUMENTS
DETAILS

SHEET DT4

35

Appendix E
Floodway Notice

HRGreen

5619 DTC Parkway | Suite 1150 | Greenwood Village, CO 80111
Main 720.602.4999 + **Fax** 844.273.1057

HRGREEN.COM

September 2021

Property owner

Property owner address

Re: Notification of increases in 1-percent-annual-chance water-surface elevations and/or future flood hazard revisions

The Flood Insurance Rate Map (FIRM) for a community depicts the Special Flood Hazard Area (SFHA), the area that has been determined to be subject to a 1-percent or greater chance of flooding in any given year. The floodway is the portion of the floodplain that includes the channel of a river or other watercourse and the adjacent land area that must be reserved in order to discharge the 1-percent-annual-chance (base) flood without cumulatively increasing the water-surface elevation by more than a designated height. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

{Revision Requester} is applying for a Conditional Letter of Map Revision (CLOMR) from the Federal Emergency Management Agency (FEMA) on behalf of {Revision requester's client} to revise FIRMs 08041C0552G and 08041C0556G for El Paso County along Gieck Ranch Tributary 2. {Revision requester' client} is proposing to realign and create a creek corridor as part of the Grandview Reserve Development.

Once the project has been completed, a Letter of Map Revision (LOMR) request should be submitted that will, in part, revise the following flood hazards along Gieck Ranch Tributary 2.

The floodway will be revised from the south-central project boundary to Eastonville Road near the northwest corner of GVR along Gieck Ranch Tributary 2.

This letter is to inform you of the proposed project that may affect flood elevations on your property at {insert physical address}. This letter is also to inform you of the potential changes to the effective flood hazard information that would result after the project is completed and a LOMR request is submitted to FEMA.

Maps and detailed analysis of the floodway revision can be reviewed at the {location TBD} at {location address TBD}. If you have any questions or concerns about the proposed project or its affect on your property, you may contact {name of appropriate community official} of {name of community} at {community official contact information} from {date TBD} to {date TBD} or {name of appropriate community official} with Mile High Flood District at {community official contact information} from {date TBD} to {date TBD}.

HR GREEN, INC

Chris McFarland, PE
Lead Engineer

Appendix F
Endangered Species Act Compliance

ecos ecosystem services LLC

Informal Consultation Request

April 10, 2020

Mr. Drue DeBerry
Acting Colorado Field Supervisor
U.S. Fish and Wildlife Service
Colorado Ecological Services Field Office
134 Union Blvd., Suite 670
Lakewood, Colorado 80228

RE: Request for Technical Assistance Regarding the Likelihood of Take of Federally-listed Threatened and Endangered Species resulting from the proposed development of the Grandview Reserve Project in El Paso County, Colorado

Dear Mr. DeBerry:

Ecosystem Services, LLC (ecos) has prepared the enclosed habitat evaluation on behalf of 4 Site Investments to describe the physical/ecological characteristics of the Grandview Reserve site (Site) and evaluate the potential effects of the proposed development project (Project) on the Federally-listed threatened and endangered (T&E) species protected under the Endangered Species Act (ESA).

The El Paso County Environmental Division has completed its review of the Project and has requested that 4 Site Investments provide a "Clearance Letter" obtained from the U.S. Fish and Wildlife Service (USFWS) to the Planning and Community Development Department prior to project commencement "where the project will result in ground disturbing activity in habitat occupied or potentially occupied by threatened or endangered species and/or where development will occur within 300 feet of the centerline of a stream or within 300 feet of the 100 year floodplain, whichever is greater."

At this time there is no Federal action and no Federal agency is making a formal effects determination under Section 7 (a)(2) of the ESA. Therefore, ecos is requesting technical assistance from USFWS regarding 4 Site Investments' (i.e., the non-federal party) responsibilities under the ESA, and specifically the likelihood of the Project (described herein) resulting in take of listed species. If the USFWS concurs with the findings presented herein we request that you issue an informal letter of concurrence for use in the El Paso County Project review process.

1.0 SITE LOCATION and PROJECT DESCRIPTION

The Site is located in the Falcon/Peyton area of El Paso County and is bounded along the north by 4 Way Ranch Phase I, along the south by Waterbury, along the southeast by Highway 24, and along the west by Eastonville Road. There are no existing structures, roads, or other infrastructure on the Site. The Site is located approximately 4.14 miles southwest of Peyton, 4.16 miles northeast of Falcon and 4.66 miles south of Eastonville, in El Paso County, Colorado. The Site is generally located within the south ½ of Section 21, south ½ of Section 22, the north ½ of Section 27, and the north ½ of Section 28, Township 12 South, Range 64 West in El Paso County, Colorado. The center of the Site is situated at approximately Latitude 38.98541389 north, -104.55472222 east (refer to Figure 1).

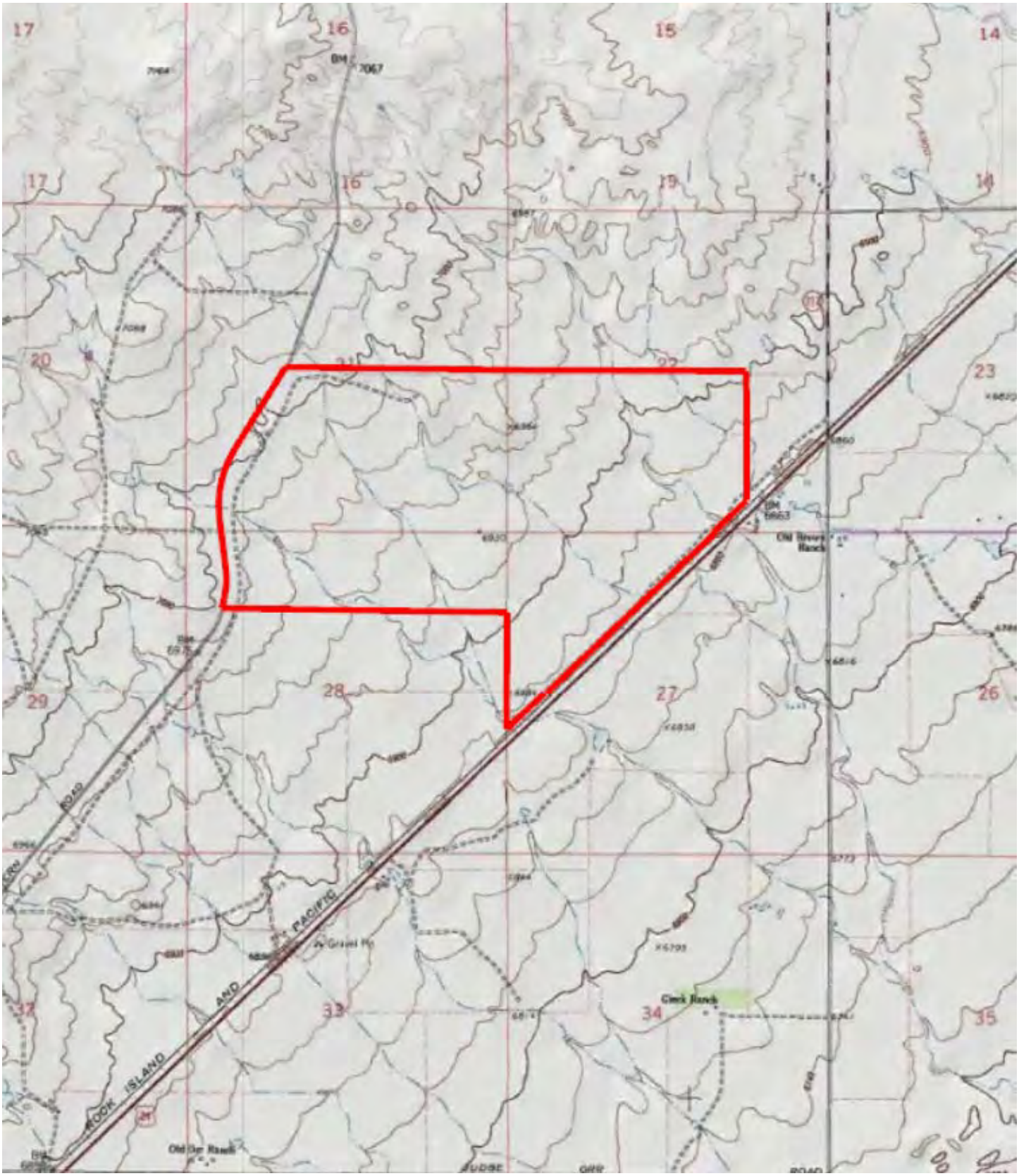
The Applicant proposes to develop the 768.2-acre Site as a mixed use residential and commercial community with the total number of units ranging from 2,496 to 3,261 as summarized below:

Table 1 – Land Use Summary

Land Use Category	Acreage	Acreage %	Density Units/Acre		Units	
			Min.	Max.	Min.	Max.
Institutions	16.9 acres	2.2%	NA	NA	NA	NA
Low Density Residential	136.4 acres	17.8%	1	2	136	272
Medium Density Residential	258.4 acres	33.6%	3	4	775	1033
Medium-High Density Residential	68.6 acres	8.9%	6	8	411	548
High Density Residential	117.4 acres	15.3%	10	12	1174	1408
Commercial	17.0 acres	2.2%	NA	NA	NA	NA
Open Space$_1$	132.5 acres	17.2%	NA	NA	NA	NA
Rex Rd. & Collector	21.0 acres	2.7%	NA	NA	NA	NA
TOTAL	**768.2 acres**	**100%**	**NA**	**NA**	**NA**	**NA**

Note 1: Open Space includes: Detention Ponds, Drainage Corridors, General Open Space & Easements and R.O.W. Buffers of Eastonville Road and Highway 24

Please refer to Figure 2.



USGS 7.5 min. Quad: Falcon
Latitude: 38.985713°N
Longitude: -104.552854°W
Section 21, 22, 27 & 28, Township 12 South, Range 64 West

EL PASO COUNTY
FALCON REGIONAL PARK

REX RD.

EASTONVILLE RD.

PARCEL A
6.2 ac.
CHURCH

PARCEL B
17.7 ac.
HIGH DENSITY

PARCEL C
24.8 ac.
HIGH DENSITY

PARCEL D
23.5 ac.
HIGH DENSITY

PARCEL E
17.2 ac
HIGH DENSITY

PARCEL F
15.5 ac.
HIGH DENSITY

PARCELG
40.0 ac.
MED DENSITY

PARCEL H
32.5 ac.
HIGH DENSITY

PARCEL I
38.8 ac.
MED. DENSITY

PARCEL J
64.2 ac.
MED. DENSITY

PARCEL K
59.1 ac.
HIGH DENSITY

PARCEL L
25.8 ac.
HIGH DENSITY

PARCEL M
29.8 ac.
HIGH DENSITY

PARCEL N
41.9
HIGH DENSITY

PARCEL O
18.5 ac.
HIGH DENSITY

PARCEL P
13.5 ac.
HIGH DENSITY

PARCEL Q
15.6 ac.
MED DENSITY

PARCEL R
23.6 ac.
HIGH DENSITY

PARCEL S
54.2 ac.
LOW DENSITY

PARCEL T
27.9 ac.
LOW DENSITY

PARCEL U
6.7 ac.
LOW DENSITY

ELEMENTARY
SCHOOL
10.7 ac.

COMMUNITY
PARK
5.9 ac.

C-1
8.2 ac.
COMMERCIAL

C-2
8.8 ac.
COMMERCIAL

FALCON
HIGH SCHOOL

WATERBURY
PROJECT

15' BUFFER

GAS LINE ESMT

GAS LINE ESMT

OPEN SPACE

POCKET PARK

DET. POND

TRAIL (TYP)

EXISTING WETLAND AND DRAINAGEWAY

EXISTING ROCK ISLAND TRAIL

HWY 24

GRANDVIEW TRAIL CONNECTION TO EXISTING ROCK ISLAND TRAIL

Land Use Summary

LAND USE CATEGORY	ACREAGE	ACREAGE %	DU/AC	UNITS
CHURCH	6.2 ac.	0.8%	N/A	N/A
LOW DENSITY	88.8 ac.	11.6%	1.45	129
MEDIUM DENSITY	158.6 ac.	20.7%	3.10	492
HIGH DENSITY	343.4 ac.	44.9%	4.00	1374
COMMERCIAL	17.0 ac.	2.2%	N/A	N/A
SCHOOL	10.7 ac.	1.4%	N/A	N/A
OPEN SPACE	119.1 ac.	15.6%	N/A	N/A
REX & COLLECTOR	21.0 ac.	2.7%	N/A	N/A
*OPEN SPACE INCLUDES: DETENTION, DRAINAGE CORRIDORS, GENERAL OPEN SPACE AND EASEMENTS,AND R.O.W./BUFFER OF EASTONVILLE RD. & HWY 24				
Total	764.8 ac.	**100%**		**1995**

LEGEND

POCKET PARK - APPROXIMATE LOCATION

DETENTION - APPROXIMATE LOCATION

PROPOSED TRAIL

SKETCH PLAN - DRAFT 3-25-20

GRANDVIEW RESERVE

FALCON, CO

HRGreen

NORTH

0 300 600 900

SCALE: 1" = 300'

MARCH 25, 2020

2.0 METHODOLOGY

2.1 Office Assessment

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

- Colorado Department of Agriculture (CDA) Noxious Weed List;
- Colorado Natural Heritage Program (CNHP);
- Colorado Oil and Gas Conservation Commission (COGCC) GIS Online;
- Colorado Parks and Wildlife (CPW);
- El Paso County Master Plan;
- El Paso County, Sub-Area Plan (provided by Client);
- Federal Emergency Management Agency (FEMA);
- Google Earth current and historic aerial imagery;
- Survey of Critical Biological Resources, El Paso County, Colorado;
- Survey of Critical Wetlands and Riparian Areas in EI Paso and Pueblo Counties, Colorado;
- U.S. Army Corps of Engineers (USACE) 1987Corps of Engineers Wetlands Delineation Manual;
- USACE 2010 Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Great Plains Region;
- U.S. Department of Agriculture (USDA) PLANTS Database;
- U.S. Fish and Wildlife Service (USFWS) Region 6;
- USFWS National Wetland Inventory (NWI);
- USFWS IPaC database search; and
- U.S. Geological Survey (USGS).

Ecos also reviewed pertinent, site-specific background data provided by 4 Site Investments and their consulting Team, including topographic base mapping, site development plans, and other data pertinent to the assessment.

2.2 Onsite Assessment

Following the collection and review of existing data and background information, ecos conducted a field assessment of the Site on October 10 and 11, 2018 to identify any potential impacts to natural resources associated with the Project. Field reconnaissance concentrated on identification of wetland habitat, waters of the U.S., wildlife habitat (including habitat suitable to support threatened and endangered wildlife) significant topographic features, noxious weeds and vegetation. Wetland habitat and waters of the U.S. boundaries, wildlife habitat, major vegetation communities, and significant weed stands were sketched on topographic and aerial base maps and located using a hand-held Global Positioning System as deemed necessary. Representative photographs were taken to assist in describing and documenting Site conditions and potential ecological impacts.

3.0 ENVIRONMENTAL SETTING

The Site is located in the Southwestern Tablelands Ecological Region (Chapman et al, 2006), which is primarily comprised of sub-humid grassland and semiarid rangeland. More specifically, the Site is located in the Foothills Grassland sub-region (26j) which contains a mix of grassland types with some small areas of isolated tallgrass prairie species that are more common much farther east. The proximity to runoff and moisture from the Front Range and the more loamy, gravelly, and deeper soils are able to support more tallgrass and midgrass species than neighboring ecoregions. Big and little bluestem, yellow indiangrass and switchgrass occur, along with foothill grassland communities. The annual precipitation of 14 to 20 inches tends to be greater than in regions farther east. Soils are loamy, gravelly, moderately deep, and mesic. Rangeland and pasture are common , with small areas of cropland. Urban and suburban development has increased in recent years, expanding out from Colorado Springs and the greater Denver area.

The Site contains no Colorado Natural Heritage Conservation Areas or Potential Conservation Areas according to the CNHP (CNHP, 2018), and no Wildlife Refuges or Hatcheries according to the USFWS IPaC Trust Resources Report (USFWS, 2016a) (refer to Appendix A).

3.1 Topography

The Site is generally characterized as gently sloping from northwest to southeast with four ephemeral drainages (prairie sloughs) present, two of which are discontinuous and two are tributary to Black Squirrel Creek offsite. Naturally undulating swales drain toward the sloughs, which contain wetlands in low areas and dry areas where alluvial deposits have formed. Site topography ranges from a high elevation of 7020 feet above mean sea level (AMSL) in the northwestern corner to a low elevation of 6860 feet above AMSL where the northeastern tributary exits the Site on the east boundary along Highway 24; for a total elevation drop of 160 feet. An ill-defined and undulating hill, which is likely an eroded remnant bluff, is present in the north-central portion of the Site. Refer to Figure 3.

3.2 Soils

Ecos utilized the U.S. Department of Agriculture, Natural Resource Conservation Service Web Soil Survey (USDA, NRCS, 2018) to determine if hydric soils are present within the Site, as this data assist in informing the presence/absence of potential wetland habitat regulated under the Clean Water Act. The soils data were also utilized to supplement the field observations of vegetation, as the USDA provides correlation of native vegetation species by soils types. Please refer to Figure 4, USDA NRCS Soil Map and Appendix A for additional USFWS wetland information.

3.3 Vegetation

The vegetation within the Site is primarily comprised of shortgrass prairie with wetland vegetation in the swales and sloughs (Figure 5). The shortgrass prairie is dominated by little bluestem (*Schizachyrium scoparium*), blue grama (*Bouteloua gracilis*), and buffalograss (*Bouteloua dactyloides*) with occasional associative grass and forb species including western wheatgrass (*Pascopyrum smithii*), yellow Indiangrass (*Sorghastrum nutans*), Canada wildrye (*Elymus canadensis*), needle and thread (*Hesperostipa comata*), switchgrass (*Panicum virgatum*), Western yarrow (*Achillea millefolium*), broom snakeweed (*Gutierrezia sarothrae*), fringed sage (*Artemisia frigida*), Prickly pear (*Opuntia* spp.), and prairie aster spp. (*Symphyotrichum* spp.). Occasional patches of snowberry (*Symphoricarpos albus*) and Wood's rose (*Rosa woodsii*) occupy the transitional areas between uplands and wetlands. A few, single plains cottonwood (*Populus deltoides*) occur along the drainages. The Site is heavily impacted by historic and ongoing grazing and there are weeds scattered throughout, including Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*),

Russian thistle (*Salsola kali*), common mullein (*Verbascum thapsus*), and yellow toadflax spp. (*Linaria vulgaris*). Hydrophytic vegetation (wetland vegetation) is present within the swales and sloughs (refer to Section 3.4.2).

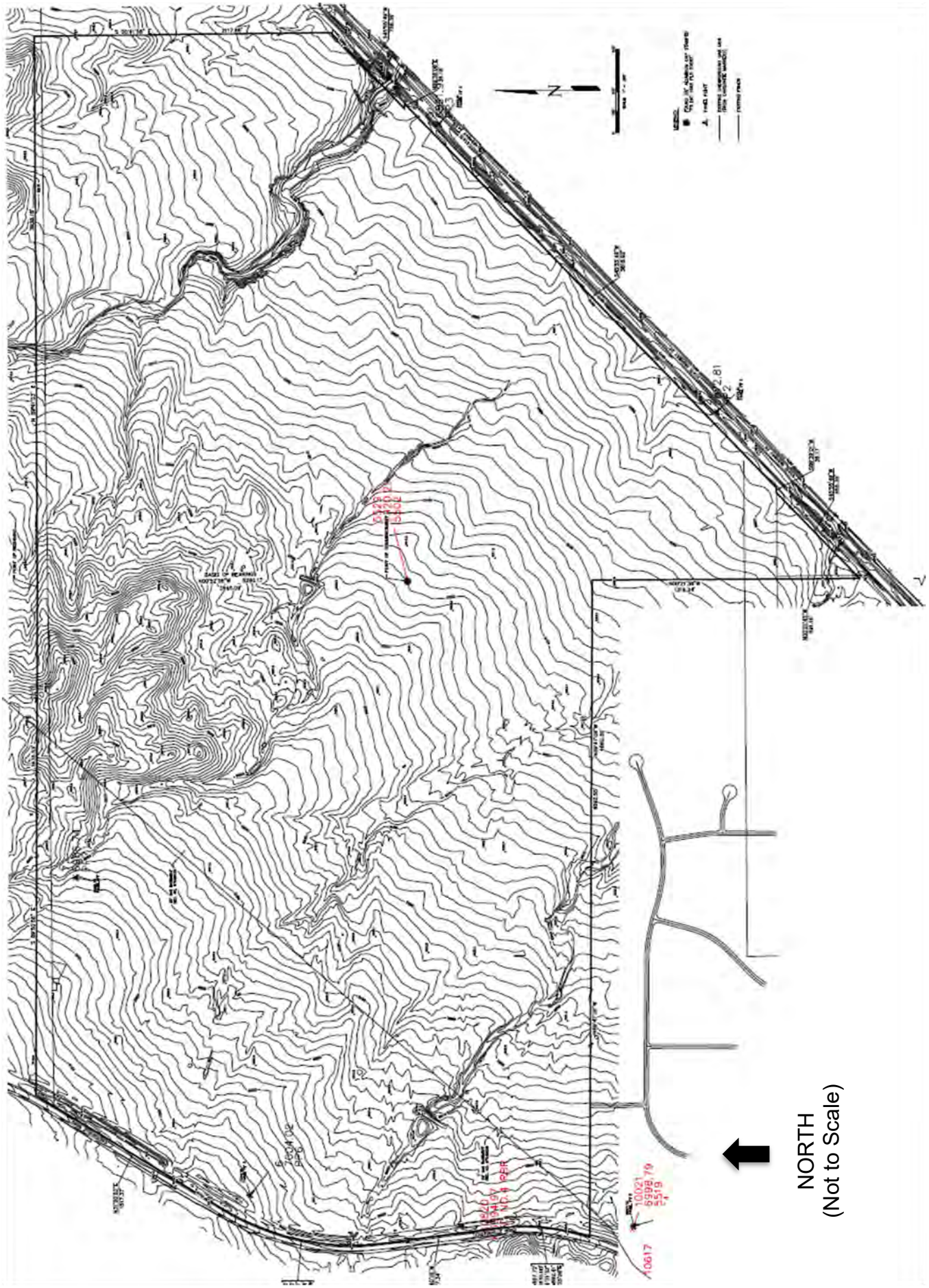
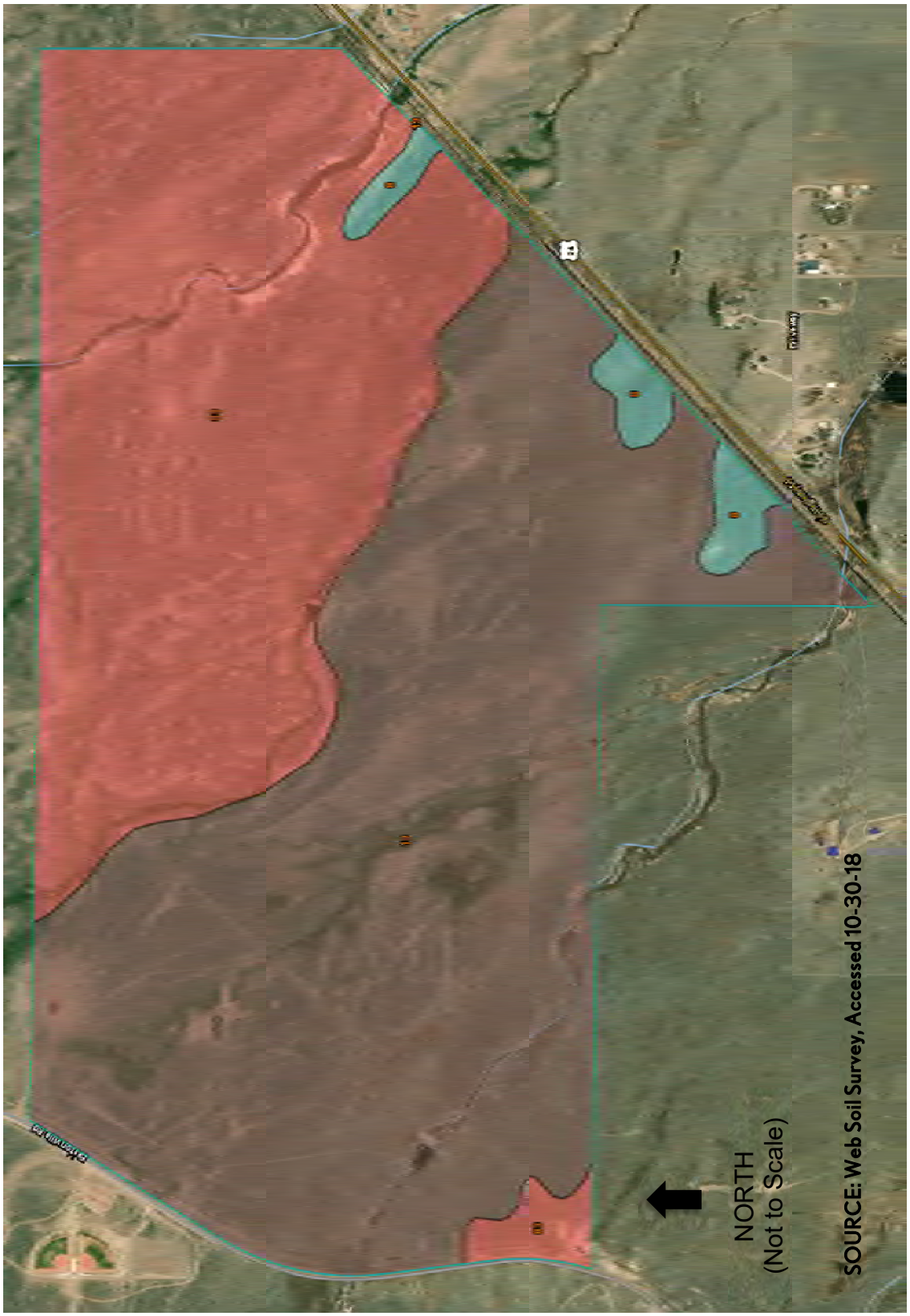


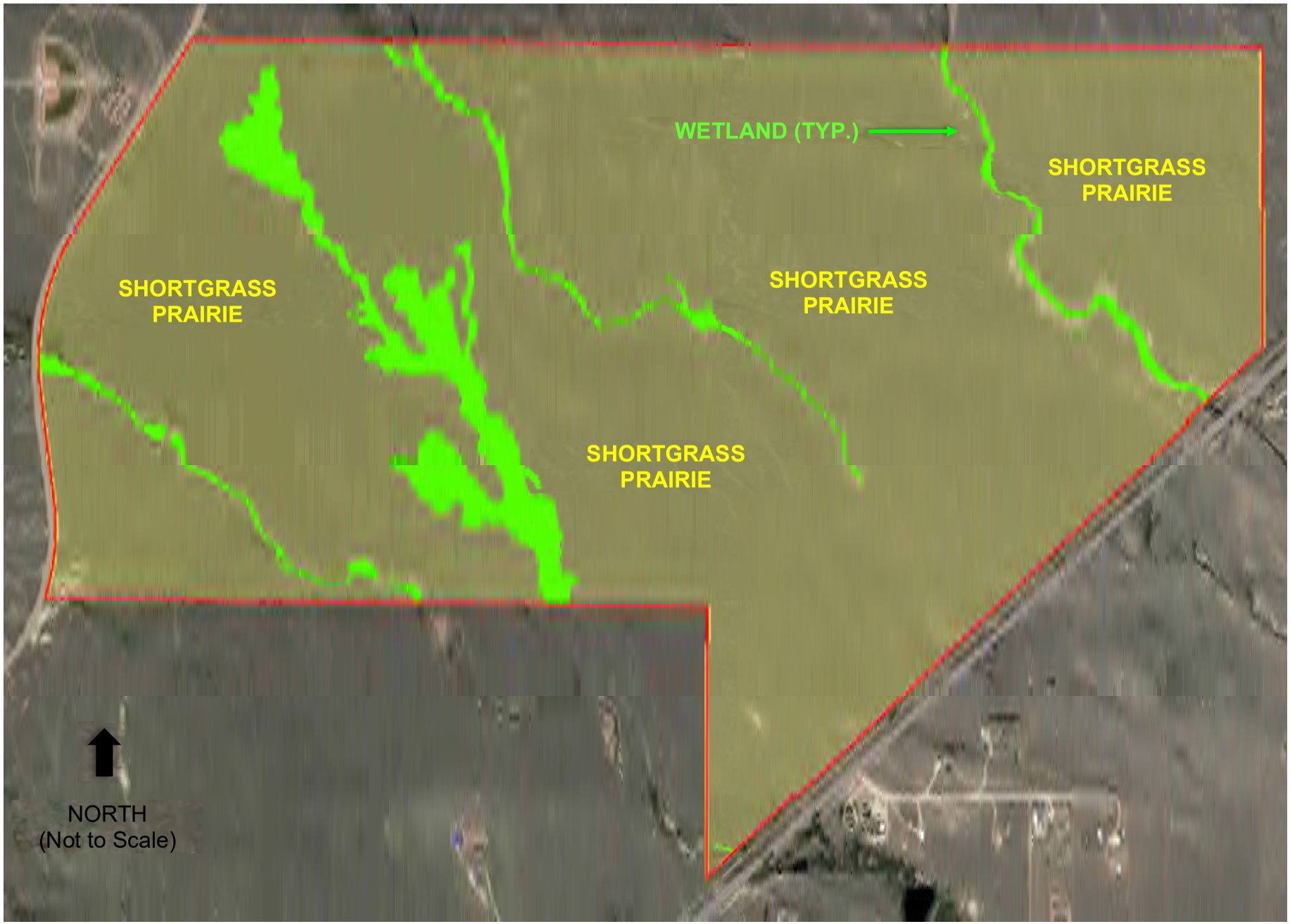
Figure 3 TOPOGRAPHIC MAP



Summary by Map Unit — El Paso County Area, Colorado (CO625)

Summary by Map Unit — El Paso County Area, Colorado (CO625)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
8	Blakeland loamy sand, 1 to 9 percent slopes	Blakeland loamy sand, 1 to 9 percent slopes	17.5	2.3%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	Columbine gravelly sandy loam, 0 to 3 percent slopes	428.6	55.8%
83	Stapleton sandy loam, 3 to 8 percent slopes	Stapleton sandy loam, 3 to 8 percent slopes	322.2	41.9%
Totals for Area of Interest			**768.3**	**100.0%**

Figure 5



VEGETATION COMMUNITY MAP

3.4 Wetland Habitat and Waters of the U.S.

3.4.1 Methodology

Ecos utilized the National Wetland Inventory (NWI) Wetlands Mapper (USFWS 2018a); Colorado Wetland Inventory Mapping Tool (CNHP, 2018); historic and current Google Earth aerial photography; USGS 7.5-minute topographic mapping; and detailed Project topographic mapping to screen the Site for potential wetland habitat and waters of the U.S. Additionally, ecos performed a jurisdictional delineation to identify the Waters of the United States (WOUS), including wetlands.

The mapping data above were proofed during the field assessment and a wetland delineation was conducted to determine the presence/absence of potential WOUS, including wetland habitat. Once a feature was verified to be present, ecos determined whether it is a jurisdictional wetland/waters under the Clean Water Act. The U.S. Army Corps of Engineers (USACE), wetland delineation methodology was employed to document the 3 field indicators (parameters) of wetland habitat (i.e., wetland hydrology, hydric soils and a predominance of hydrophytic vegetation as explained in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and supplemented by the Regional Supplement to the *Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2)* (USACE, 2010). The wetland delineation was surveyed by the project team surveyor

Consistent with the NWI and Colorado Wetland Inventory Mapping Tool (Figure 6) and topographic mapping, the wetland/waters delineation revealed the presence of four drainages with the potential to support wetland habitat (Figure 7). Two of the drainages (i.e. northeast Drainage D and southwest Drainage A) were preliminarily determined to be jurisdictional (pending USACE verification) and support predominantly palustrine emergent wetland (PEMC1) habitat with minor occurrences of palustrine scrub-shrub (PSS) and palustrine forested (PFO) species along their fringes. The central Drainage C and south-central Drainage B were investigated found to be discontinuous, prairie sloughs that are non-jurisdiction, "isolated" features. Please refer to Figure 6 for a composite of the NWI and CNHP Wetland and Riparian Areas mapping, Figure 7 for the ECOS Wetland and Waters Sketch Map, and Appendix B for representative photographs.

3.4.2 Field Assessment Findings

The results of the onsite assessment for each of the four onsite drainages is summarized below, with an explanation of the field indicators (parameters) of wetland habitat/waters that were observed, and an explanation as to whether ecos preliminarily determined each feature was jurisdictional or non- jurisdictional under Section 404 of the Clean Water Act. Jurisdictional features are mapped on Figure 7.

1) <u>Jurisdictional wetland habitat and waters of the U.S</u>.
    a. <u>PEMC1 Wetland Habitat</u> – Northeast Drainage D is classified as a Palustrine Emergent, Persistent, Seasonally Flooded wetland (PEMC1). Wetland Area A is tributary to Black Squirrel Creek off of the Site to the southeast. It is dominated by Nebraska sedge, redtop, clustered field sedge, three-square bulrush, swordleaf rush, soft-stem bulrush, poverty rush, Baltic rush, and watercress. Other species were present, including water mint, sporadic patches of sandbar willow, cutleaf evening primrose, fireweed, curly dock, and water milfoil, and snowberry, wild licorice and Wood's rose along the high banks. Soil samples indicate the presence of field indicators of hydric soils (organic horizon from 0-2 inches, 10YR4/2 clay loam from 2-9 inches, 10YR4/1 clay loam from 9-14 inches, and 10YR5/1 sandy clay from 14-18+ inches). Sustaining hydrology was evident as flowing water is present within a defined channel and saturated soils are present at the surface and throughout the

floodplain, including groundwater driven side-slope seepage. This area meets all 3 parameters for jurisdictional wetland habitat.

b. PEMC1 Wetland Habitat – Southwest Drainage A is classified as a Palustrine Emergent, Persistent, Seasonally Flooded wetlands (PEMC1 Wetland Area D is tributary to Black Squirrel Creek off of the Site to the southeast. It is dominated by Nebraska sedge, clustered field sedge, swordleaf rush, redtop, poverty rush, Baltic rush, and pussytoes. Other species were present, including soft-stem bulrush, three-square bulrush, smartweed, saltgrass, foxtail barley, water mint, scouring rush, wild geranium, watercress, narrowleaf cattail, and snowberry, wild licorice and Wood's rose along the high banks. Sporadic occurrences of sandbar willow, crack willow and plains cottonwood were present. Soil samples indicate the presence of field indicators of hydric soils (10YR2/2 loamy clay from 0-6 inches, 10YR4/2 sand from 6-12 inches, 10YR4/1 sand from 12-16 inches, and 10YR4/1 clayey sand from 16-18+ inches). Sustaining hydrology from groundwater seepage was evident as saturated soil is present at or within 8-12 inches of the ground surface. These areas meet all 3 parameters for jurisdictional wetland habitat.

2) Non-Jurisdictional, Isolated Wetlands - The central Drainage C and south-central Drainage B were investigated found to be discontinuous, prairie sloughs with reaches that are upland swales; they exhibited upland "breaks" in which they did not exhibit defined bed or bank (Figure 7); and they were also found to be "isolated" as they did not connect with downstream WOUS. Patches of PEMC1 Wetland exists in these drainages that exhibits the same characteristics of other wetlands on site and meets all 3 parameters for jurisdictional wetland habitat. However, they are clearly disconnected from Black Squirrel Creek by uplands that do not exhibit a defined bed or bank. Therefore, these drainages are isolated, non-jurisdictional features and as such were not delineated.

3.4.3 Summary of Jurisdictional and Non-Jurisdictional Wetlands and Waters

Jurisdictional Habitat – Northeast Drainage D and southwest Drainage A (refer to Figure 7) are jurisdictional wetland habitat and WOUS as they are tributary to the jurisdictional habitat in Black Squirrel Creek. These natural features meet the criteria that the USACE uses to assert jurisdiction, as they are:

- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

Non-Jurisdictional Areas – The central Drainage C and south-central Drainage B are considered non-jurisdictional. They do not meet the criteria that the Corps uses to assert jurisdiction, as they are not:

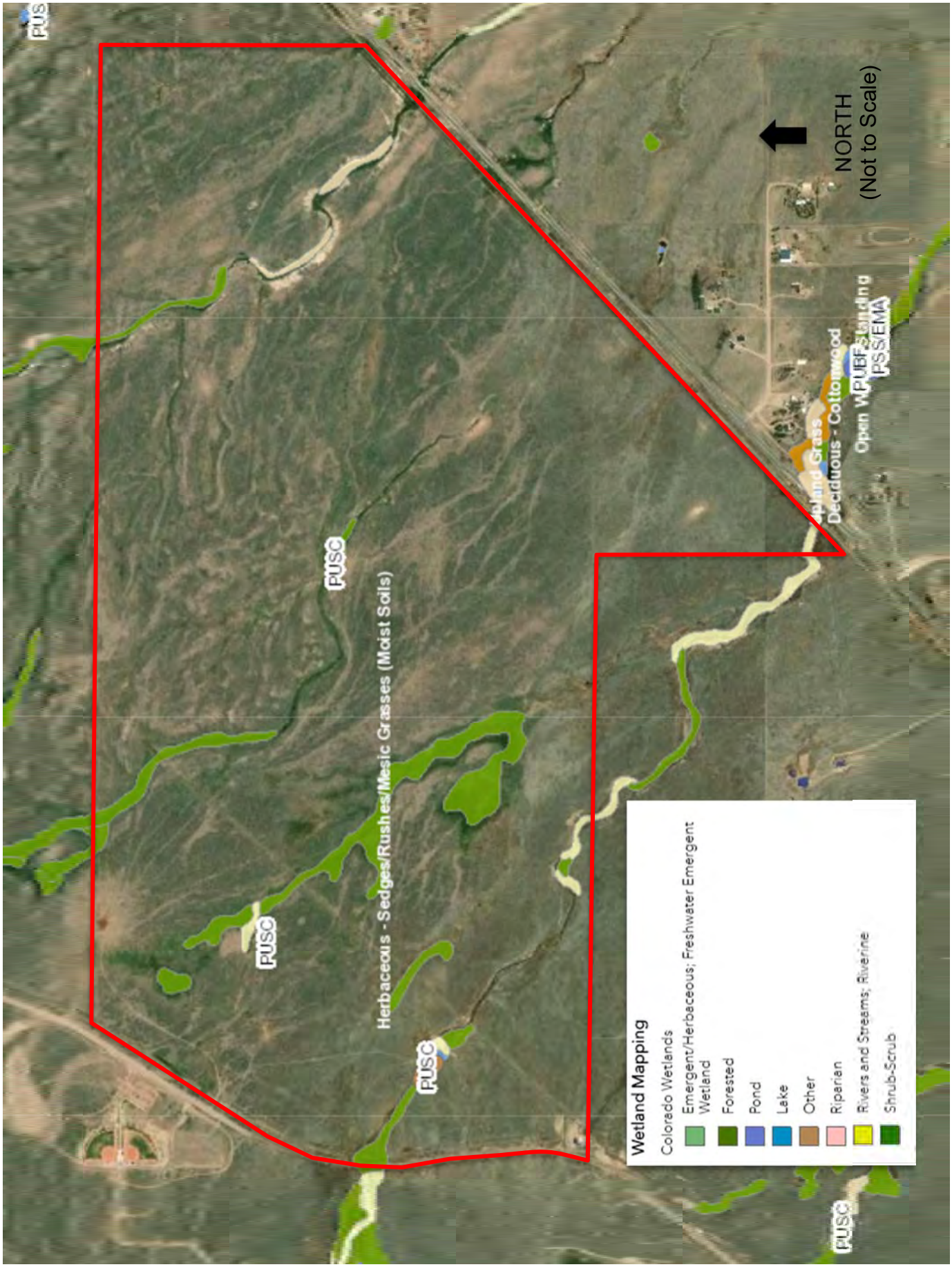
- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

Furthermore, Drainages B and C are not considered "tributaries", as "a tributary includes natural, man-altered, or man-made water bodies that carry flow directly or indirectly into a traditional navigable water." These drainages are ephemeral swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow) over which the Corps does not assert jurisdiction.

3.4.4 Verification by the U.S. Army Corps of Engineers

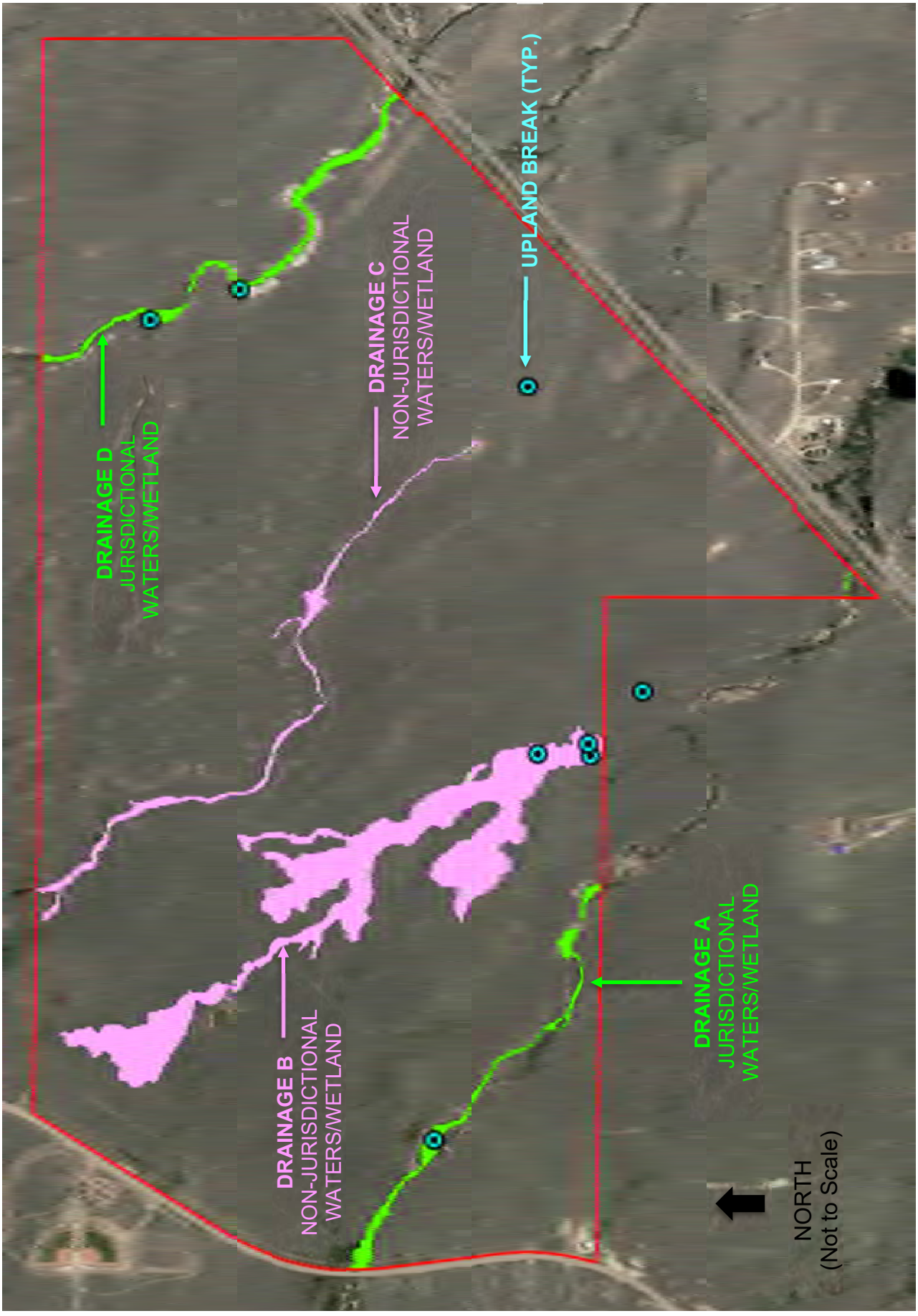
On July 5, 2019 the USACE provided an email to Ecos to confirm our findings of non-jurisdiction for Drainages B and C. Note that we did not request a jurisdictional determination of Drainages A and D as we have documented them to be jurisdictional. An excerpt of the USACE response from Tony Martinez, Regulatory Program Manager for the Albuquerque District, Southern Colorado Regulatory Branch of the USACE is copied below, and the original email is contained in Appendix C.

"Based on the information provided in the attached email and our site visit on June 21, 2019 our office concurs with your observations that central Drainage C and south-central Drainage B are isolated and are located entirely upland therefore, we conclude that No permit is required."



SOURCE: USFWS, National Wetland Inventory & CNHP, Colorado Wetland Inventory

Figure 6 NATIONAL WETLAND INVENTORY & CNHP WETLAND & RIPARIAN AREAS MAP



SOURCE: Ecosystem Services, LLC On-site Delineation, 10-11-18

Figure 7 ECOS WETLAND & WATERS SKETCH MAP

3.5 Wildlife Communities

The stated purpose and intent of the "El Paso County Development Standards" section on wildlife is to ensure that proposed development is reviewed in consideration of the impacts on wildlife and wildlife habitat, and to implement the provisions of the Master Plan (El Paso County, 2018b). Ecos has determined that the wildlife impact potential for development of the Site is expected to be low.

The Site currently provides poor to moderate habitat for wildlife, as illustrated in the representative photographs (Appendix B). There are two primary vegetation types on the Site, including shortgrass prairie and wetland habitat.

The project would develop most of the shortgrass prairie, however the drainages and adjacent short grass prairie would be preserved as Open Space. A noxious weed management plan will be implemented per State and County requirements to improve wildlife habitat; and a native plant re-vegetation plan for the Open Space is recommended to provide additional benefit to wildlife habitat.

The habitat preferences of the observed species are reflective of the habitat on Site. Two species of raptors were observed and appear to either be residents or frequent hunters to this Site: ferruginous hawk (*Buteo regalis*) and great horned owl (*Bubo virginianus*). Sandhill crane (*Grus canadensis*) were observed flying over during their migration, although they are not likely to utilize the Site. Prairie species such as jackrabbit (*Lepus townsendii*), pronghorn (*Antilocapra americana*), black-tailed prairie dog (*Cynomys ludovicianus*) and thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*) were present. The remaining species are considered generalists and included mourning doves (*Zenaida macroura*) and American crows (*Corvus brachyrhynchos*). The Site provides very limited tree nesting habitat for raptors; however, ferruginous hawks may also use ground nests. No existing nest sites for any raptors were noted during the Site visit.

The Site provides habitat for mammals including rodents, antelope, and carnivores. The site provides foraging and breeding habitat for predators such as coyote and fox. The Site also provides habitat for reptiles but limited habitat for amphibians due to the lack of persistent standing and flowing water.

The Site contains no Wildlife Refuges or Hatcheries according to the USFWS IPaC Trust Resources Report (USFWS, 2018b) (Appendix A).

4.0 FEDERAL LISTED SPECIES

A number of species that occur in El Paso County are listed as candidate, threatened or endangered by the USFWS (USFWS, 2018) under the ESA. Ecos compiled the Federally-listed species for the Site in Table 1 based on the Site-specific, USFWS IPaC Trust Resources Report we ran for the Project (Appendix A); and our onsite assessment. Ecos has provided our professional opinion regarding the probability that these species may occur within the Site and their probability of being impacted by the Project.

The likelihood that the Project would impact any of the species listed below is very low to none. Most are not expected occur in the Project area or on the Site; nor will they be affected by the direct or indirect effects of the project.

TABLE 1 - FEDERAL LISTED SPECIES ASSESSED FOR THE PROJECT			
Species	**Status**	**Habitat Requirements and Presence**	**Probability of Impact by Project**
FISH			
Greenback cutthroat trout (*Oncorhynchus clarki stomias*)	Threatened	Cold, clear, gravely headwater streams and mountain lakes that provide an abundant food supply of insects.	None. Suitable habitat does not exist on the Site.
Pallid sturgeon (*Scaphirhynchus albus*)	Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed Project is not located in the watershed of any of the listed river basins.
REPTILES AND AMPHIBIANS			
BIRDS			
Least tern (*Sternula antillarum*)	Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed Project is not located in the watershed of any of the listed river basins.
Mexican spotted owl (*Strix occidentalis lucida*)	Threatened	Mature, old-growth forests of white pine, Douglas fir, and ponderosa pine; steep slopes and canyons with rocky cliffs. The closest USFWS designated Critical habitat is over 15 miles southwest of the Site in mountainous terrain (USFWS, 2018).	None. Suitable habitat does not exist on the Site.
Piping plover (*Charadrius melodus*)	Threatened	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed Project is not located in the watershed of any of the listed river basins.
Whooping crane (*Grus americana*)	Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The proposed Project is not located in the watershed of any of the listed river basins.
MAMMALS			

TABLE 1 - FEDERAL LISTED SPECIES ASSESSED FOR THE PROJECT			
Species	**Status**	**Habitat Requirements and Presence**	**Probability of Impact by Project**
Preble's meadow jumping mouse (*Zapus hudsonius preblei*)	Threatened	Inhabits well-developed riparian habitat with adjacent, relatively undisturbed grassland communities, and a nearby water source. Well-developed riparian habitat includes a dense combination of grasses, forbs and shrubs; a taller shrub and tree canopy may be present. Has been found to regularly use uplands at least as far out as 100 meters beyond the 100-year floodplain.	None. Not likely to occur on Site due to: 1) the absence of habitat required to support the life requisites of the species (Figure 8 and Appendix B); 2) negative trapping results reported by USFWS adjacent to the Site (Figure 9); 3) 10.22-mile distance from closest CPW "Potential" Occupied Habitat - west/northwest of the Site in Colorado Springs (refer to Figure 8); 4) 6.5-mile distance from closest USFWS Critical Habitat - southwest of the Site along Black Squirrel Creek in Colorado Springs (refer to Figure 8); and 5) lack of habitat connection corridor from known habitat to the Site.
PLANTS			
Ute ladies'-tresses orchid (*Spiranthes diluvialis*)	Threatened	Primarily occurs along seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels or valleys, and lakeshores. May also occur along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside borrow pits, reservoirs, and other human-modified wetlands.	Very Low. Unlikely to occur as the Site is situated between 6,860 and 7,020 feet above mean sea level, which is higher than the 6,500-foot elevation limits documented for the species and recommended for conducting surveys by the USFWS.
Western prairie fringed orchid (*Platanthera praeclara*)	Threatened	Occurs in tallgrass prairie in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and Oklahoma. Upstream depletions to the Platte River system in Colorado and Wyoming may affect the species in Nebraska.	None. The proposed Project will not alter or deplete flows to the Platte River system.

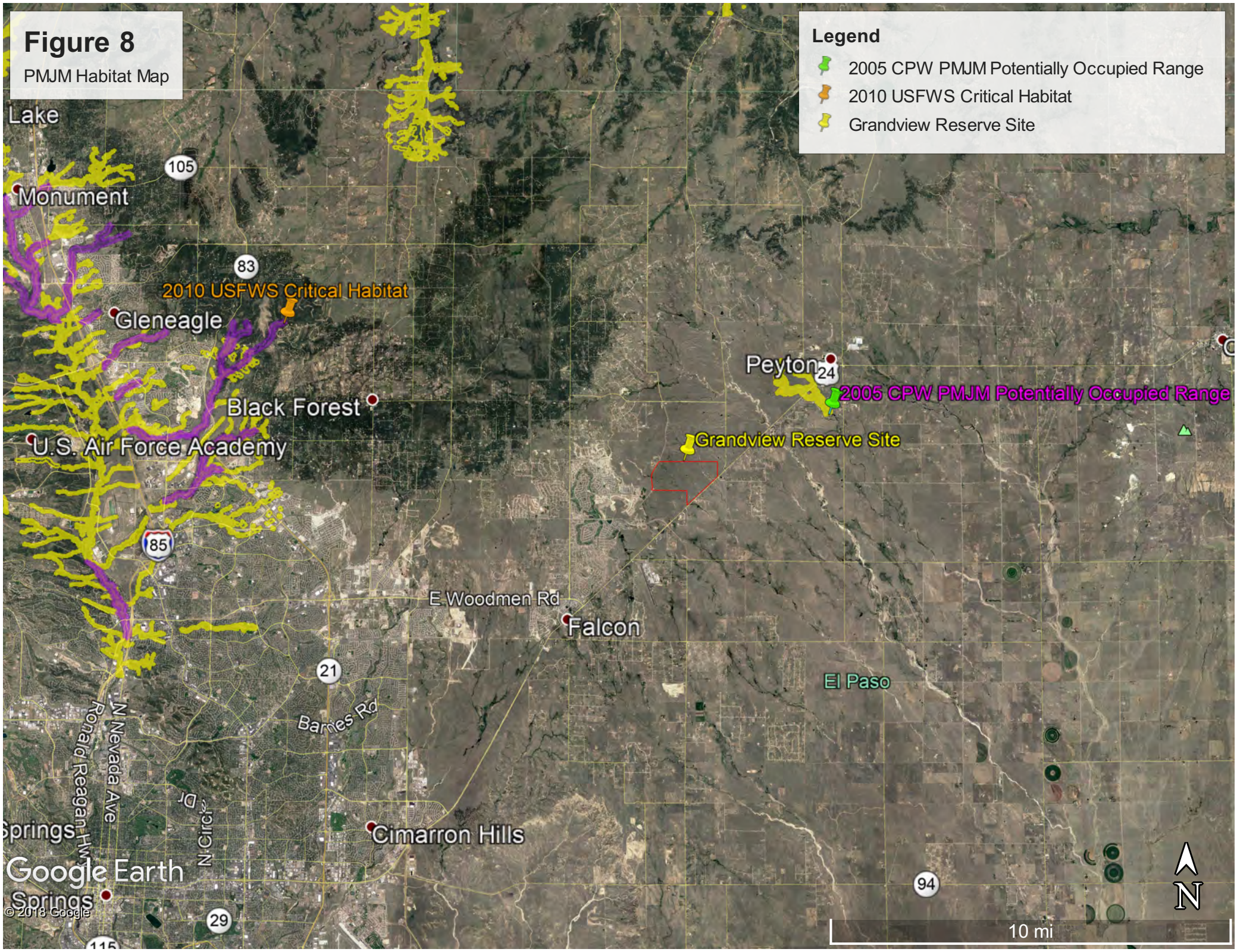


Figure 8
PMJM Habitat Map
Legend
2005 CPW PMJM Potentially Occupied Range
2010 USFWS Critical Habitat
Grandview Reserve Site
Lake
105
Monument
83
2010 USFWS Critical Habitat
Gleneagle
Peyton
24
2005 CPW PMJM Potentially Occupied Range
Black Forest
Grandview Reserve Site
U.S. Air Force Academy
85
E Woodmen Rd
Falcon
21
El Paso
Barnes Rd
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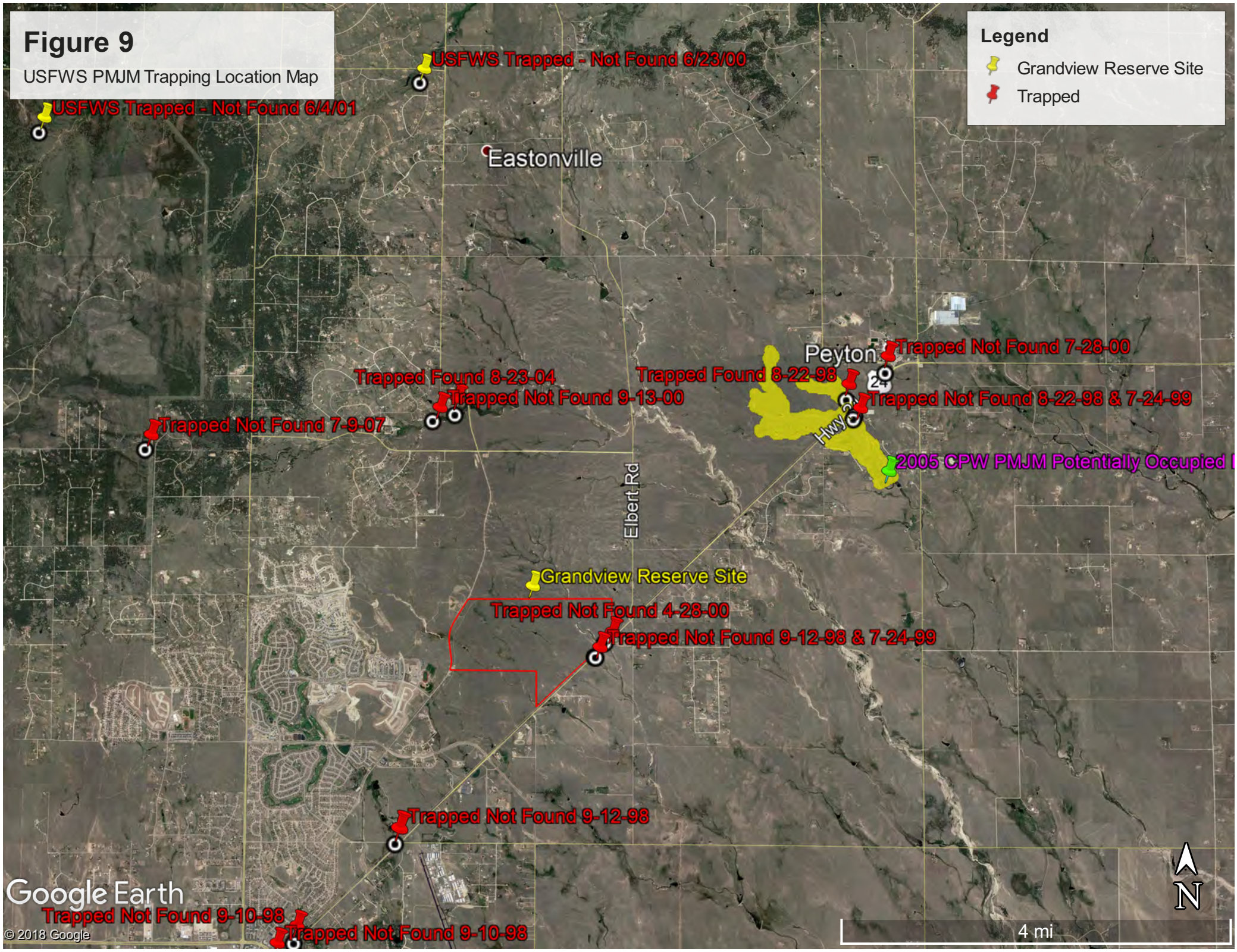
Figure 9
USFWS PMJM Trapping Location Map
Legend
Grandview Reserve Site
Trapped
USFWS Trapped - Not Found 6/23/00
USFWS Trapped - Not Found 6/4/01
Eastonville
Peyton
Trapped Not Found 7-28-00
Trapped Found 8-22-98
Trapped Found 8-23-04
Trapped Not Found 9-13-00
Trapped Not Found 8-22-98 & 7-24-99
Trapped Not Found 7-9-07
Hwy 24
2005 CPW PMJM Potentially Occupied
Elbert Rd
Grandview Reserve Site
Trapped Not Found 4-28-00
Trapped Not Found 9-12-98 & 7-24-99
Trapped Not Found 9-12-98
Google Earth
Trapped Not Found 9-10-98
Trapped Not Found 9-10-98
© 2018 Google
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4 mi

5.0 EFFECTS DETERMINATION

The Site is not located within any USFWS designated critical habitat or known occupied habitat for federally listed threatened or endangered species. Please refer to the IPaC database (Appendix A) and Table 1.

The Project will have **No Effect** on the following listed species:

- Listed species in Nebraska, as the Site is not located in the North Platte, South Platte or Laramie River basins.
- Greenback cutthroat trout, Mexican spotted owl and North American wolverine, as suitable habitat does not exist on the Site.
- Western prairie fringed orchid, as the Site will not alter or deplete flows to the Platte River system.
- Ute ladies'-tresses orchid is unlikely to occur as the Site is situated between 6,860 and 7,020 feet above mean sea level, which is higher than the 6,500-foot elevation limits documented for the species and recommended for conducting surveys by the USFWS.
- Preble's meadow jumping mouse: This species occurs in the County but is not known to occur on the Site due to:
    - The absence of habitat required to support the life requisites of the species;
    - Negative trapping results (i.e., Trapped – Not Found) reported by USFWS upstream and downstream of the Site on West Kiowa Creek, and east of the Site on Kiowa Creek;
    - 2.5 mile distance from the closest CPW "Potential" Occupied Habitat;
    - 6.5 mile distance from the closest USFWS Critical Habitat; and
    - The lack of viable habitat connection corridors from known, occupied habitat to the Site.

6.0 CONSERVATION MEASURES

Species that occur in wetland and riparian habitat are expected to benefit from the proposed change in land use. All four onsite drainages will be protected via drainage easements and will also be located in Open Space. Eliminating cattle grazing from the Site would allow for more native herbaceous and woody vegetation to grow along the drainages, thus improving habitat for many wildlife species. A noxious weed management plan will be implemented per State and County requirements to improve wildlife habitat; and a native plant re-vegetation plan for the Open Space is recommended to provide additional benefit to wildlife habitat. Implementation of the stormwater management plan will further assist in protecting water quality in all drainages, provide consistent flows to non-jurisdictional/ephemeral drainages, and ameliorate development impacts on aquatic wildlife species, such as leopard frogs.

The following, additional recommendations are intended to reduce potential impacts to wildlife:

1. Limit the use of herbicides, pesticides, and fertilizers as they can negatively impact aquatic wildlife species.
2. Minimize the installation of fencing. When fencing is needed, use wildlife friendly fences or include specific wildlife crossings along fence lines. Pronghorn are of particular concern because they do not jump over fences and can be injured by barbed-wire fences.
3. Road crossings over the Creek should be designed to enable wildlife underpass and allow use the Creek as a movement corridor to reduce collisions with vehicles.
4. Dogs should be kept in fenced pens and be leashed when on walks. At least one designated off-leash area for dogs should be provided, as this will increase compliance with leash rules in other areas.
5. Cats should not be allowed outdoors because they kill birds and native rodents.

7.0 CONCURRENCE REQUEST

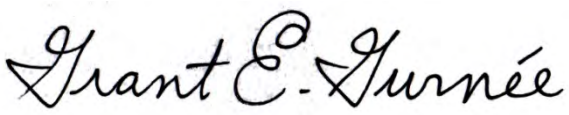
Ecos requests informal concurrence from the USFWS with our No Effects Determination based on the information presented herein. The Project and its direct and indirect environmental effects don't occur in any designated critical habitat. The majority of the ESA-listed species don't occur in the Project area and are absent from all areas where the Project will have direct or indirect environmental effects. Preble's meadow jumping mouse and Ute ladies'-tresses orchid occur in the County but are not known to occur in the Project area and areas where the Project will have direct or indirect environmental effects.

Thank you for your assistance with this project. Please feel free to call ecos (970) 812-3267 if you have any questions.

Sincerely,

Ecosystem Services, LLC

Jon Dauzvardis, P.W.S.
Owner - Restoration Ecologist



Grant E. Gurnée, P.W.S.
Owner - Restoration Ecologist

Cc: Peter Martz, 4 Site Investments

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Appendix G
MT – 2 Checklist

MT-2 REVISION REQUEST SUBMITTAL CHECKLIST

PART A: GENERAL REQUIREMENTS

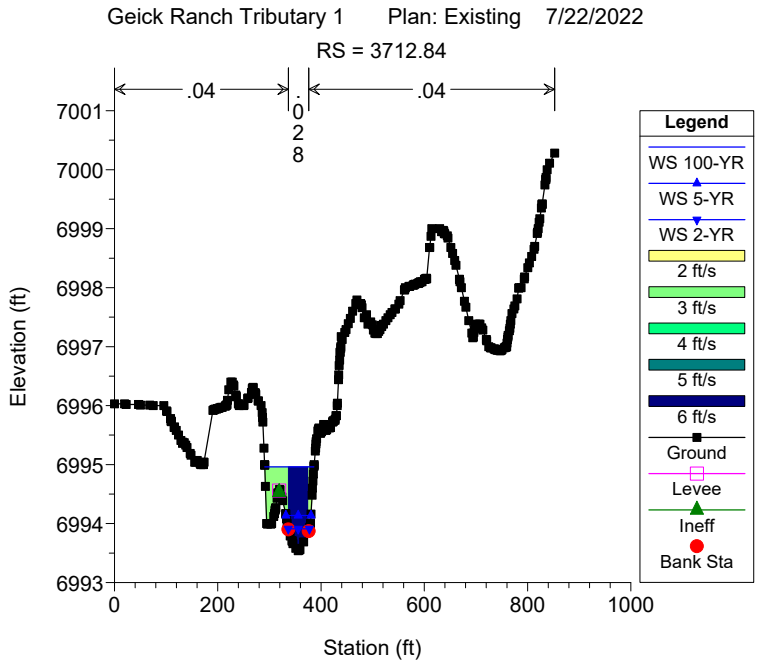
ELEMENTS	Yes	N/A
NARRATIVE: Please provide a written description about the purpose of the request and the scope of the proposed/as-built project and the methodology used to analyze the project effects.	X	
MT-2 APPLICATION FORMS: Please provide completed forms applicable to your request. Ensure that MT-2 Form 1 was signed by the requester, certifying engineer, and each community affected by the revision.	X	
HYDROLOGIC ANALYSIS: If applicable, please provide a FEMA acceptable hydrologic analysis in digital format, drainage area map and associated backup information (e.g., calculations used to determine lag time, CN and loss values as well as landuse and soil maps). FEMA-acceptable models can be accessed at www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/numerical-models-meeting-minimum-requirements.		X
HYDRAULIC ANALYSIS: Please provide a FEMA acceptable hydraulic analysis in digital format. FEMA-acceptable models can be accessed at www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/numerical-models-meeting-minimum-requirements.	X	
CERTIFIED TOPOGRAPHIC WORK MAP: Please provide a certified topographic work map that meets the mapping requirements outlined in MT-2 Form 2. If available, please provide digital Computer-Aided Design (CAD) or Geographic Information System (GIS) data that is spatially referenced.	X	
ANNOTATED FIRM: Please submit a revised FIRM, at the scale of the effective FIRM, which shows the revised boundary delineation of the base floodplain, 0.2-percent-annual-chance floodplain, and regulatory floodway and how it ties into the boundary delineation shown on the effective FIRM at the downstream and upstream ends of the revised reach.	X	
REVIEW FEE PAYMENT: Please include the appropriate review fee payment. The current fee schedule is available on the FEMA Web site at https://www.fema.gov/flood-map-related-fees.		X
MEET 65.10 REQUIREMENT: If the request intends to show that a berm/levee/flood wall provides flood protection, please submit all of the data requirements outlined in Section 65.10 of the NFIP regulations.		X
OPERATION AND MAINTENANCE PLAN: If the request involves a berm, levee, flood wall, dam, and/or detention basin project, please submit an officially adopted maintenance and operation plan.		X
PROPOSED/AS-BUILT PLANS: If applicable, please submit proposed/as-built plans, certified by a registered Professional Engineer, for all the project elements.	X	
FLOODWAY NOTICE: If the revision result in changing or establishing floodway boundaries, please provide floodway public notice or a statement by your community that it has notified all affected property owners, in compliance with NFIP regulation Subparagraph 65.7(b)(1).	X	
PROPERTY OWNER NOTIFICATION: If the revision result in any widening/shifting/establishing of the base floodplain and/or any BFE increases/establishing BFEs, please provide copy of the individual legal notices sent to all the property owners affected by any increases in the flood hazard information.	X	

PART B: CLOMR SPECIFIC REQUIREMENTS

Endangered Species Act COMPLIANCE: Please submit documentation of compliance with the ESA Requirements. To learn more about ESA Compliance, please see the MT-2 Instructions manual.	X	
65.12 REGULATORY REQUIREMENTS: If the Base (1-percent-annual-chance) Flood Elevation (BFE) increases greater than 0.00 foot as a result of encroachment within a floodway or 1.0 foot within Zone AE that has no floodway/Zone A, between the pre-project (existing) conditions and the proposed conditions as a result of the proposed project. Please submit a). Certification that no structures are affected by the increased BFE; b). Documentation of individual legal notice to all affected property owners, explaining the impact of the proposed action on their property; and c). An evaluation of alternatives that would not result in an increase in BFE.		X

Note: Applicants are encouraged to submit their revision request using the Online LOMC tool. To learn more about the Online LOMC tool, visit the FEMA website at www.fema.gov/online-lomc.

Appendix H
Existing Condition Cross Sections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Ground
Levee
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Bank Sta
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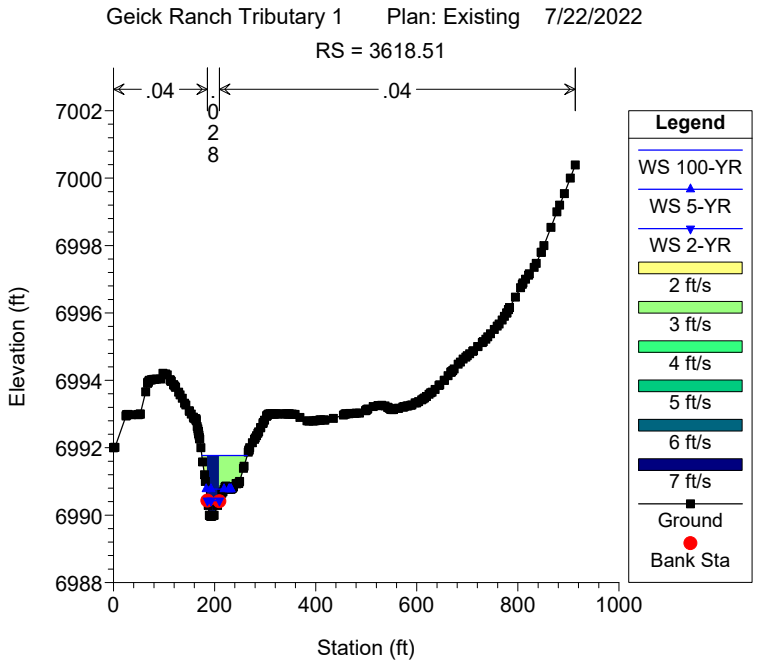
Station (ft)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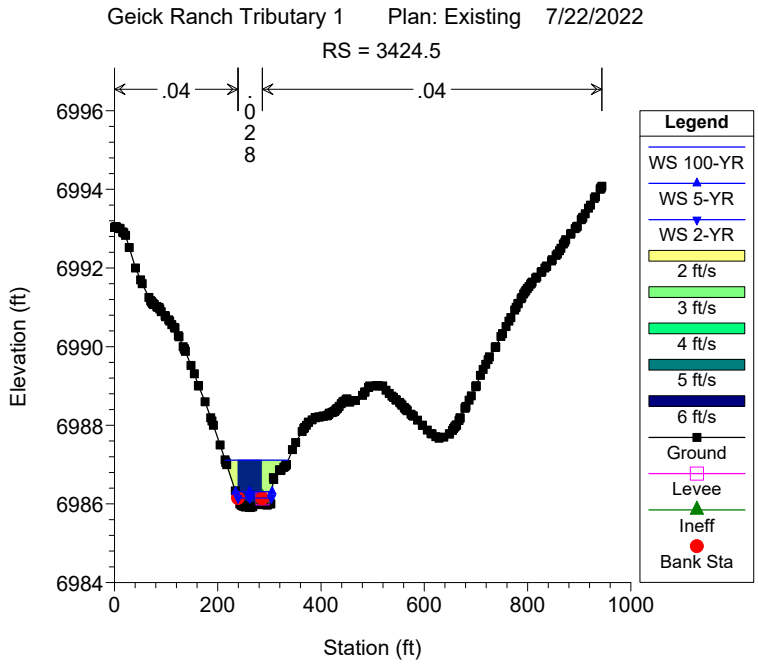
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Bank Sta
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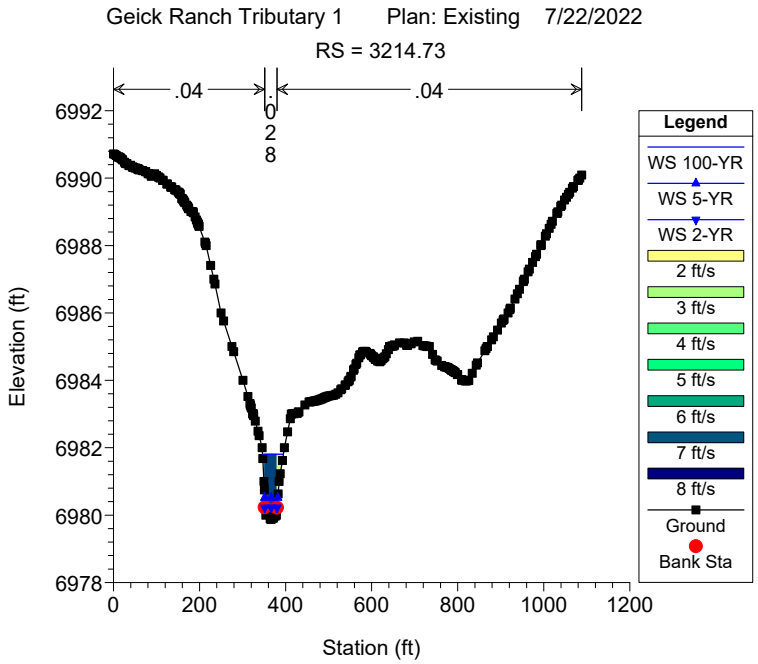
Station (ft)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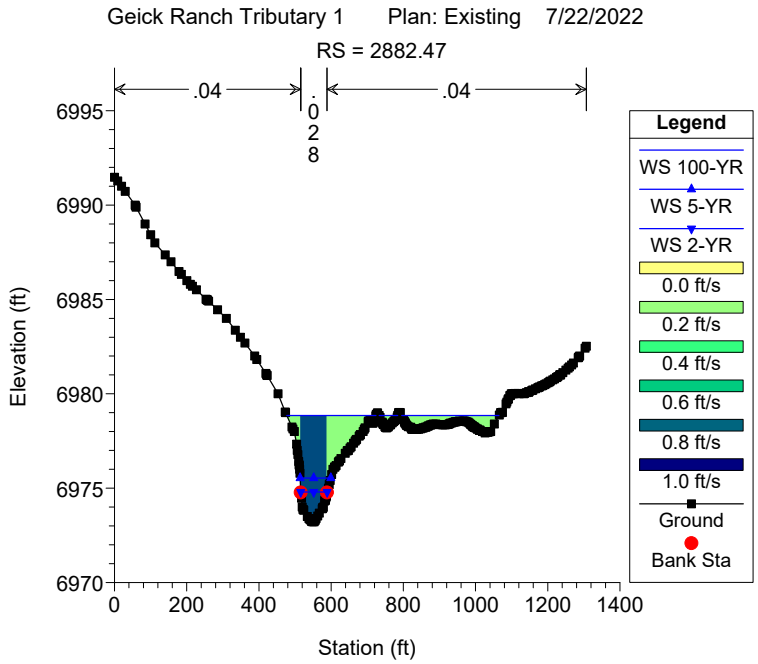
Station (ft)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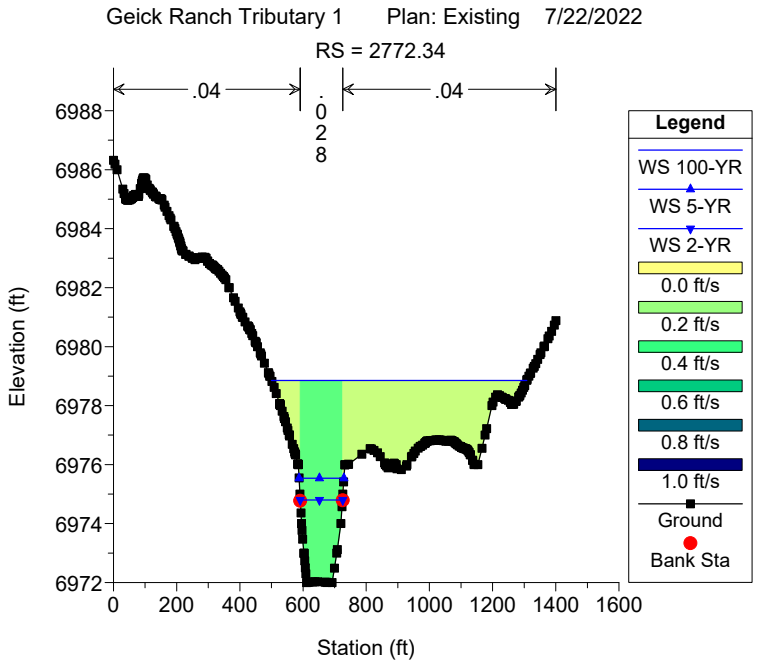
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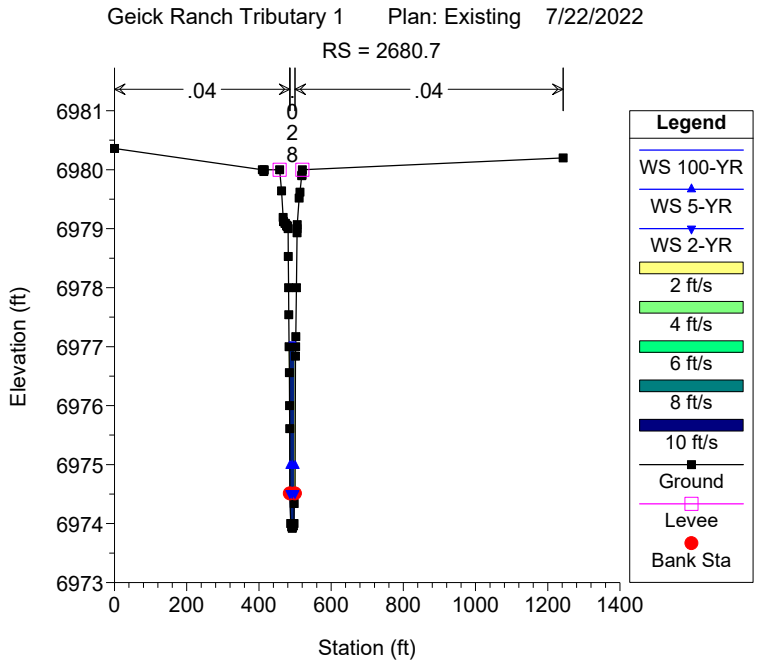
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Levee
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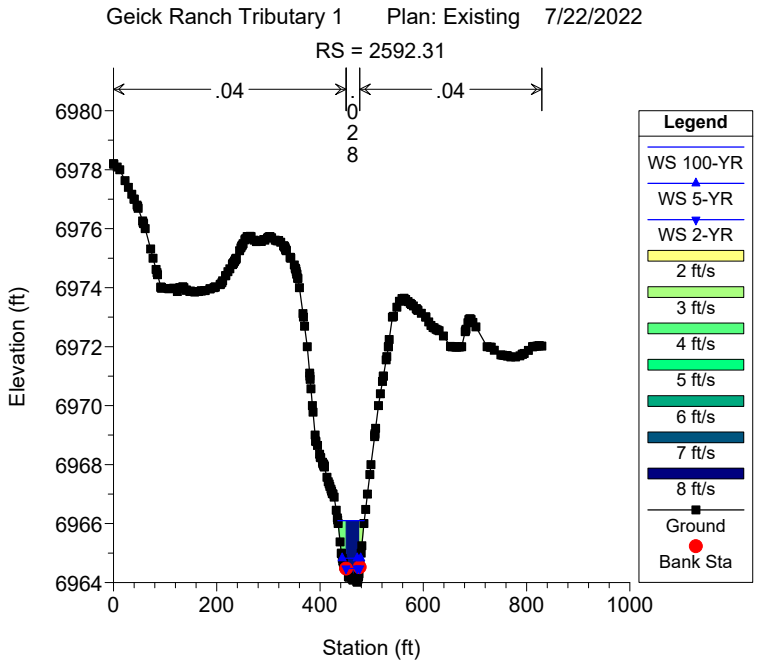
Station (ft)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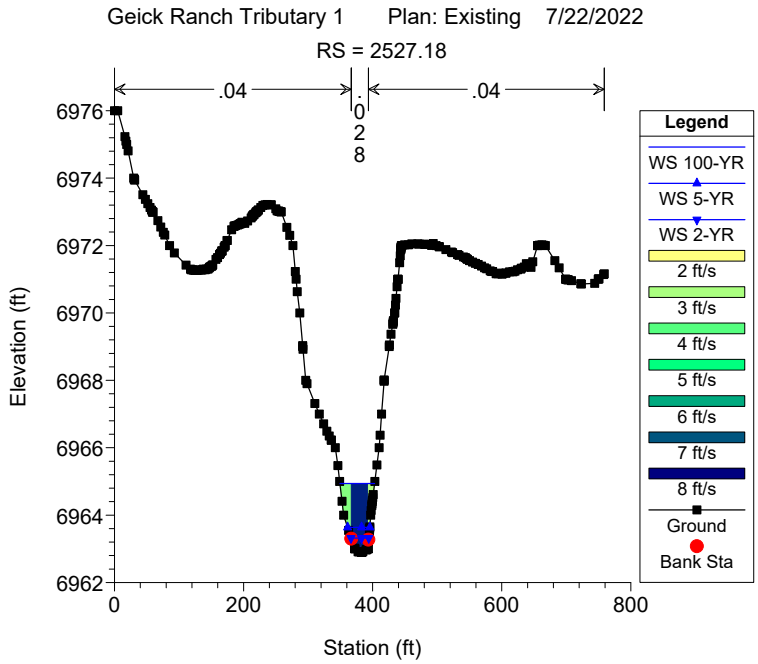
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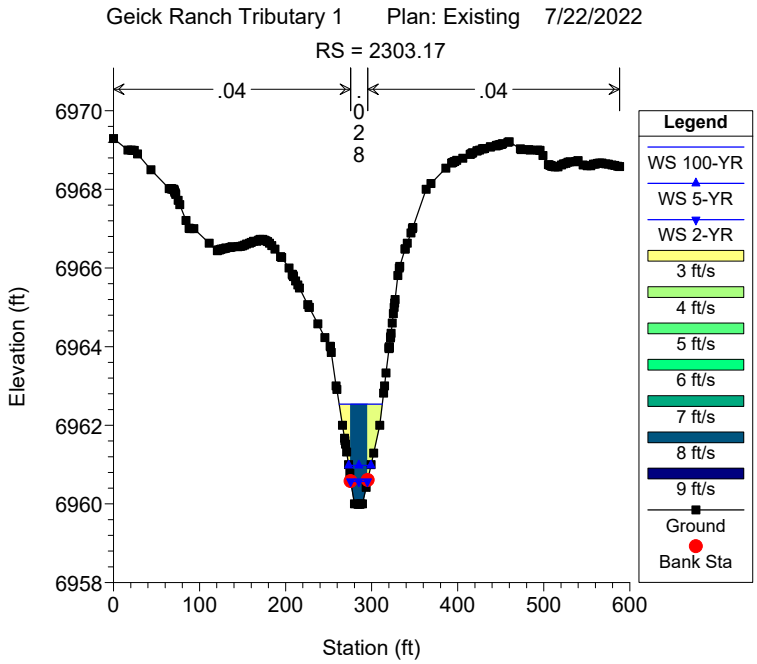
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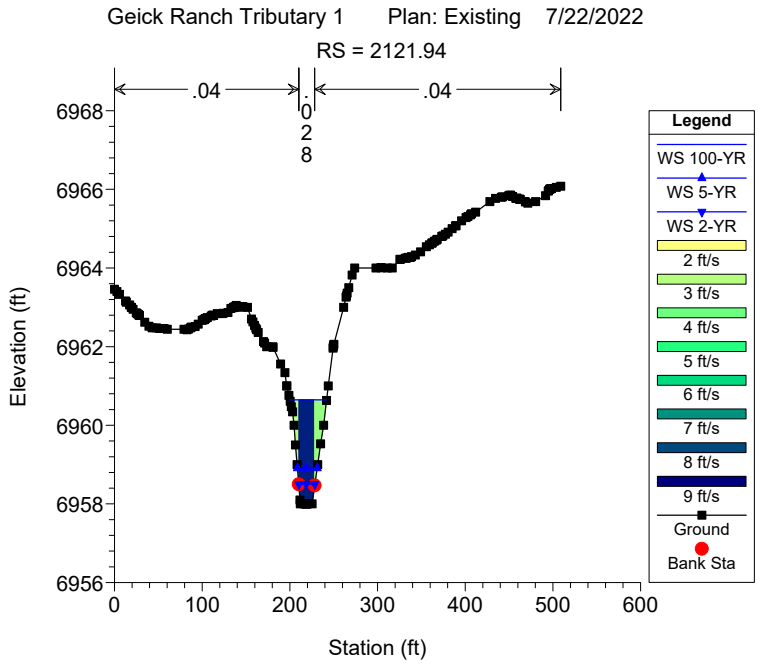
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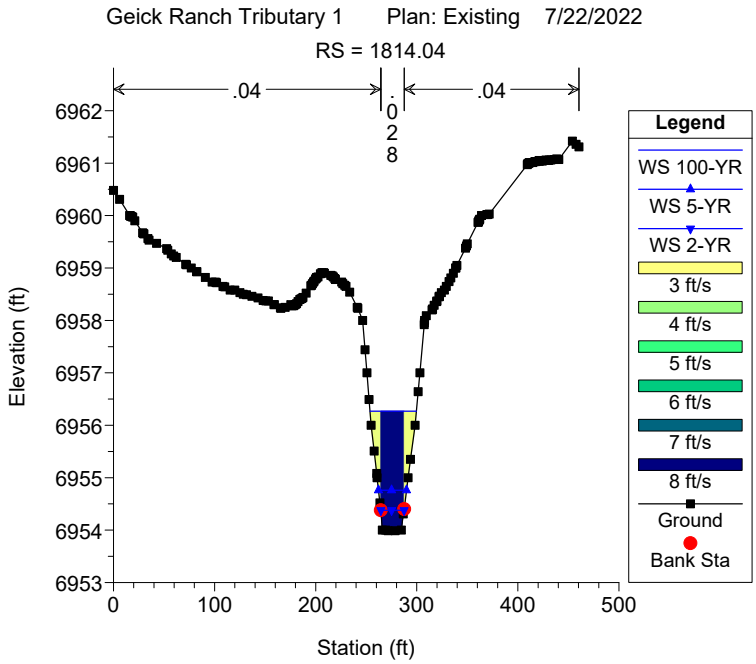
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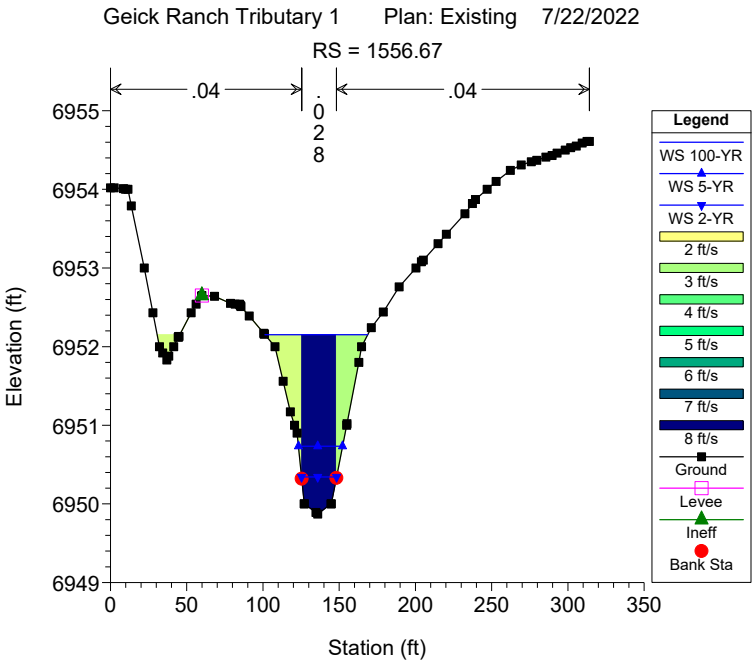
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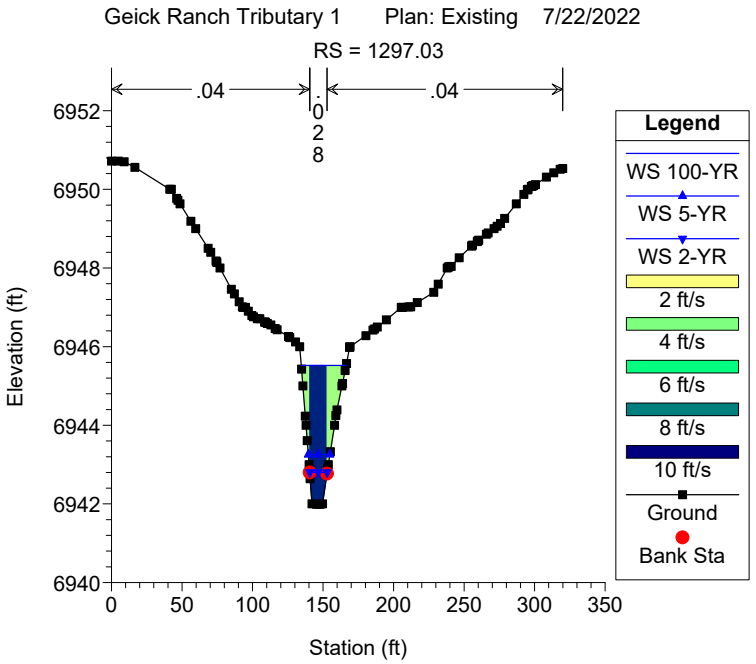
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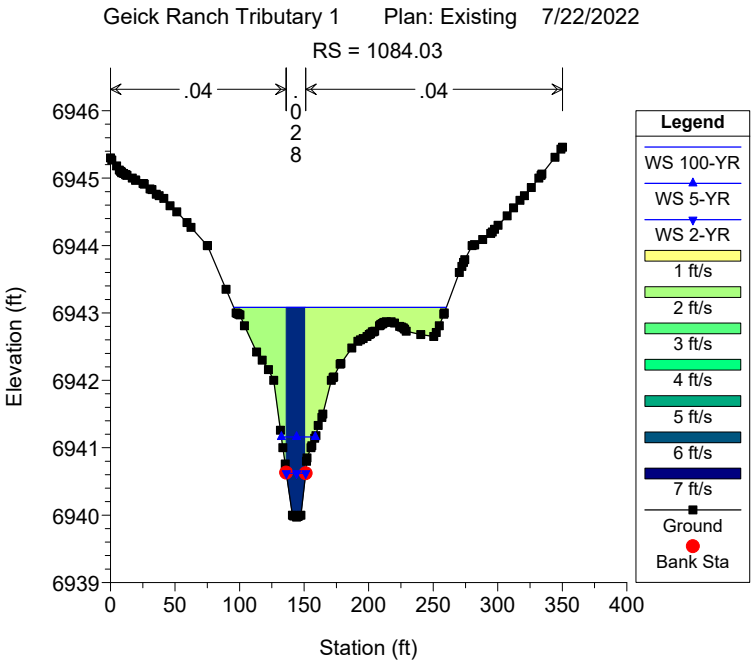
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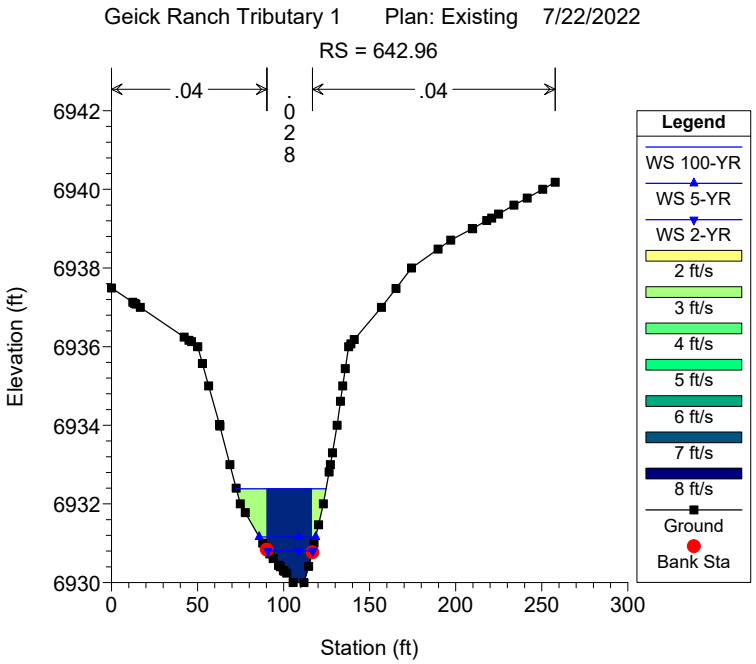
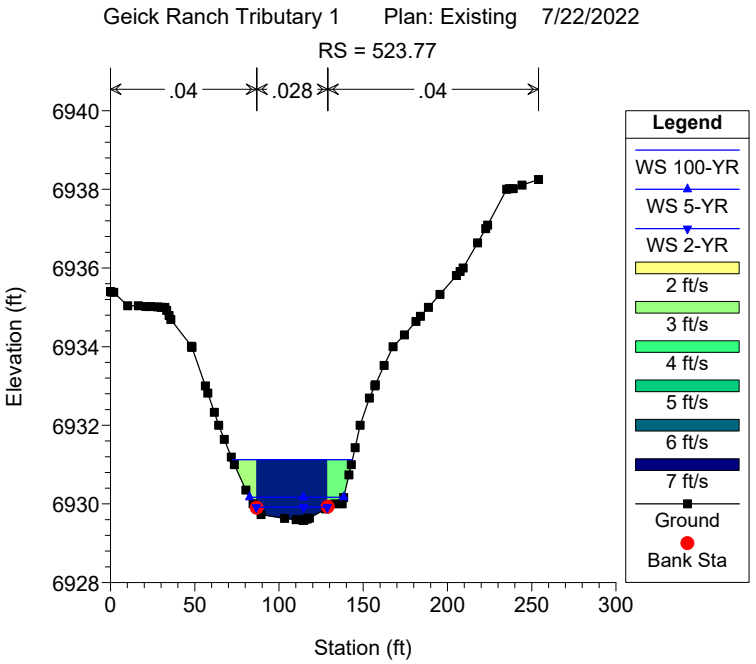
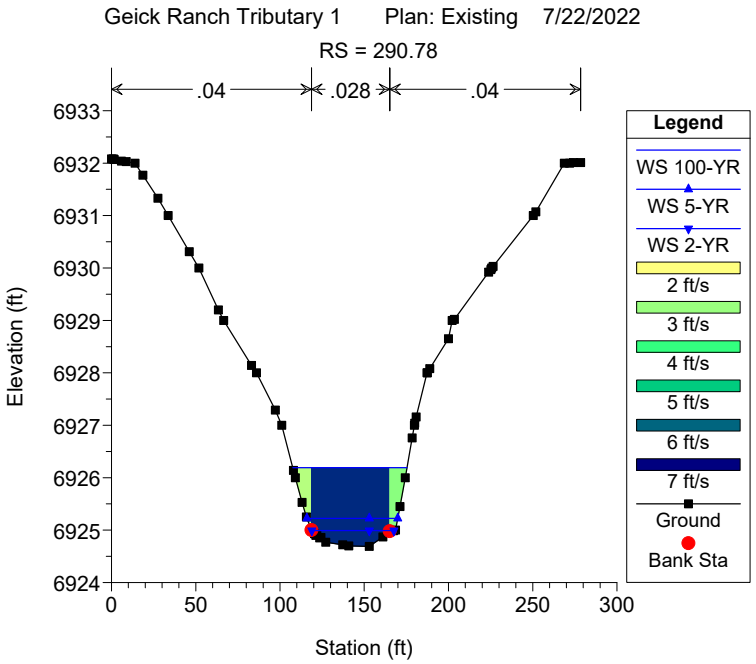
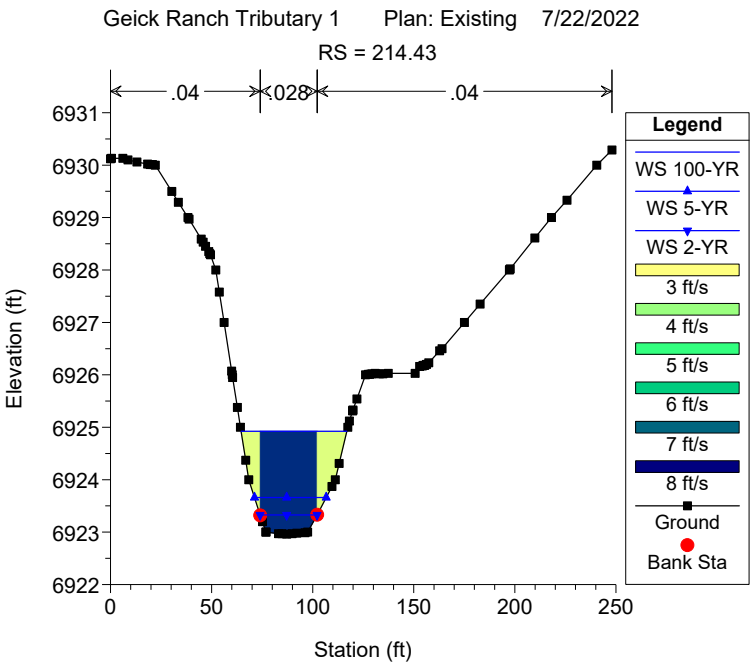
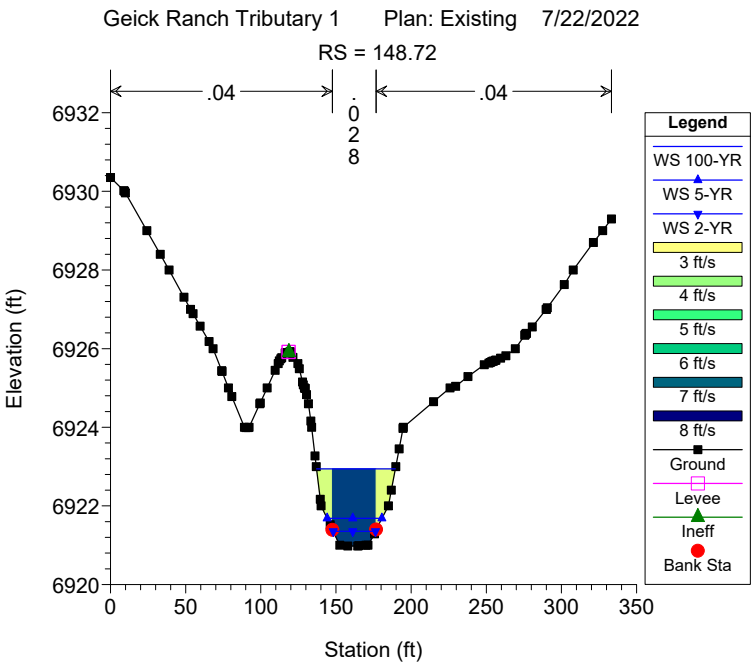
7 ft/s
Ground
Bank Sta

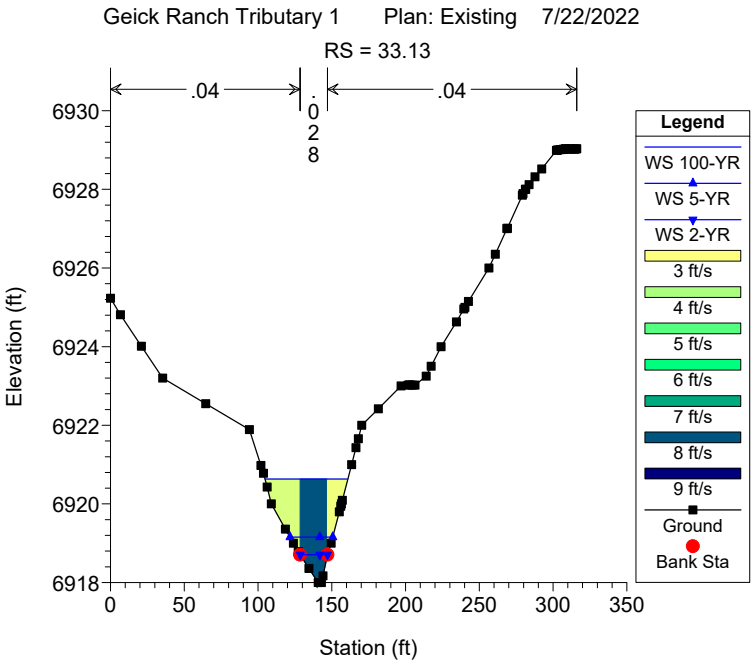

Geick Ranch Tributary 1 Plan: Existing 7/22/2022
RS = 642.96
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta

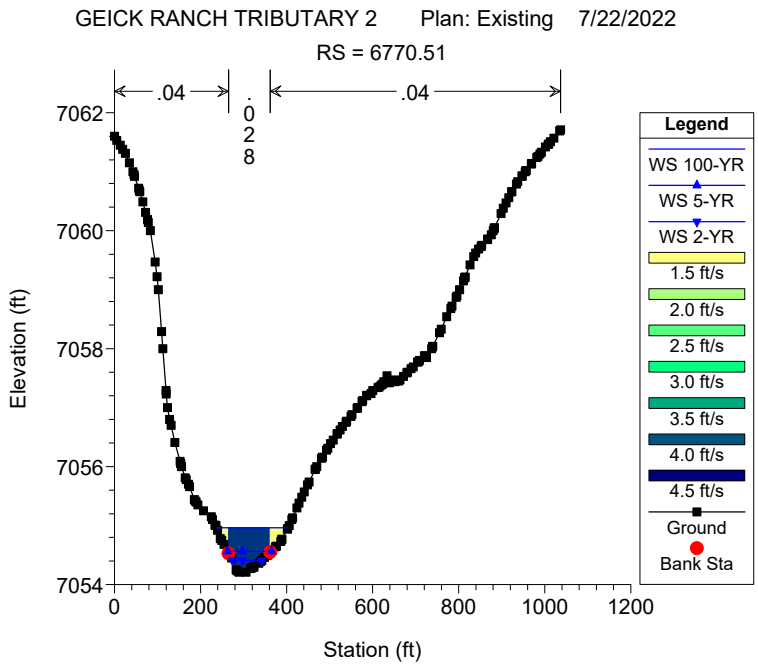

Geick Ranch Tributary 1 Plan: Existing 7/22/2022
RS = 523.77
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

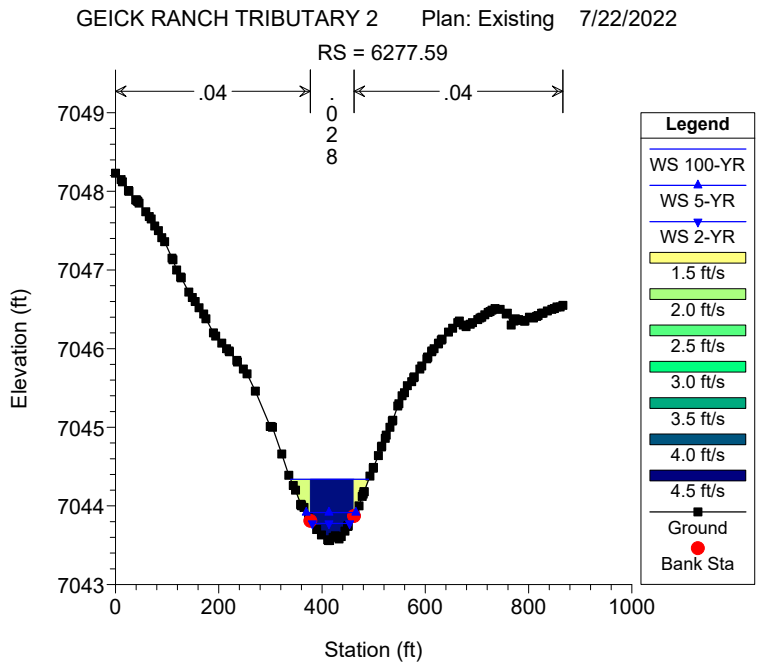

Geick Ranch Tributary 1 Plan: Existing 7/22/2022
RS = 290.78
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

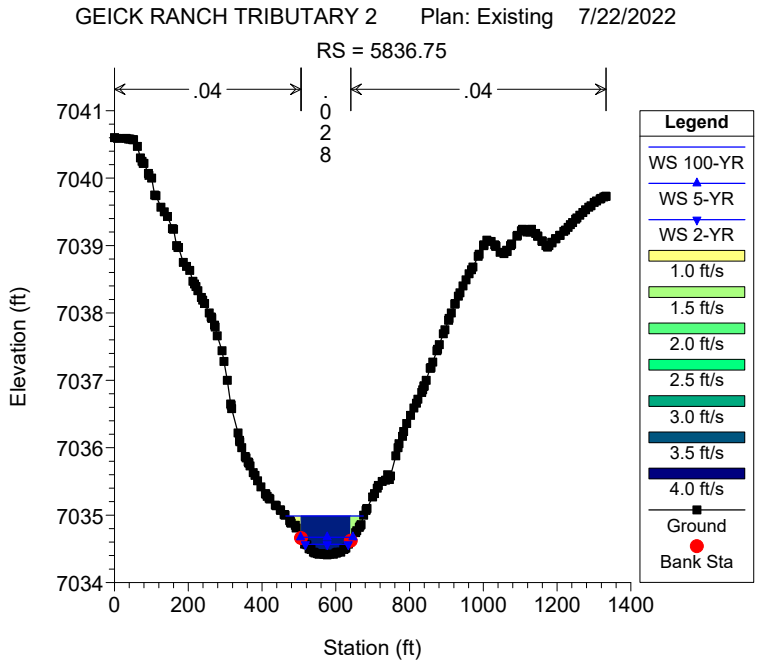

Geick Ranch Tributary 1 Plan: Existing 7/22/2022
RS = 214.43
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

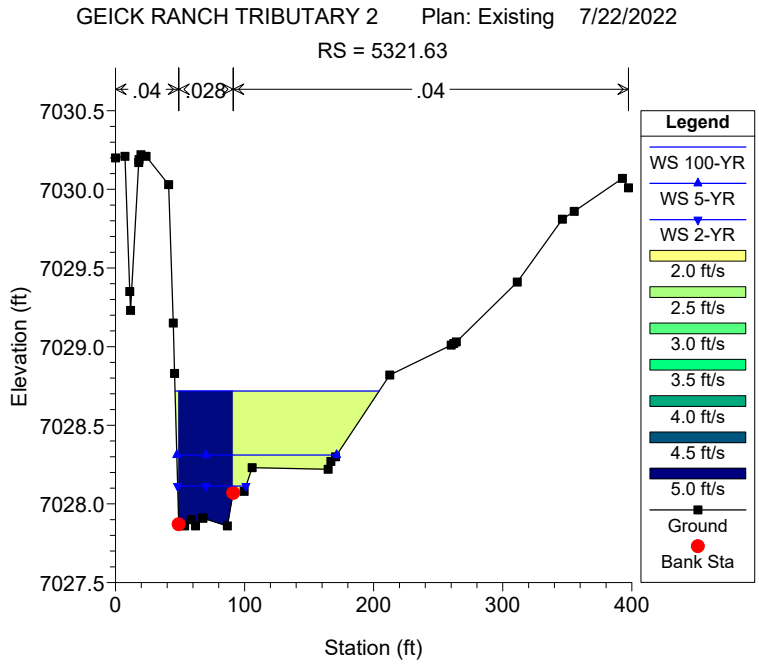

Geick Ranch Tributary 1 Plan: Existing 7/22/2022
RS = 148.72
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Levee
Ineff
Bank Sta
Elevation (ft)
Station (ft)

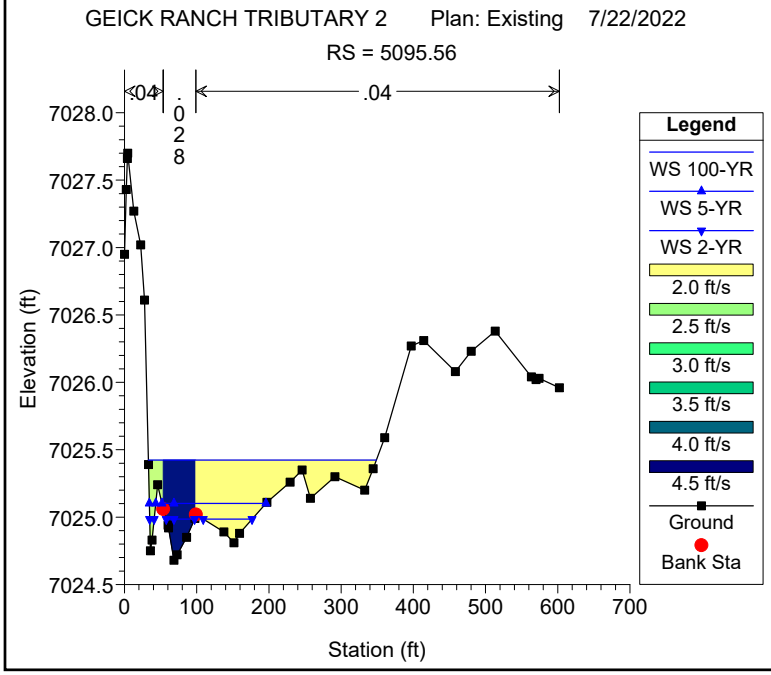

Geick Ranch Tributary 1 Plan: Existing 7/22/2022
RS = 33.13
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

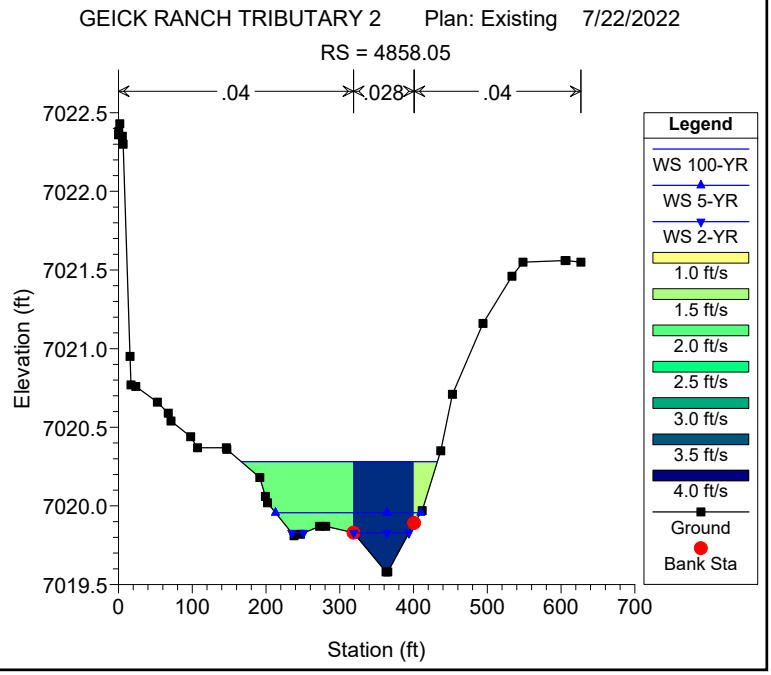

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 6770.51
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
Ground
Bank Sta

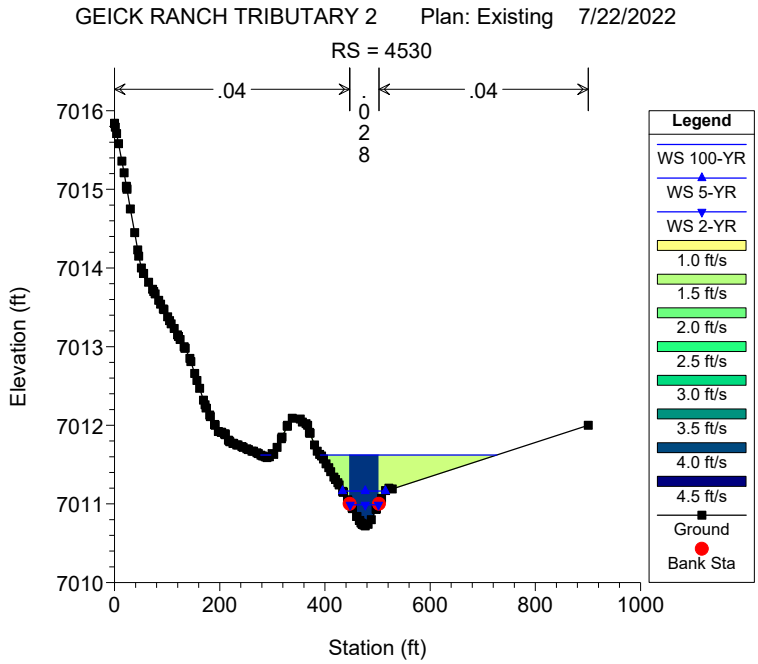

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 6277.59
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
Ground
Bank Sta

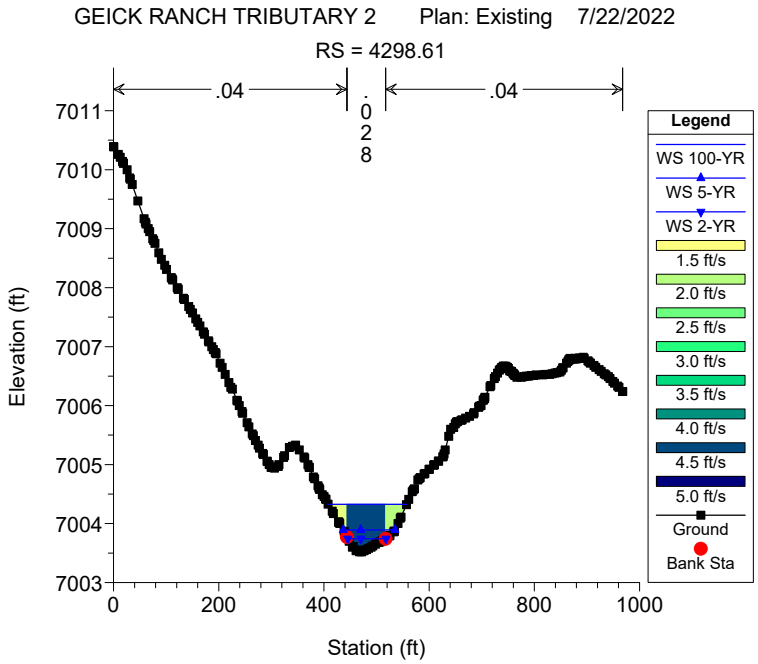

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 5836.75
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
Ground
Bank Sta

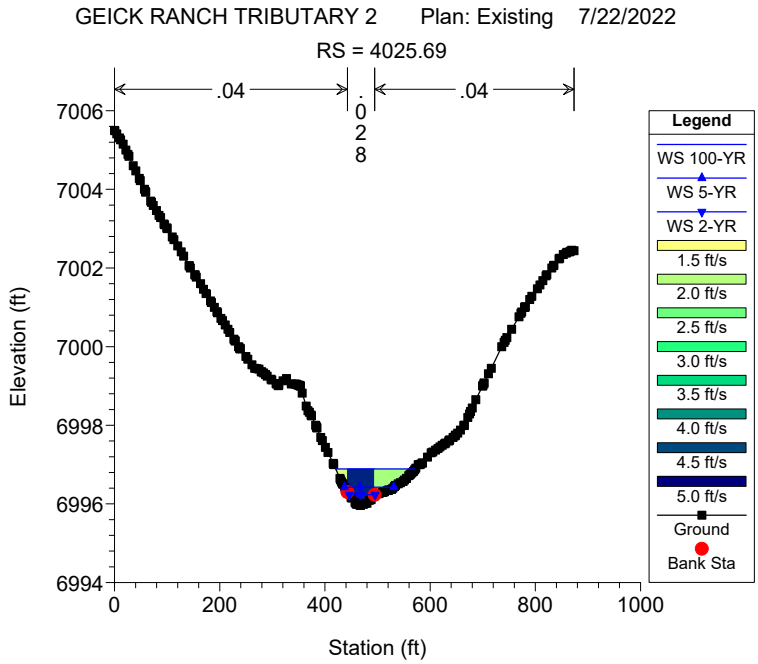

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 5321.63
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
Ground
Bank Sta

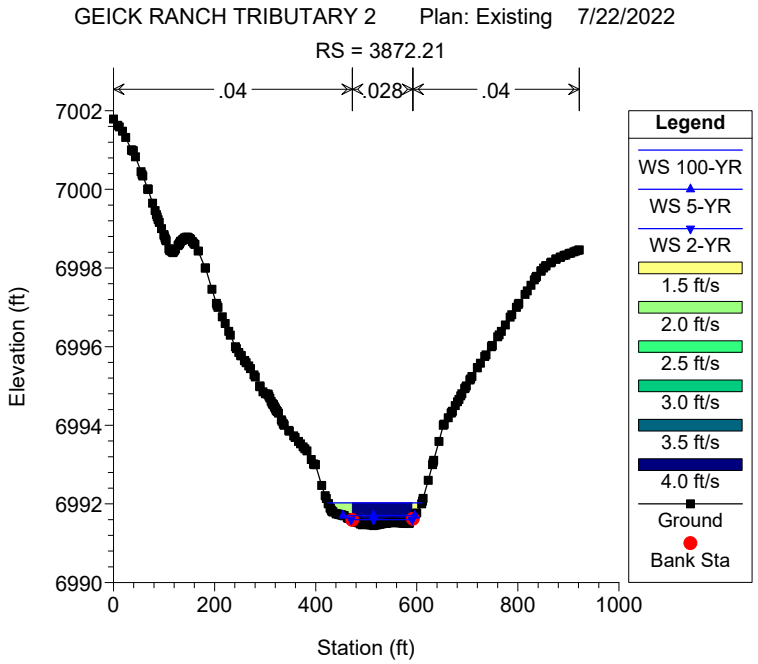

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 5095.56
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
Ground
Bank Sta

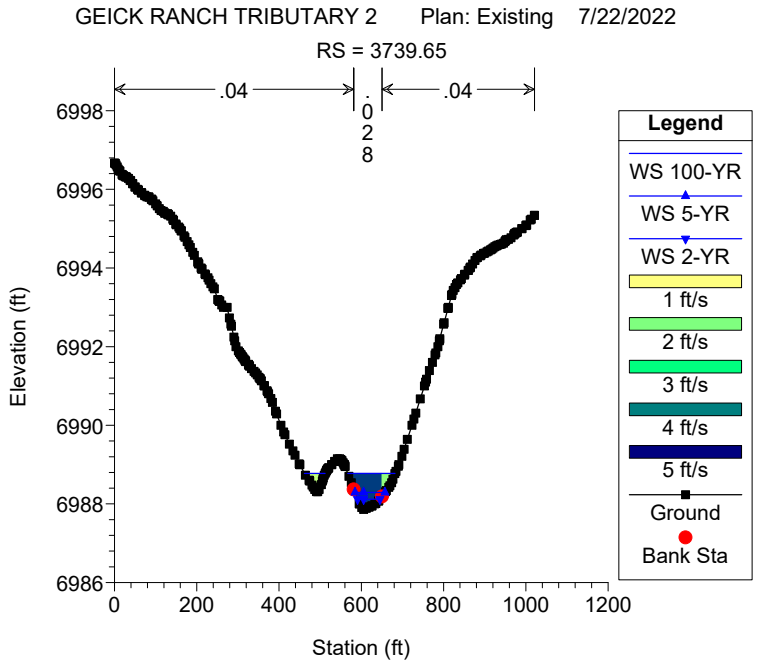

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 4858.05
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
Ground
Bank Sta

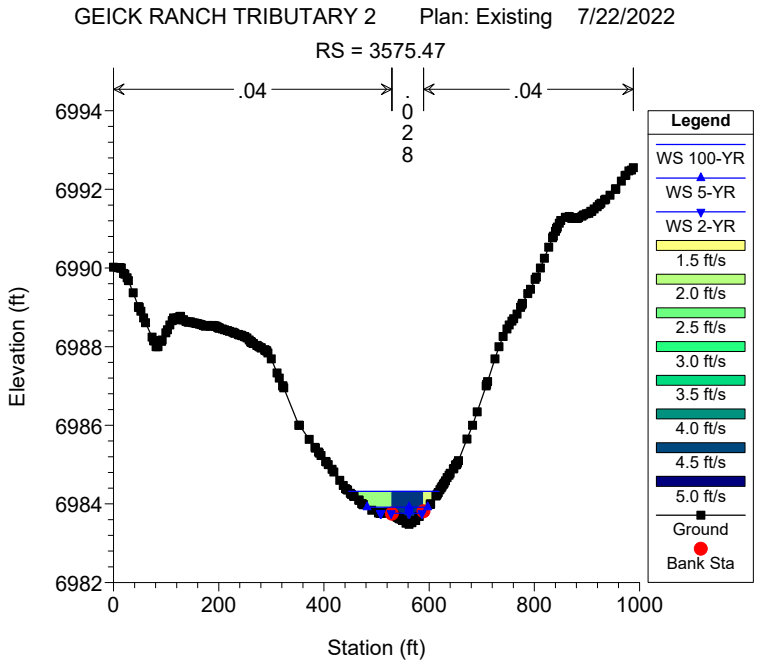

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 4530
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

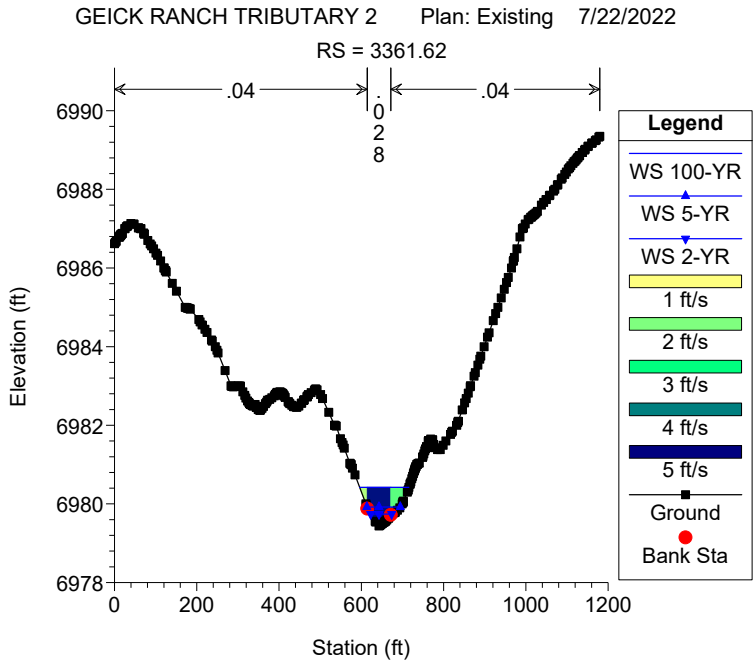

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 4298.61
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

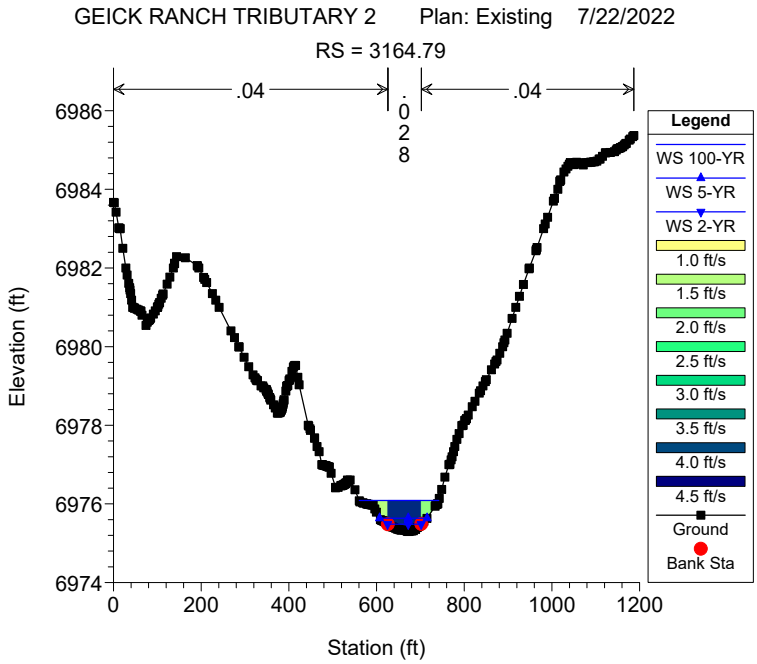

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 4025.69
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

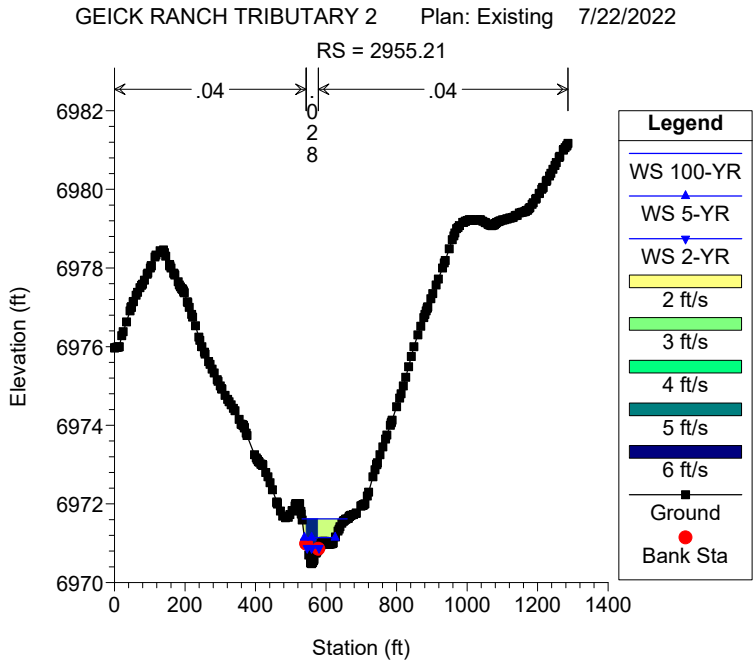

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 3872.21
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

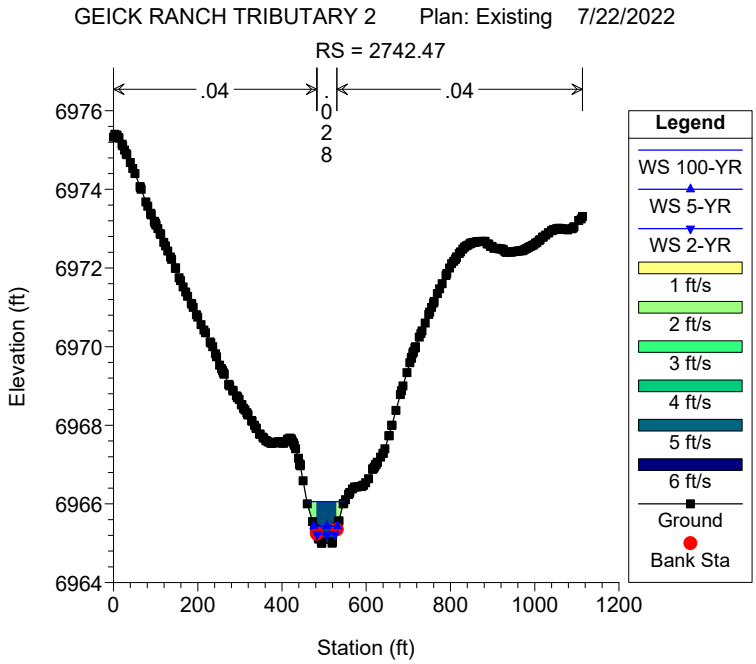

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 3739.65
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

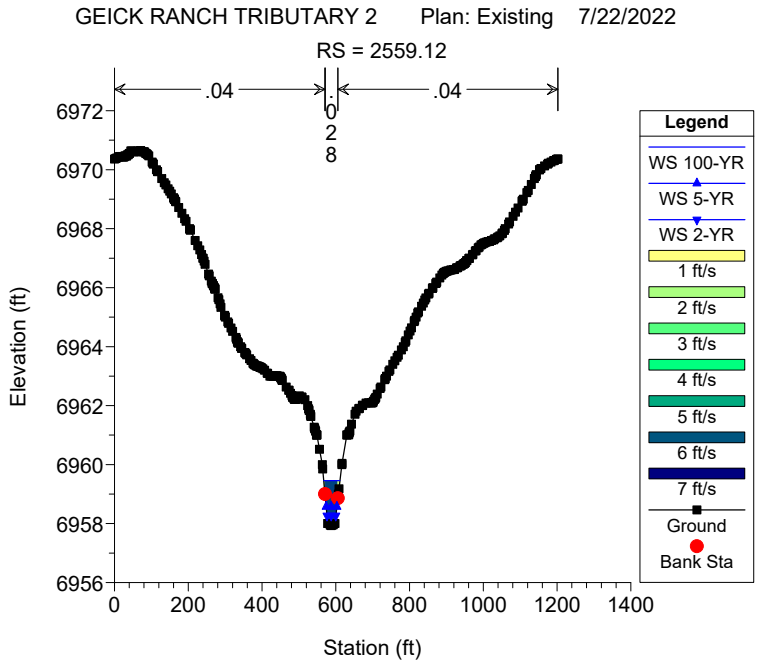

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 3575.47
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

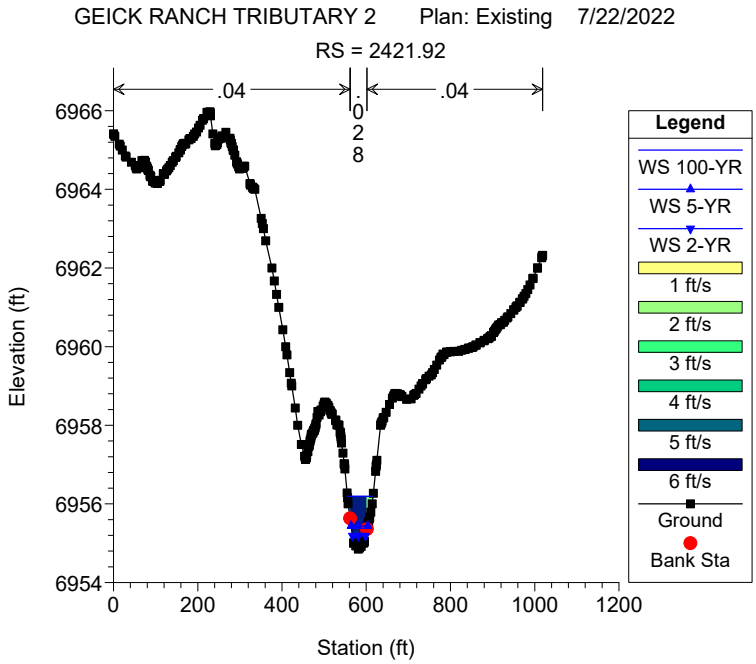

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 3361.62
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

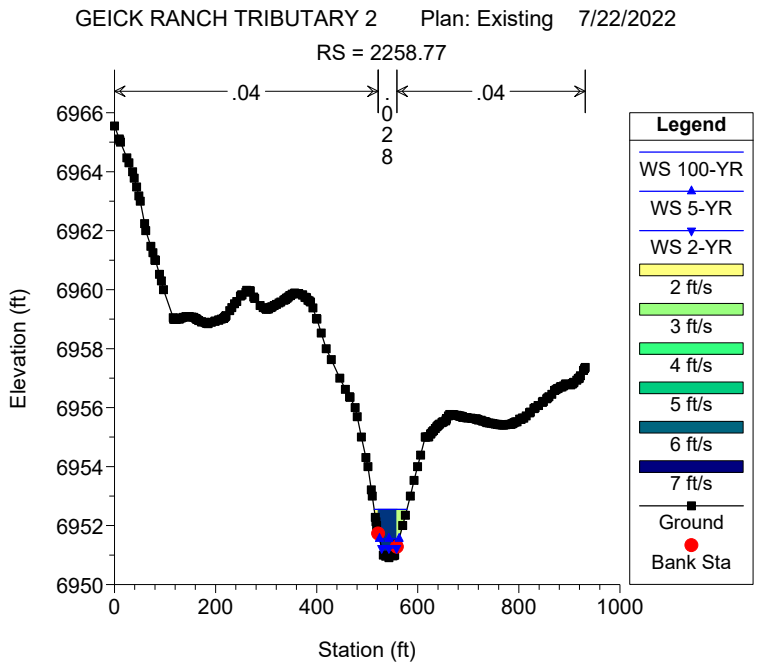

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 3164.79
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

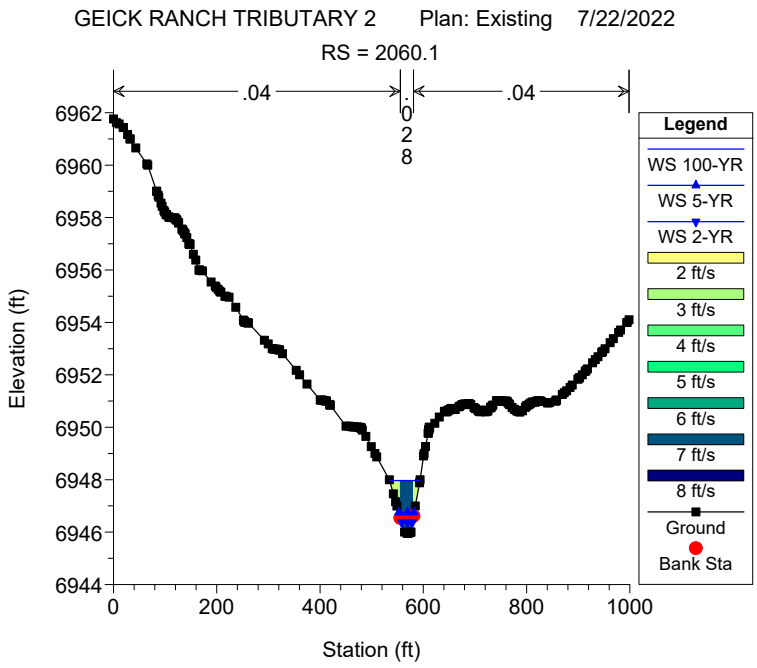

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2955.21
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

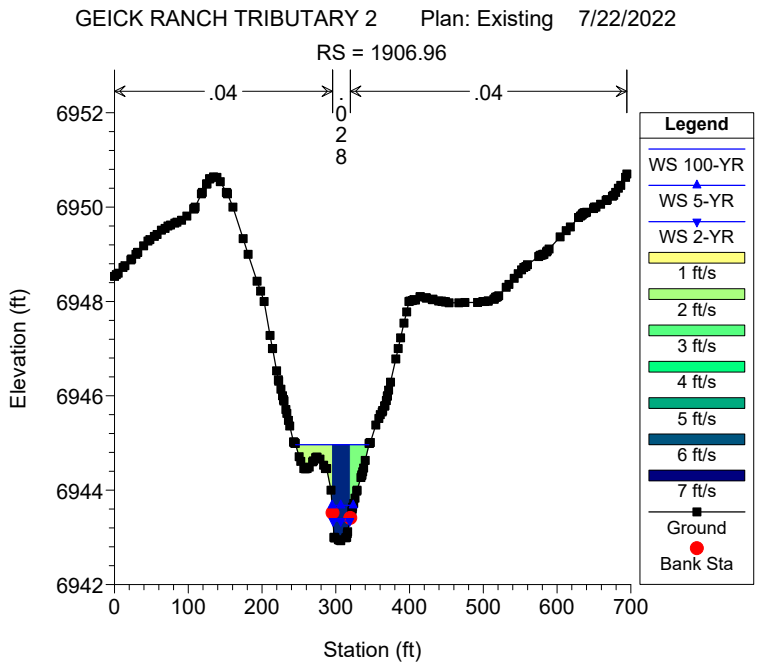

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2742.47
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

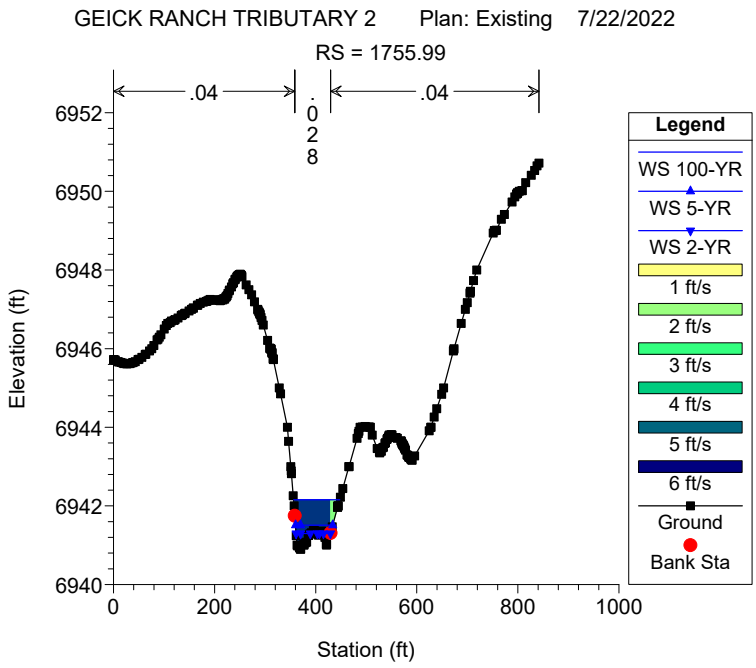

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2559.12
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

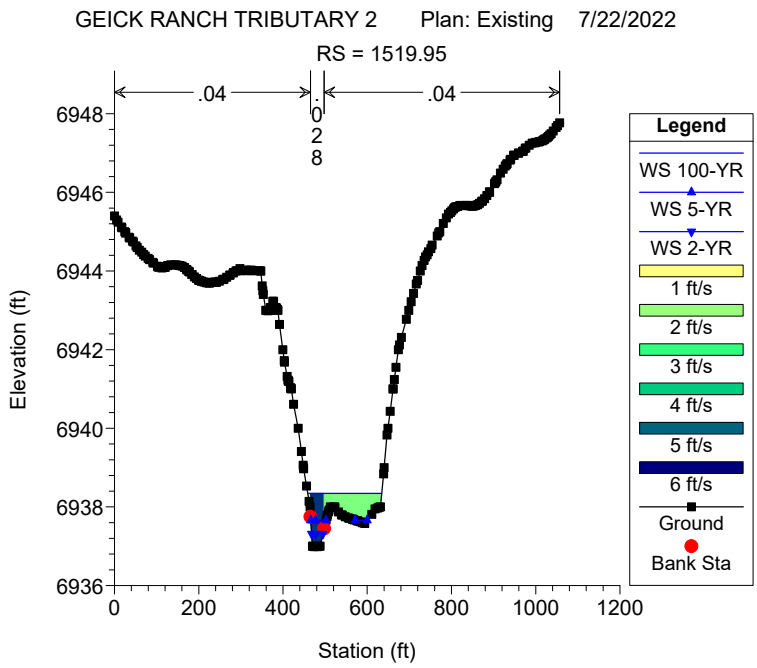

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2421.92
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

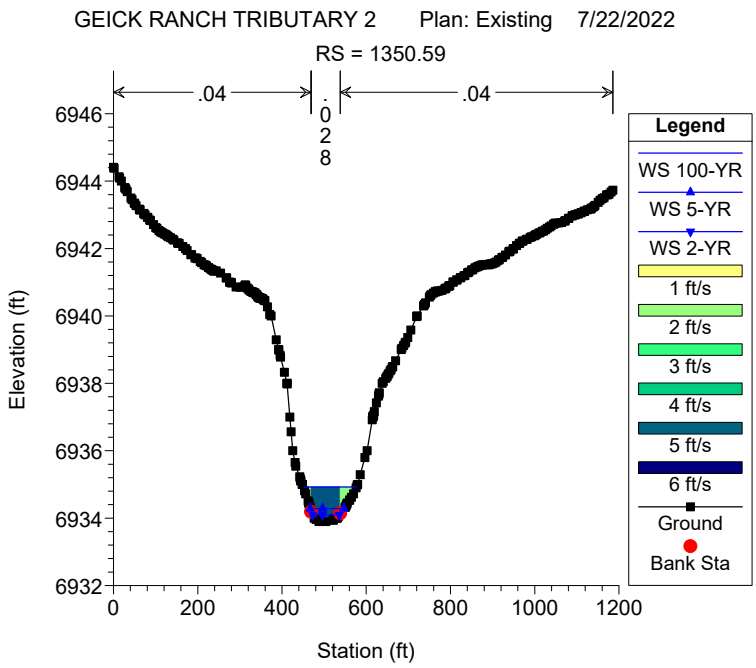

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2258.77
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

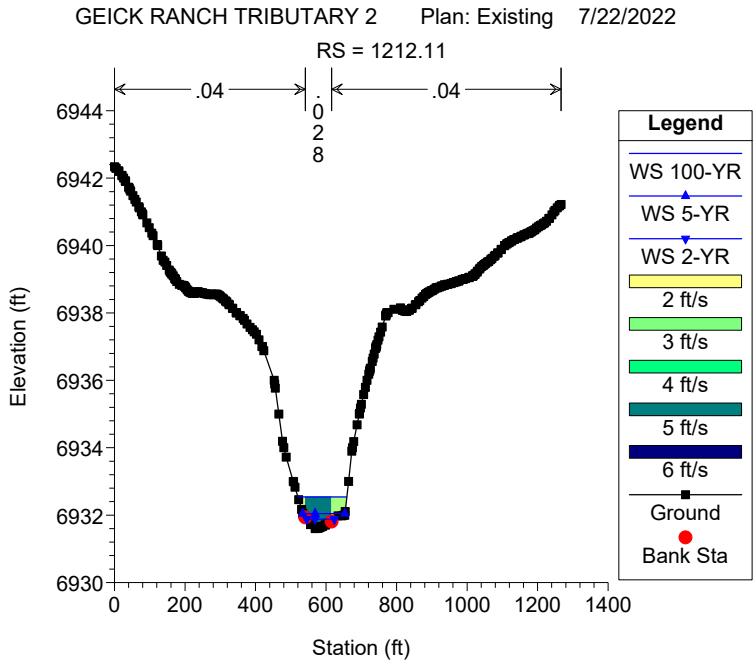

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2060.1
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

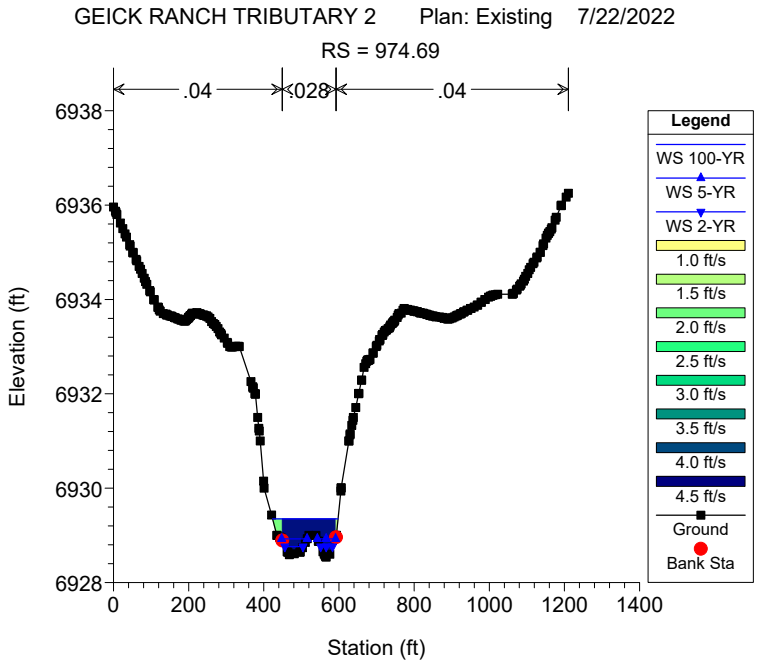

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 1906.96
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

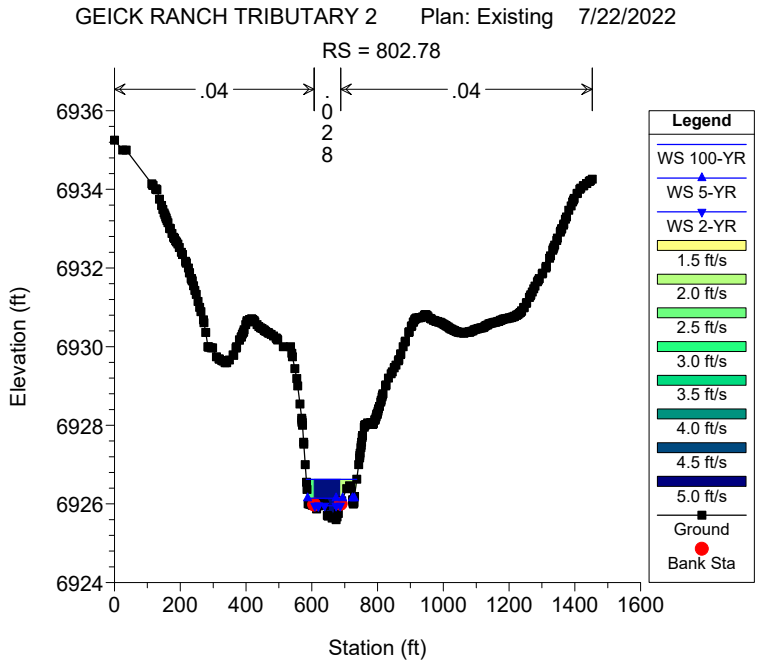

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 1755.99
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

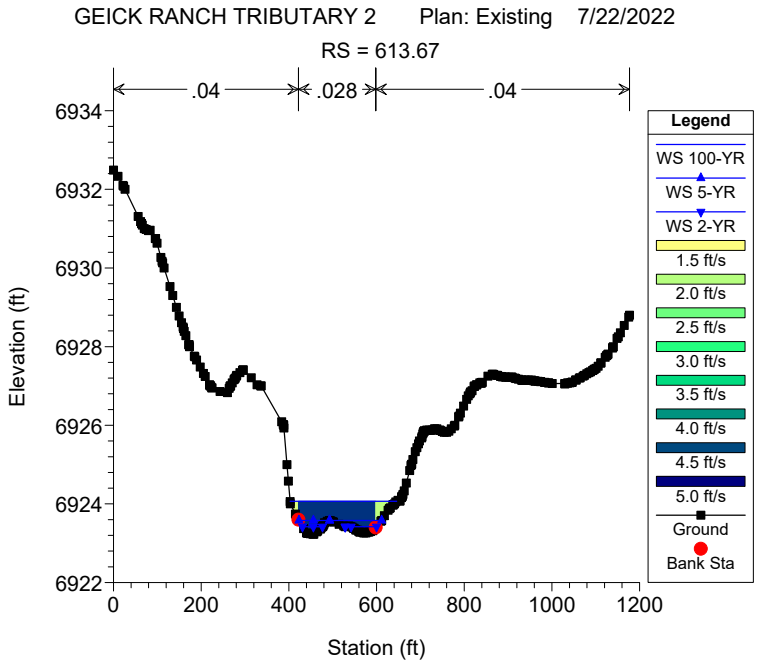

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 1519.95
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

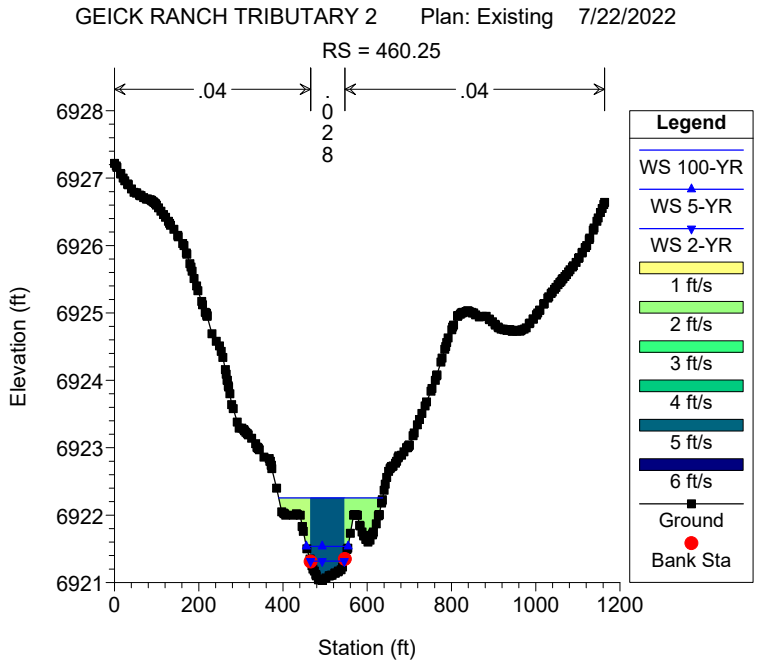

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 1350.59
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

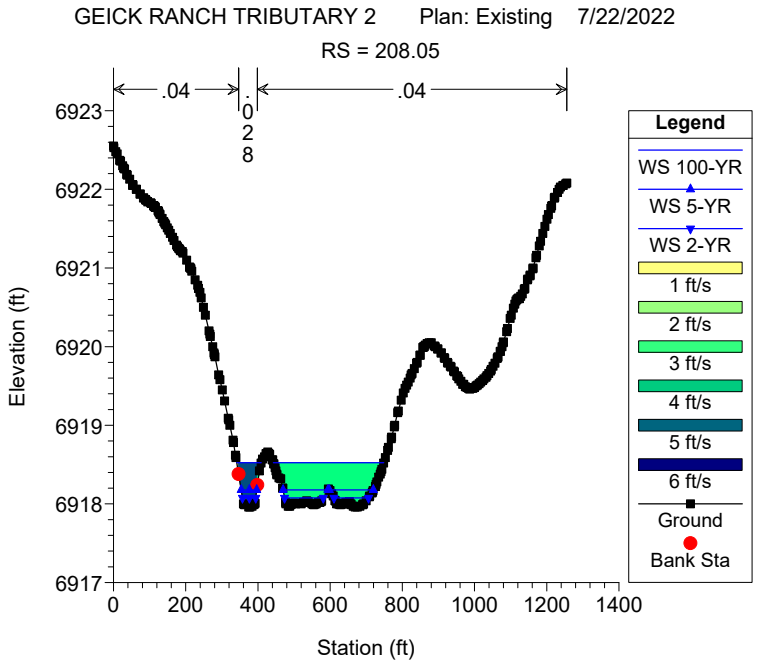

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 1212.11
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

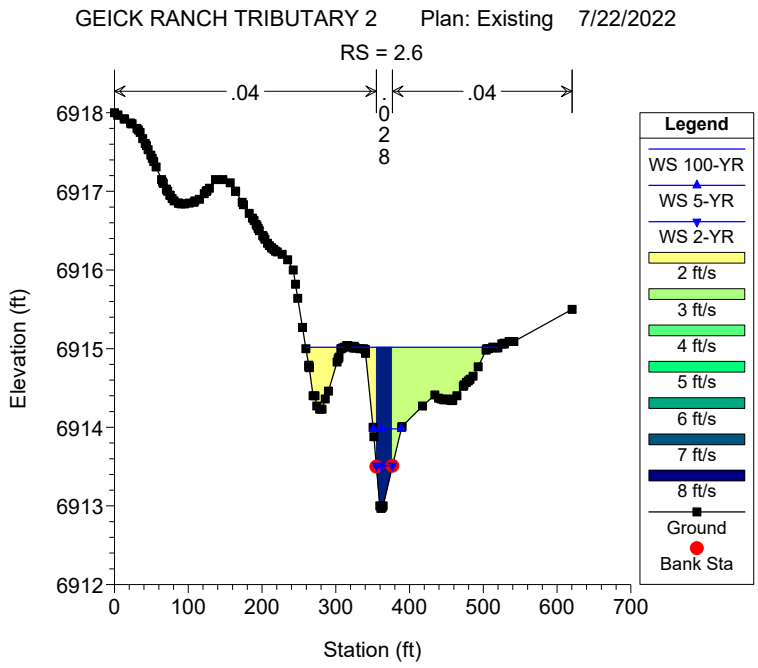

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 974.69
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

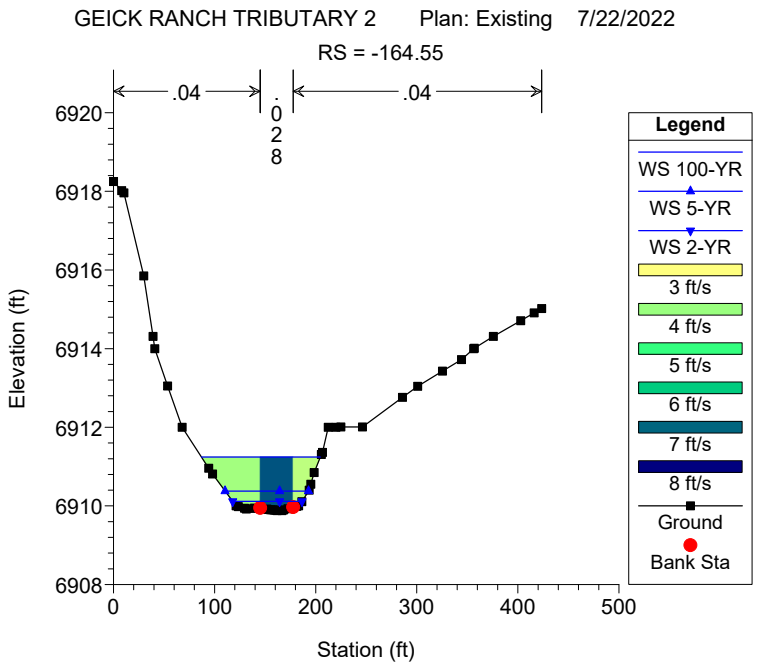

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 802.78
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

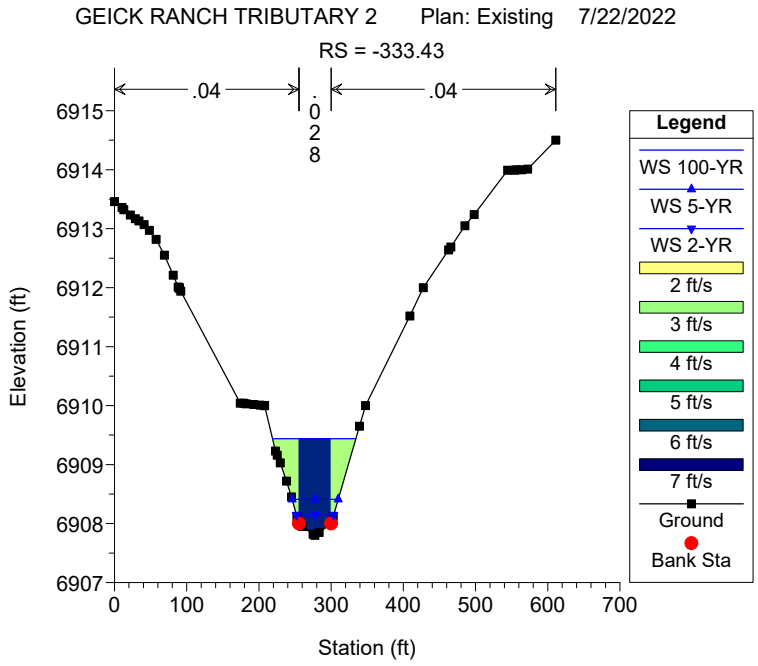

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 613.67
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

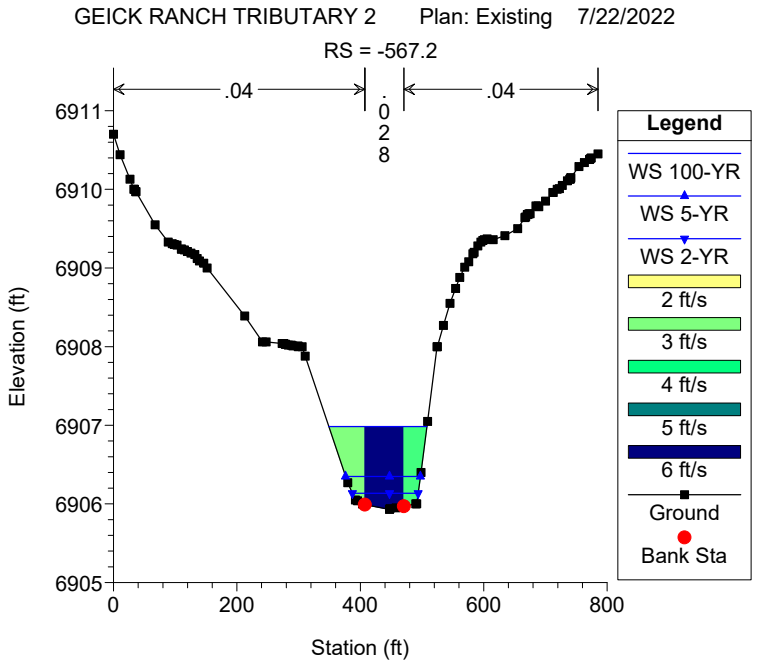

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 460.25
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

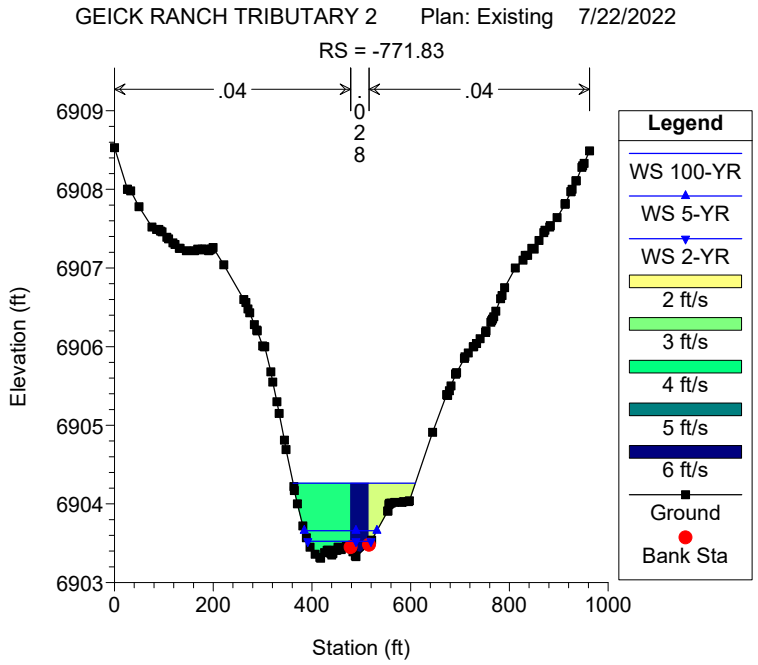

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 208.05
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = 2.6
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

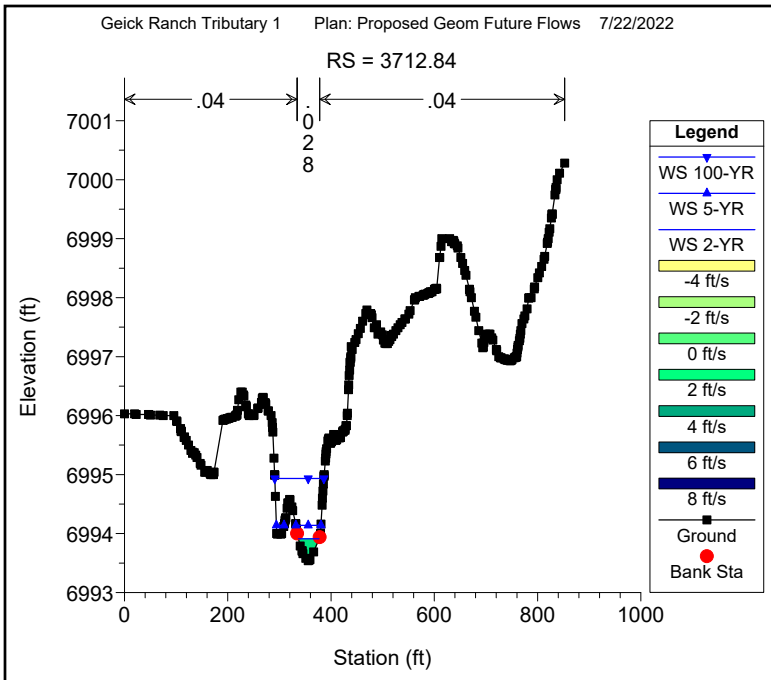

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = -164.55
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

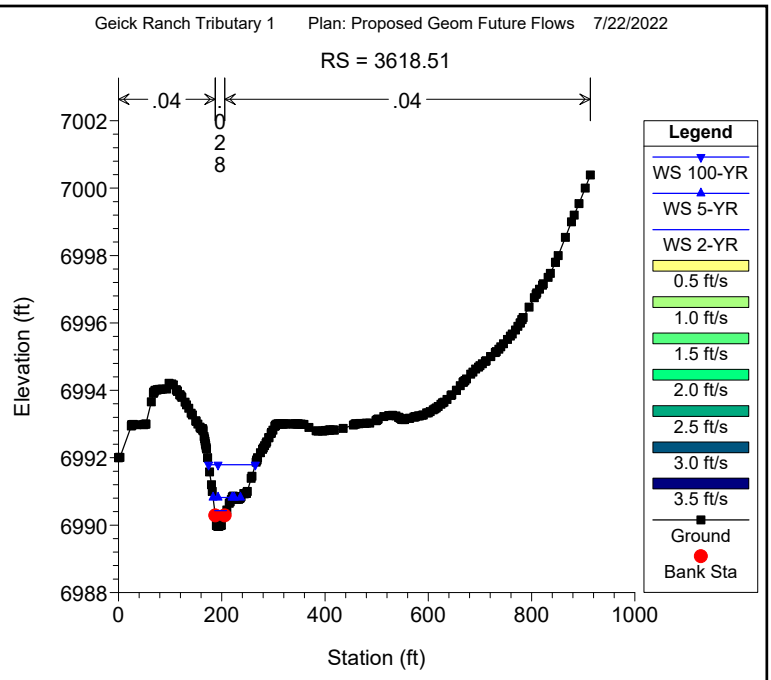

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = -333.43
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

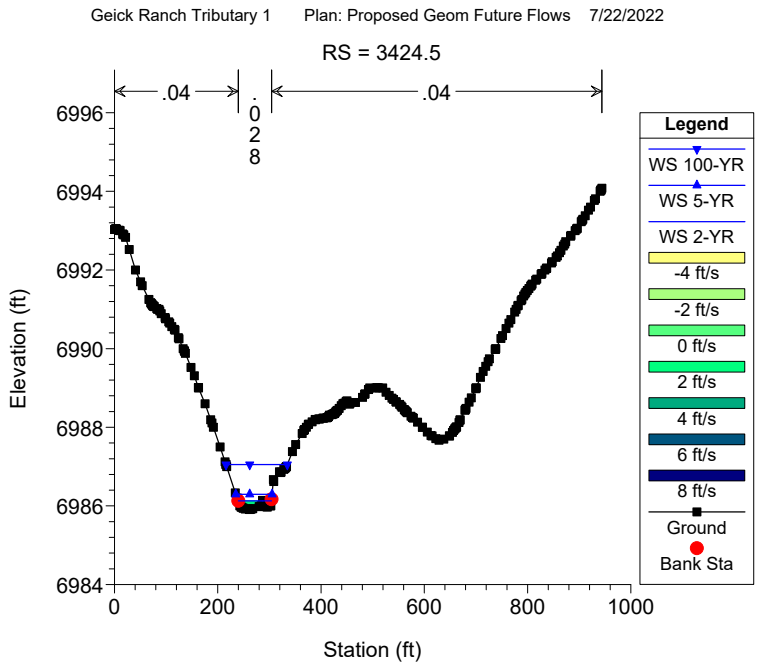

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = -567.2
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

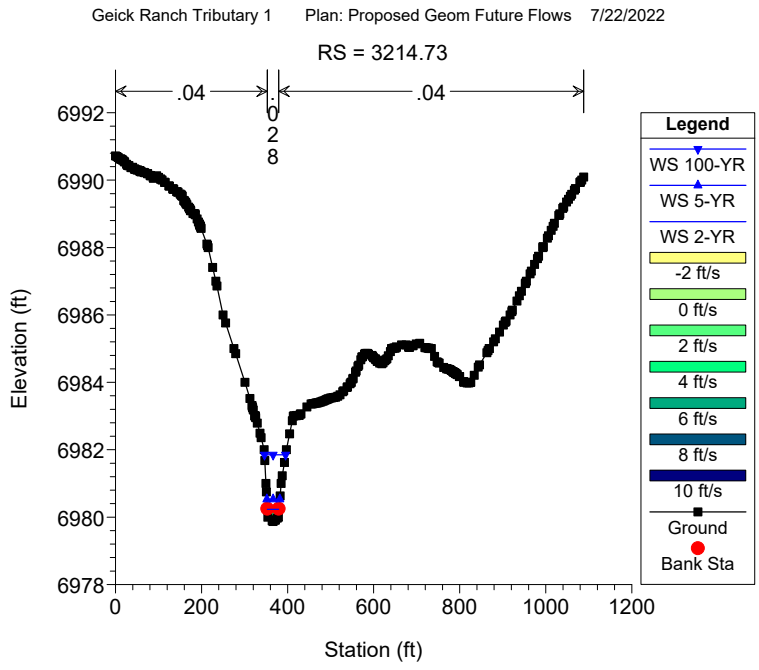

GEICK RANCH TRIBUTARY 2 Plan: Existing 7/22/2022
RS = -771.83
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

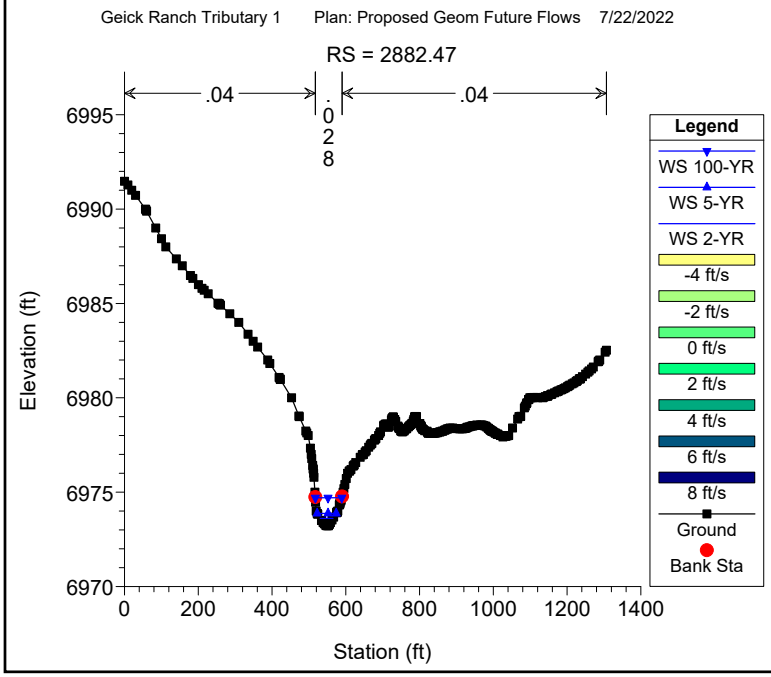
Appendix I
Future Condition Cross Sections

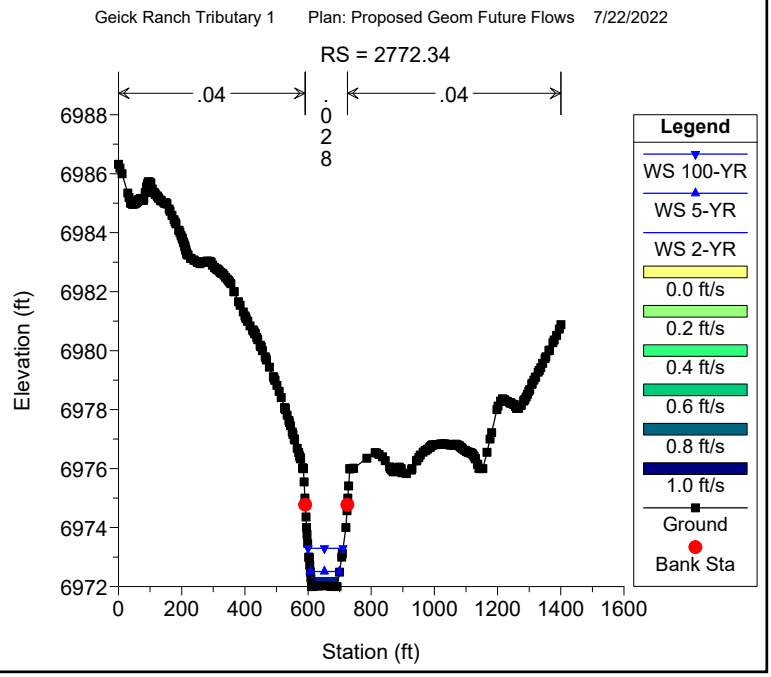

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 3712.84
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-4 ft/s
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

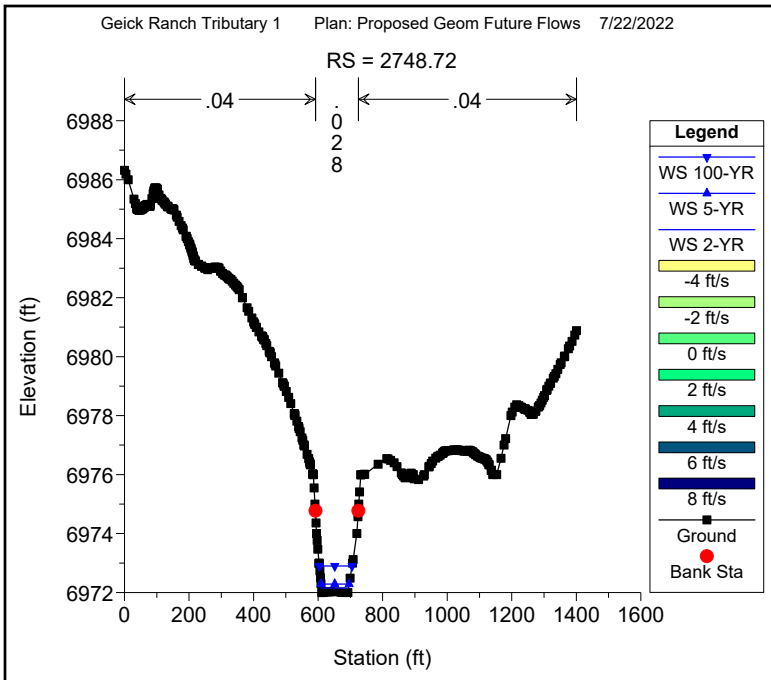

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 3618.51
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

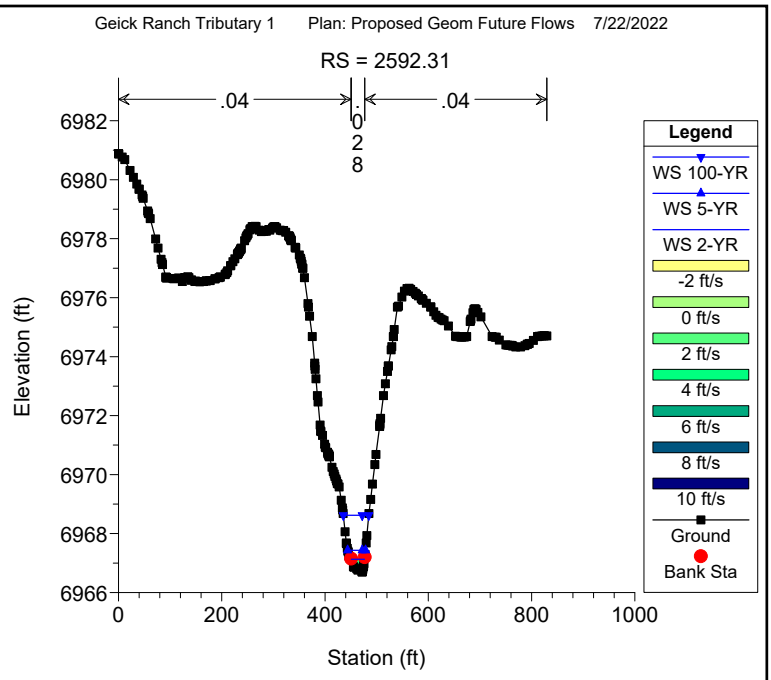

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 3424.5
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-4 ft/s
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

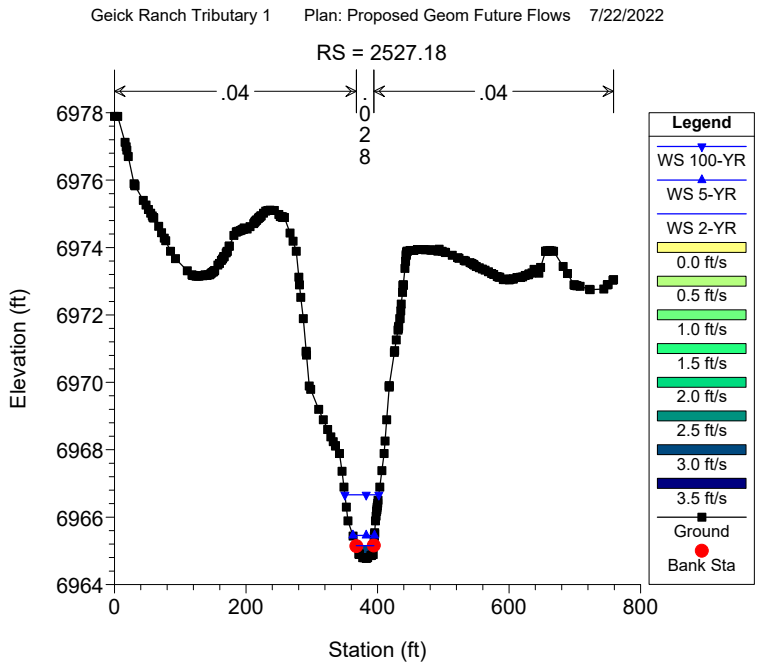

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 3214.73
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

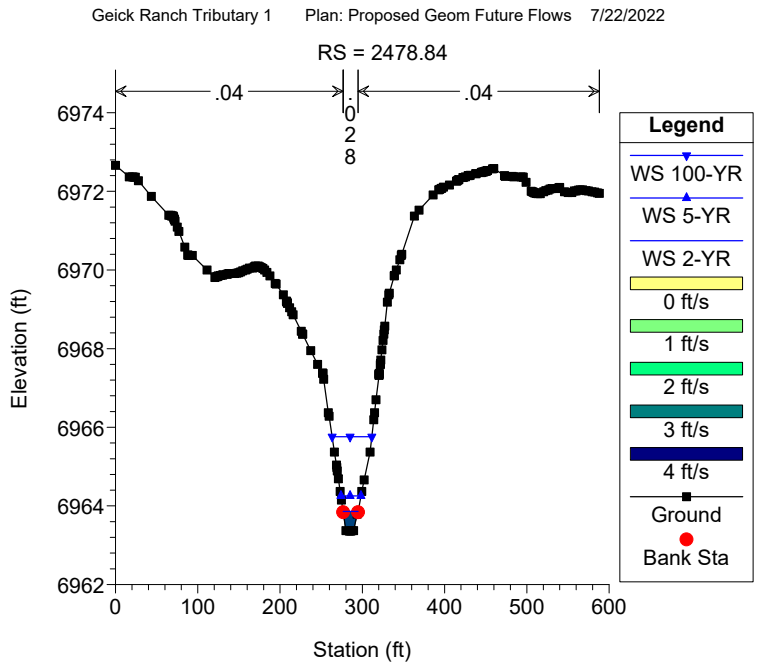

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2882.47
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-4 ft/s
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

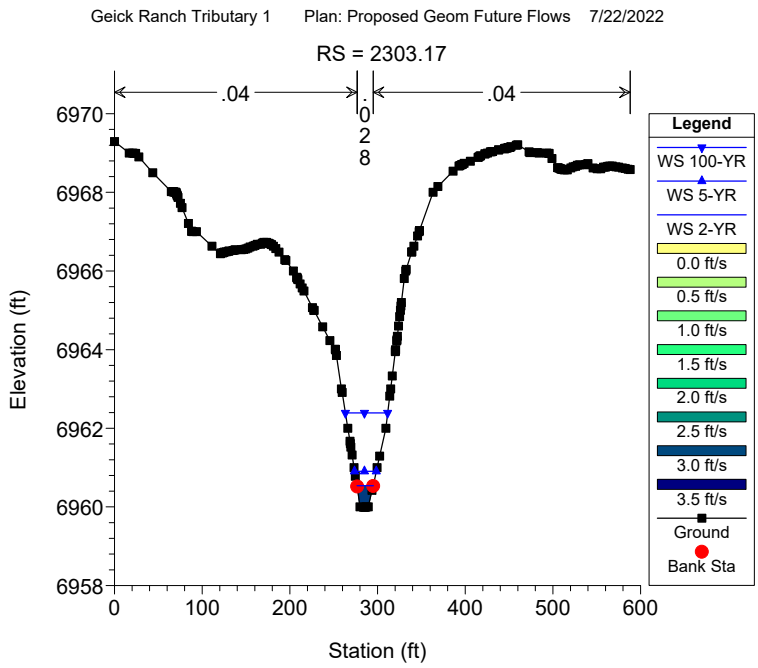

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2772.34
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.2 ft/s
0.4 ft/s
0.6 ft/s
0.8 ft/s
1.0 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

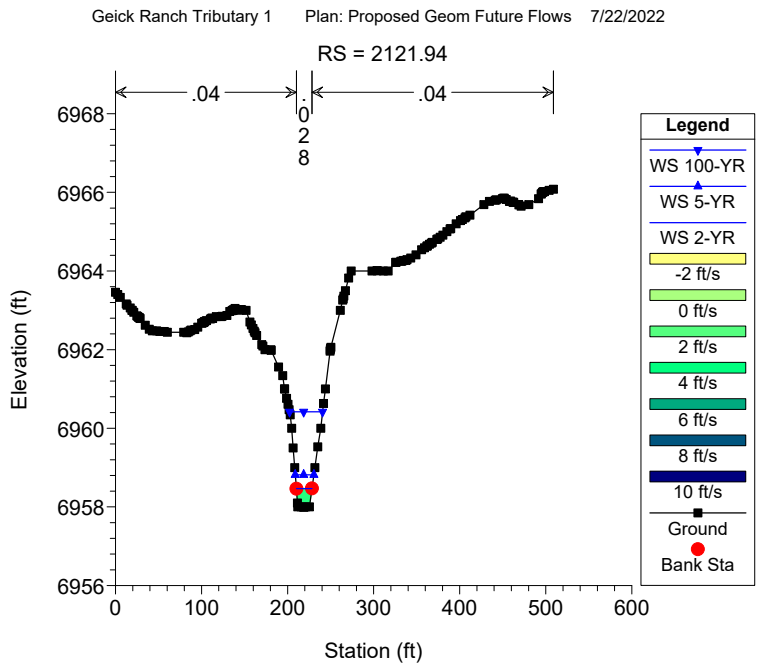

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2748.72
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-4 ft/s
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

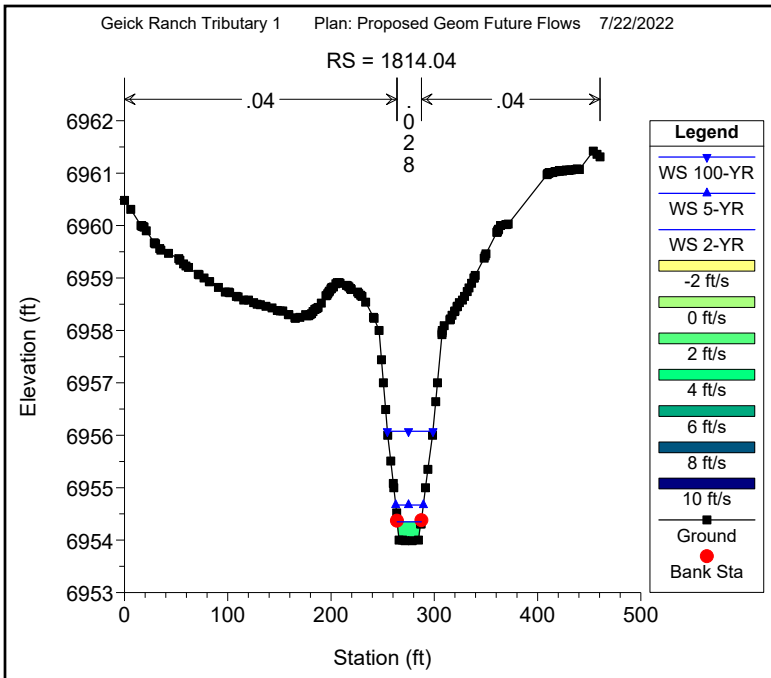

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2592.31
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

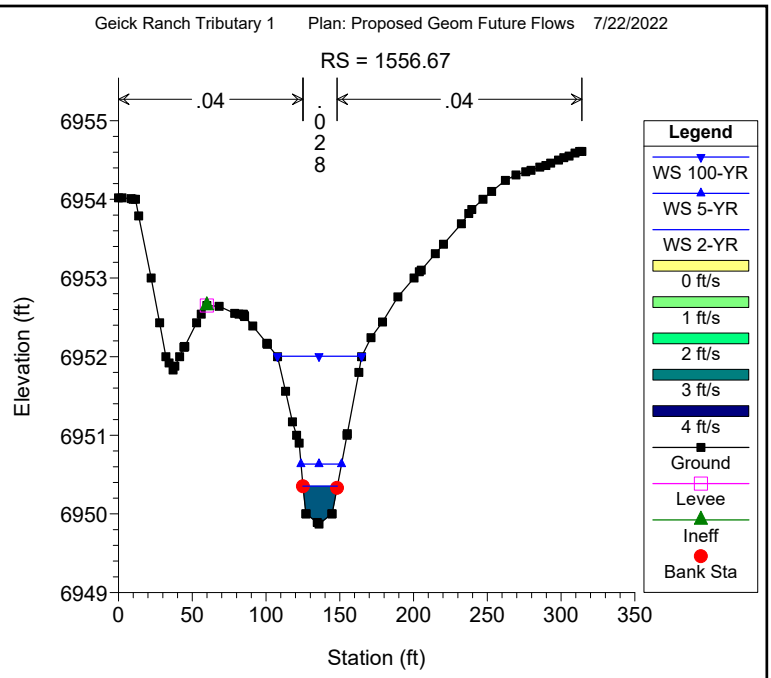

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2527.18
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

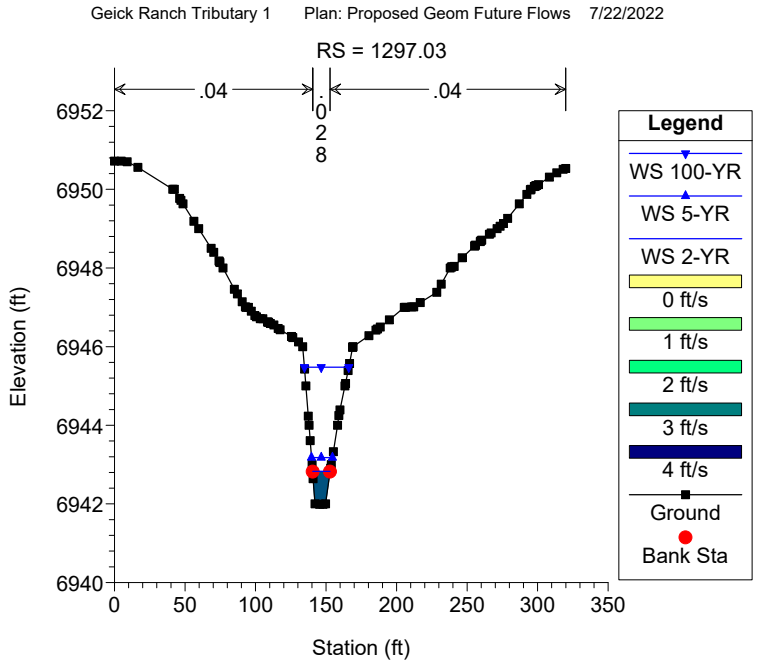

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2478.84
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

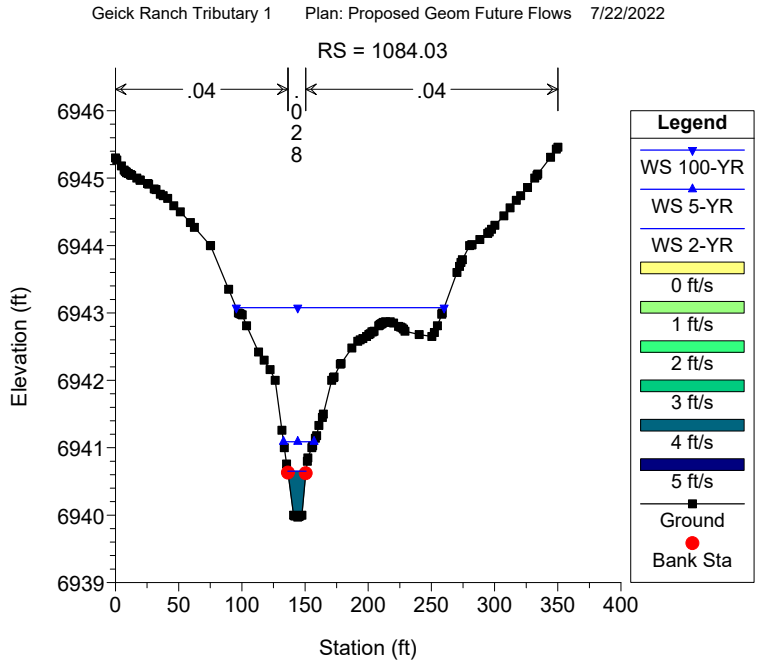

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2303.17
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

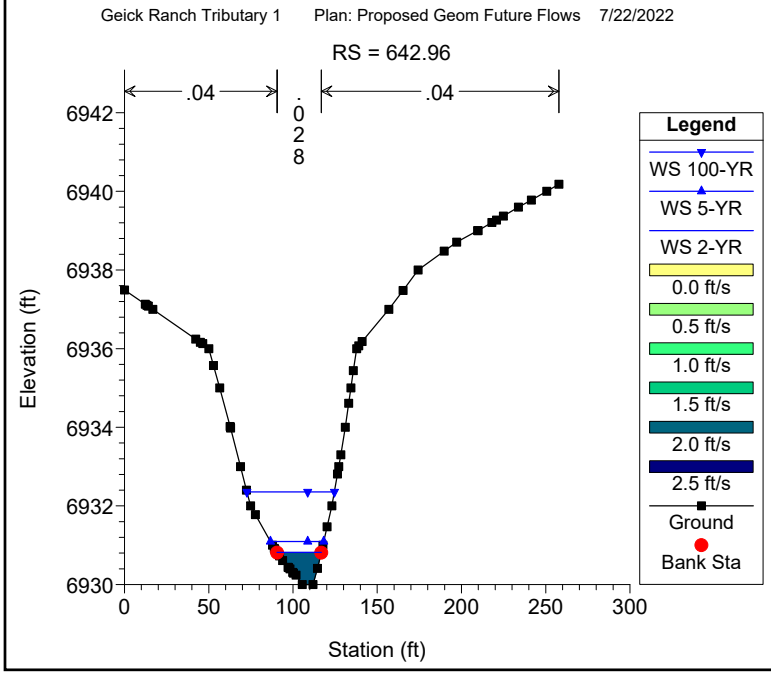

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 2121.94
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

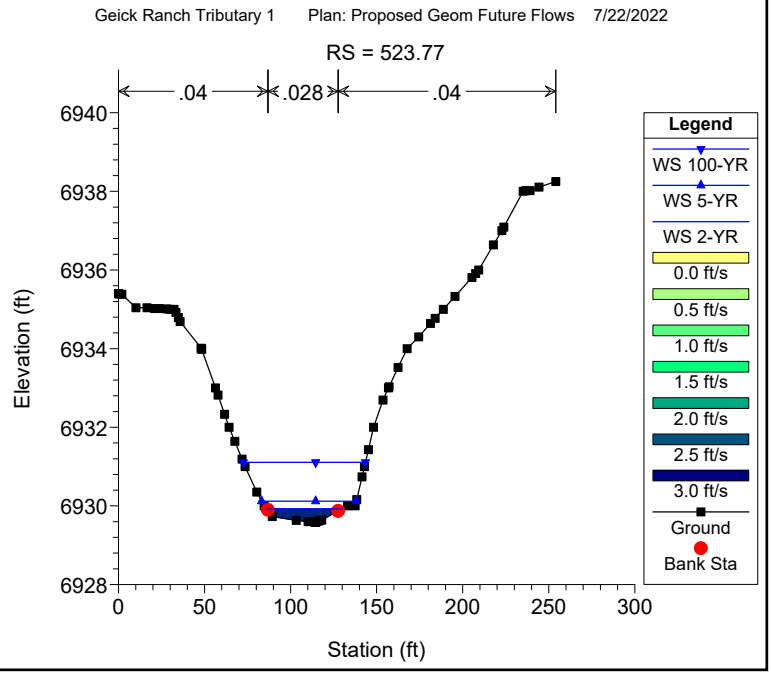

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 1814.04
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
-2 ft/s
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

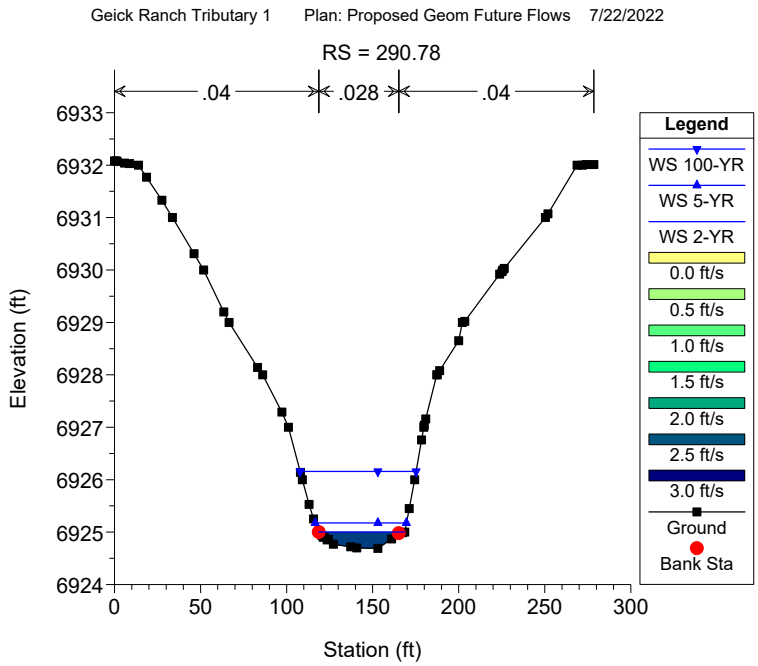

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 1556.67
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
Ground
Levee
Ineff
Bank Sta

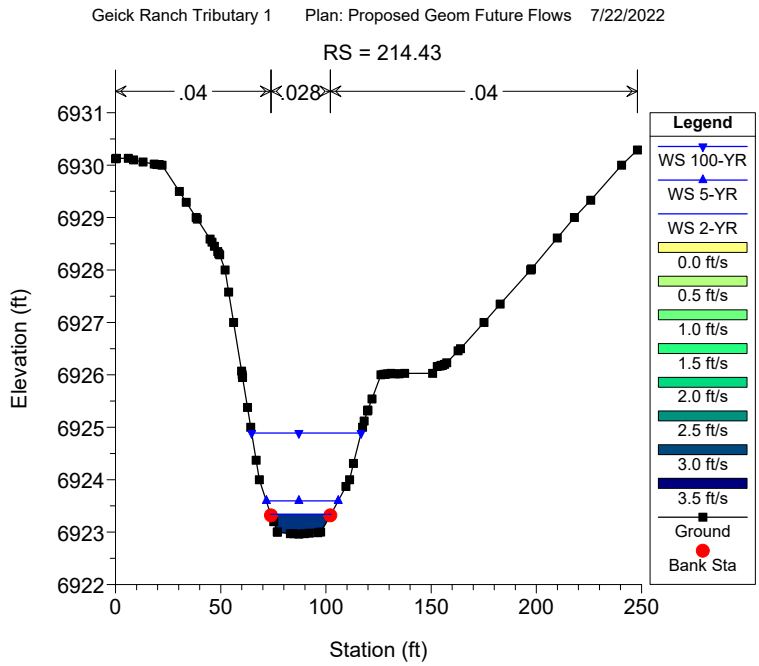

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 1297.03
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
Ground
Bank Sta

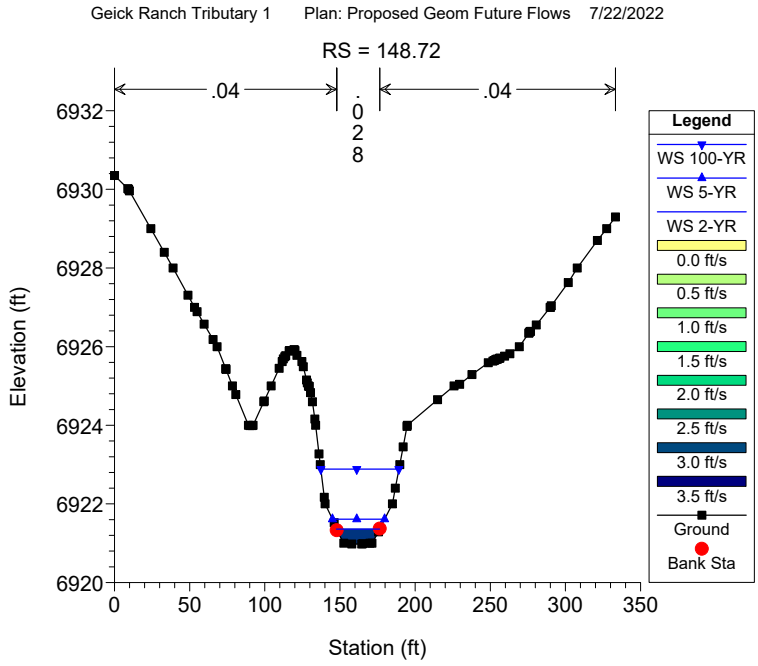

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 1084.03
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
Ground
Bank Sta

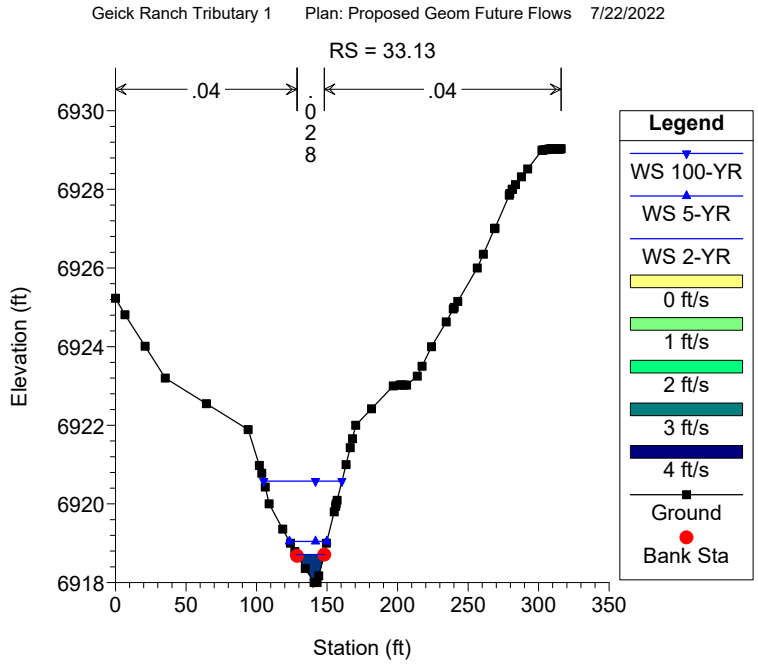

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 642.96
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
Ground
Bank Sta


Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 523.77
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
Ground
Bank Sta


Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 290.78
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
Ground
Bank Sta

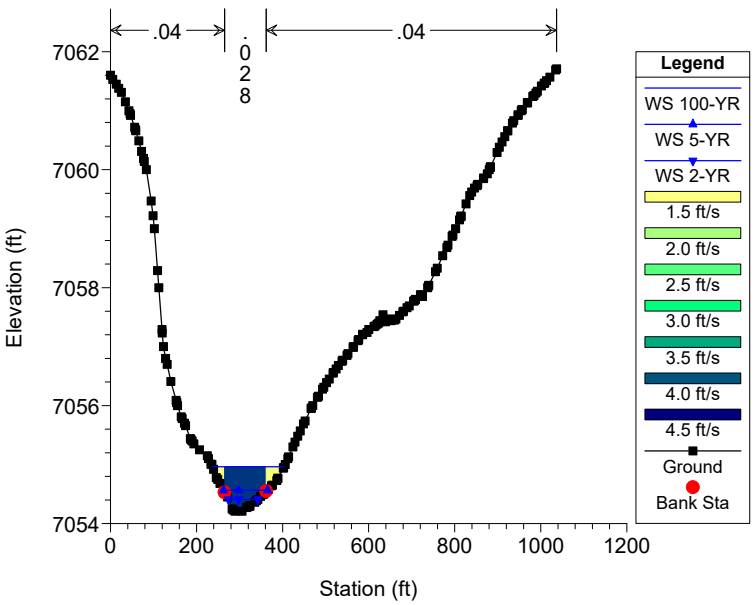

Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 214.43
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
Ground
Bank Sta


Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 148.72
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
Ground
Bank Sta


Geick Ranch Tributary 1 Plan: Proposed Geom Future Flows 7/22/2022
RS = 33.13
.04
.028
.04
Elevation (ft)
Station (ft)
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
Ground
Bank Sta

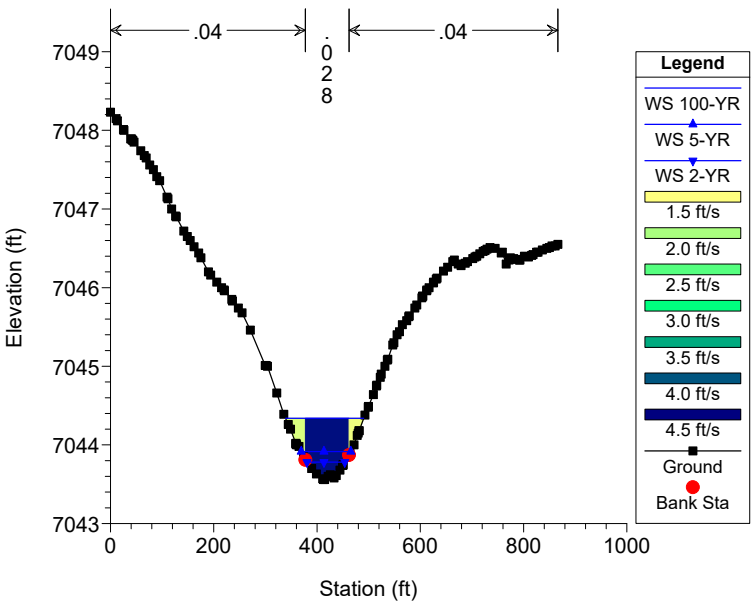
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 7029.02



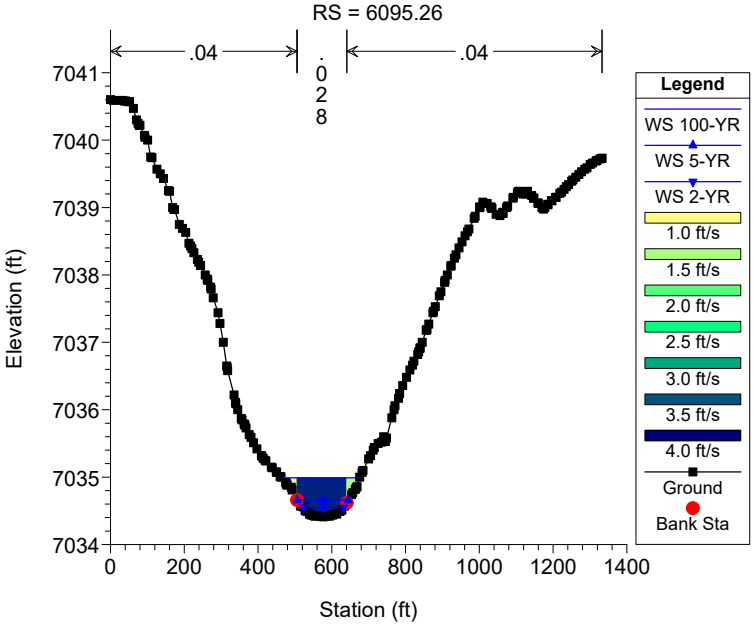
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 6535.56



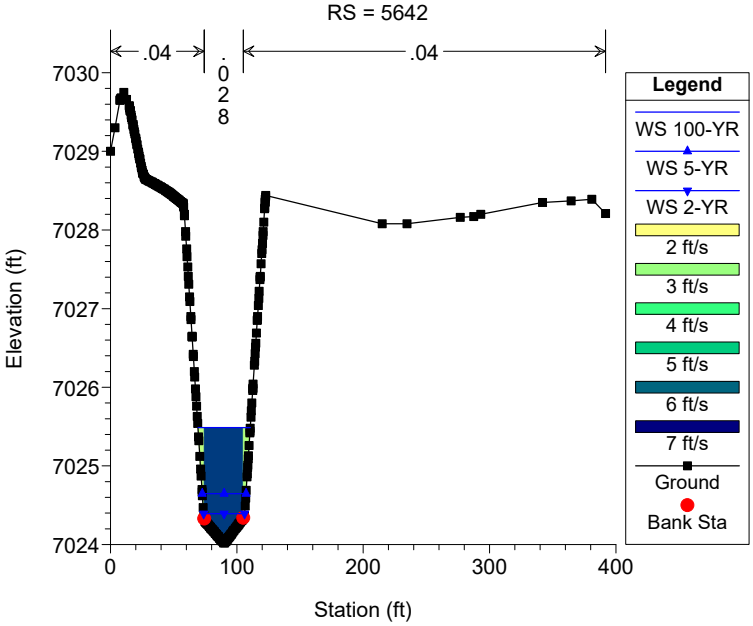
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 6095.26



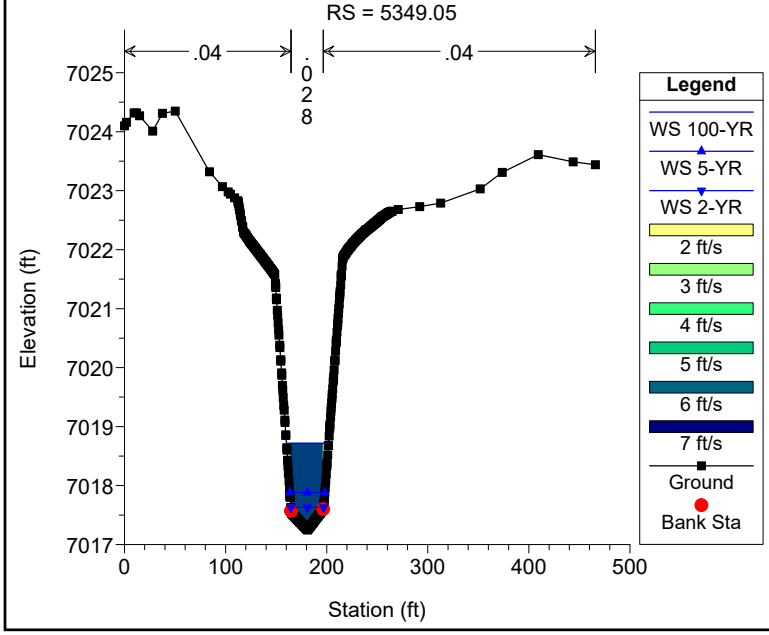
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 5642



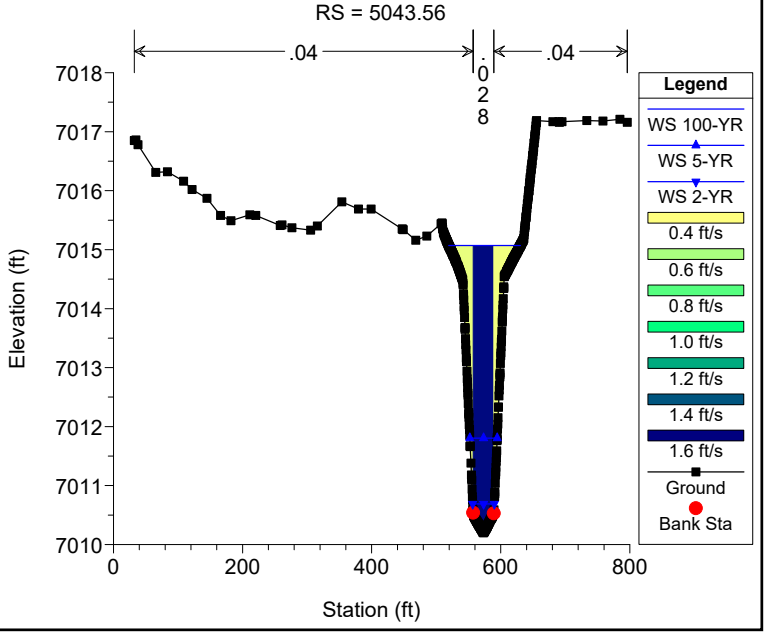
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 5349.05



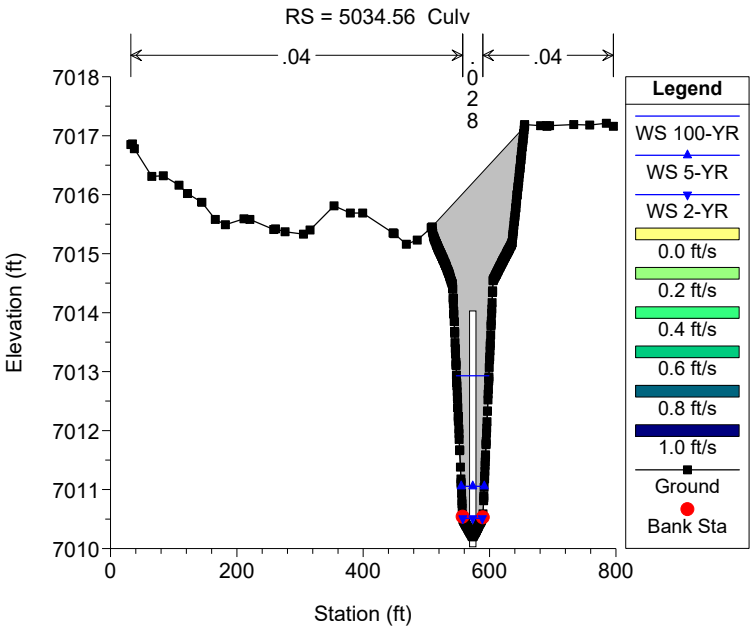
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 5043.56



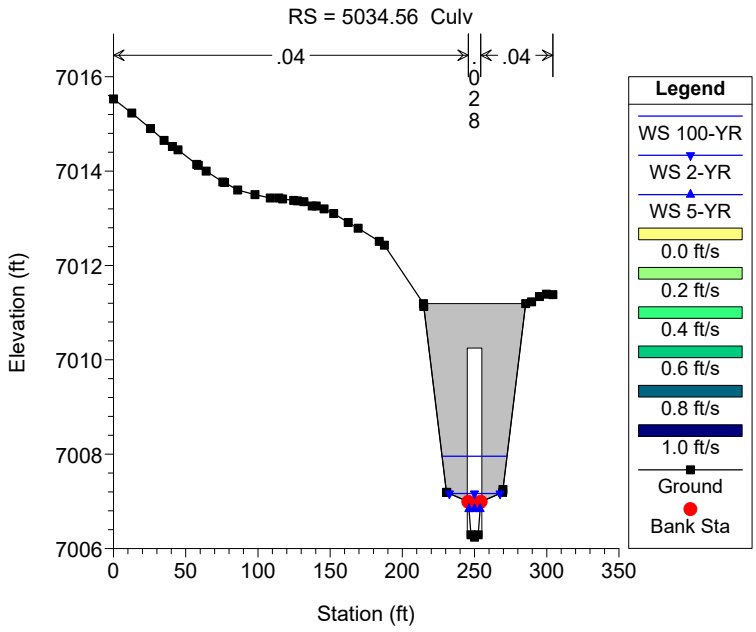
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 5034.56 Culv



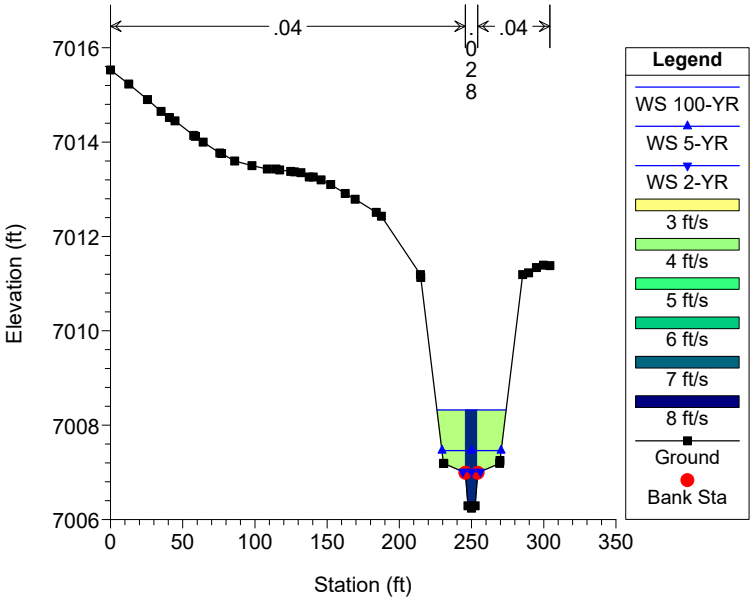
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 5034.56 Culv



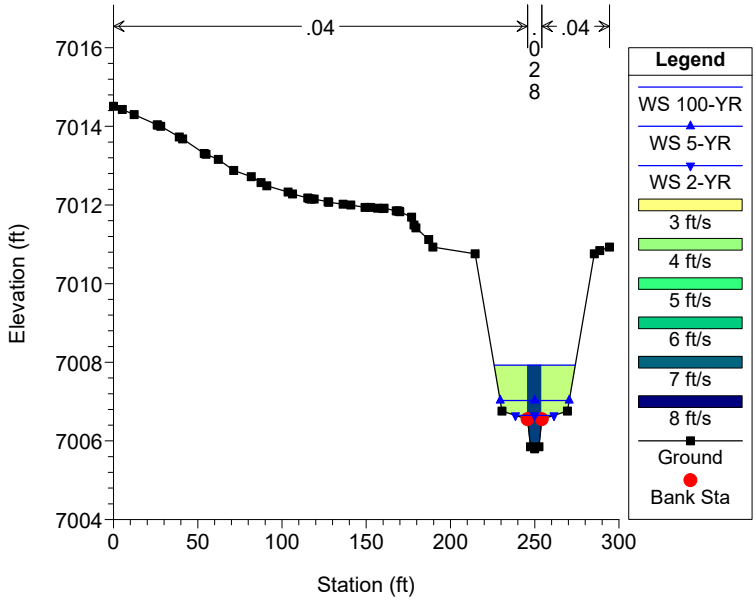
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 4748.5



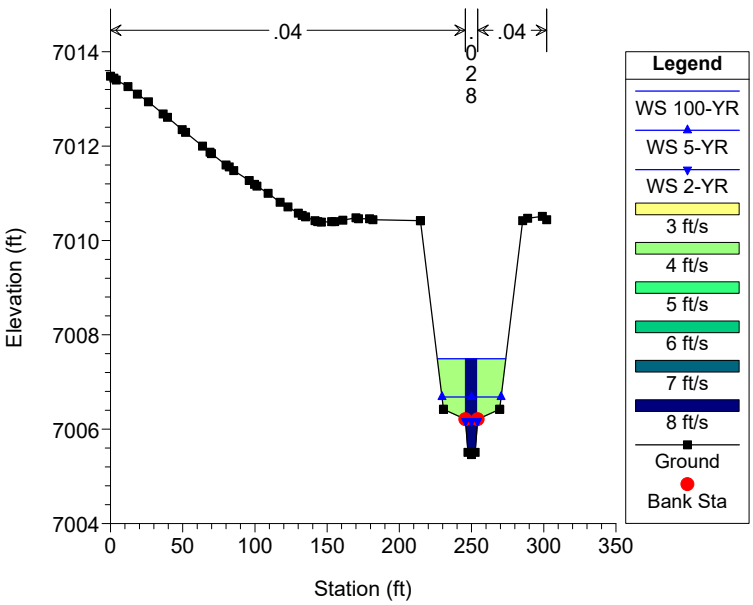
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 4700



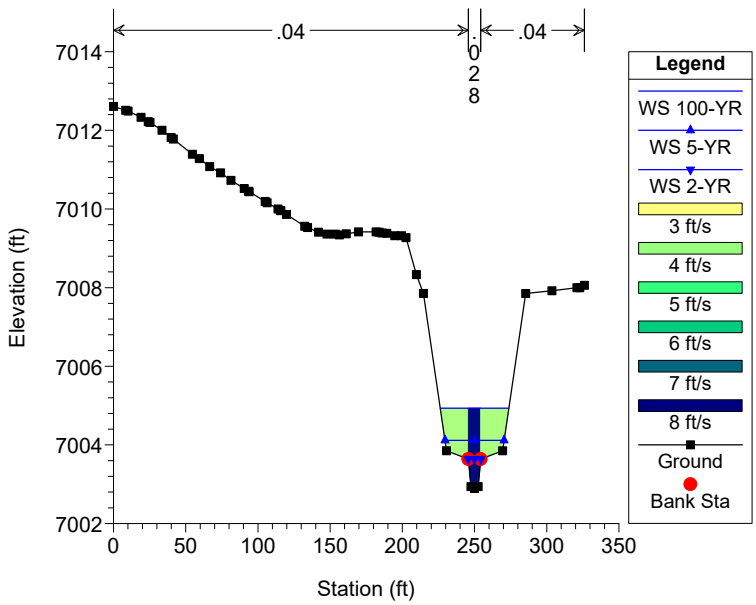
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

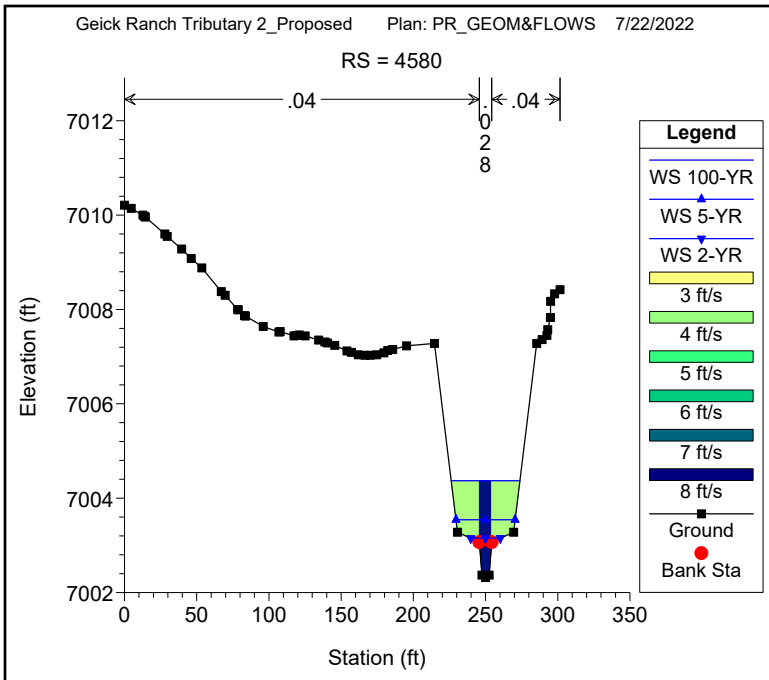
RS = 4662.69

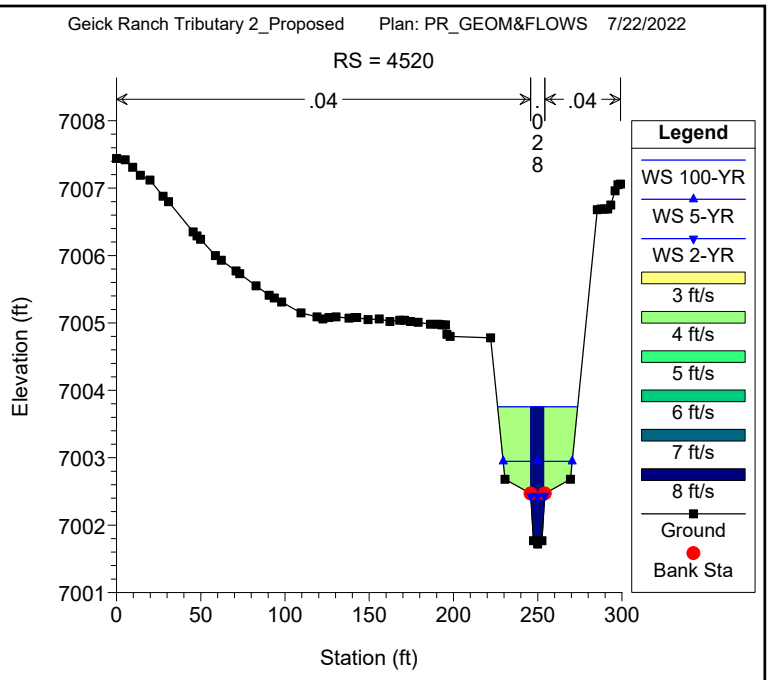


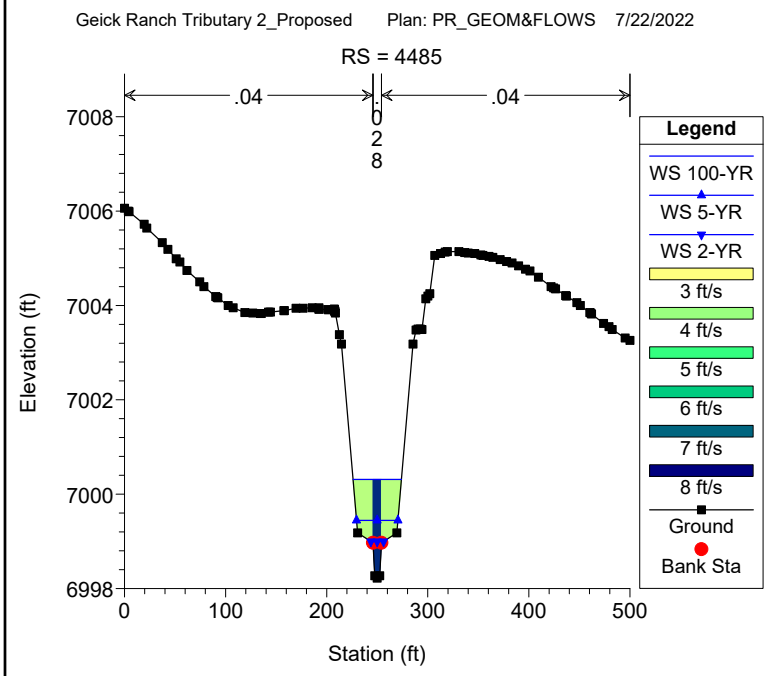
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

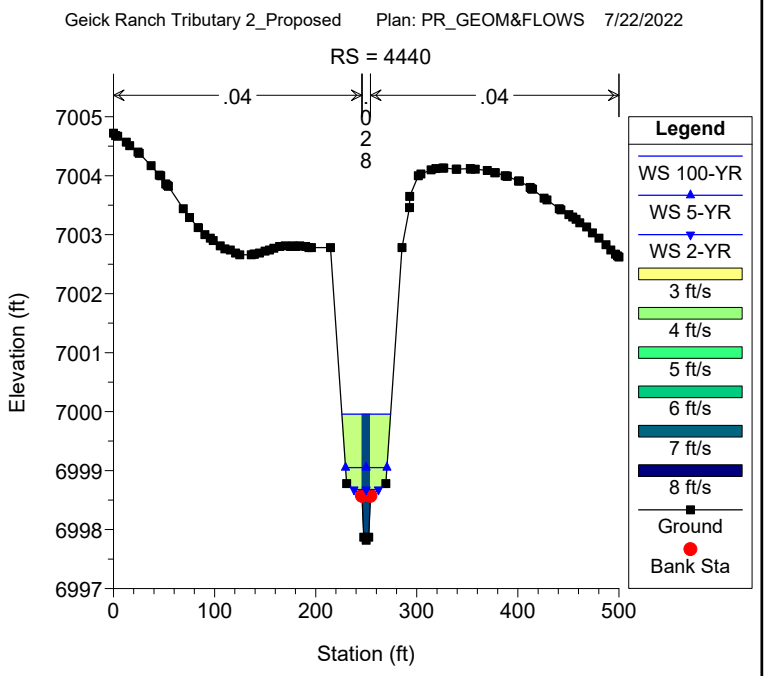
RS = 4636.96

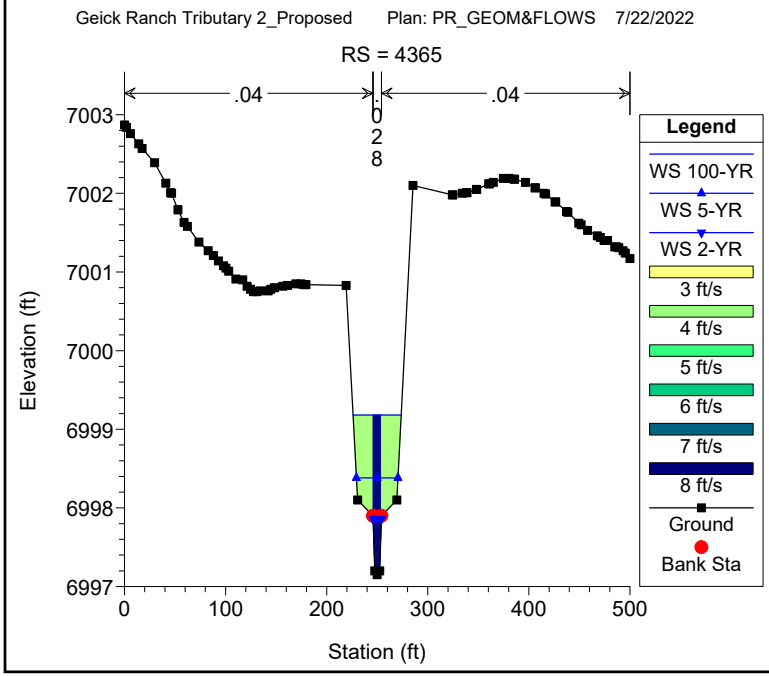


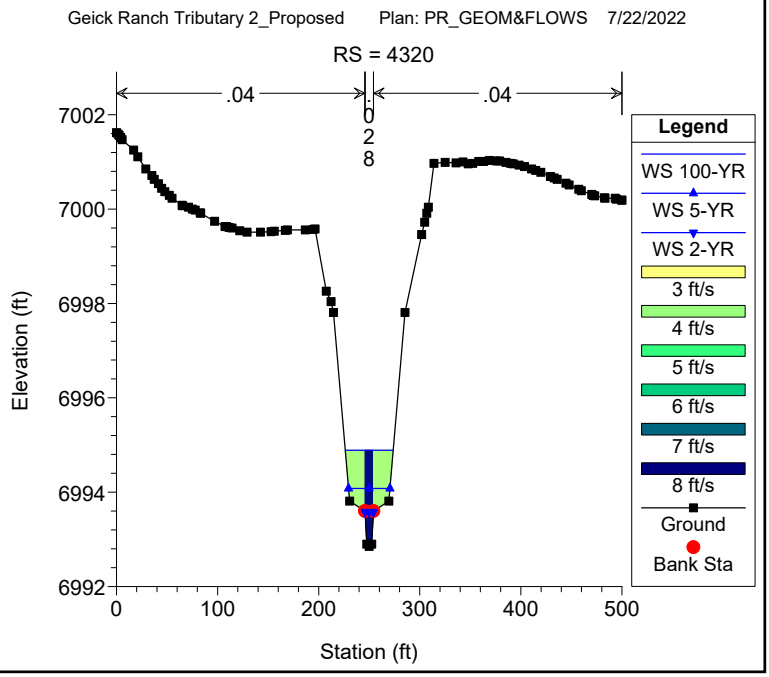

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 4580
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 4520
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 4485
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

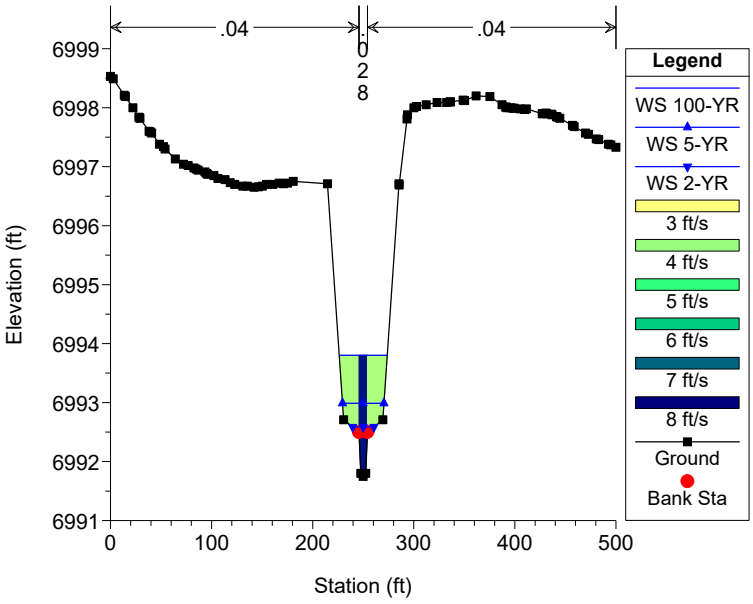

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 4440
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 4365
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 4320
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

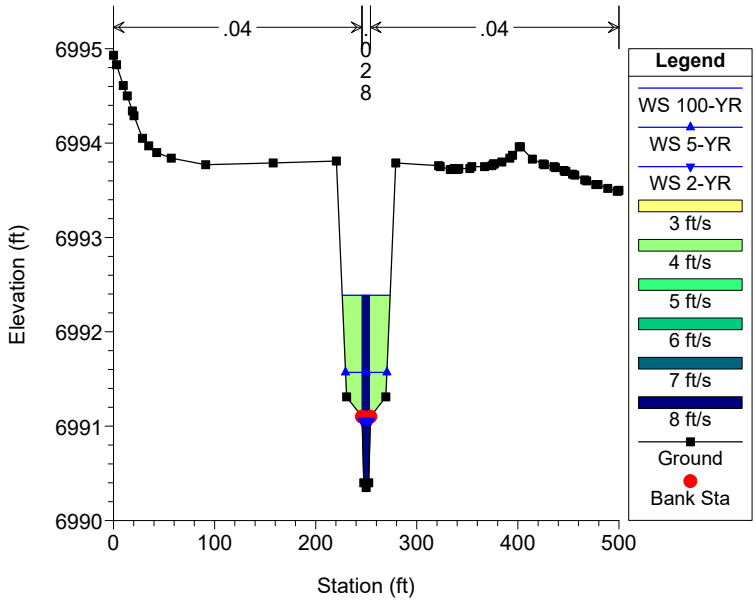
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 4210



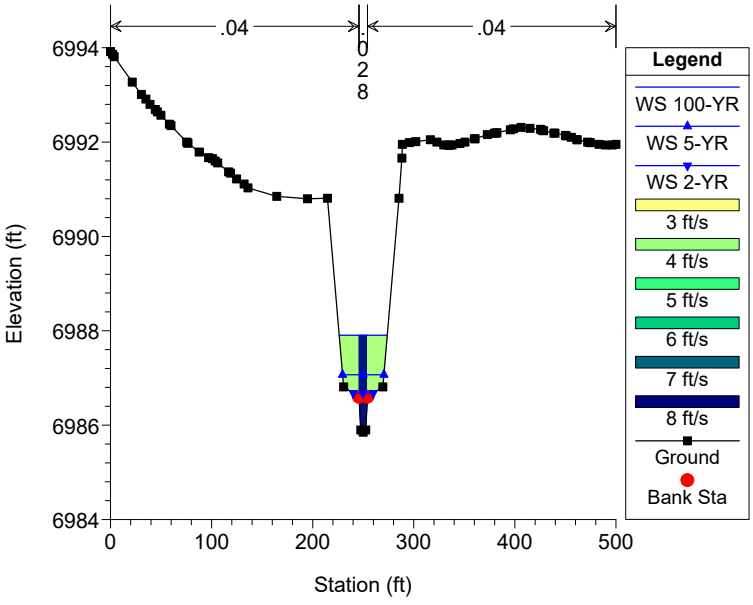
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 4070



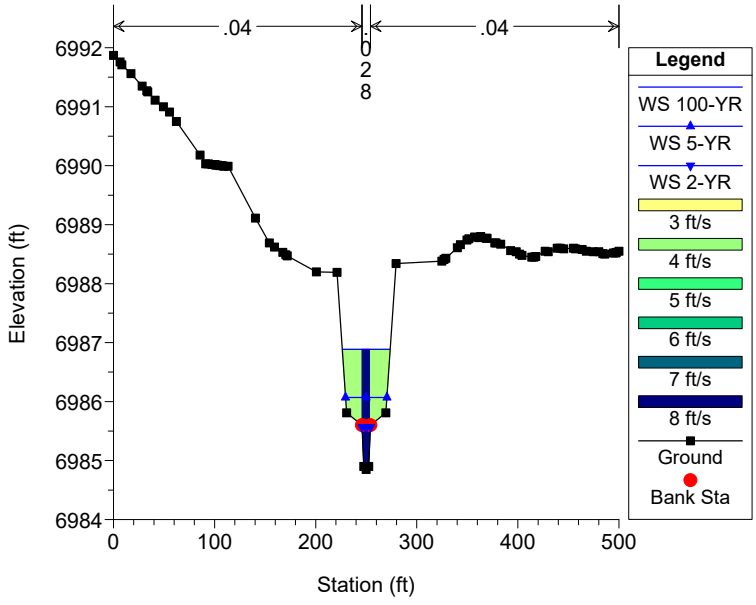
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 4025



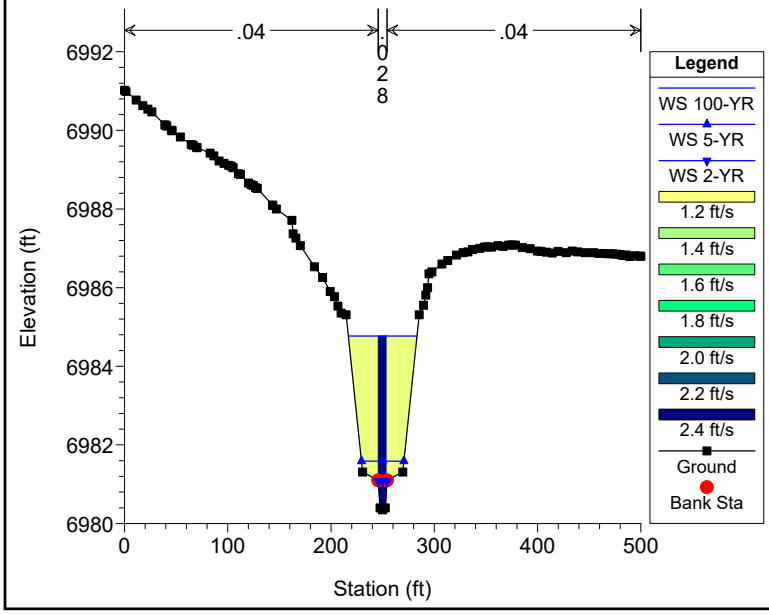
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 3925



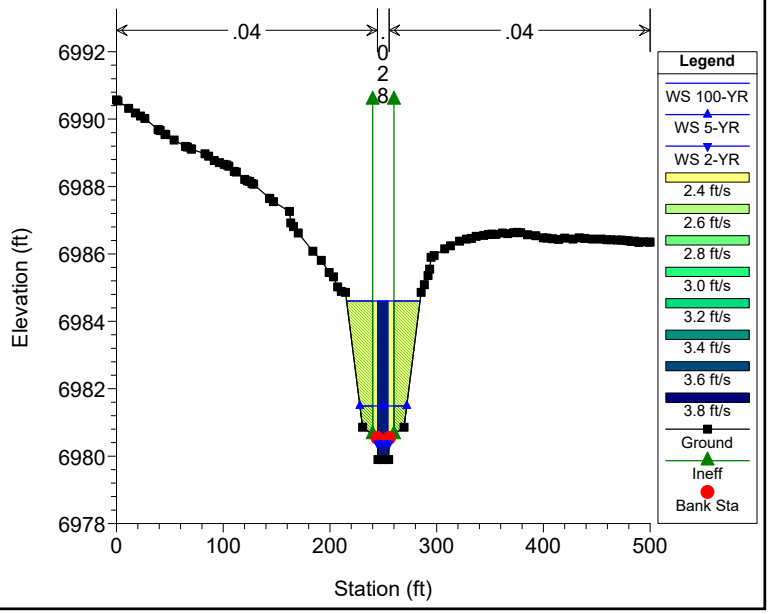
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

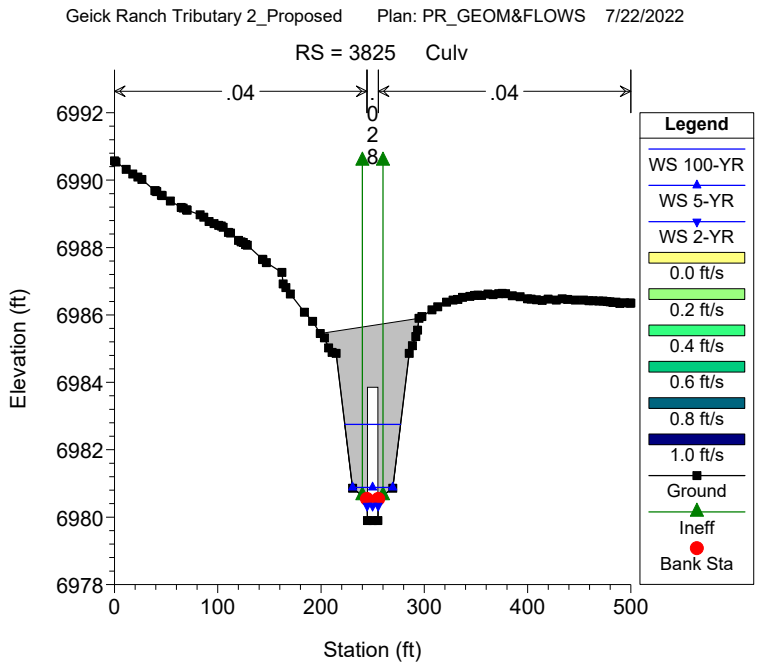
RS = 3880

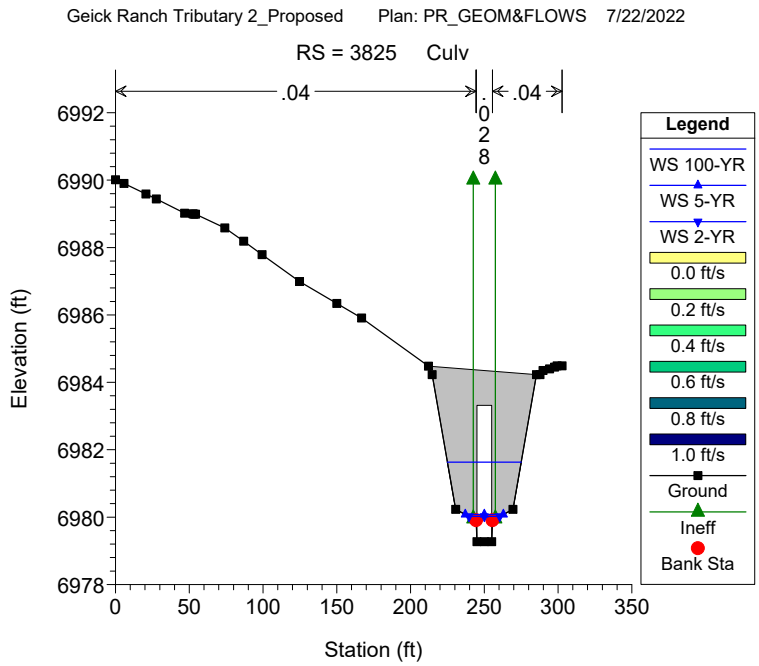


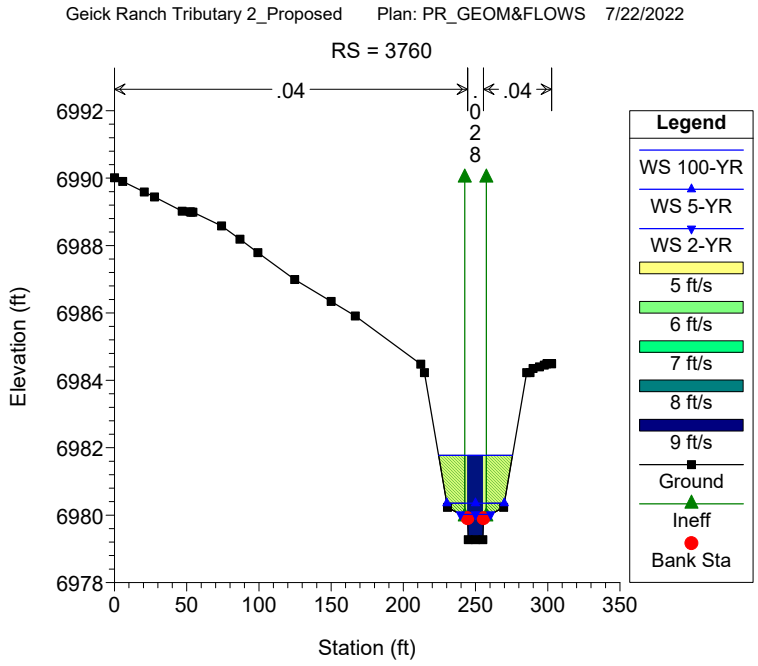
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

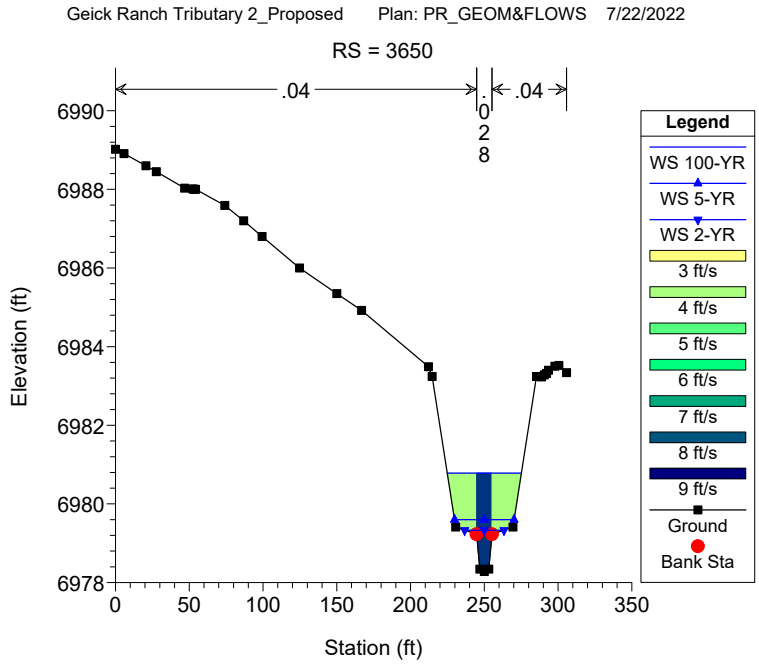
RS = 3830

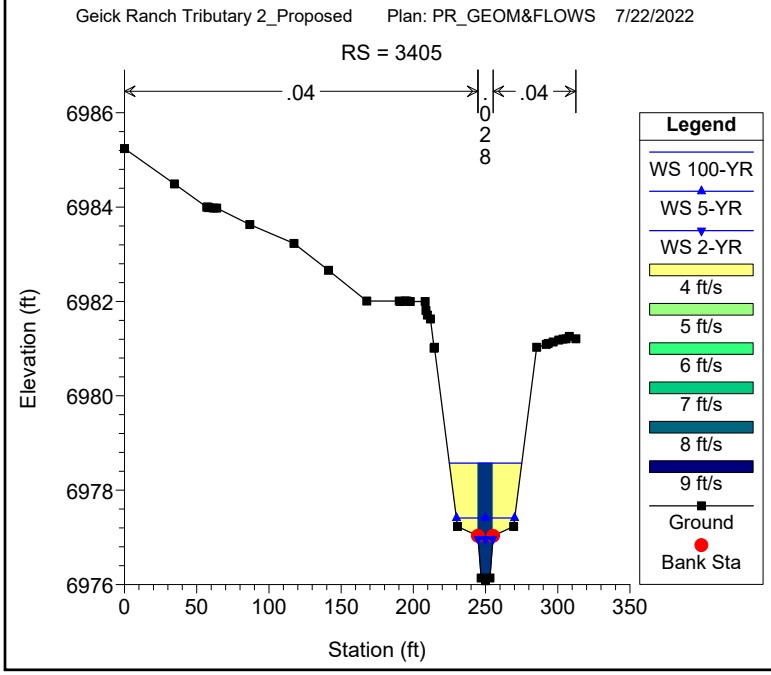


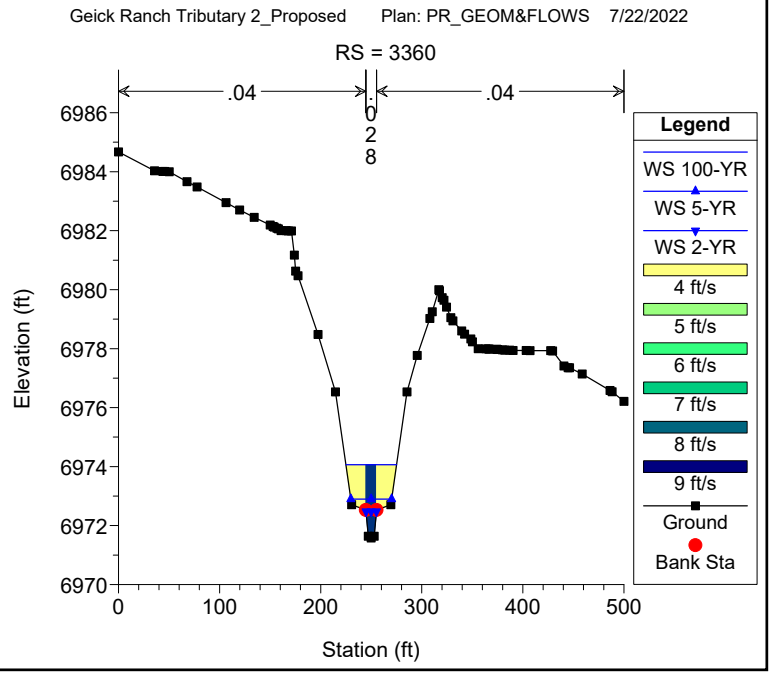

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3825 Culv
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.2 ft/s
0.4 ft/s
0.6 ft/s
0.8 ft/s
1.0 ft/s
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

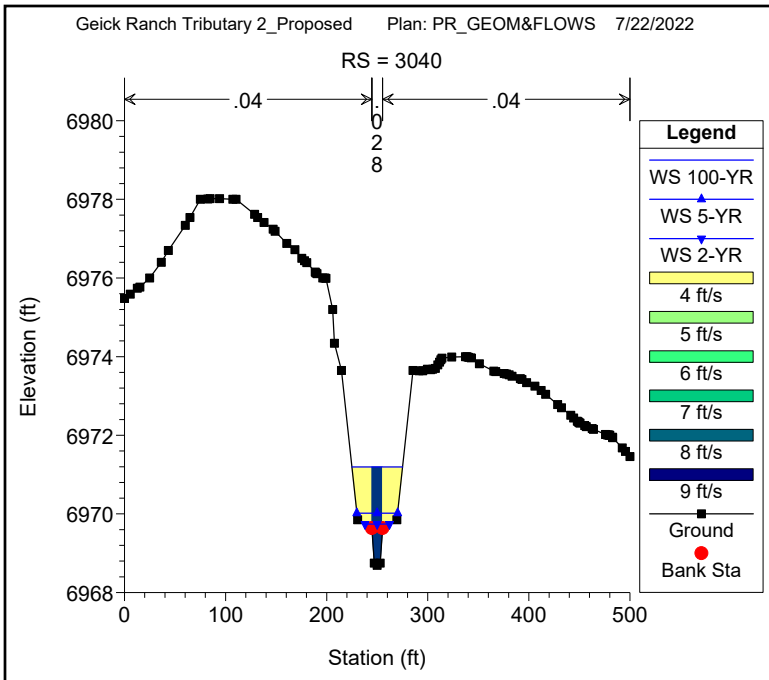

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3825 Culv
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
0.0 ft/s
0.2 ft/s
0.4 ft/s
0.6 ft/s
0.8 ft/s
1.0 ft/s
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

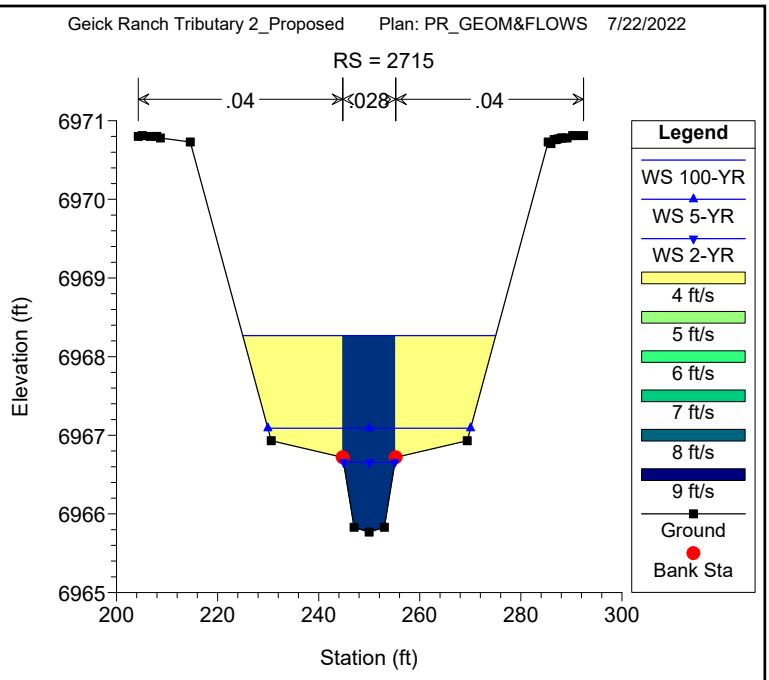

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3760
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

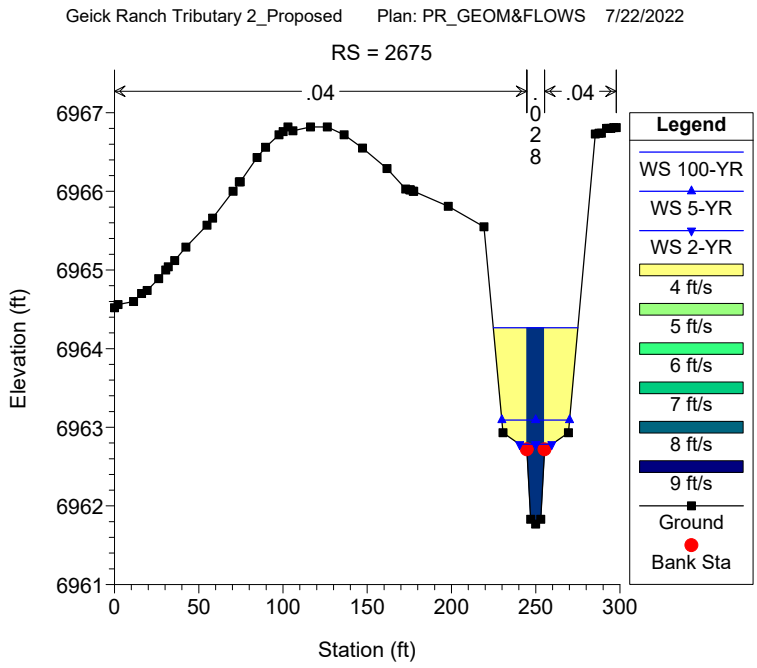

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3650
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

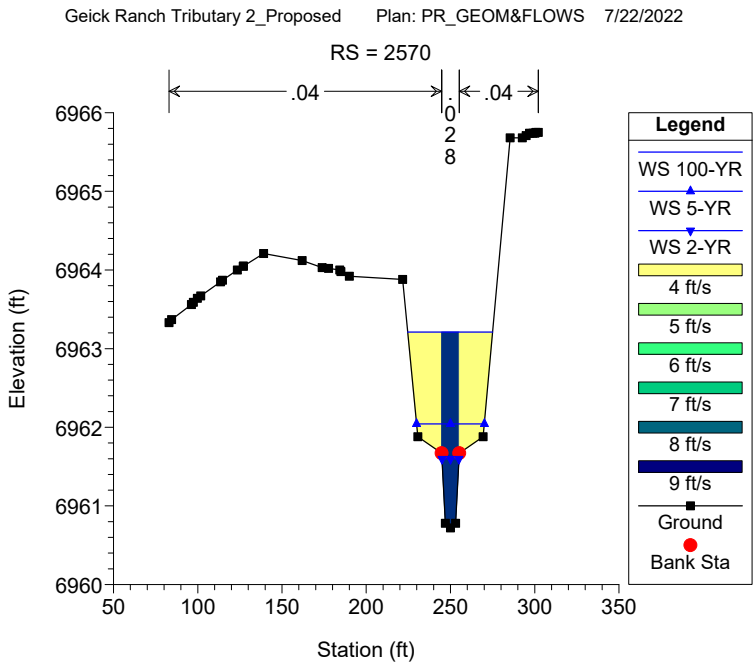

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3405
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

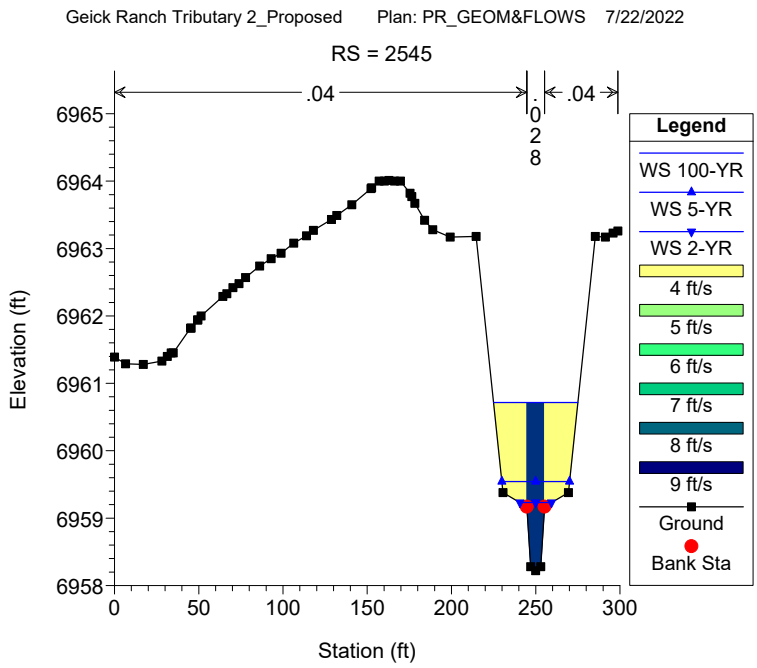

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3360
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

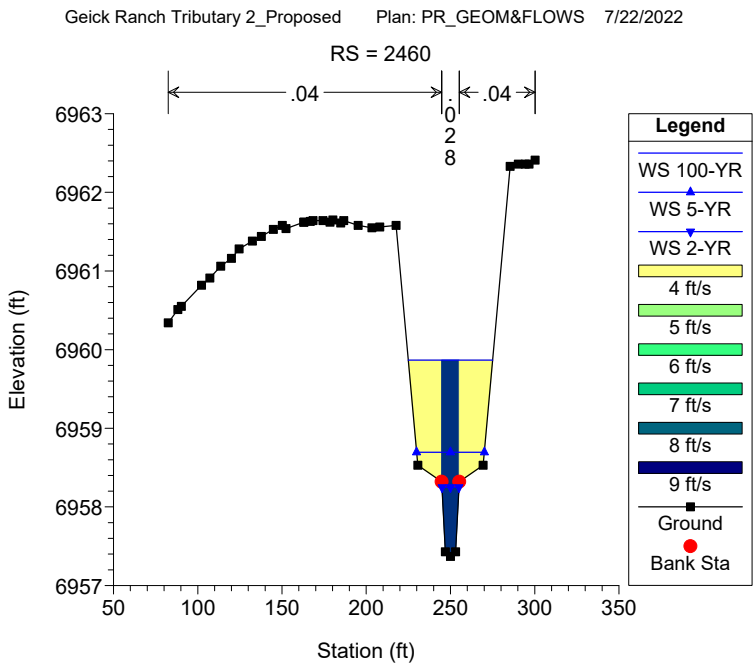

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 3040
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 2715
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 2675
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

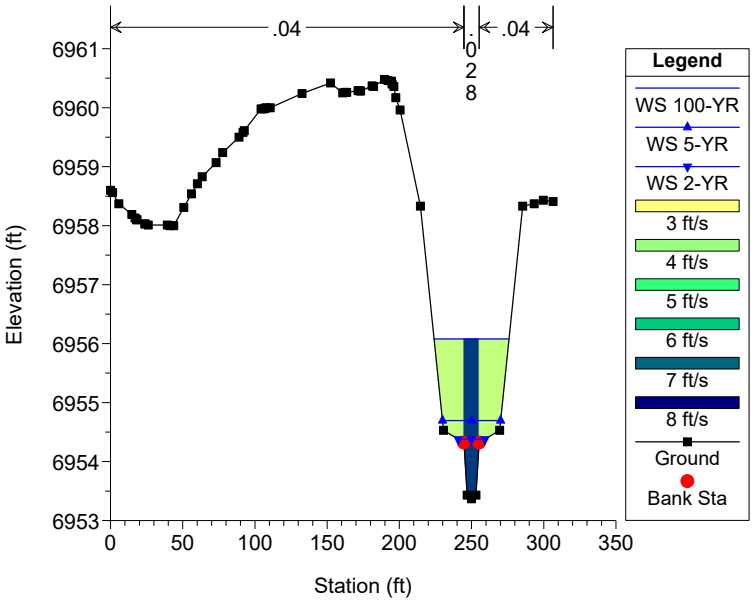

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 2570
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 2545
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 2460
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

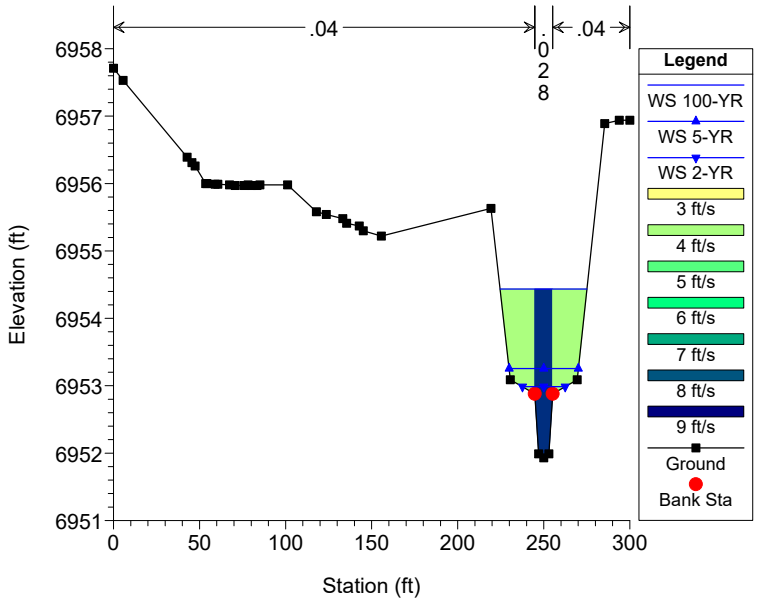
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 2420



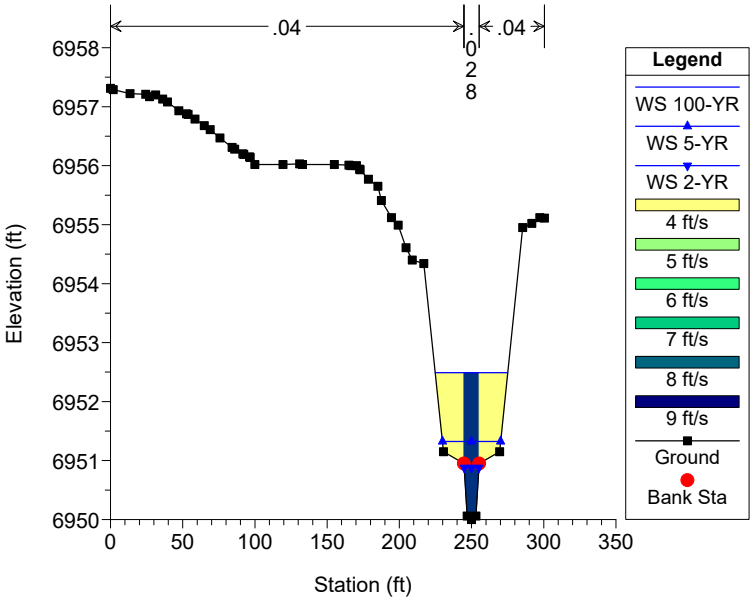
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 2260



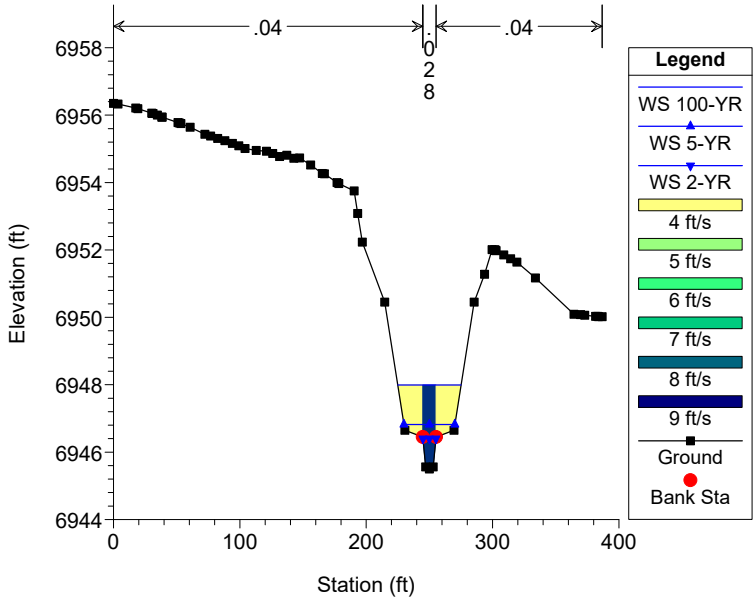
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 2045



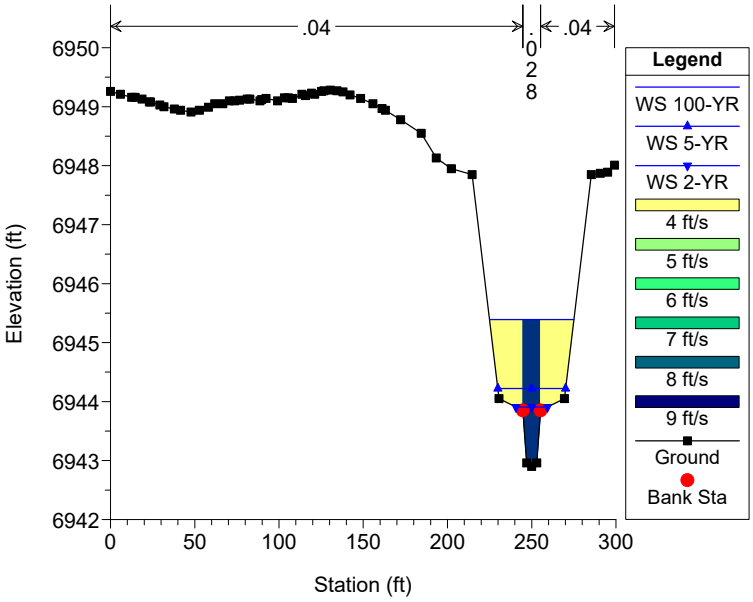
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 2000



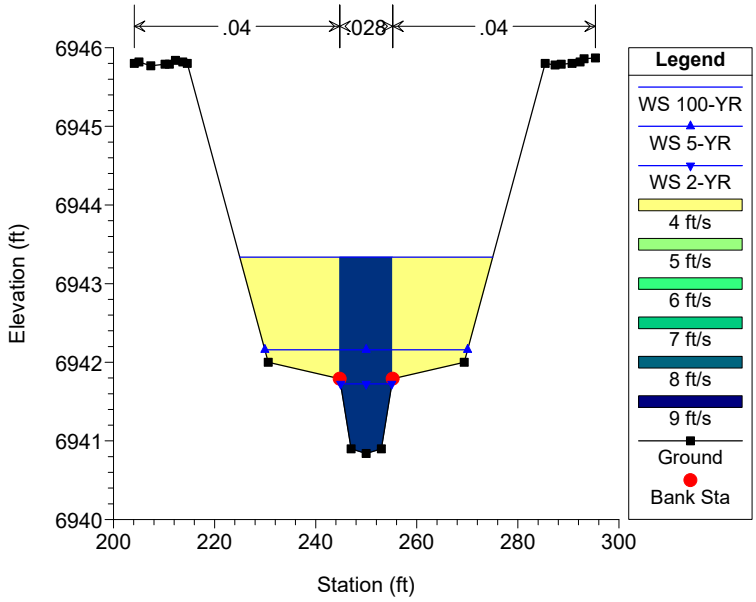
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 1740



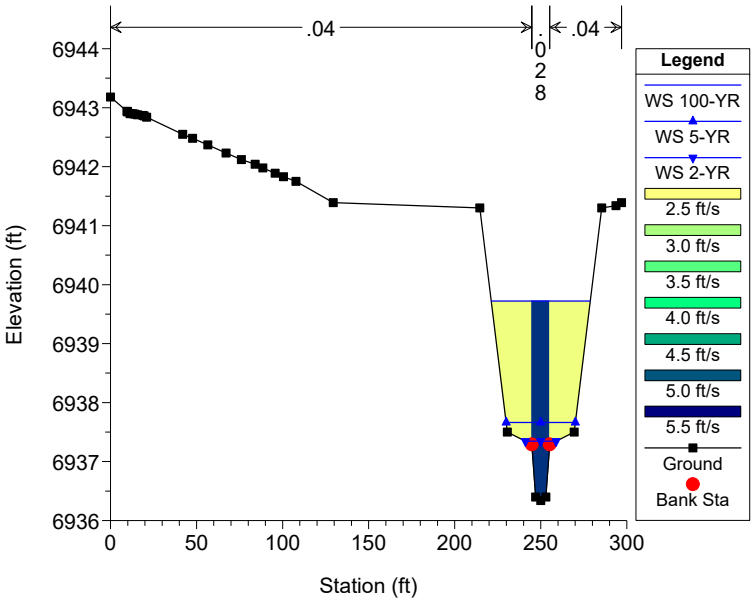
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 1535



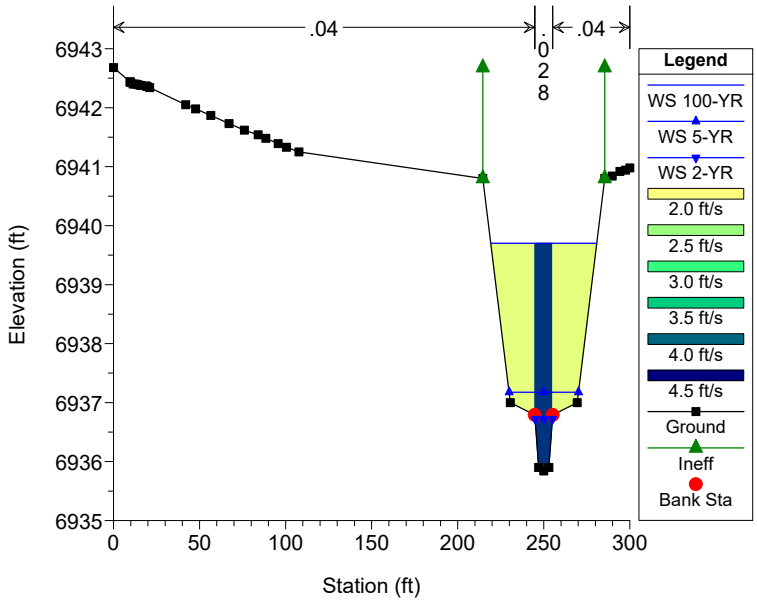
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 1490



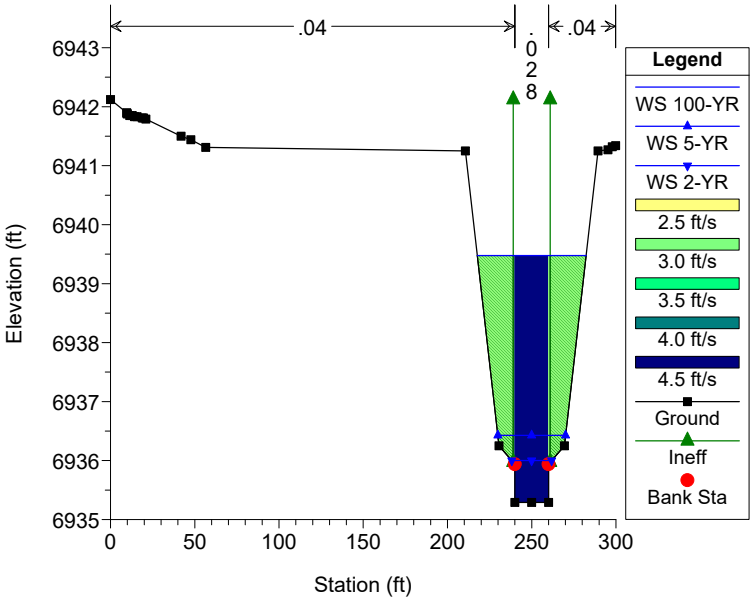
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 1440



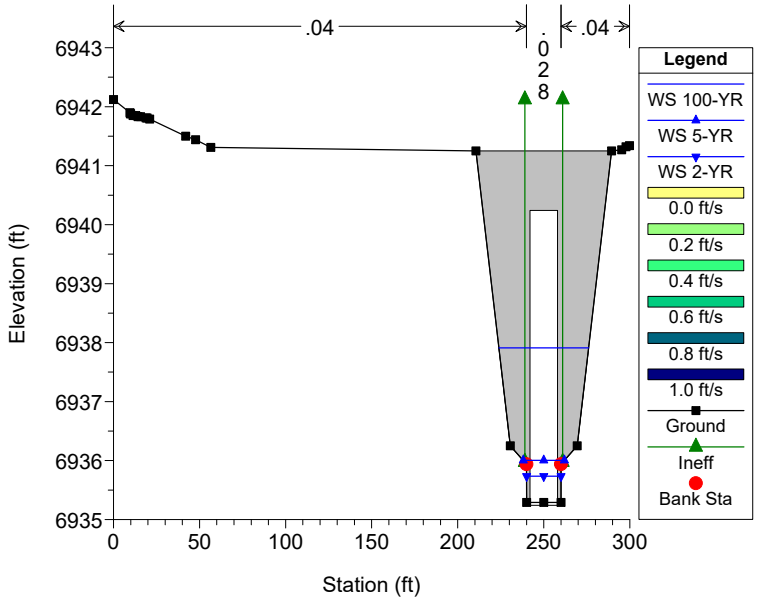
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 1385



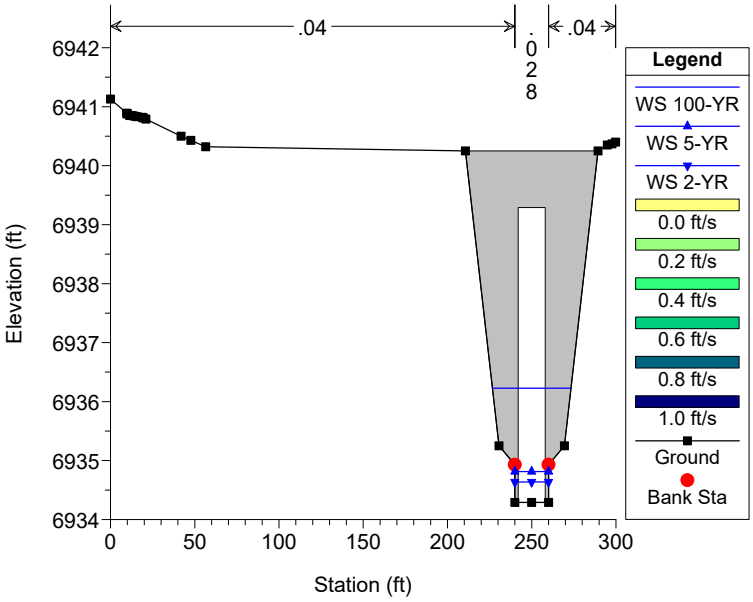
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 1380 Culv



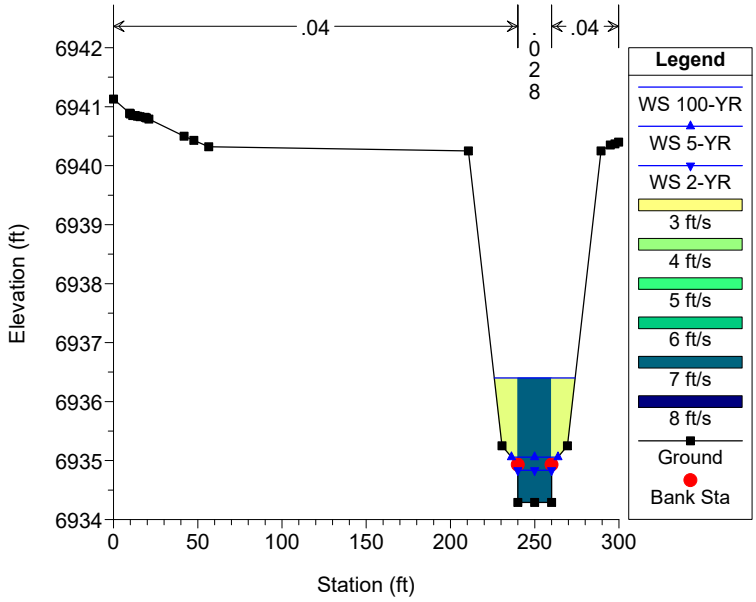
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

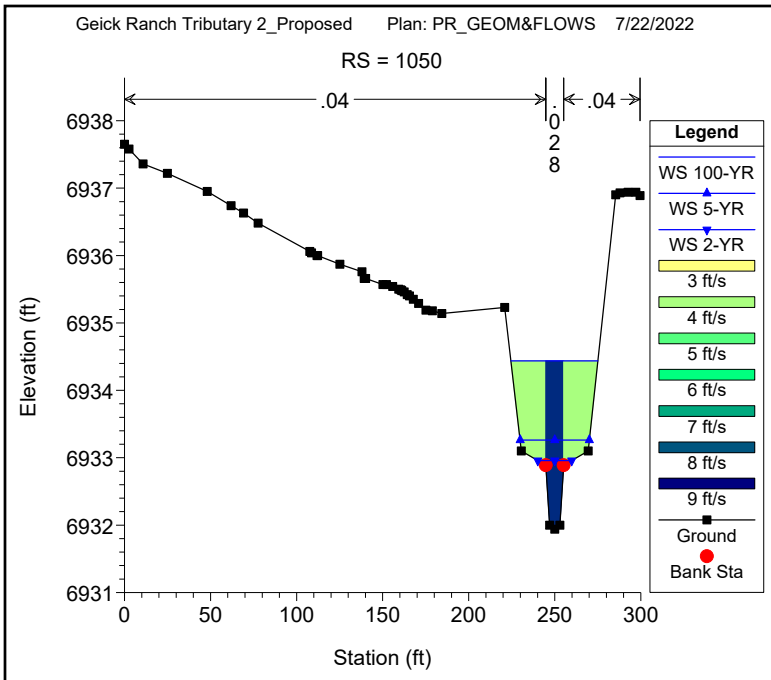
RS = 1380 Culv

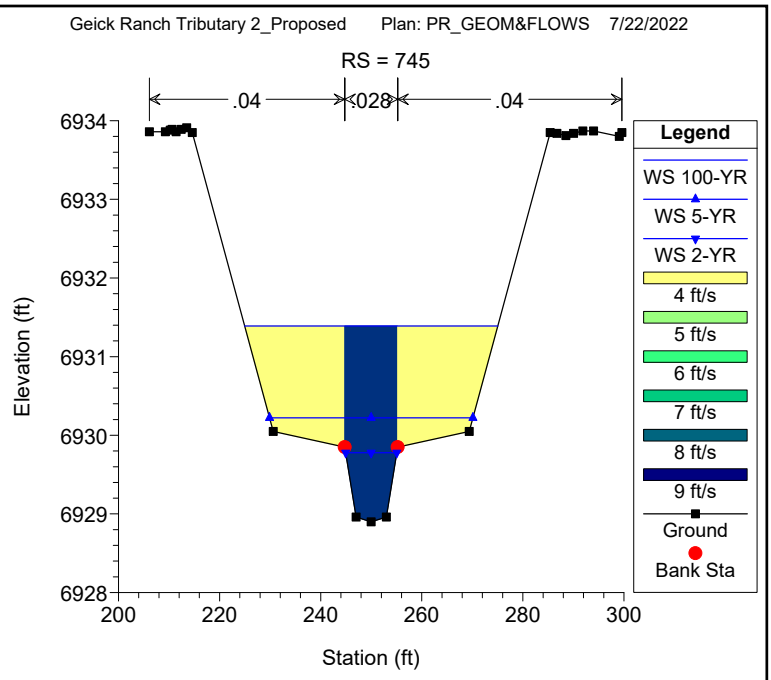


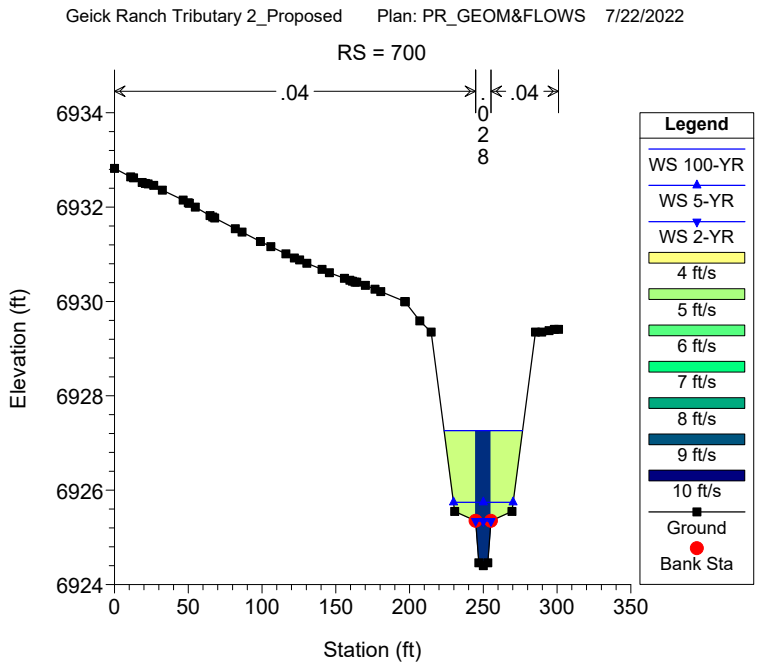
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

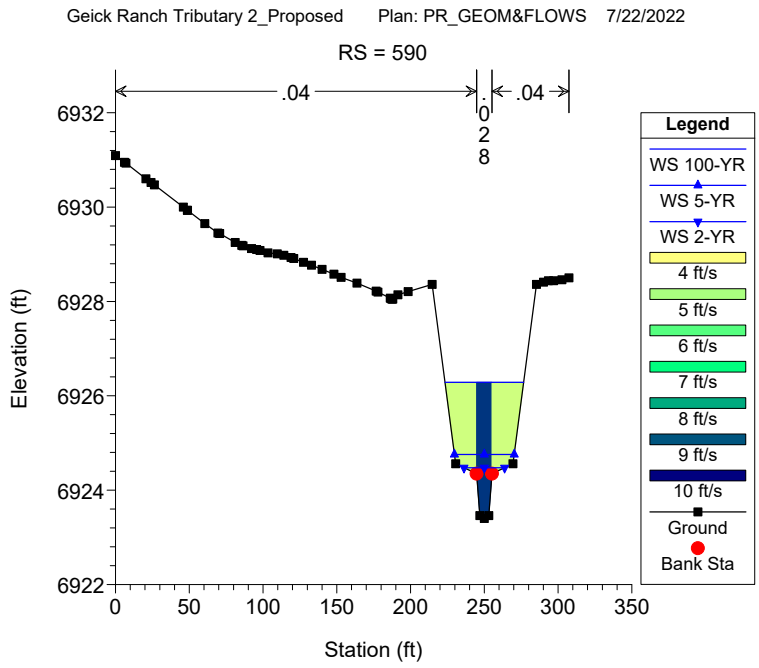
RS = 1285

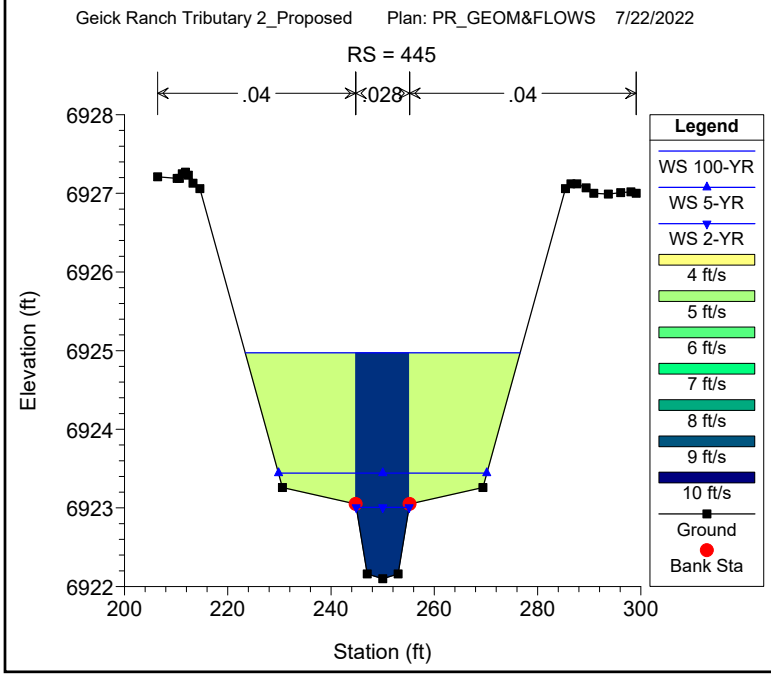


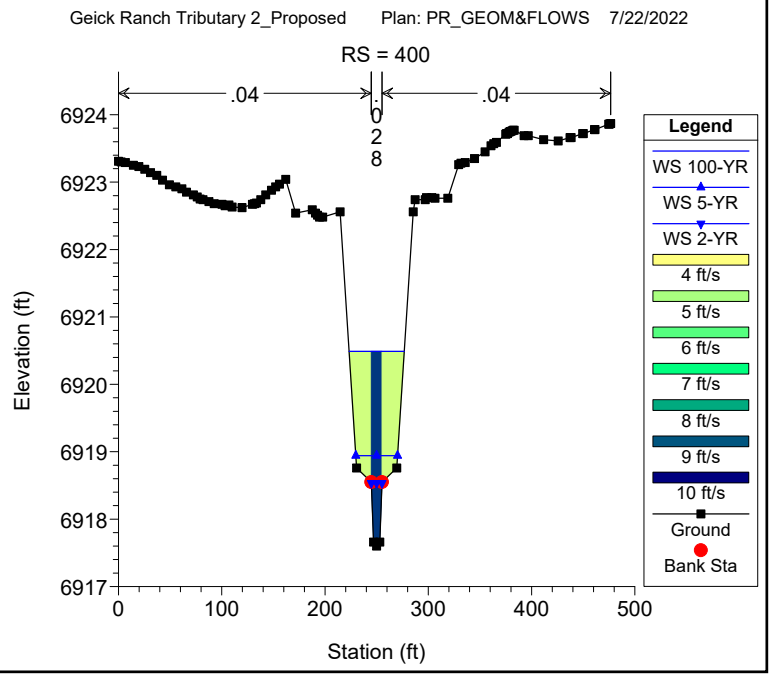

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 1050
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 745
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 700
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

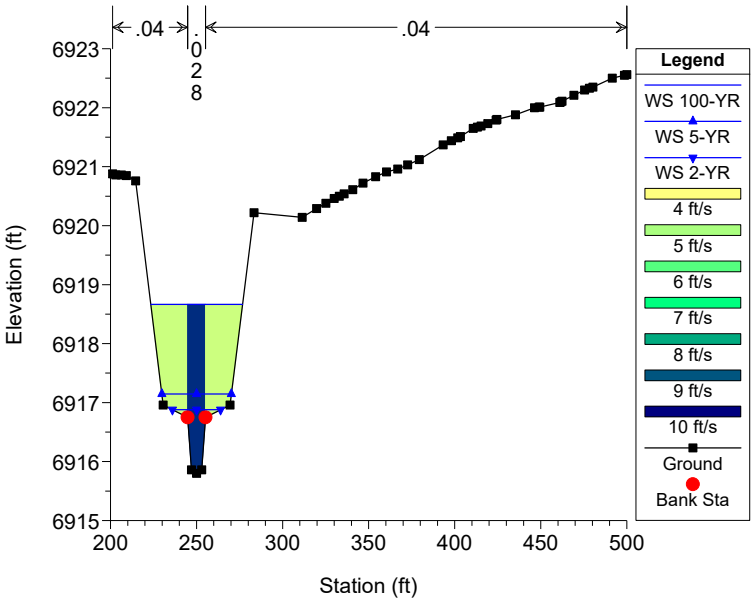

Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 590
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 445
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)


Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022
RS = 400
.04
.028
.04
Legend
WS 100-YR
WS 5-YR
WS 2-YR
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
10 ft/s
Ground
Bank Sta
Elevation (ft)
Station (ft)

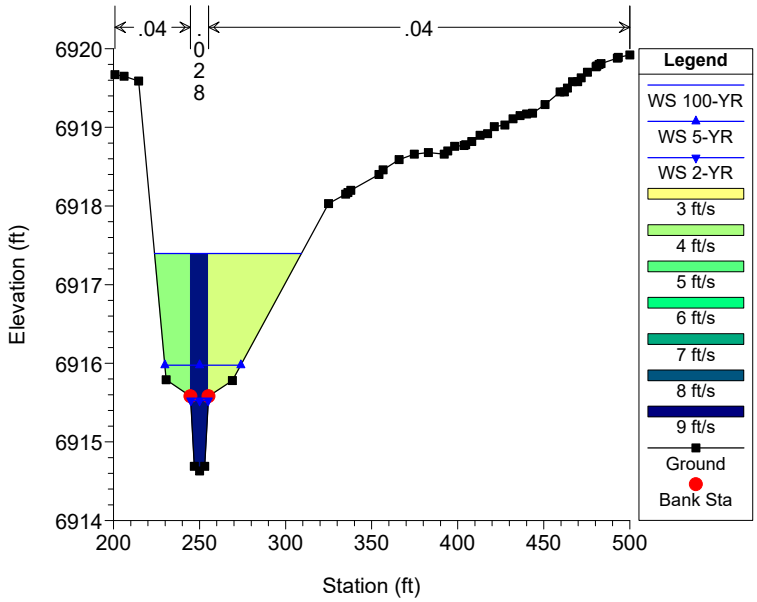
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 200



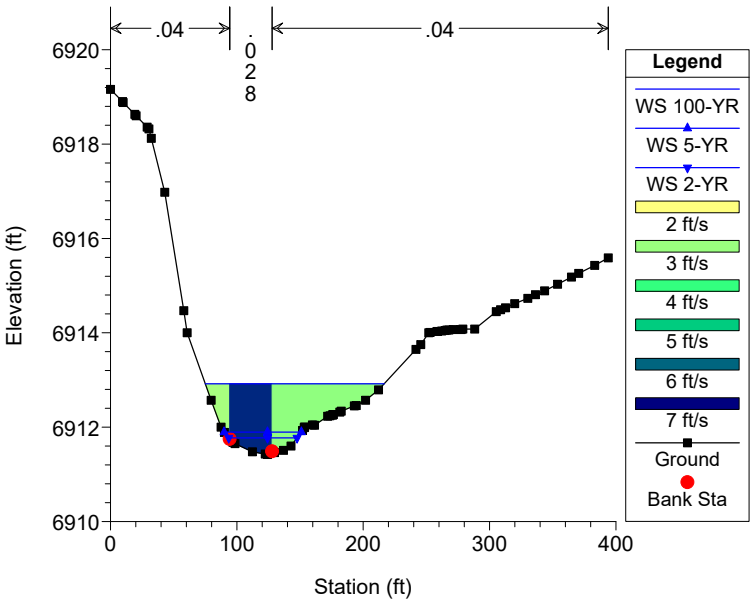
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = 70.18



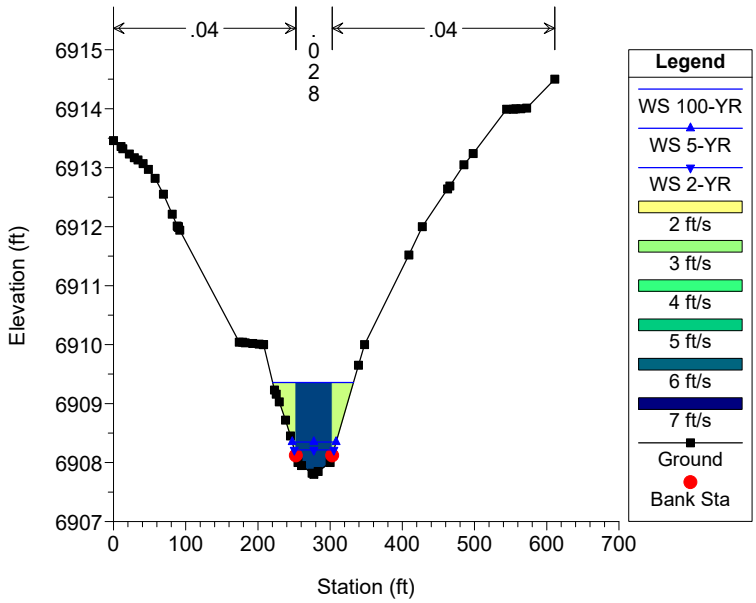
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = -90.21



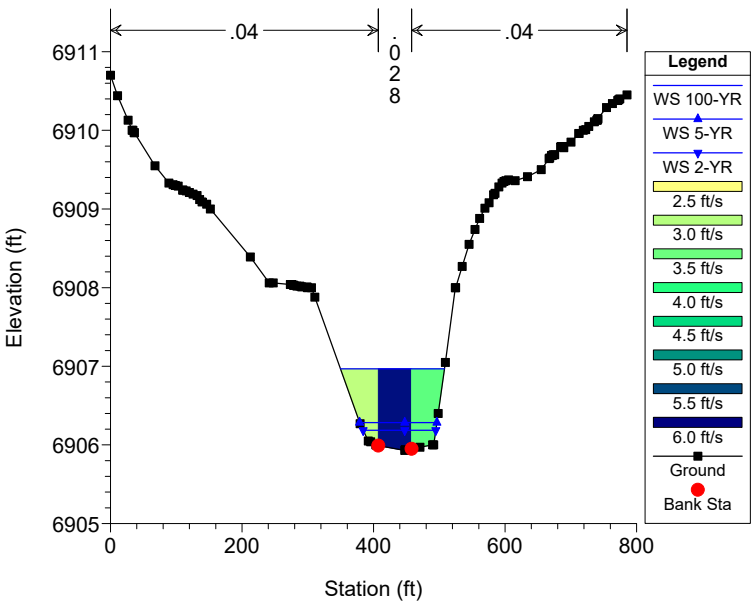
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = -296.57



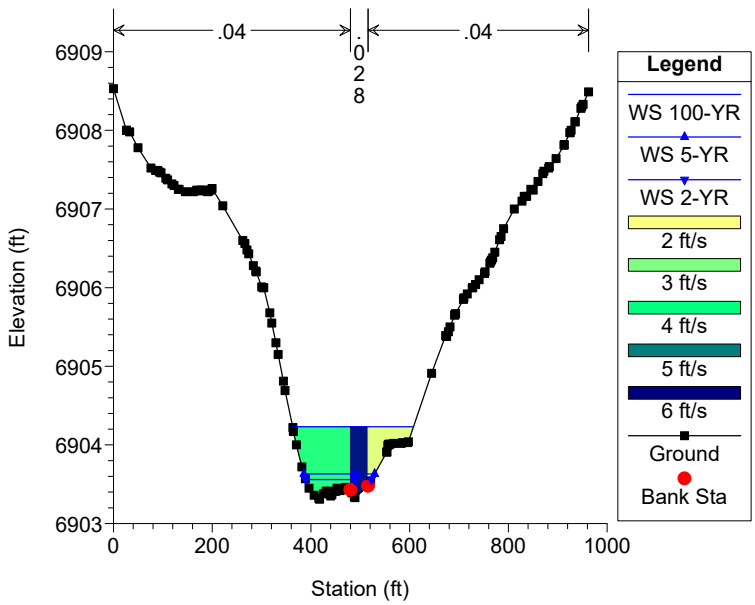
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = -530.34



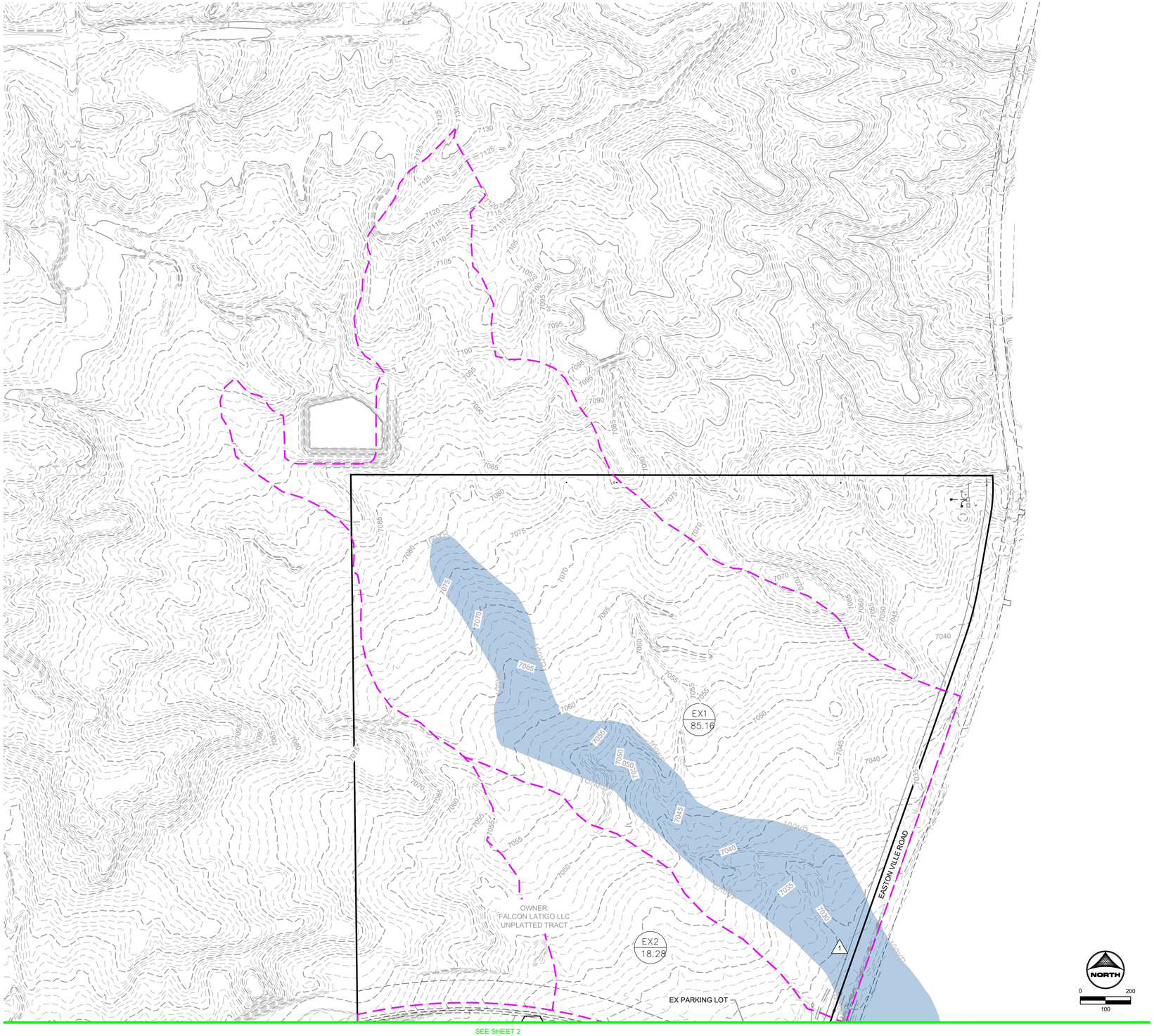
Geick Ranch Tributary 2_Proposed Plan: PR_GEOM&FLOWS 7/22/2022

RS = -734.97



APPENDIX F – DRAINAGE MAPS

JOKERST, NICHOLAS, 9/2/2022 11:03 AM



SUMMARY RUNOFF TABLE

BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
EX1	85.16	2	11.0	74.1
EX2	18.28	6	4.8	25.3
EX3	51.06	7	13.7	69.7
EX4	62.67	2	4.1	27.2
EX5	22.53	2	6.4	42.7
EX6	3.24	2	1.0	6.9
EX7	1.67	2	0.6	4.2
EX8	13.17	2	3.3	21.9
EX9	2.11	2	0.6	4.1

DESIGN POINT SUMMARY TABLE

DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
1	EX1	11.0	74.1
2	EX2	4.8	25.3
3	EX3	26.3	148.4
4	EX4	4.1	27.2
5	EX5	6.4	42.7
6	EX6	1.0	6.9
7	EX7	0.6	4.2
8	EX8	3.3	21.9
9	EX9	0.6	4.1

LEGEND:

- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- EX STORM SEWER
- EX DRAINAGE SWALE
- EX PROPERTY LINE
- EXISTING FLOW DIRECTION
- PROPOSED GRANDVIEW DRAINAGE BASIN
- DESIGN POINT — 1
- PROPOSED BASIN LABEL — NAME / AREA

DRAWN BY: NQJ JOB DATE: 9/2/2022
APPROVED: CM JOB NUMBER: 201662.08
CAD DATE: 9/2/2022
CAD FILE: J:\2020\201662\CAD\Dwgs\C\Eastonville_Road_662.08\Drainage\201662.08_FDR_map_ex

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - COLORADO SPRINGS
1975 RESEARCH PKWY SUITE 230
COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
FAX: 713.965.0044

EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

EXISTING CONDITIONS - DRAINAGE MAP

SHEET DRN 1

HR GREEN Xrefs: xv-util_662, xv-dsgn_662, xv-row-662, xg-t-dh01_FDR_EX, ex_drain_map_legend

SEE SHEET 1

OWNER:
FALCON LATIGO LLC
UNPLATTED TRACT

EX2
18.28

EX3
51.06

EX4
62.87

G15

DESIGN POINT G15
(MERIDIAN RANCH MDDP)
Q5 = 8 CFS
Q100 = 54 CFS
DRAINS TO DP3

G12

DESIGN POINT G12
(MERIDIAN RANCH MDDP)
Q5 = 25.1 CFS
Q100 = 487 CFS
DRAINS TO DP4

EX PARKING LOT

REX ROAD

EX 20.00' MVEA ESMT
REC NO. N/A

EX TRAIL

EX RAW WTR LINE (PRIVATE)

EX 20.00' MVEA ESMT
REC NO. N/A

EX 50.00' MVEA ESMT
REC NO 210034079-210046560

EX OVERHEAD ELEC (TYP)

EX TRAIL

EX 24" RCP CULVERT

GIECK RANCH TRIB. #2 (CHANNEL B)

EASTONVILLE ROAD

EX 100-YR
FLOODPLAIN

EX GRAVEL ROADWAY
(WIDTH VARIES)

EX DUAL 30" RCP CULVERTS (PUBLIC)

EL PASO COUNTY
FALCON REGIONAL PARK
PARCEL NO.4200000400

EX 20.00' MVEA ESMT
REC. NO N/A

EX 24" CMP (PUBLIC)

GRANDVIEW RESERVE FILING 1
(EXISTING 4 SITE INVESTMENTS LLC)

EX 50.00' MVEA ESMT
REC NO 210034079-210046560

EL PASO COUNTY
FALCON REGIONAL PARK
PARCEL NO.4200000400

EX WETLANDS (JURISDICTIONAL)

EX OVERHEAD ELEC (TYP)

GRANDVIEW RESERVE FILING 2
(EXISTING 4 SITE INVESTMENTS LLC
PARCEL NO. 4200000462)

EX 18" CMP (PUBLIC)

EX WETLANDS (JURISDICTIONAL)

GIECK RANCH TRIB. #1 (CHANNEL A)

EX GRAVEL ROADWAY
(WIDTH VARIES)

EL PASO COUNTY
FALCON REGIONAL PARK
PARCEL NO.4200000400

EX GAS LINE (TYP)

EX 20.00' MVEA ESMT
REC. NO. N/A

EX 50.00' MVEA ESMT

SEE SHEET 3

NORTH
0 200
100

SUMMARY RUNOFF TABLE

BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
EX1	85.16	2	11.0	74.1
EX2	18.28	6	4.8	25.3
EX3	51.06	7	13.7	69.7
EX4	62.67	2	4.1	27.2
EX5	22.53	2	6.4	42.7
EX6	3.24	2	1.0	6.9
EX7	1.67	2	0.6	4.2
EX8	13.17	2	3.3	21.9
EX9	2.11	2	0.6	4.1

DESIGN POINT SUMMARY TABLE

DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
1	EX1	11.0	74.1
2	EX2	4.8	25.3
3	EX3	26.3	148.4
4	EX4	4.1	27.2
5	EX5	6.4	42.7
6	EX6	1.0	6.9
7	EX7	0.6	4.2
8	EX8	3.3	21.9
9	EX9	0.6	4.1

LEGEND:

- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- EX STORM SEWER
- EX DRAINAGE SWALE
- EX PROPERTY LINE
- EXISTING FLOW DIRECTION
- PROPOSED GRANDVIEW DRAINAGE BASIN
- DESIGN POINT (1)
- PROPOSED BASIN LABEL (NAME / AREA)

DRAWN BY:	NQJ
APPROVED:	CM
CAD DATE:	9/2/2022
CAD FILE:	J:\2020\201662\CAD\Dwgs\C\Eastonville_Road_662.08\Drainage\201662.08_FDR_map_ex
JOB DATE:	9/2/2022
JOB NUMBER:	201662.08

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

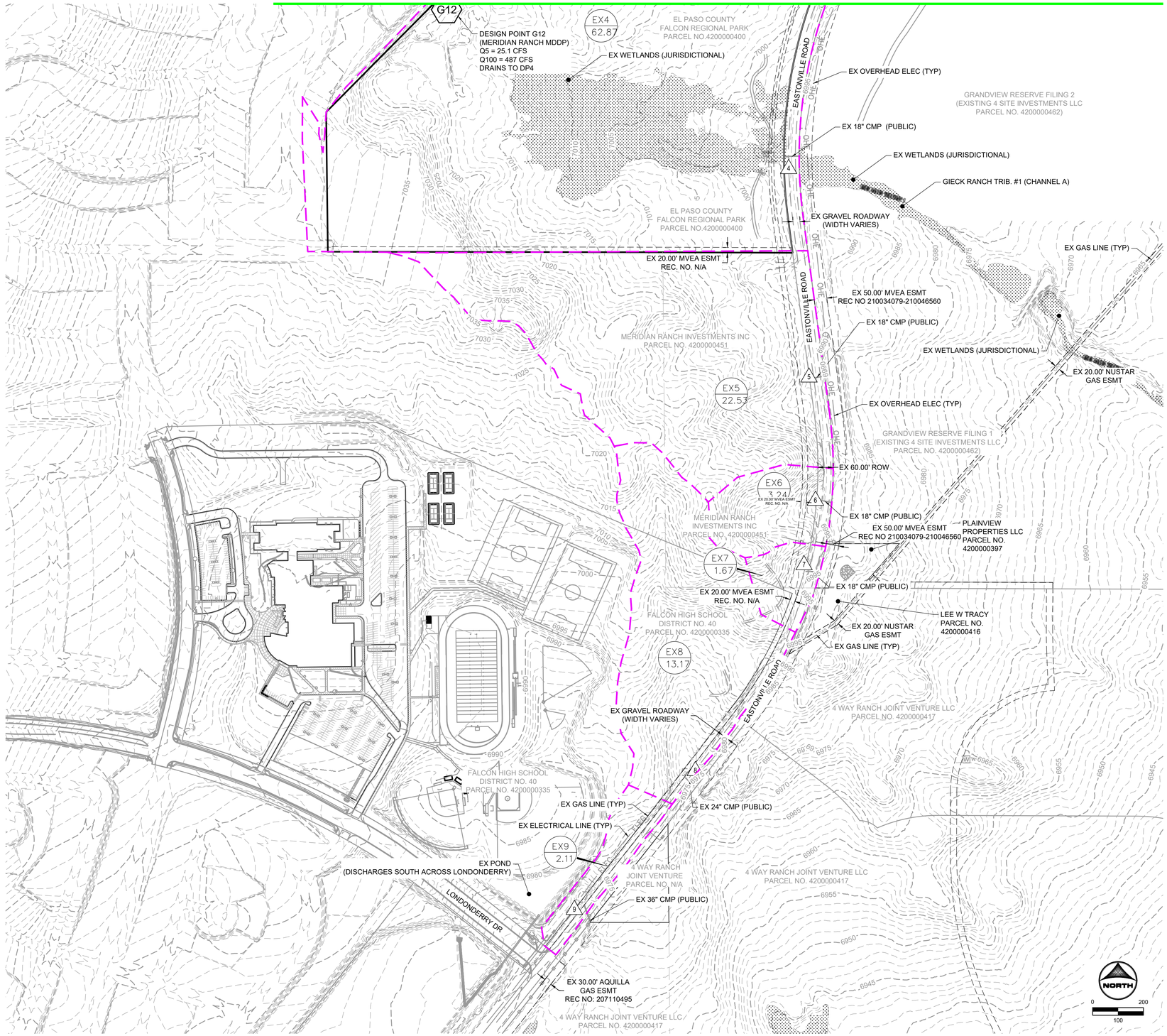
HR GREEN - COLORADO SPRINGS
1975 RESEARCH PKWY SUITE 230
COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
FAX: 713.965.0044

EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

EXISTING CONDITIONS - DRAINAGE MAP

SHEET DRN 2

SEE SHEET 2



SUMMARY RUNOFF TABLE

BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
EX1	85.16	2	11.0	74.1
EX2	18.28	6	4.8	25.3
EX3	51.06	7	13.7	69.7
EX4	62.67	2	4.1	27.2
EX5	22.53	2	6.4	42.7
EX6	3.24	2	1.0	6.9
EX7	1.67	2	0.6	4.2
EX8	13.17	2	3.3	21.9
EX9	2.11	2	0.6	4.1

DESIGN POINT SUMMARY TABLE

DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
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2	EX2	4.8	25.3
3	EX3	26.3	148.4
4	EX4	4.1	27.2
5	EX5	6.4	42.7
6	EX6	1.0	6.9
7	EX7	0.6	4.2
8	EX8	3.3	21.9
9	EX9	0.6	4.1

LEGEND:

- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- EX STORM SEWER
- EX DRAINAGE SWALE
- EX PROPERTY LINE
- EXISTING FLOW DIRECTION
- PROPOSED GRANDVIEW DRAINAGE BASIN
- DESIGN POINT
- PROPOSED BASIN LABEL (NAME / AREA)

DRAWN BY:	NQJ	JOB DATE:	9/2/2022
APPROVED:	CM	JOB NUMBER:	201662.08
CAD DATE:	9/2/2022		
CAD FILE:	J:\2020\201662\CAD\Dwgs\C\Eastonville_Road_662.08\Drainage\201662.08_FDR_map_ex		

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 — 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

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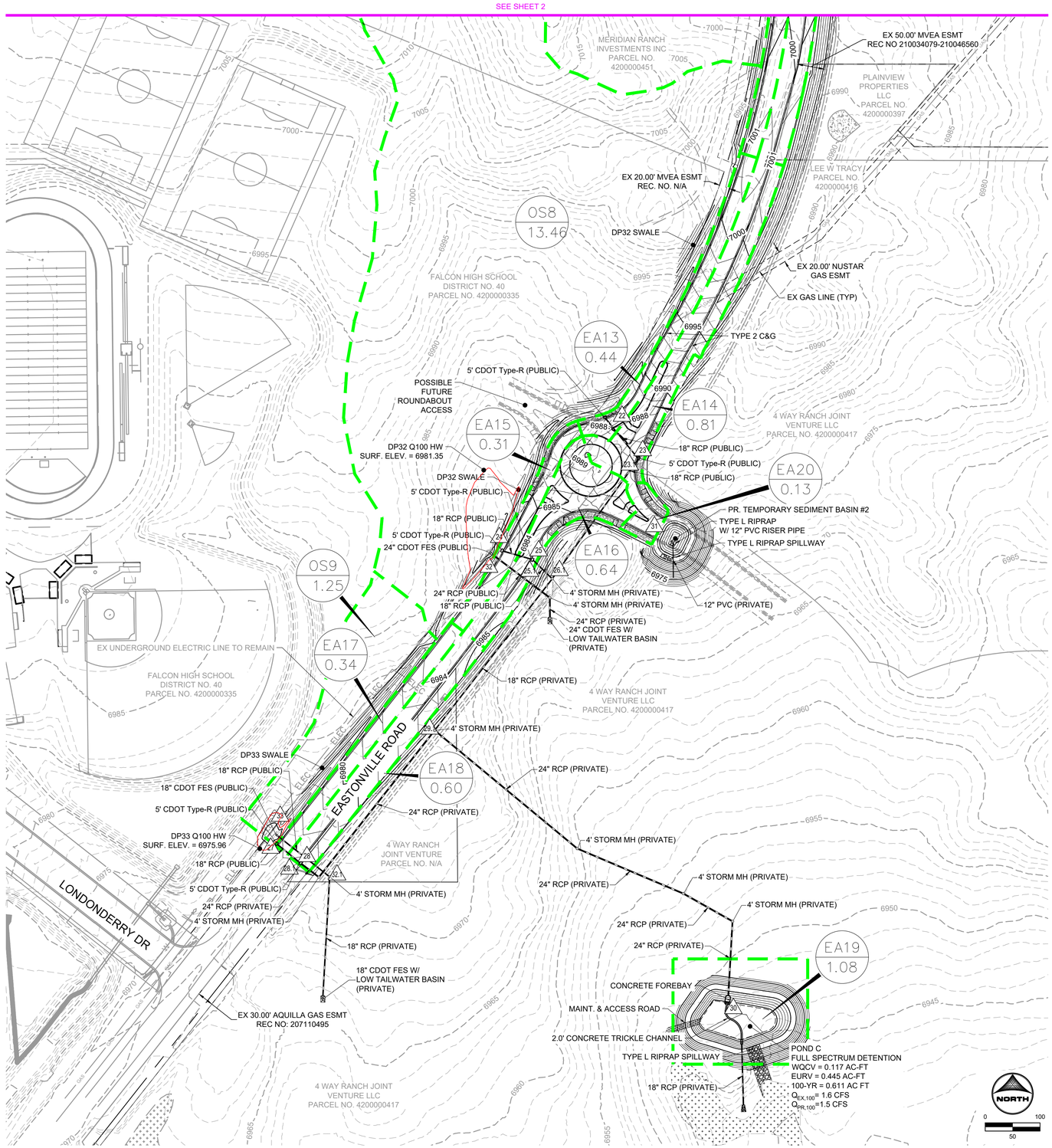
PHONE: 719.300.4140
FAX: 713.965.0044

EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

EXISTING CONDITIONS - DRAINAGE MAP

SHEET DRN 3



SUMMARY RUNOFF TABLE

BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
OS1	77.26	2	10.0	67.2
OS2	15.03	7	4.1	21.1
OS3	1.00	2	0.2	1.2
OS4	9.60	9	3.8	17.3
OS5	40.26	8	11.7	56.2
OS6	60.97	2	3.9	27.4
OS7	24.03	2	6.8	45.8
OS8	13.46	2	3.2	21.6
OS9	1.25	2	0.4	2.5
OS10	11.42	2	2.8	19.2
EA1	0.22	73	0.7	1.3
EA2	0.25	73	0.8	1.5
EA3	0.20	71	0.7	1.4
EA4	0.17	65	0.5	1.1
EA5	0.16	2	0.1	0.4
EA6	0.70	100	3.1	5.5
EA7	0.65	89	2.5	4.7
EA8	2.08	99	5.0	9.0
EA9	2.99	64	4.6	9.5
EA10	1.34	94	4.0	7.4
EA11	1.99	66	4.1	8.5
EA12	0.92	4	0.5	2.9
EA13	0.44	84	1.8	3.3
EA14	0.81	70	2.6	5.2
EA15	0.31	84	1.2	2.3
EA16	0.64	86	2.6	4.9
EA17	0.34	91	1.4	2.6
EA18	0.60	54	1.4	3.1
EA19	1.08	98	4.9	8.9
EA20	0.13	100	0.6	1.1

DESIGN POINT SUMMARY TABLE

DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
1	OS1	10.0	67.2
2	EA1	0.7	1.3
3	EA2	0.8	1.5
3.1	DP2 & DP3	1.4	2.8
4	EA5 & DP3.1	0.1	0.4
5	EA3	0.7	1.4
6	EA4	0.5	1.1
6.1	DP5 & DP6	1.2	2.5
7	OS2	4.1	21.1
8	OS3	0.2	1.2
8.1	DP7 & DP8	3.9	22.4
9.1	DP6.1 & DP8.1	4.3	23.4
10	EA7	2.5	4.7
11	OS4	3.8	17.3
12	OS5	11.7	56.2
12.1	DP11 & DP12	19.0	92.5
13	OS10	2.8	19.2
13.1	DP12.1 & DP13	20.6	106.6
14	EA8	5.0	9.0
15	EA9	4.6	9.5
15.1	DP14 & DP15	9.3	17.9
16	OS6	57.9	514.4
17	EA10	4.0	7.4
18	EA11	4.1	8.5
18.1	DP17 & DP18	8.0	15.4
19.1	DP15.1 & DP18.1	15.0	29.5
20	EA12	0.5	2.9
21	OS7	6.8	45.8
22	EA13	1.8	3.3
23	EA14	2.6	5.2
23.1	DP22 & DP23	4.3	8.4
24	EA15	1.2	2.3
25	EA16	2.6	4.9
25.1	DP24 & DP25	3.8	7.2
26.1	DP23.1 & DP25.1	7.8	15.2
27	EA17	1.4	2.6
28	EA18	1.4	3.1
28.1	DP27 & DP28	2.7	5.4
29.1	DP26.1 & DP28.1	9.9	19.3
30	EA19	4.9	8.9
31	EA20	0.6	1.1
32	OS8	3.2	21.6
33	OS9	0.4	2.5

LEGEND:

- PROPOSED MAJOR CONTOUR — 5250
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- PROPOSED STORM SEWER
- PROPOSED DRAINAGE SWALE
- PROPERTY LINE
- PROPOSED FLOW DIRECTION
- EXISTING FLOW DIRECTION
- PROPOSED DRAINAGE BASIN
- DESIGN POINT — 1
- PROPOSED BASIN LABEL — NAME / AREA

DRAWN BY: NQJ	JOB DATE: 9/9/2022	BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1"
APPROVED: CM	JOB NUMBER: 201662.08	IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.
CAD DATE: 9/9/2022		
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HRGreen
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PHONE: 719.300.4140
FAX: 713.965.0044

EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

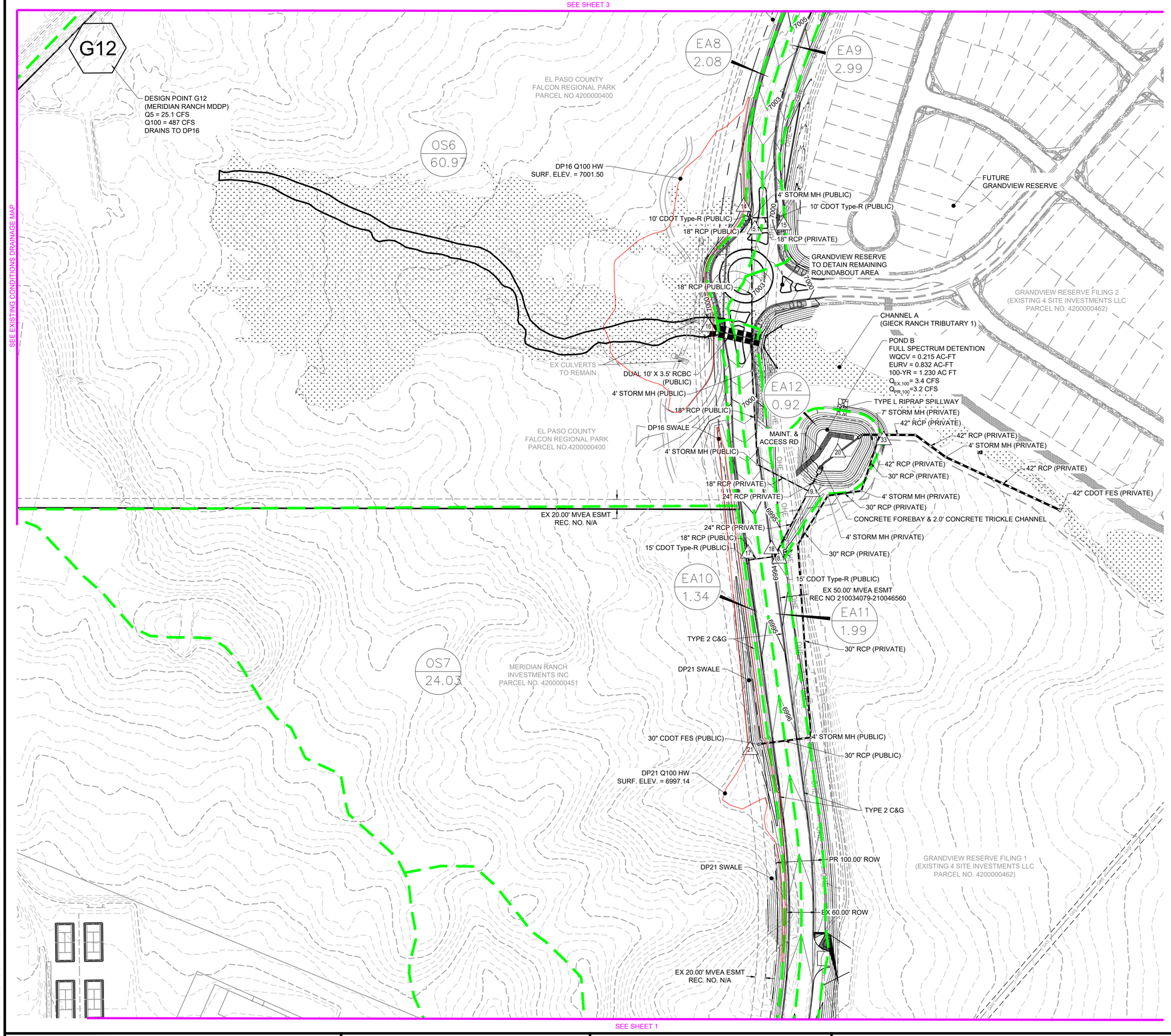
D·R·HORTON America's Builder

PROPOSED CONDITIONS - DRAINAGE MAP

SHEET DRN 1

SEE SHEET 3

SEE EXISTING CONDITIONS DRAINAGE MAP



SEE SHEET 1

SUMMARY RUNOFF TABLE

BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
OS1	77.26	2	10.0	67.2
OS2	15.03	7	4.1	21.1
OS3	1.00	2	0.2	1.2
OS4	0.60	9	3.8	17.3
OS5	40.26	8	11.7	56.2
OS6	60.97	2	3.9	27.4
OS7	24.03	2	6.8	45.8
OS8	13.46	2	3.2	21.6
OS9	1.25	2	0.4	2.5
OS10	11.42	2	2.8	19.2
EA1	0.22	73	0.7	1.3
EA2	0.25	73	0.8	1.5
EA3	0.20	71	0.7	1.4
EA4	0.17	65	0.5	1.1
EA5	0.16	2	0.1	0.4
EA6	0.70	100	3.1	5.5
EA7	0.65	89	2.5	4.7
EA8	2.08	99	5.0	9.0
EA9	2.99	64	4.6	9.5
EA10	1.34	94	4.0	7.4
EA11	1.99	66	4.1	8.5
EA12	0.92	4	0.5	2.9
EA13	0.44	84	1.8	3.3
EA14	0.81	70	2.6	5.2
EA15	0.31	84	1.2	2.3
EA16	0.64	86	2.6	4.9
EA17	0.34	91	1.4	2.6
EA18	0.60	54	1.4	3.1
EA19	1.08	98	4.9	8.9
EA20	0.13	100	0.6	1.1

DESIGN POINT SUMMARY TABLE

DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
1	OS1	10.0	67.2
2	EA1	0.7	1.3
3	EA2	0.8	1.5
3.1	DP2 & DP3	1.4	2.8
4	EA5 & DP3.1	0.1	0.4
5	EA3	0.7	1.4
6	EA4	0.5	1.1
6.1	DP5 & DP6	1.2	2.5
7	OS2	4.1	21.1
8	OS3	0.2	1.2
8.1	DP7 & DP8	3.9	22.4
9.1	DP8.1 & DP8.1	4.3	23.4
10	EA7	2.5	4.7
11	OS4	3.8	17.3
12	OS5	11.7	56.2
12.1	DP11 & DP12	19.0	92.5
13	OS10	2.8	19.2
13.1	DP12.1 & DP13	20.6	106.6
14	EA8	5.0	9.0
15	EA9	4.6	9.5
15.1	DP14 & DP15	9.3	17.9
16	OS6	57.9	514.4
17	EA10	4.0	7.4
18	EA11	4.1	8.5
18.1	DP17 & DP18	8.0	15.4
19.1	DP15.1 & DP18.1	15.0	29.5
20	EA12	0.5	2.9
21	OS7	6.8	45.8
22	EA13	1.8	3.3
23	EA14	2.6	5.2
23.1	DP22 & DP23	4.3	8.4
24	EA15	1.2	2.3
25	EA16	2.6	4.9
25.1	DP24 & DP25	3.8	7.2
26.1	DP23.1 & DP25.1	7.8	15.2
27	EA17	1.4	2.6
28	EA18	1.4	3.1
28.1	DP27 & DP28	2.7	5.4
29.1	DP26.1 & DP28.1	9.9	19.3
30	EA19	4.9	8.9
31	EA20	0.6	1.1
32	OS8	3.2	21.6
33	OS9	0.4	2.5

LEGEND:

- PROPOSED MAJOR CONTOUR — 5250
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- PROPOSED STORM SEWER
- PROPOSED DRAINAGE SWALE
- PROPERTY LINE
- PROPOSED FLOW DIRECTION
- EXISTING FLOW DIRECTION
- PROPOSED DRAINAGE BASIN
- DESIGN POINT
- PROPOSED BASIN LABEL — NAME / AREA

NORTH
0 100
50

DRAWN BY:	NQJ	JOB DATE:	9/9/2022
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PHONE: 719.300.4140
FAX: 713.965.0044

EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

PROPOSED CONDITIONS - DRAINAGE MAP

SHEET DRN 2

SEE EXISTING CONDITIONS DRAINAGE MAP

DP7 Q100 HW
SURF. ELEV. = 7026.50

24" CDOT FES

10' CDOT Type-R (PUBLIC)

EA1
0.22

18" RCP (PRIVATE)

POND A
(WQ SAND FILTER)

12" PVC (UNDERDRAIN)

DESIGN POINT G15
(MERIDIAN RANCH MDDP)
Q5 = 8 CFS
Q100 = 54 CFS
DRAINS TO DP11

REX ROAD

EA3
0.20

EX 20.00' MVEA ESMT
REC NO. N/A

EA4
0.17

15" RCP (PRIVATE)

15" RCP (PRIVATE)

PR. TEMPORARY SEDIMENT BASIN #1

EA5
0.16

24" RCP (PRIVATE)

5' STORM MH (PUBLIC)

24" RCP (PRIVATE)

DP10 SWALE

PR 10' X 4' RCBC
(BY OTHERS)

10' CDOT Type-R (PUBLIC)

15" RCP (PRIVATE)

EL PASO COUNTY
FALCON REGIONAL PARK
PARCEL NO.4200000400

OS4
9.60

DP9.1 SWALE

FUTURE
REX
ROAD

EA7
0.65

EA6
0.70

TYPE L RIPRAP
W/ 12" PVC RISER PIPE

12" PVC (PRIVATE)

EX CULVERTS
TO REMAIN

EX 100-YR FLOODPLAIN

TYPE L RIPRAP SPILLWAY

EX 20.00' MVEA ESMT
REC NO. N/A

TYPE 2 C&G

DP11 SWALE

EX 50.00' MVEA ESMT
REC NO 210034079-210046560

CHANNEL B - GIECK RANCH TRIB. 2
(NOT A PART OF THIS PROJECT,
SHOWN FOR REFERENCE)

DP11 Q100 HW
SURF. ELEV. = 7014.20

OS10
11.42

30" CDOT FES

EX CULVERTS
(TO BE FLOW FILLED)

EX PARKING AREA TO REMAIN

OS5
40.26

EA9
2.99

GRANDVIEW RESERVE FILING 1
(EXISTING 4 SITE INVESTMENTS LLC)

30" RCP (PRIVATE)

48" RCP (PRIVATE)

EA8
2.08

DP12 SWALE

EX POND TO REMAIN

EL PASO COUNTY
FALCON REGIONAL PARK
PARCEL NO.4200000400

EASTONVILLE ROAD

EX 20.00' MVEA ESMT
REC. NO N/A

DP12 Q100 HW
SURF. ELEV. = 7008.50

48" CDOT FES

48" RCP (PRIVATE)

48" RCP (PUBLIC)

48" RCP (PRIVATE)

48" RCP (PRIVATE)

48" CDOT FES

4' STORM MH (PUBLIC)

DP12 SWALE

EX MVEA ABOVE GROUND
ELECTRICAL BOX TO REMAIN

EX WELL STATION

GRANDVIEW RESERVE FILING 1
(EXISTING 4 SITE INVESTMENTS LLC
PARCEL NO. 4200000462)

EX 50.00' MVEA ESMT
REC NO 210034079-210046560

DP16 SWALE

EA8

100YR

SEE SHEET 2

SUMMARY RUNOFF TABLE				
BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
OS1	77.26	2	10.0	67.2
OS2	15.03	7	4.1	21.1
OS3	1.00	2	0.2	1.2
OS4	9.60	9	3.8	17.3
OS5	40.26	8	11.7	56.2
OS6	60.97	2	3.9	27.4
OS7	24.03	2	6.8	45.8
OS8	13.46	2	3.2	21.6
OS9	1.25	2	0.4	2.5
OS10	11.42	2	2.8	19.2
EA1	0.22	73	0.7	1.3
EA2	0.25	73	0.8	1.5
EA3	0.20	71	0.7	1.4
EA4	0.17	65	0.5	1.1
EA5	0.16	7	0.1	0.4
EA6	0.70	100	3.1	5.5
EA7	0.65	89	2.5	4.7
EA8	2.08	99	5.0	9.0
EA9	2.99	64	4.6	9.5
EA10	1.34	94	4.0	7.4
EA11	1.90	66	4.1	8.5
EA12	0.92	4	0.5	2.9
EA13	0.44	84	1.8	3.3
EA14	0.81	70	2.6	5.2
EA15	0.31	84	1.2	2.3
EA16	0.64	86	2.6	4.9
EA17	0.34	91	1.4	2.6
EA18	0.60	54	1.4	3.1
EA19	1.08	98	4.9	8.9
EA20	0.13	100	0.6	1.1

DESIGN POINT SUMMARY TABLE			
DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
1	OS1	10.0	67.2
2	EA1	0.7	1.3
3	EA2	0.8	1.5
3.1	DP2 & DP3	1.4	2.8
4	EA5 & DP3.1	0.1	0.4
5	EA3	0.7	1.4
6	EA4	0.5	1.1
6.1	DP5 & DP6	1.2	2.5
7	OS2	4.1	21.1
8	OS3	0.2	1.2
8.1	DP7 & DP8	3.9	22.4
9.1	DP6.1 & DP8.1	4.3	23.4
10	EA7	2.5	4.7
11	OS4	3.8	17.3
12	OS5	11.7	56.2
12.1	DP11 & DP12	19.0	92.5
13	OS10	2.8	19.2
13.1	DP12.1 & DP13	20.6	106.6
14	EA8	5.0	9.0
15	EA9	4.6	9.5
15.1	DP14 & DP15	9.3	17.9
16	OS6	57.9	514.4
17	EA10	4.0	7.4
18	EA11	4.1	8.5
18.1	DP17 & DP18	8.0	15.4
19.1	DP15.1 & DP18.1	15.0	29.5
20	EA12	0.5	2.9
21	OS7	6.8	45.8
22	EA13	1.8	3.3
23	EA14	2.6	5.2
23.1	DP22 & DP23	4.3	8.4
24	EA15	1.2	2.3
25	EA16	2.6	4.9
25.1	DP24 & DP25	3.8	7.2
26.1	DP23.1 & DP25.1	7.8	15.2
27	EA17	1.4	2.6
28	EA18	1.4	3.1
28.1	DP27 & DP28	2.7	5.4
29.1	DP26.1 & DP28.1	9.9	19.3
30	EA19	4.9	8.9
31	EA20	0.6	1.1
32	OS8	3.2	21.6
33	OS9	0.4	2.5

LEGEND:

- PROPOSED MAJOR CONTOUR — 5250
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- PROPOSED STORM SEWER
- PROPOSED DRAINAGE SWALE
- PROPERTY LINE
- PROPOSED FLOW DIRECTION
- EXISTING FLOW DIRECTION
- PROPOSED DRAINAGE BASIN DESIGN POINT
- PROPOSED BASIN LABEL — NAME / AREA

NORTH

0 50 100

DRAWN BY: NQJ JOB DATE: 9/9/2022
APPROVED: CM JOB NUMBER: 201662.08
CAD DATE: 9/9/2022
CAD FILE: J:\2020\201662\CAD\Dwgs\C\Eastonville_Road_662.08\Drainage\201662.08_FDR_map

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IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

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PHONE: 719.300.4140
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EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

PROPOSED CONDITIONS - DRAINAGE MAP

SHEET DRN 3

SEE EXISTING CONDITIONS DRAINAGE MAP

SEE EXISTING CONDITIONS DRAINAGE MAP

SEE SHEET 3

OS1 77.26

OS2 15.03

OS3 1.00

OS4 9.60

EA1 0.22

EA2 0.25

EA3 0.20

EA4 0.17

EA5 0.16

EA6

EA7 0.65

G15

100YR

DESIGN POINT G15
(MERIDIAN RANCH MDDP)
Q5 = 8 CFS
Q100 = 54 CFS
DRAINS TO DP11

REX ROAD

EX 20.00' MVEA ESMT
REC NO. N/A

EL PASO COUNTY
FALCON REGIONAL PARK
PARCEL NO.4200000400

DP7 Q100 HW
SURF. ELEV. = 7026.50

DP8 Q100 HW
SURF. ELEV. = 7025.50

18" RCP (PRIVATE)
10' CDOT Type-R (PUBLIC)
15" CDOT FES
24" CDOT FES
15" RCP (PRIVATE)
24" RCP (PRIVATE)
6' STORM MH (PUBLIC)
DP9.1 SWALE
FUTURE REX ROAD
EX CULVERTS

EX DRAINAGE SWALE
(REDIRECTS FG38 TO CHANNEL B)

CHANNEL B - GIECK RANCH TRIB. 2
(NOT A PART OF THIS PROJECT,
SHOWN FOR REFERENCE)

POND A
(WQ SAND FILTER)
12" PVC (UNDERDRAIN)

PR. TEMPORARY SEDIMENT BASIN #1

PR 10' X 4' RCBC
(BY OTHERS)

DP10 SWALE

TYPE L RIPRAP
W/ 12" PVC RISER PIPE
12" PVC (PRIVATE)

7024
7025
7020
7015
7010

NORTH
0 100
50

SUMMARY RUNOFF TABLE

BASIN	AREA (ac)	% IMPERVIOUS	Q_5 (cfs)	Q_{100} (cfs)
OS1	77.26	2	10.0	67.2
OS2	15.03	7	4.1	21.1
OS3	1.00	2	0.2	1.2
OS4	9.60	9	3.8	17.3
OS5	40.26	8	11.7	56.2
OS6	60.97	2	3.9	27.4
OS7	24.03	2	6.8	45.8
OS8	13.46	2	3.2	21.6
OS9	1.25	2	0.4	2.5
OS10	11.42	2	2.8	19.2
EA1	0.22	73	0.7	1.3
EA2	0.25	73	0.8	1.5
EA3	0.20	71	0.7	1.4
EA4	0.17	65	0.5	1.1
EA5	0.16	2	0.1	0.4
EA6	0.70	100	3.1	5.5
EA7	0.65	89	2.5	4.7
EA8	2.08	99	5.0	9.0
EA9	2.99	64	4.6	9.5
EA10	1.34	94	4.0	7.4
EA11	1.99	66	4.1	8.5
EA12	0.92	4	0.5	2.9
EA13	0.44	84	1.8	3.3
EA14	0.81	70	2.6	5.2
EA15	0.31	84	1.2	2.3
EA16	0.64	86	2.6	4.9
EA17	0.34	91	1.4	2.6
EA18	0.60	54	1.4	3.1
EA19	1.08	98	4.9	8.9
EA20	0.13	100	0.6	1.1

DESIGN POINT SUMMARY TABLE

DESIGN POINT	CONTRIBUTING BASINS	ΣQ_5 (cfs)	ΣQ_{100} (cfs)
1	OS1	10.0	67.2
2	EA1	0.7	1.3
3	EA2	0.8	1.5
3.1	DP2 & DP3	1.4	2.8
4	EA5 & DP3.1	0.1	0.4
5	EA3	0.7	1.4
6	EA4	0.5	1.1
6.1	DP5 & DP6	1.2	2.5
7	OS2	4.1	21.1
8	OS3	0.2	1.2
8.1	DP7 & DP8	3.9	22.4
9.1	DP6.1 & DP8.1	4.3	23.4
10	EA7	2.5	4.7
11	OS4	3.8	17.3
12	OS5	11.7	56.2
12.1	DP11 & DP12	19.0	92.5
13	OS10	2.8	19.2
13.1	DP12.1 & DP13	20.6	106.6
14	EA8	5.0	9.0
15	EA9	4.6	9.5
15.1	DP14 & DP15	9.3	17.9
16	OS6	57.9	514.4
17	EA10	4.0	7.4
18	EA11	4.1	8.5
18.1	DP17 & DP18	8.0	15.4
19.1	DP15.1 & DP18.1	15.0	29.5
20	EA12	0.5	2.9
21	OS7	6.8	45.8
22	EA13	1.8	3.3
23	EA14	2.6	5.2
23.1	DP22 & DP23	4.3	8.4
24	EA15	1.2	2.3
25	EA16	2.6	4.9
25.1	DP24 & DP25	3.8	7.2
26.1	DP23.1 & DP25.1	7.8	15.2
27	EA17	1.4	2.6
28	EA18	1.4	3.1
28.1	DP27 & DP28	2.7	5.4
29.1	DP26.1 & DP28.1	9.9	19.3
30	EA19	4.9	8.9
31	EA20	0.6	1.1
32	OS8	3.2	21.6
33	OS9	0.4	2.5

LEGEND:

- PROPOSED MAJOR CONTOUR — 5250
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR — 5250
- EXISTING MINOR CONTOUR
- PROPOSED STORM SEWER
- PROPOSED DRAINAGE SWALE
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EASTONVILLE ROAD
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

PROPOSED CONDITIONS - DRAINAGE MAP

SHEET DRN 4

HRGreen

HRGREEN.COM

Grandview Reserve
CLOMR REPORT

July 2022

HR Green Project No: 201662.03

Prepared By:

HR Green Development, LLC

Contact: Greg Panza, PE

gpanza@hrgreen.com

720-602-4999

Table of Contents

Grandview Reserve CLOMR Report

Project Narrative

This report was prepared by HR Green to support the submission of MT-2 forms and documents in a request for a Conditional Letter of Map Revision (CLOMR) for channel improvements along Geick Ranch Tributary 1 and Geick Ranch Tributary 2. This request impacts the current delineation of the 100-year boundary on Flood Insurance Rate Maps (FIRMs) 08041C0552G and 08041C0556G.

Grandview Reserve is located in Falcon, Colorado within El Paso County and contains approximately 776 acres within the south half of section 21 and 22 and the north half of section 27 and 28, Township 12 South, and Range 66 West of the Sixth Principal Meridian in Ela Paso County, Colorado.

Grandview Reserve (GVR) falls within the Gieck Ranch Drainage Basin which covers approximately 22 square miles. This drainage basin is tributary to Black Squirrel Creek and joins said creek just to the south of Elicott, CO about 18 miles to the south. Black Squirrel Creek eventually drains to the Arkansas River in Pueblo Colorado. Much of the Gieck Ranch Drainage basin is undeveloped consisting of rural farmland. The Gieck Ranch Drainage basin lies north of the Haegler Ranch drainage basin. The channels through the Grandview property can all be described as gently sloping drainages that roll through the site towards the creeks, they are tributary too.

Per the NRCS web soil survey, the site is made up entirely of Type A and B soils. The majority of which are Type A soils. The predominate soils are Blakeland loamy sand, Columbine gravelly sandy loam, and Stapleton sandy loam. The first two soils are Type A soil and cover approximately 55.1% of the site and the later soil is a Type B soil and covers the remaining 44.9% of the site.

The vegetation found within Grandview Reserve consists of wetland communities in the floodplain with a transitional area to shortgrass prairie communities that dominate the site. The primary species found in the shortgrass prairie regions include little bluestem, blue grama, and buffalograss. The transitional area between the wetlands and shortgrass prairie includes patches of snowberry, and wood's rose. There are a few plains cottonwoods along the main channels. The area has historically been heavily grazed and there are weeds throughout the site. Weeds found onsite include Canada thistle, Russian thistle, common mullein and yellow toadflax spp.

Observations of the existing channels suggest that by and large they are equilibrium with their watershed flows; evidence including relatively stable bankfull channels, adequate floodplain (above bankfull channel elevations) and in-tact plant communities that would be expected in this type of reach support the notion that the reach is in equilibrium.

At present, the preliminary analysis and design of Geick Ranch Tributary 1 (GRT1) and Geick Ranch Tributary 2 (GRT2) has been completed. Geick Ranch Tributary 1 is to by and large be left in its current state with the exception of the reach surrounding the existing breached stock pond berm. This berm is to be removed and the surrounding region is to be regraded and stabilized to match the existing channel conditions.

Proposed improvements for Geick Ranch Tributary 2 include the realignment of the channel, generally shifting the channel towards the west to accommodate the proposed land plan. There is to be a dedicated 100' wide corridor in which the valley will meander. The valley is the area needed to fully contain the 100 year event plus freeboard requirements. Preliminary analysis indicates the valley will have an average width of approximately 63'; initial sizing approximates the bankfull width to be 8.8' – 13.8'. The valley and channel thalweg will generally follow the same profile, with some deviation as the bankfull channel meanders through the valley in turn decreasing the low

flow channels average slope. The average valley profile is to be approximately 1% with a series of grade control structures to both decrease elevation and dissipate energy to meet natural channel criteria as outline in El Paso County criteria and agreed upon channel parameters.

Hydrology

For modeling the floodplain, flows were assumed to remain the same as presented in the 4 Way Ranch LOMR completed by Kiowa Engineering in March of 2004. Flows are to remain the same and increased runoff attributed to development will be controlled by the various ponds that are to be constructed near the channel.

Per the existing LOMR completed in March 2004, the 100-year flow corresponds to ~280 cfs as GRT2 enters the north boundary of the site (station 45+30 along the existing channel alignment). As the channel works through the existing site, the 100 year flows increase to ~391 cfs at station 22+59 along the existing channel alignment and ~597 cfs at station 6+14 along the existing channel alignment. Along GRT1 in the existing condition there is a minor increase in flow attributed to overland flow from the basin. See Table 1 and Table 2 for summaries of existing flows for GRT1 and GRT2 respectively.

Table 1 - EXISTING FLOWS FOR GEICK RANCH TRIBUTARY 1

STATION	2-YR STORM	5-YR STORM	100-YR STORM
37+13	23 cfs	67 cfs	413 cfs
25+92	26.45 cfs	80.03 cfs	479.80 cfs
15+57	26.45 cfs	80.03 cfs	479.80 cfs

Table 2 - EXISTING FLOWS FOR GEICK RANCH TRIBUTARY 2

STATION	2-YR STORM	5-YR STORM	100-YR STORM
45+30	19 cfs	59 cfs	280 cfs
22+59	20.14 cfs	68.95 cfs	390.70 cfs
6+14	22.14 cfs	85.99 cfs	597.42 cfs

Future hydrology derived via CUHP was modeled in SWMM to determine future flow rates anticipated along GRT1 and the realigned GRT2 channel. Table 3 and Table 4 summarize all future flows for GRT1 and the realigned portion of GRT2 respectively.

Table 3 - FUTURE FLOWS FOR GEICK RANCH TRIBUTARY 1

STATION	2-YR STORM	5-YR STORM	100-YR STORM
37+13	23 cfs	67 cfs	413 cfs
25+92	23 cfs	67 cfs	413 cfs
15+57	27.75 cfs	67.69 cfs	466.95 cfs

Table 4- FUTURE FLOWS FOR GEICK RANCH TRIBUTARY 2

STATION	2-YR STORM	5-YR STORM	100-YR STORM
47+49	19 cfs	59 cfs	280 cfs
36+50	31.72 cfs	60.52 cfs	395.83 cfs
5+54	33.53 cfs	63.16 cfs	553.68 cfs

Hydraulics

Design criteria were developed to guide a preliminary layout of channel dimension, planform, and profile for the realigned segment of GRT2. Published criteria from the Urban Stormwater Drainage Criteria Manual, Volume 1 (USDCM; Urban Drainage and Flood Control District, 2016), El Paso County DCM and various other reports currently in process for the drainages through GVR and completed for GVR drainages were used for initial design parameter and flow rates. Parameters used and minimum bankfull geometry is summarized in Table 5.

Table 5 - DESIGN PARAMETERS

Design Parameter	Design Value
Roughness values	EPC Table 10-2
Maximum 5-year velocity, main channel (within bankfull channel width) (ft/s)	EPC: 2.5 ft/s MHFD: 5 ft/s*
Maximum 100-year velocity, main channel (within bankfull channel width) (ft/s)	EPC: 2.5 ft/s MHFD: 7 ft/s*
Froude No., 5-year, main channel (within bankfull channel width)	0.7
Froude No., 100-year, main channel (within bankfull channel width)	0.85
Maximum shear stress, 100-year, main channel (within bankfull channel width)	1.2 lb/sf
Minimum bankfull capacity of bankfull channel (based on future development conditions)	2 year, 19 - 33.5 cfs
Minimum bankfull channel geometry[1]	
Design Channel Type	C4
Entrenchment Ratio	2.7-31.65 (x=5.26)
Width to depth ratio	13.5-75.0 (x=29.28)
Sinuosity	1.43-2.80 (x=1.92)
Slope	0.0001-0.0184 (x=0.0045)
D_{50}	12-14mm (~0.5 in)
d_{84}	32-48mm (~1.6in)
Meander Length[2]	34-92 (x=56)
Belt Width[2]	18-55 (x=32)
Radius of Curvature[2]	7-28 (x=11)
Minimum Floodplain Terrace	6 ft
Maximum overbank side slope	4(H):1(V)
Maximum bankfull side slope	2.5(H):1(V)
Maximum bankfull side slope	2.5(H):1(V)
Minimum bottom width[3]	4.8 ft
Freeboard	1.5 ft

[1] These values were derived from empirical data and will be used as guidelines for design and will be used in conjunction with hydraulic regime equations as outlined in "Spreadsheet Tools for River Evaluation, Assessment, and Monitoring: The STREAM Diagnostic Modules"
[2] These values are derived from "Spreadsheet Tools for River Evaluation, Assessment, and Monitoring: The STREAM Diagnostic Modules"
[3] Minimum bottom width shown is for the low flow channel only. The main channel will be ~41 ft wide

The 2-year frequency was selected for the design of the bankfull channel to approximate the flow most likely to govern a stable geometry. Prior reports estimated future 2-year flow as ~15-cfs and assumes no culvert effects; i.e., open channel flow un-affected by a culvert. The future 2-year flow (19-33.5 cfs) was used to size the low flow

channel. This resulted in a channel with a minimum bottom width varying from 4.8 feet - 9.8 feet, 0.8 feet deep with 2.5:1 side slopes for a bankfull width varying from 8.8 feet to 13.8 feet, assuming a mean channel longitudinal slope of 0.9%. Equations as shown in the spreadsheet should produce low shear values within the channel section however further analysis using HEC-RAS was completed to determine the final geometry of said channel. The effective discharge channel is highly correlated to the "bankfull" channel (Leopold 1994) As several channel geometrics are derived from bankfull channel width, depth, cross sectional area and sinuosity, and that USDCM and the OSP report design criteria parameters relate to bankfull width, we have chosen bankfull width to serve as the foundation of design.

To determine an appropriate bankfull width, Leopold's generalized width estimate was first calculated (1994, as presented in USDCM Vol 1):

$W = aQ^{0.5}$

Where:

w = bankfull width of channel (top width when conveying bankfull discharge)

Q = bankfull discharge (10.5 cfs)

a = 2.7 (wide bankfull channel)
2.1 (average bankfull channel width)
1.5 (narrow bankfull channel)

Assuming an average bankfull width, the equation would estimate a 6.8-ft bankfull width. It is important to note that the Leopold equation lumps all channel types of varying width-to-depth rations. To perform a check on this estimation, worksheet alternative iterations of channel width from 4-12 feet were performed to find the depth associated with the 2-year flow. Chanel slope was set to 0.09 to best fit the average valley slope, side slopes were assumed to be 2.5:1 and manning's "n" was assumed to be 0.035. The resulting channel depth was divided into each iteration's width to identify the iteration with a width-to-depth ratio most closely associated with a Type-C channel. Given the valley type of the proposed project (Unconfined Alluvial Valley), we can expect Type-C and Type-E channels to represent stable channel geomorphologies. Given the setting and valley slope, we have chosen a Type-C (riffle-pool morphology) channel. Type-C channels typical have width-to-depth ratios >12, with gravel and sand bottomed systems averaging 29 and 27, respectively (13.5-28.7 for 60% of gravel bed streams 12.6-29.2 for 50% of sand bed streams; Rosgen 1996). Given these ranges, the channel alternative with a OPC 2-yr flow-dependent channel depth that, when divided into its corresponding width, yielded a W/D between 10.7 – 36.7.

The resulting channel, then, has the following general dimensions:

- Bottom width = 4.8 ft – 9.8 ft
- Top Width = 8.8 ft – 13.8 ft
- Average $Depth_{Riffle}$ = 0.8 ft
- Width:Depth (W/D) Ratio = 11.3
- Cross Sectional Area = 5.44 ft^2 - 9.44 ft^2

The resulting channel dimensions listed above were then used to do the initial site grading of GRT2. The channel was then modeled in HEC- RAS and the geometry was further refined to reduce velocities, shear stresses, and the Froude number to fall within acceptable ranges.

By and large GRT1 is to be left in its current state as analysis indicates it will remain in a stable state despite development. the existing stock pond is to be removed and that segment of the channel is to be graded to match the surrounding existing state.

Ultimate project hydraulics were evaluated through HEC-RAS 5.0.5. The following sections delve into the use and evaluation of the duplicate effective model and the development of the proposed conditions model.

a. Duplicate Effective Model

There is no existing effective model.

b. Existing Conditions Model

The existing conditions models were created to serve as a baseline for comparing future conditions to existing conditions. The existing conditions models were created by exporting cross sections from CAD along the existing channel alignments. Manning's roughness "n" values were selected to represent the existing conditions of the channel by following EPC's guidance in table 10-2. Existing flow rates were used from the 2004 LOMR completed by Matrix Engineering and are summarized in Table 1 and Table 2. Resulting water surface elevation for the 100-year event can be found in Appendix H.

c. Proposed Conditions Model

The proposed conditions model for GRT1 was developed by copying the geometry for the existing channel and updating the cross sections surrounding the existing stock pond to account for its removal and regrading of that segment of the channel. Manning's roughness "n" values were selected to represent the proposed conditions of the project area and follow EPC's guidance in table 10-2. In the existing model, the steady flow rate data included two changes in flow rate at cross sections 25+92 and 15+57, which correspond to the same sections in the proposed condition model. While the location in which flows change remained the same there were slight changes in flow rates that are attributed to future detention along the channel, these flows are summarized in the preceding hydrology section in Table 2 and Table 3. The last three cross sections were used to confirm the water surface elevation remained within tolerance. Cross sections can be referenced in Appendix I.

The proposed conditions model for GRT2 was developed to account for changes to the channel alignment, geometry, and the proposed culverts along the new channel alignment. The proposed conditions model was created by exporting sample lines along the new alignment that sampled the proposed grading. Manning's roughness "n" values were selected to represent the proposed conditions of the project area and follow EPC's guidance in table 10-2. In the existing model, the steady flow rate data included two changes in flow rate at cross sections 22+58.77 and 6+13.67, which roughly corresponded to cross sections 36+50 and 7+00 respectively in the proposed condition model. While the location in which flows change remained the same there were slight changes in flow rates that are attributed to future releases from water quality ponds along the channel, these flows are summarized in the preceding hydrology section in Table 2 and Table 4. Ineffective flow areas were added to cross sections within the project reach upstream and downstream of culverts to account for areas not actively conveying water due to turbulence. The last three cross sections along the modeled channel are identical to the last three cross sections in the existing conditions model and were used to confirm the water surface elevation remained within tolerance. Cross sections can be referenced in Appendix I.

Maintenance Considerations

Natural stream design approaches take into consideration short and long term maintenance needs by providing a high functioning low maintenance stream (HFLMS). By spreading more frequent storm events into the floodplain terrace, water is introduced into the uplands species of the riparian corridor to provide irrigation flows. Additionally using naturally armored rundown riffles and pools vs larger grade control structures maintenance is limited to mainly trash removal and noxious weed control. Additionally as outlined above the design takes into consideration various flow regimes in order to analyze proposed stream corridor stresses and apply low maintenance stabilization measures to help stabilize and control sediment degradation and aggradation within the channel.

Conclusion

After evaluating the impacts of the proposed channel improvements to the segment of GRT1 and GRT2 between Eastonville Road to the northwest (upstream) and the south-central project boundary (downstream) it is not anticipated that the BFE will change outside of the project. The reevaluation of the 1% chance of annual occurrence event limits has been delineated and has a footprint for GRT2 that does not fall entirely within the boundary delineated in the FIRM effective 2018; this is largely due to the realignment of the channel and the overall footprint of the 1% chance of annual occurrence is significantly narrower than the previous delineation. BFEs at the location of tie in at the boundary of the site is not shown to rise more than 0.00’ in the modeling completed in this assessment. Cross sections for GRT1 and GRT2 can be found in Appendix H and Appendix I to compare the 100year water surface elevation for both the existing and proposed conditions.

Appendix A
MT-2 Forms

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless it displays a valid OMB control number. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a (NFIP) Flood Insurance Rate Maps (FIRM).

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☒ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Example: 480301 480287	City of Katy Harris County	TX TX	48473C 48201C	0005D 0220G	02/08/83 09/28/90
080059	EL PASO COUNTY	CO	08041C0552G	0552G	12/7/2018
080059	EL PASO COUNTY	CO	08041C0556G	0556G	12/7/2018

2. a. Flooding Source: Geick Ranch Tributary 2

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

3. Project Name/Identifier: GRANDVIEW RESERVE GEICK RANCH TRIBUTARY 1 AND 2 IMPROVEMENTS

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☒ Improved Methodology/Data ☒ Regulatory Floodway Revision ☐ Base Map Changes
☐ Coastal Analysis ☒ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
☒ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: ☒ Channelization ☐ Levee/Floodwall ☒ Bridge/Culvert

☐ Dam ☐ Fill ☐ Other (Attach Description)

6. ☐ Documentation of ESA compliance is submitted (required to initiate CLOMR review). Please refer to the instructions for more information.

C. REVIEW FEE

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

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: GREG PANZA	Company: HR GREEN	
Mailing Address: 5619 DTC PARKWAY SUITE 1150 GREENWOOD VILLAGE, CO 80111	Daytime Telephone No.: 720-602-4939	Fax No.:
	E-Mail Address: gpanza@hrgreen.com	
Signature of Requester (required):	Date: 7/22/2022	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirements for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For Conditional LOMR requests, the applicant has documented Endangered Species Act (ESA) compliance to FEMA prior to FEMA's review of the Conditional LOMR application. For LOMR requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: KEITH CURTIS, CFM, FLOODPLAIN ADMINISTRATOR	Community Name: EL PASO COUNTY/PPRBD	
Mailing Address: 2880 INTERNATIONAL CIRCLE COLORADO SPRINGS, CO 80910	Daytime Telephone No.: 719-327-2898	Fax No.:
	E-Mail Address: KEITH@PPRBD.ORG	
Community Official's Signature (required):	Date: 7/22/2022	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: GREG PANZA	License No.: 37081	Expiration Date: 10-31-2023	
Company Name: HR GREEN	Telephone No.: 720-602-4939	Fax No.:	
Signature:	Date: 7/22/2022	E-Mail Address: gpanza@hrgreen.com	

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

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

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

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DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 1

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

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

☒ Not revised (skip to section B)	☐ No existing analysis	☐ Improved data
☐ Alternative methodology	☐ Proposed Conditions (CLOMR)	☐ Changed physical condition of watershed

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

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

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

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model → Specify Model: _____
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? ☐ Yes ☐ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit*	IMMEDIATELY DS OF IMPROVEMENTS	2303.17	6962.54	6962.39
Upstream Limit*	IMMEDIATELY US OF IMPROVEMENTS	3424.5	6987.11	6987.05

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC RAS 5.0.5

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

Models Submitted	Natural Run		Floodway Run		Datum
Duplicate Effective Model*	File Name:	Plan Name: N/A	File Name:	Plan Name:	
Corrected Effective Model*	File Name:	Plan Name:	File Name:	Plan Name:	
Existing or Pre-Project Conditions Model	File Name: GRT1.prj	Plan Name: Existing	File Name:	Plan Name:	
Revised or Post-Project Conditions Model	File Name: GRT1.prj	Plan Name: Proposed Geom Future Flows	File Name:	Plan Name: N/A	
Other - (attach description)	File Name:	Plan Name: N/A	File Name:	Plan Name:	

* For details, refer to the corresponding section of the instructions.

■ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

☐ Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information:

Source: EDWARD JAMES Date: 7/22/2022

Accuracy: +/- 0.08 ft

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

■ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ■ No

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:

   - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
   - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.

   b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? ☐ Yes ■ No

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

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

   If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ■ No

   If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. NO. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program; Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 1

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

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam.....complete Section D
Levee/Floodwall.....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Modeled Structure

1. Name of Structure: Tributary 1

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

   Location of Structure: LOCATED EAST OF EASTONVILLE ROAD AND NORTHWEST OF HIGHWAY 24

   Downstream Limit/Cross Section: SECTION 2882.47

   Upstream Limit/Cross Section: SECTION 2592.31

2. Name of Structure: _____

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

   Location of Structure: _____

   Downstream Limit/Cross Section: _____

   Upstream Limit/Cross Section: _____

3. Name of Structure: _____

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

   Location of Structure: _____

   Downstream Limit/Cross Section: _____

Upstream Limit/Cross Section: _____

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

B. CHANNELIZATION

Flooding Source: Geick Ranch Tributary 1

Name of Structure: Tributary 1

1. Hydraulic Considerations

The channel was designed to carry _____ (cfs) and/or the 100 -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ■ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions

☐ Other locations (specify): _____

2. Channel Design Plans

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

3. Accessory Structures

The channelization includes (check one):

☐ Levees [Attach Section E (Levee/Floodwall)] ☐ Drop structures ☐ Superelevated sections

■ Transitions in cross sectional geometry ☐ Debris basin/detention basin [Attach Section D (Dam/Basin)] ☐ Energy dissipator

☐ Weir ☐ Other (Describe):

4. Sediment Transport Considerations

Are the hydraulics of the channel affected by sediment transport? ☐ Yes ■ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered. THE CHANNEL WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington VA 20958-3005, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program (NFIP); Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 2

Note: Fill out one form for each flooding source studied

A. HYDROLOGY

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

- ☒ Not revised (skip to section B)
- ☐ No existing analysis
- ☐ Improved data
- ☐ Alternative methodology
- ☐ Proposed Conditions (CLOMR)
- ☐ Changed physical condition of watershed

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

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

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

- ☐ Statistical Analysis of Gage Records
- ☐ Precipitation/Runoff Model → Specify Model: _____
- ☐ Regional Regression Equations
- ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters), and documentation to support the new analysis.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Is the hydrology for the revised flooding source(s) affected by sediment transport? ☐ Yes ☐ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation..

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit*	IMMEDIATELY DS OF PROJECT	EX: -333.43 PR: -296.57	6909.44	6909.36
Upstream Limit*	WEST OF EASTONVILLE RD	EX: 5836.75 PR: 6095.26	7034.99	7034.99

*Proposed/Revised elevations must tie-into the Effective elevations within 0.5 foot at the downstream and upstream limits of revision.

2. Hydraulic Method/Model Used: HEC RAS 5.0.5

3. Pre-Submittal Review of Hydraulic Models*

DHS-FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS.

4.

Models Submitted	Natural Run File Name:	Natural Run Plan Name:	Floodway Run File Name:	Floodway Run Plan Name:	Datum
Duplicate Effective Model*					
Corrected Effective Model*		N/A			
Existing or Pre-Project Conditions Model	EXGRT2.prj	Existing			
Revised or Post-Project Conditions Model	PRGRT2.prj	PR_GeomFlows		N/A	
Other - (attach description)		N/A			

* For details, refer to the corresponding section of the instructions.

☒ Digital Models Submitted? (Required)

C. MAPPING REQUIREMENTS

A **certified topographic work map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

☐ Digital Mapping (GIS/CADD) Data Submitted (preferred)

Topographic Information:

Source: EDWARD JAMES Date: 7/22/2022

Accuracy: +/- 0.08 ft

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM**, at the same scale as the original, annotated to show the boundaries of the revised 1%-and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%-and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area on revision.

☒ Annotated FIRM and/or FBFM (Required)

D. COMMON REGULATORY REQUIREMENTS*

1. For LOMR/CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ■ No

   a. For CLOMR requests, if either of the following is true, please submit **evidence of compliance with Section 65.12 of the NFIP regulations**:

   - The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot compared to pre-project conditions.
   - The proposed project encroaches upon a SFHA with or without BFEs established and would result in increases above 1.00 foot compared to pre-project conditions.

   b. Does this LOMR request cause increase in the BFE and/or SFHA compared with the effective BFEs and/or SFHA? ☐ Yes ■ No

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

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

   If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(A)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ■ Yes ☐ No

   If Yes, attach **evidence of regulatory floodway revision notification**. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being established. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For CLOMR requests, please submit documentation to FEMA and the community to show that you have complied with Sections 9 and 10 of the Endangered Species Act (ESA).

For actions authorized, funded, or being carried out by Federal or State agencies, please submit documentation from the agency showing its compliance with Section 7(a)(2) of the ESA. Please see the MT-2 instructions for more detail.

* Not inclusive of all applicable regulatory requirements. For details, see 44 CFR parts 60 and 65.

DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. NO. 1660-0016
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

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PRIVACY ACT STATEMENT

AUTHORITY: The National Flood Insurance Act of 1968, Public Law 90-448, as amended by the Flood Disaster Protection Act of 1973, Public Law 93-234.

PRINCIPAL PURPOSE(S): This information is being collected for the purpose of determining an applicant's eligibility to request changes to National Flood Insurance Program (NFIP) Flood Insurance Rate Maps (FIRM).

ROUTINE USE(S): The information on this form may be disclosed as generally permitted under 5 U.S.C § 552a(b) of the Privacy Act of 1974, as amended. This includes using this information as necessary and authorized by the routine uses published in DHS/FEMA/NFIP/LOMA-1 National Flood Insurance Program; Letter of Map Amendment (LOMA) February 15, 2006, 71 FR 7990.

DISCLOSURE: The disclosure of information on this form is voluntary; however, failure to provide the information requested may delay or prevent FEMA from processing a determination regarding a requested change to a NFIP Flood Insurance Rate Maps (FIRM).

Flooding Source: Geick Ranch Tributary 2

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

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization.....complete Section B
Bridge/Culvert.....complete Section C
Dam.....complete Section D
Levee/Floodwall.....complete Section E
Sediment Transport.....complete Section F (if required)

Description Of Modeled Structure

1. Name of Structure: Tributary 2

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

   Location of Structure: LOCATED BETWEEN EASTONVILLE ROAD AND NORTHWEST OF HIGHWAY 24

   Downstream Limit/Cross Section: SOUTHERN BOUNDARY OF GRANDVIEW RESERVE, SECTION 70.18

   Upstream Limit/Cross Section: EAST SIDE OF EASTONVILLE ROAD, SECTION 5642

2. Name of Structure: 10' X 4' BOX Culvert at US end of project

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

   Location of Structure: UNDER THE FUTURE REX ROAD

   Downstream Limit/Cross Section: SECTION 5043.56

   Upstream Limit/Cross Section: SECTION 4748.5

3. Name of Structure: 10' X 4' BOX Culvert MID project

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

   Location of Structure: MID GEICK RANCH TRIB 2, UNDER PROPSOED ROAD THROUGH FUTURE DEVELOPMENT

   Downstream Limit/Cross Section: SECTION 3760 UPSTREAM LIMIT / CROSS SECTION: SECTION 3880

NAME OF STRUCTURE: 16' X 5' BOX CULVERTSOUTHERN END OF PROJECT
TYPE: BRIDGE CULVERT
LOCATION OF STRUCTURE: MID GEICK RANCH TRIB 2, UNDER PROPSOED ROAD THROUGH FUTURE DEVELOPMENT
DOWNSTREAM LIMIT: 1285
UPSTREAM LIMIT: 1385

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

B. CHANNELIZATION

Flooding Source: Geick Ranch Tributary 2

Name of Structure: Tributary 2

1. Hydraulic Considerations

The channel was designed to carry _____ (cfs) and/or the 100 -year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☐ Supercritical flow ■ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ■ At Drop Structures ☐ At Transitions

☐ Other locations (specify): _____

2. Channel Design Plans

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

3. Accessory Structures

The channelization includes (check one):

☐ Levees [Attach Section E (Levee/Floodwall)] ■ Drop structures ☐ Superelevated sections

☐ Transitions in cross sectional geometry ☐ Debris basin/detention basin [Attach Section D (Dam/Basin)] ☐ Energy dissipator

☐ Weir ☐ Other (Describe):

4. Sediment Transport Considerations

Are the hydraulics of the channel affected by sediment transport? ☐ Yes ■ No

If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered. THE CHANNEL WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

C. BRIDGE/CULVERT

Flooding Source: Geick Ranch Tributary 2

Name of Structure: 10' X 4' BOX Culvert at US end of project

1. This revision reflects (check one):

   ☒ Bridge/culvert not modeled in the FIS There is no existing FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

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

4. Sediment Transport Considerations

   Are the hydraulics of the structure affected by sediment transport? ☐ Yes ☒ No

   If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

THE CULVERT WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

C. BRIDGE/CULVERT

Flooding Source: Geick Ranch Tributary 2

Name of Structure: 10' X 4' BOX Culvert MID project

1. This revision reflects (check one):

   ☒ Bridge/culvert not modeled in the FIS There is no existing FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

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

4. Sediment Transport Considerations

   Are the hydraulics of the structure affected by sediment transport? ☐ Yes ☒ No

   If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

THE CULVERT WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

C. BRIDGE/CULVERT

Flooding Source: Geick Ranch Tributary 2

Name of Structure: 16' X 5' BOX CULVERTSOUTHERN END OF PROJECT

1. This revision reflects (check one):

   ☒ Bridge/culvert not modeled in the FIS There is no existing FIS

   ☐ Modified bridge/culvert previously modeled in the FIS

   ☐ Revised analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8): HEC-RAS
   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

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

4. Sediment Transport Considerations

   Are the hydraulics of the structure affected by sediment transport? ☐ Yes ☒ No

   If Yes, then fill out Section F (Sediment Transport) of Form 3. If no, then attach an explanation.

THE CULVERT WAS DESIGNED TO INCLUDE ARMORING AS NEEDED TO PREVENT ADVERSE SEDIMENT TRANSPORT/ SCOURING.

Appendix B
Certified Topo

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

NAVD88 6866.33

NORTH

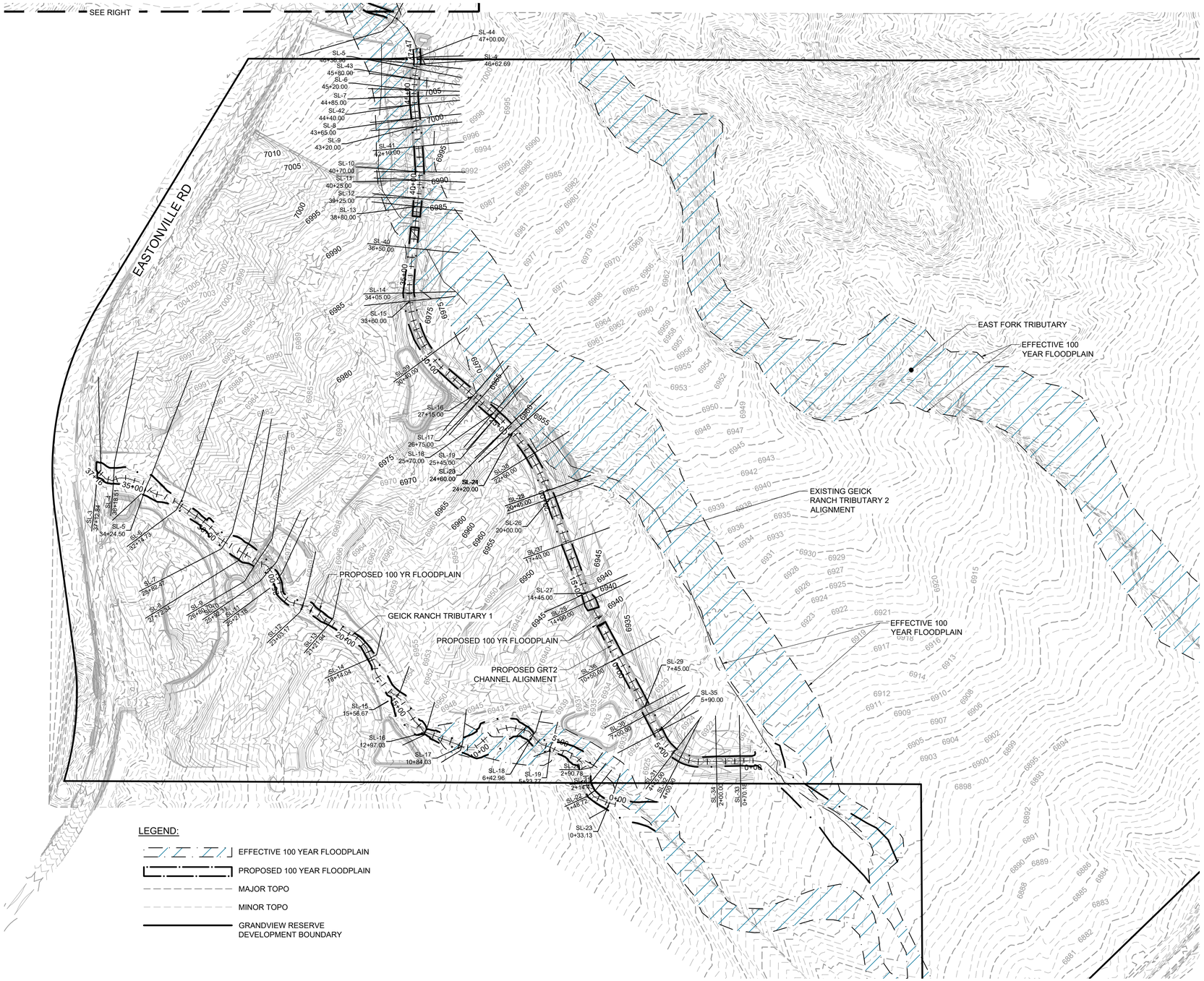
0 150 300

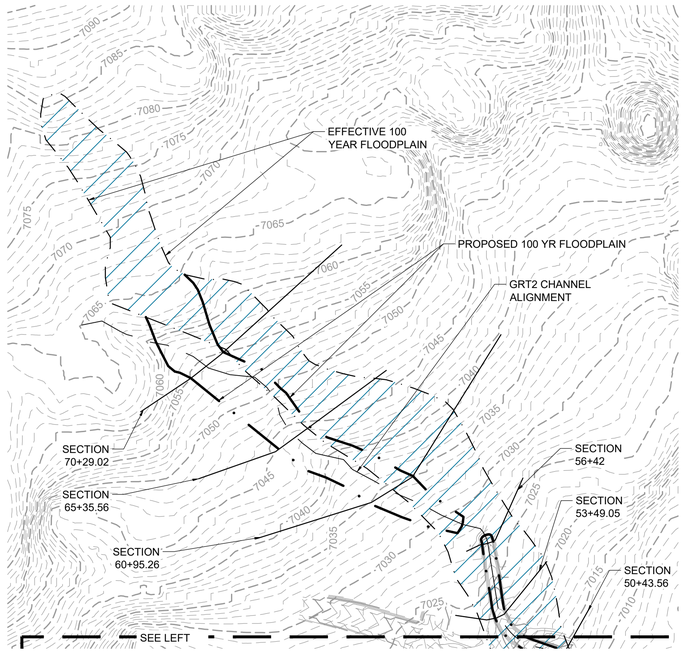
HRGreen

Job No.:	201662
Prepared By:	SJF
Date:	7/22/2022

EXISTING FLOODPLAIN EXHIBIT

FIG.1





LEGEND:

- EFFECTIVE 100 YEAR FLOODPLAIN
- PROPOSED 100 YEAR FLOODPLAIN
- MAJOR TOPO
- MINOR TOPO
- GRANDVIEW RESERVE DEVELOPMENT BOUNDARY

COLORADO LICENSED
GREGORY L. PAYNE
37081
7-22-22
PROFESSIONAL ENGINEER

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.

   NAVD88

NORTH
0 300
150

HRGreen

Job No.:	201662
Prepared By:	SJF
Date:	7/22/2022

FLOODPLAIN EXHIBIT

FIG.2

Appendix C
Annotated Firm

NOTES TO USERS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

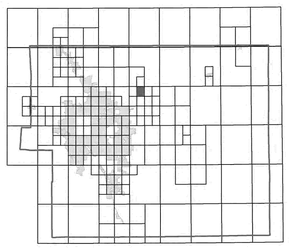
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

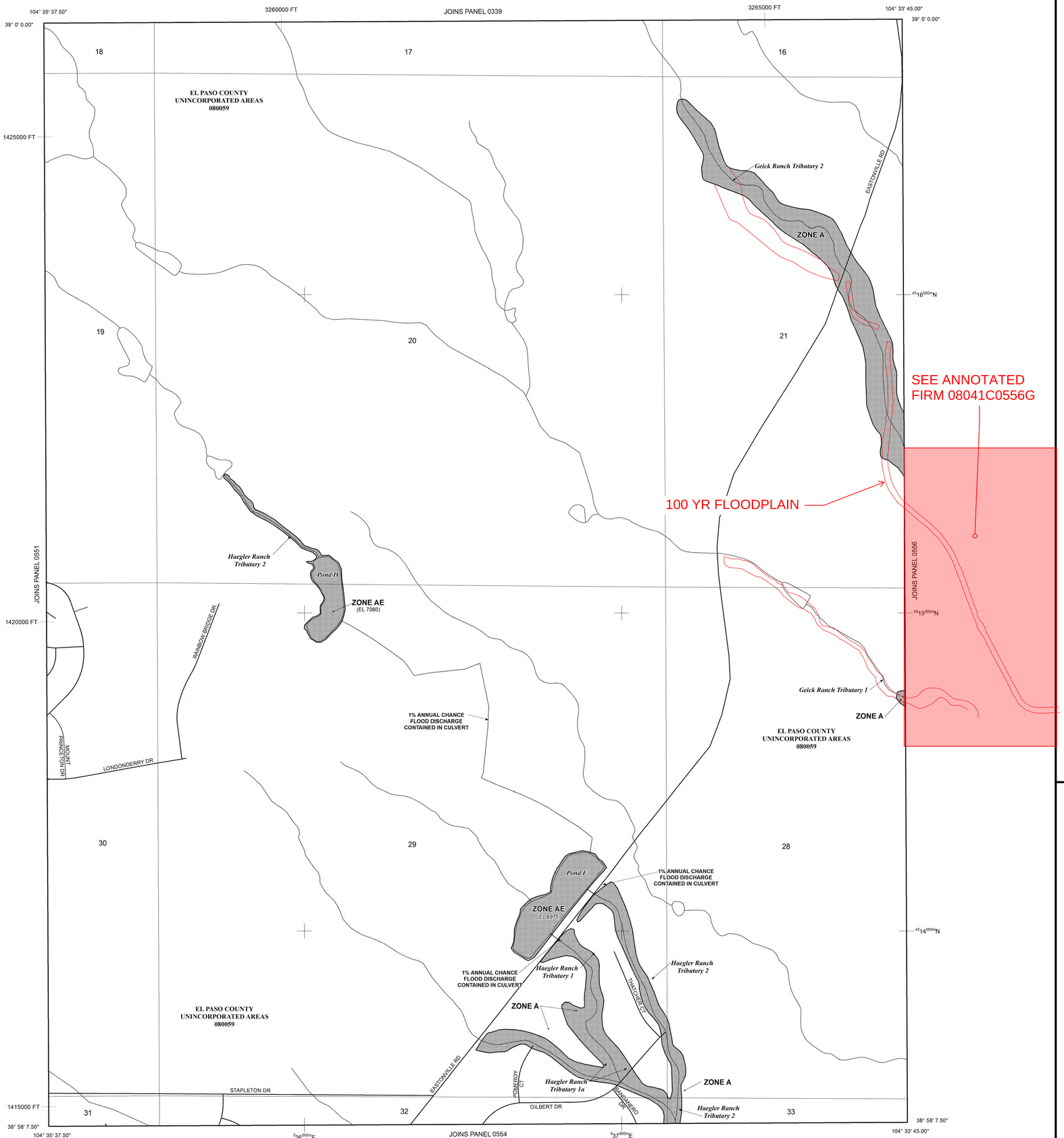
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



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

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



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST.

LEGEND

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

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

- **ZONE A** — No Base Flood Elevations determined.
- **ZONE AE** — Base Flood Elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

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

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

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

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

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0552G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 552 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0552	G

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

MAP NUMBER
08041C0552G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

NOTES TO USERS

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

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

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

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Silver Spring, MD 20910-3282

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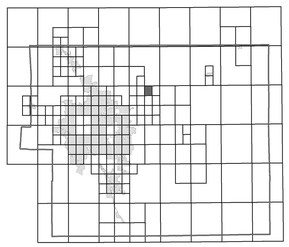

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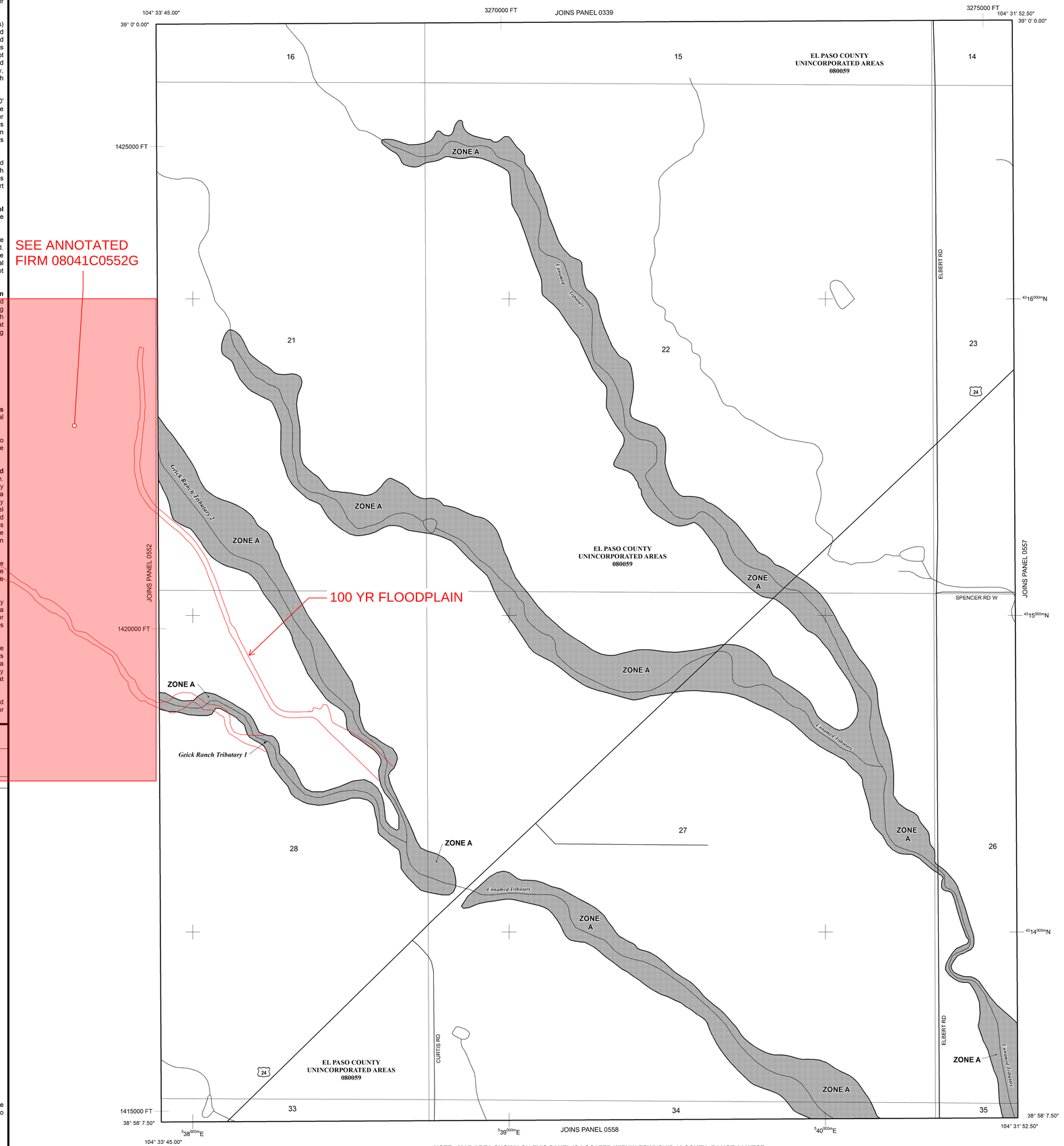

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST.

LEGEND

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

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FLOODWAY AREAS IN ZONE AE

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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)

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	Floodplain boundary
	Floodway boundary
	Zone D Boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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

A — A	Cross section line
23 — 23	Transect line
97° 07' 30.00" 32° 22' 30.00"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4275000mN	1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT	5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

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

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

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

PANEL 0556G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 556 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0556	G

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

MAP NUMBER
08041C0556G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

Appendix D
Proposed Plans