



# MASTER DEVELOPMENT DRAINAGE PLAN

## BENT GRASS RESIDENTIAL SUBDIVISION

El Paso County, Colorado

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PREPARED FOR:  
**Challenger Homes**  
8605 Explorer Dr., Suite 250  
Colorado Springs, CO 80920

PREPARED BY:  
**Galloway & Company, Inc.**  
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DATE:  
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Revised November 2019  
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### Engineering Review

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**EPC Planning & Community  
Development Department**



**ENGINEER'S STATEMENT**

*The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the Drainage Criteria Manual for the City of Colorado Springs and El Paso County. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.*

\_\_\_\_\_  
Charlene Durham, PE 36727  
For and on behalf of Galloway & Company, Inc.



**DEVELOPER'S CERTIFICATION**

*I, The developer, have read and will comply with all of the requirements specified in this drainage report and plan.*

By: \_\_\_\_\_  
Address: Challenger Homes  
8605 Explorer Dr., Suite 250  
Colorado Springs, CO 80920

\_\_\_\_\_  
2-10-20  
Date

**DEVELOPER'S CERTIFICATION**

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

\_\_\_\_\_  
Jennifer Irvine, P.E.  
County Engineer/ECM Administrator

\_\_\_\_\_  
Date

Conditions:



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## I. Purpose

The intent of the developer is to develop the residential portion of the Bent Grass Subdivision. The purpose of this Master Development Drainage Plan (MDDP) is to identify on and offsite drainage patterns, locate and identify tributary or downstream drainage features and facilities that impact the site, and identify which types of drainage facilities will be needed and where they will be located. Potential drainage issues associated with the proposed development will also be discussed, as well as possible solutions. The concepts within this report are preliminary in nature and final drainage reports are required upon any development within the site.

## II. General Description

The project is a single-family residential development located in the Falcon area of El Paso County, Colorado. The site is located in the Northwest  $\frac{1}{4}$  and Southwest  $\frac{1}{4}$  of Section 1, Township 13S, Range 65W, of the Sixth Principal Meridian, County of El Paso, State of Colorado. The subject property is located to the south of The Meadows Filing No. 3; west of Bent Grass Residential Filing No. 1; north of Latigo Business Center Filing No 1, undeveloped property, and the Mountain View Electric Association; and east of The Meadows Filing No. 2. A Vicinity Map is included in Appendix A.

A Planned Unit Development Plan Amendment was approved for the site, PUD-14-002. This Development Plan is the basis for the drainage facility design contained within this MDDP. The site consists of approximately 103.4 acres and includes 309 dwelling units.

The existing soil types within the proposed site as determined by the NRCS Web Soil Survey for El Paso County Area consist of Columbine gravelly sandy loam, Blakeland-Fluvaquentic Haplaquolls, and Blakeland loamy sand. All soils are defined as having a hydrologic soil group of A. See the soils map included in Appendix A.

## III. Previous Reports

The proposed site has been included in multiple drainage studies in the past. The following is a composite list of the existing reports pertaining to this site analysis.

1. *Falcon Drainage Basin Planning Study*, by Matrix Design Group, September 2015.
2. *Master Development Drainage Plan and Preliminary Drainage Plan – Bent Grass Subdivision*, by Kiowa Engineering Corporation, December 2006.
3. *Final Drainage Report for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2014.
4. *Final Drainage Report Addendum for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2015.
5. *Master Development Drainage Plan for The Ranch*, by Classic Consulting Engineers & Surveyors, LLC, November 2018.
6. *Falcon Highlands Master Development Drainage Plan & Preliminary Drainage Report & Final Drainage Report for Filing 1*, by URS, January 2005.
7. *Final Drainage Report and Erosion Control Plan – Latigo Business Center Filing No. 1 A Re-subdivision of a Portion of Latigo Business and Research Center Filing No. 1*, by Kiowa Engineering Corporation, November 2004.

8. *Final Drainage Letter Report for Lot 1, Latigo Business Center Filing No. 1*, by Colorado Design Concepts, April 2005.
9. *Final Drainage and Erosion Control for The Meadows Filing Three Subdivision*, by LADD Engineering, July 2000.

## IV. Drainage Criteria

Hydrology calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014 and the El Paso County Engineering Criteria Manual (ECM) as revised in July 2019.

The drainage calculations were based on the criteria manual Figure 6-5 and IDF equations to determine the intensity, and are listed in Table 1 below.

**Table 1 - Precipitation Data**

Return Period	One Hour Depth (in).	Intensity (in/hr)
5-year	1.50	5.17
100-year	2.52	8.68

The rational method was used to calculate peak flows as the tributary areas are less than 100 acres. The rational method has been proven to be accurate for basins of this size and is based on the following formula:

$$Q = CIA$$

Where:

Q = Peak Discharge (cfs)  
C = Runoff Coefficient  
I = Runoff intensity (inches/hour)  
A = Drainage area (acres)

The runoff coefficients are calculated based on land use, percent imperviousness, and design storm for each basin, as shown in the drainage criteria manual (Table 6-6). Composite percent impervious and C values were calculated using the residential, streets, roofs, and lawns coefficients found in Table 6-6 of the manual.

The 100-year event was used as the major storm event for pipes and inlets. The 5-year event was used as the minor event.

For the preliminary design of the channels HEC-RAS version 5.0.3 was utilized. The model was prepared to evaluate velocity, Froude number, and channel depth. Additionally, the model was utilized to size the culverts under Bent Grass Meadows Parkway. A Manning's n value of 0.045 was utilized for the channel which is appropriate for a bunch type native grass that is anticipated within the full channel section. The channels were designed to have a maximum depth of 5' per the criteria manual and have a maximum velocity of 5 ft/s with a maximum Froude number of 0.6

HEC-RAS calcs  
appear to be  
higher

The UD-Detention spreadsheet was utilized for sizing the water quality orifices on the proposed water quality portion of the regional detention pond as well as the on-site water quality ponds.

HEC-HMS was utilized to analyze the hydrology of the overall basin and verify that no changes in release rates have occurred to the regional detention pond with the addition of water quality.

## V. Existing Drainage Conditions

The site is contained fully within one major drainage basin; the West Falcon Tributary. The site does border the Middle Falcon Tributary along the eastern edge of the property. The site generally drains from north to south with an average slope of 2% outside of the channel and an average slope of 1% inside the channel. The rational method was used to analyze the individual basins within the site because their size permits it. Excerpts from the DBPS are included in the appendix.

In addition to the DBPS The Ranch MDDP to the north and west of the site revisited the existing conditions as well as existing conditions from the site directly to the north of them. Several detention ponds were created within the Paint Brush Hills Subdivision and revise the offsite flow entering the site within the major drainageway. This is taken into account with The Ranch MDDP. While The Ranch is still in design stage they are proposing detention ponds within their site to release at historic rates. This will revise the flow rates in their designed section of the channel to below the rates that are identified within the DBPS.

Per the DBPS the site lies within basins, WT200, WT210, and WT220. These basins connect to channel reaches RWT202, RWT204, and RWT210. Both the RWT204 and RWT210 sections of channel currently exist and appear as a drainageway when visiting the site. Reach RWT202 appears to be a shallow overland flow through the project site. It is nearly unrecognizable through the site from a visual standpoint.

The existing channels were visually inspected via a site walk and all appear in really good condition. There are no signs of scour within the bottoms of the channel. There are small areas that are incised or sloughing at the top of bank, along the length of the channel, through the proposed site. These areas are less than 12" in height.

There is a small depression at the north end of the site, that appears to be the remnants of an old stock pond. It provides no detention or water quality for the upstream area. It will be removed with the development of this site. A wetlands assessment of this area was performed by American Geoservices dated January 29, 2020. This investigation concluded that "potentially jurisdictional wetlands were not observed within the ponded area."

There is an existing sediment pond located to the east of the site, on what is known as the "School Site." This sediment pond was designed with the FDR Addendum for Bent Grass Residential Filing 1 and works for existing conditions. A permanent pond will need to be provided upon development of this site.

A historic basin map was prepared for this site to analyze the existing basins as well as the offsite basins contributing to the site. The historic map is included in Appendix E and basins are described below.

**Basin A-1** (5.42 AC,  $Q_5 = 2.2$  cfs,  $Q_{100} = 12.4$  cfs): is associated with the northeastern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast, into the property to the east.

**Basin A-2** (18.00 AC,  $Q_5 = 5.3$  cfs,  $Q_{100} = 35.4$  cfs): is associated with the northeastern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southwest into the existing channel RWT204.

**Basin A-3** (19.59 AC,  $Q_5 = 6.0$  cfs,  $Q_{100} = 40.7$  cfs): is associated with the northwestern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast into the existing channel RWT204.

**Basin A-4** (23.81 AC,  $Q_5 = 8.3$  cfs,  $Q_{100} = 46.5$  cfs): is associated with the western portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the south toward the Latigo Business Center Filing No. 1.

**Basin B-1** (32.53 AC,  $Q_5 = 9.6$  cfs,  $Q_{100} = 64.2$  cfs): is associated with the southeastern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the south offsite.

**Basin B-2** (4.51 AC,  $Q_5 = 1.5$  cfs,  $Q_{100} = 10.0$  cfs): is associated with a portion of the middle of the site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast into the existing channel at reach RWT210.

**Basin B-3** (16.18 AC,  $Q_5 = 7.8$  cfs,  $Q_{100} = 36.9$  cfs): is associated with the southwestern portion of the proposed site. The basin is currently undeveloped. Runoff from the basin generally flows to the southeast into the existing channel at reach RWT210.

**Basin OS-1** (31.35 AC,  $Q_5 = 6.9$  cfs,  $Q_{100} = 28.6$  cfs) is associated with The Meadows Filing No. 3 lots 14, 15, 16, and 17. Runoff from this basin sheet flows to the northern property line of the site and then into Basin A-1 to Design Point (DP1).

**Basin OS-2** (17.81 AC,  $Q_5 = 11.4$  cfs,  $Q_{100} = 41.7$  cfs) is associated with The Meadows Filing No. 3 lots 7, 10, 11, 12 and 13. Runoff from this basin sheet flows to the northern property line and into Basin A-2 to DP 2 where it enters RWT204.

**Basin OS-3** (9.99 AC,  $Q_5 = 5.4$  cfs,  $Q_{100} = 23.4$  cfs) is associated with The Meadows Filing No. 3 lots 4 and 5. Runoff from this basin sheet flows to the northern property line and into Basin A-3 to DP 3 where it enters RWT204.

**Basin OS-4** (30.69 AC,  $Q_5 = 12.0$  cfs,  $Q_{100} = 55.4$  cfs) is associated with The Meadows Filing No. 1 lots 4, 5, 6, 7, 8, 9, 10 and 11. Runoff from this basin sheet flows east to the western property line of the site and into Basin A-4 where it then flows south to DP 4.

**Design Point 20** (225.0 AC,  $Q_5 = 91.8$  cfs,  $Q_{100} = 226.0$  cfs) – This area is located north of Basin OS-5, and is comprised of lots B3 thru B6, A1, and A3 in The Meadows Filing No. 3. Flows will cross under Woodmen Hills Drive via an existing culvert, then sheet flow to the southeast, passing through Basin OS-5 to DP 11.

**Basin OS-5** (14.13 AC,  $Q_5 = 4.9$  cfs,  $Q_{100} = 27.8$  cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin sheet flows from the North to the South into basin OS-6 and an existing sediment pond.

**Basin OS-6** (5.81 AC,  $Q_5 = 1.9$  cfs,  $Q_{100} = 12.8$  cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin sheet flows from the North to South to an existing sediment pond and then

into Bent Grass Meadows Drive. Flows will continue to the east, alongside Bent Grass Meadows Drive, to the Meridian Road intersection. At this location, flows will enter the existing roadside ditch along Meridian Road, continuing to then flow south through the existing roadside ditch located on the west side of Meridian Road.

## VI. Four Step Process

The Four Step Process is used to minimize adverse impacts of urbanization and is a vital component of developing a balanced, sustainable project. Below identifies the approach to the four-step process:

### 1. Employ Runoff Reduction Practices

The proposed development uses Low Impact Development (LID) practices to reduce runoff at the source. Rather than creating point discharges that are directly connected to impervious areas, runoff is routed through pervious areas to promote infiltration. Grass buffers and swales are used where practical.

### 2. Implement BMPs That Provide a Water Quality Capture Volume with Slow Release

This step utilizes formalized water quality capture volume to slow the release of runoff from the site. Pond WU will be modified to provide EURV and WQCV for its entire tributary area. The EURV volume will release in 72 hours, while the WQCV will release in no less than 40 hours. On-site water quality control volume detention ponds will provide water quality treatment prior to the runoff being released into the channel.

### 3. Stabilize Drainageways

This step implements stabilization to channels to accommodate developed flows while protecting infrastructure and controlling sediment loading from erosion in the drainageways. Erosion protection in the form of riprap pads at all outfall points to the channel to prevent scouring of the channel from point discharges. A HEC-RAS model was created and used to evaluate the stability of the existing and proposed channels. The channel will be redesigned and improved in phases throughout the development of the site. This will be further discussed later in this report.

### 4. Implement Site Specific and Other Source Control BMPs

Source control BMPs for homeowners include the use of garages as the primary area where pollutants can be stored. The single-family detached homes provide garages which can act as storage areas. The proposed development does not include outdoor storage or the potential for introduction of contaminants to the county's MS4, thus no targeted source control BMPs are necessary. The biggest source control BMP is public education which can be found on the El Paso County website and discuss topics such as: pet waste, car washing, lawn care, fall leaves, and snow melt and deicer.

## VII. Proposed Drainage Conditions

There are very minor changes to the overall Falcon Area Basin delineation with the proposed condition. A small portion of the site that previously went to the Middle Tributary was revised to come into the site and a small portion of the site that was previously within the West Tributary was designed to drain into the

Middle Tributary. This will be discussed with the individual basins. All necessary calculations can be found within the appendices of the report.

There are two channels that run through the site. As was discussed within the Existing Conditions portion of the report both the RWT202 and RWT204 run through the site. The RWT202 channel will be rerouted on the north end, prior to entering the site, to flow in the existing RWT204 channel. The proposed development will drain to the RWT204 channel, which becomes RWT210 further south in the site. A box culvert will be installed with the construction of Bent Grass Meadows Parkway.

The DBPS alternative that was approved shows a small sub regional pond (SR3) to provide EURV for a portion of the tributary area. The basin analysis provided in the DBPS shows no decrease in either the 2-year or the 100-year events through this point. The required volume of this pond was only 1 acre-foot for the entire tributary area. It has been discussed with El Paso County to not construct this pond, but in lieu of that provide on-site water quality capture volume detention ponds prior to releasing into the channel and revise the existing detention pond WU South to provide water quality for the entire tributary area. This modification will be discussed later in the report. The on-site water quality ponds designed with the first phase (Filing 2) provide 1 acre-foot of volume. Therefore, by eliminating the SR3 pond, there is really no impact on the downstream property owners.

The site will release to on-site water quality ponds that will be designed with each phase. These ponds will then release into the West Tributary channel RWT204.

As has been mentioned previously, the site is proposed to be single family residential. The site has been designed to provide a large lot buffer between the existing large lots to the north and west of the site and the proposed site. Beyond this buffer, the majority of the site is smaller approximately 0.25 acre lots.

**Basin OS-1** (31.35 AC, Q5 = 16.1 cfs, Q100 = 68.2 cfs) is associated with The Meadows Filing No. 3 lots 7, 10, 11, 12, 13, 14, 15, 16, and 17. Runoff from this basin sheet flows to the northern property line of the site at Design Point (DP1) where a swale will be provided and convey flow to the RWT204 channel.

**Basin A-1** (22.13 AC, Q5 = 29.5 cfs, Q100 = 70.3 cfs) is located in the northeast corner of the site. It encompasses single family residential lots along with several of the local roads and sits north of Bent Grass Meadows Parkway. A large portion of this basin is associated with the first phase of the development. Runoff from the basin is anticipated to be conveyed through the basin generally from northeast to southwest to DP2. Portions of the basin will flow directly into RWT204 while portions are anticipated to be collected in inlets within Bent Grass Meadows Parkway, which release into a water quality pond at DP2.

**Basin A-2** (19.05 AC, Q5 = 25.6 cfs, Q100 = 61.2 cfs) is located in the northern middle portion of the site. It encompasses single family residential lots along with several of the local roads and sits north of Bent Grass Meadows Parkway. Runoff from the basin is anticipated to be conveyed through the basin generally from northwest to southeast to DP3. Portions of the basin will flow directly into RWT204 while portions are anticipated to be collected in inlets within Bent Grass Meadows Parkway, which release into a water quality pond at DP3.

**Basin A-3** (4.05 AC, Q5 = 6.7 cfs, Q100 = 15.7 cfs) is located in the middle of the site. It encompasses Bent Grass Meadows Parkway. Runoff from the basin drains towards a low point at the crossing of the



RWT204 channel through the middle of the site, DP 4. Runoff will be captured in inlets and will connect to the culvert passing under the roadway and will be treated by the water quality pond at DP3.

**Basin A-5** (0.80 AC, Q5 = 1.6 cfs, Q100 = 3.6 cfs) is associated with the rears of several lots from Bent Grass Residential Subdivision Filing No. 1. Runoff is anticipated to be collected in a swale between the two subdivisions and will outfall into the street at DP 5. Runoff will then be conveyed via curb & gutter through Basin A-4 to DP6, releasing into a water quality pond at this design point.

**Basin A-4a** (27.36 AC, Q5 = 38.8 cfs, Q100 = 85.4 cfs) is located in the southeast corner of the site. It encompasses single family residential lots along with several of the local roads and sits south of Bent Grass Meadows Drive. A large portion of this basin is associated with the first phase of the development. Runoff from the basin is anticipated to be conveyed through the basin generally from northeast to southwest to DP 6, into a water quality pond.

**Basin A-4b** (0.35 AC, Q5 = 0.8 cfs, Q100 = 1.8 cfs) is south of Bent Grass Meadows Drive, east of the existing channel. It includes backlot grading, which will release to the west, directly to the channel RWT204. This basin will have no water quality treatment, prior to entering RWT204.

**Basin B-1** (0.34 AC, Q5 = 1.0 cfs, Q100 = 2.1 cfs) is located on the east side of the site. It encompasses a portion of Bent Grass Meadows Drive. There is a high point in the road causing a portion of the road to drain east into the existing roadway at DP 7. Bent Grass Residential Filing No. 1 had two basins accounting for this condition (Basins A and B with a total area of 0.38 acres). The anticipated flow rate from these two basins was 1.3 cfs in the 5-year event and 2.6 cfs in the 100-year event. The runoff from the proposed roadway is in conformance with the anticipated runoff in the Filing No. 1 Report. A calculation for the street capacity of the existing Bent Grass Meadows Drive has been included in Appendix B.

**Basin B-2a** (0.96 AC, Q5 = 1.7 cfs, Q100 = 3.8 cfs) is located in the east property line of the site, south of Avena Road. It encompasses the rears of some of the lots and an undeveloped tract between Bent Grass Residential Filing 2 and Bent Grass Residential Filing 1. Runoff will flow to the south through a proposed swale, where it will be intercepted by a flared end section. Flow will then be delivered via a proposed rcp pipe to a water quality pond at the south property line and east bank of the channel.

**Basin B-2b** (0.41 AC, Q5 = 0.9 cfs, Q100 = 2.1 cfs) is located along the south property line of the site, east of the existing channel. It encompasses the rears of some of the lots. Runoff is anticipated to flow offsite following historic patterns, to the south.

**Basin OS-2** (20.07 AC, Q5 = 9.3 cfs, Q100 = 43.4 cfs) is associated with The Meadows Filing No. 1 lots 8, 9, 10 and 11. Runoff from this basin sheet flows east to the western property line of the site at DP9. It is anticipated that with the construction of the lots along the western property line swales will be constructed to divert flows from Basin OS-2 to the south around the proposed development where it will be collected in a culvert under Bent Grass Meadows Parkway at DP 10. It will then be conveyed in a swale east to the RWT210 channel.

**Basin C-1** (19.95 AC, Q5 = 23.2 cfs, Q100 = 58.0 cfs) is located on the west side of the site. It encompasses single family residential lots along with several of the local roads and sits north and west of Bent Grass Meadows Drive. Runoff from the basin is anticipated to be conveyed through the basin generally from northwest to southeast to a water quality pond located at DP 10. Runoff from the basin is



anticipated to be partially collected in inlets near Bent Grass Meadows Parkway. All runoff will be captured either within the basin or within Bent Grass Meadows Parkway and will be directed east towards the RWT210 Channel.

**Basin OS-3** (10.61 AC, Q5 = 5.3 cfs, Q100 = 24.3 cfs) is associated with The Meadows Filing No. 1 lots 5, 6, and 7. Runoff from this basin sheet flows east to the western property line of the site to DP 11. It is anticipated that with the construction of the lots along the western property line swales will be constructed to divert flows from Basin OS-3 to the south around the proposed development where it will be collected in a culvert under Bent Grass Meadows Drive to the water quality pond at DP 10. It will then be conveyed in a swale east to the RWT210 channel.

**Basin OS-4** (2.64 AC, Q5 = 0.9 cfs, Q100 = 6.0 cfs) is associated with an undeveloped/unplatted portion of property, currently owned by Falcon Storage Partners. Runoff from the basin is anticipated to be collected in Bent Grass Meadows Drive at DP 12. Flow will continue south along

**Basin C-2** (1.88 AC, Q5 = 4.1 cfs, Q100 = 9.0 cfs) is located in the southwest corner of the site. It encompasses Bent Grass Meadows Drive. Runoff from the basin drains towards south towards the site's southern property line and the existing Bent Grass Meadows Drive at DP 13. Runoff is anticipated to be collected in on-grade inlets and release into a water quality pond, along the south property line. Pond outflow will be directed east to the RWT210 channel.

**Basin D-1** (21.44 AC, Q5 = 33.8 cfs, Q100 = 74.3 cfs) is located on the southern middle portion of the site. It encompasses future residential development, along with several of the local roads and sits south of Bent Grass Meadows Drive. Runoff from the basin is anticipated to be conveyed through the basin generally from northwest to southeast to DP 14. Runoff from the basin is anticipated to be collected and directed into the RWT210 Channel. With this filing, no development occurs within this basin, therefore no water quality will be needed. Upon development, this site will need to provide it's own water quality.

**Basin E-1** (0.26 AC, Q5 = 1.0 cfs, Q100 = 1.8 cfs) is located in the southwest corner of the site. It encompasses Bent Grass Meadows Drive. Runoff from the basin drains to the south towards existing Bent Grass Meadows Drive at DP 15. Runoff is anticipated to be released into the existing roadway where it will be collected in the existing storm system south of the property. There are a set of on-grade inlets (20' on the east side, 15' on the west side), which will intercept this flow. Existing inlets will release flows to the east into an existing drainage swale. This existing swale releases into an existing temporary detention pond, which is to remain in place until improvements to the West Trib Channel and Woodmen Road culverts are completed. Based on the Latigo Business Park drainage report by Kiowa Engineering, inlets were designed for flows of 9.9 and 21.2 cfs from this basin. The development of the Bent Grass site has reduced the flows entering the Latigo Business Park site, ensuring the existing storm system will continue to function adequately.

**Design Point 20** (225.0 AC, Q5 = 91.8 cfs, Q100 = 226.0 cfs) – This area is located north of Basin OS-5, and is comprised of lots B3 thru B6, A1, and A3 in Bent Grass Filing No. 3. Flows will cross under Woodmen Hills Drive via an existing culvert, then sheet flow to the southeast, passing through Basin OS-5 to DP 16.

**Basin OS-5** (14.13 AC, Q5 = 4.9 cfs, Q100 = 27.8 cfs): a basin that is associated with Bent Grass Filing No. 1. Runoff from this basin, along with flow from Design Point 20, sheet flows from the North to the South towards DP 16 and into basin OS-6 and an existing sediment pond.

**Basin OS-6** (5.38 AC, Q5 = 8.8 cfs, Q100 = 19.3 cfs): a basin that is associated with Bent Grass Filing No. 1. This basin will be developed in the future, so runoff values have been estimated for developed conditions. In undeveloped conditions, runoff from this basin sheet flows from the North to South to an existing sediment pond, along with flows from Basin OS-5 and Design Point 20, and is then released at DP 17 into the existing Bent Grass Meadows Drive. This sediment pond works in existing conditions, but a permanent pond will need to be provided upon development of this site. Upon leaving the pond, flows will continue east alongside Bent Grass Meadows Drive, to the Meridian Road intersection. At this location, flows will enter the existing roadside ditch along Meridian Road. It is anticipated that a storm system will be needed to convey flows to the east, as the pond outlet will be lower than Bent Grass Meadows Drive. There are several options which will be analyzed, to determine the best scenario to deal with these flows. These options will be considered in the drainage report associated with Meridian Road improvements, *Final Drainage Report Meridian Road & Bent Grass Meadows Drive*, which could include a DBPS Amendment to the Falcon Basin, depending on the scenario decided to be best suited for dealing with these off-site flows.

## VIII. Proposed Channel Improvements

The Falcon Area DBPS made recommendations for the channels as they run through the project site. For both the RWT202 and RWT204 the DBPS recommended protecting the channels in place. This is very problematic for both of the channels. The RWT204 is grossly oversized for the actual flows expected through it. The RWT202 is not a clearly defined channel as it passes through the site, it more closely resembles a shallow overland flow. This is not conducive to a development. RWT202 will be rerouted on the north end of the project site to convey flows to RWT204. RWT204 will generally stay in a location similar to where it is in existing conditions but will have new designed channel sections. The channels will have longitudinal slopes flattened to below 1% in order to reduce the scour potential of the channel. Grouted Sloping Boulder Drops will be utilized within the channel as grade controls (maximum height of 4' with 4:1 slope).

It is anticipated that the site plan approved within the DP will be revised to remove crossings of the channels and reduce infrastructure costs. It is currently planned that only one crossings of the channel will occur, located at Bent Grass Meadows Parkway. HEC-RAS models have been prepared for the conceptual layout and preliminary culvert sizing has been completed. Further detail for the culvert sizing will be provided with the first phase, Bent Grass Filing No. 2. The models are located in the Appendices of this report.

Provide comparison table with existing flows, proposed flows and flow attributes.

South of the property is the RWT210 channel. The DBPS calls for a natural channel design through this reach of the channel. A site visit was made and the channel was walked with El Paso County staff. The channel shows little to no sign of degradation in its current state. There are areas of minor sloughing along the top of slope that may be corrected as the site develops around the channel. To provide a natural channel as the DBPS is proposing would require major grading operations within a nicely defined and stable channel. Additionally, the proposed drop detail within the channel deals only with the low flow portion of the channel and the existing channel does not have a natural low flow section defined.

HEC-RAS models of the channel, with the full FEMA Flow of 1400cfs plus development, show that velocities within the channel are relatively low in the 5 ft/s range. However, it does show that Froude numbers exceed 0.8 and at points 1.0. This is seen in the existing conditions. Again, based on field investigation it does not appear that the channel is degrading given the existing developments upstream of the channel. Because of this, it is proposed to do a check structure design through the RWT210

section of the channel. The check structure design is similar to a prudent line design. Concrete check structures will be installed using an estimated equilibrium slope for the channel and given a drop height of 3'. This allows the channel to create its own equilibrium slope, allowing it to cut or fill as necessary. At times the channel may cut, and then at other times it may fill itself at the same point it had cut. This is all based on the sediment load of the channel and storm events the channel may see. As the channel cuts to an equilibrium slope the check structures will be exposed on the downstream face creating a vertical drop. If over time the channel has reached an unchanging equilibrium and leaves a vertical drop exposed it may be replaced with an actual grade control structure, such as a grouted sloping boulder drop or vertical hard drop.

The check structures will be installed for full bank width meaning they will pass the full 100-year event. This is as opposed to the proposed vane drops from the DBPS which will only pass low flows or small storm events.

The channel design flow rates were previously established using HEC-HMS in the DBPS. The site was analyzed using the Rational method. The HEC-HMS model for the basin was obtained from El Paso County and was revised accordingly for the developed site. It was necessary to break apart the basin into a couple of smaller basins in order to accurately design the crossings of Bent Grass Meadows Parkway. The DBPS also shows the pond SR3 which has been removed with this project, so it was necessary to remove it from the model. Refer to *Section IX Proposed Regional Pond Improvements* for more detail on Pond SR3.

In addition to the changes made with this project several changes were made upstream of the Bent Grass Subdivision. The Ranch MDDP added detention ponds for this project and corrected several of the other offline ponds near the northern end of their site. In addition to the ponds the DBPS identified flow diversion from the Falcon Watershed into the Sand Creek Watershed. This diversion was corrected with The Ranch MDDP. Updates to the HEC-HMS model are necessary because the DBPS hydrology was superseded by The Ranch design.

The Ranch MDDP also investigated the connection from The Ranch site through the Meadows Filing No. 3 to the Bent Grass site. This investigation identified that the existing homes within the Meadows do not have the adequate drainage improvements to convey storm water through the subdivision. Per The Ranch MDDP, the drainage path through the Meadows is incorrectly identified and homes were allowed to be built closer to the flow path than should have been allowed. In addition, several culverts were erroneously constructed restricting the flow path through the subdivision.

The conclusion of The Ranch MDDP is that major channel improvements are necessary through the Meadows subdivision. They state that multiple meetings have taken place with El Paso County regarding this issue and funding for the improvements is being discussed.

It is the intent of this study to provide a downstream facility for the future improvements to provide stormwater routing for The Meadows. The RWT202 channel will be constructed to the northern property line and will be left approximately 6.5' below existing grade allowing for channel connection.

## **IX. Proposed Regional Pond Improvements**

As previously mentioned the DBPS identified a pond named SR3 at the junction of RWT202 and RWT204 near the south end of the Bent Grass Residential Subdivision. The purpose of this pond was to provide

EURV for a portion of the tributary area, it was identified to have a volume of 1 acre-foot. Per discussions with El Paso County staff this pond will not be constructed. Rather, water quality will be provided by ponds constructed throughout the Bent Grass development. Pond WU will be modified to provide water quality and detention for the entire tributary area. On-site water quality pond will also be provided to treat runoff prior to releasing it into the channel. The three water quality ponds associated with the first phase of the project have a volume of approximately 1 acre-foot just for water quality and therefore eliminating the SR3 pond, which never provided detention. The existing channel will remain in place. Analysis of the existing channel shows that it is stable in its current state. Any improvements performed as part of the adjacent development will address easements and/or drainage tracts as development occurs.

Utilizing the areas and percent impervious values from the future models in the DBPS it was determined that pond WU has a tributary area of 3.58 square miles and a 7.33% impervious. Utilizing the WQCV equations contained with the Criteria was determined that a volume of 9.764 ac-ft is required for the entire tributary area. This volume exceeds the volume for the 5-year event per the DBPS.

The stage storage data for the pond was taken from the DBPS and was found that the required volume exceeds the front edge of the existing outlet structure on the pond. It is proposed to raise the front edge of the existing outlet to provide the required water quality capture volume. The existing orifices on the face of the outlet structure will be covered to prevent release through them and a new rectangular hole will be cut through the existing wall. An orifice plate with square orifices will be installed to release the WQCV. A well screen will be installed on the face of the outlet structure. A small micro pool will be placed directly in front of the orifice plate in an effort to reduce clogging of the well screen. The revised HEC-HMS model prepared for the channel flow rates, was analyzed with the updates to the Pond WU outlet, as well as the updates which were part of the Ranch MDDP and the additional basin was added due to the development along Old Meridian Road, which will be directed to Pond WU.. The outlet has also been modified to ensure the 100-year release rate meets the requirements of the DBPS, a portion of the overflow has been covered. Results have been provided in *Appendix D – Preliminary Pond Calculations*.

In reviewing the pond and in discussions with El Paso County the inlet to Pond WU has washed out and is in need of repair. As part of the proposed improvements to the pond the washed-out embankment will be repaired. In discussions with the County it is understood that there are multiple areas of wetlands in the area. While the majority of the West Tributary should be directed through Pond WU, over the weir, there are two existing 18" pipes to the east of the embankment that allow flows to pass from the West Tributary into the existing wetlands to assist in maintaining them. The embankment is designed such that flows will back up prior to entering Pond WU and will pass through the existing pipes to the east.

Site investigations identified a large reason the embankment failed was improper erosion protection. It is apparent that as the embankment was overtopped it began scouring under the riprap placed on the downhill side of the embankment. Given enough time or a large enough storm it was able to dislodge a section of the protection and the embankment washed out.

Don't dry up the  
wetlands.

It is proposed to fill the washed-out area of the embankment back to match the original design grades around it. The 18" pipe, located at the upstream side of Pond WU, through the embankment will be replaced. The purpose of this pipe is to drain the area just upstream of the embankment since the dual pipes to the east are higher than that point. Riprap will be re-established on the downstream side of the embankment. In addition it is proposed to riprap the top of the embankment to protect it from scour. A cutoff wall will also be installed through the full length of the embankment from the top of the embankment to just below the toe of slope on the downstream side. The cutoff wall should be installed on downstream

discussion is necessary - what would release rate  
be without covering top?

side of the top of the embankment. In the area where the washout occurred and where the pipe will be passing through the cutoff wall it is proposed to do a concrete cutoff wall.

## **X. Construction Phasing**

The exact phasing of the development is unknown at this time. The first phase is known and will lie within Basins A-1 and A-3 east of the RWT204 channel. It is also known that Bent Grass Meadows Drive will be installed in its entirety with the first phase of the development. This phase will include the diversion/realignment of the RWT202 channel, and the installation of the culvert under the roadway. There will be improvements to the channel that occur around the culvert location and the channel was modeled to show it remains stable with the proposed development.

When the western portion of Basin A-1 and the eastern portion of Basin A-2 develop, the channel improvements to RWT204 north of Bent Grass Meadows Drive will need to be completed. The improvements to RWT204 and RWT210 south of Bent Grass Meadows Drive will need to be completed when or before Basin D-1 develops.

The final drainage reports for the individual phases will revisit the need for channel improvements as the site develops and will use HEC-RAS models to ensure the channel remains stable. Each area of Bent Grass will provide on-site water quality ponds prior to releasing runoff into the channel.

All Regional Pond WU improvements will be completed with the first phase of the development.

## **XI. Maintenance**

The proposed channels are to be private facilities. They will be maintained by the Bent Grass Metropolitan district. When completion of future DBPS construction improvements and upon the Board of County Commissioners acceptance the channels will then be owned and maintained by El Paso County along with all drainage facilities within the public Right-of-Way.

## **XII. Wetlands Mitigation**

No wetlands are located on site.

## **XIII. Floodplain Statement**

A portion of the project site lies within Zone AE Special Flood Hazard Area as defined by the FIRM Map number 08041C0553G effective December 7, 2018. A copy of the FIRM Panel is included in the appendix.

The portion of channel that has a floodplain designation is only the RWT210 and RWT204 portions of the channel. It is unknown why the western channel, RWT202 is unmapped since it is the larger contributor regarding flow rates. Since there is a discrepancy between the DPBS and FEMA maps, the RWT202 channel that is shown on the DBPS is being rerouted to follow the north Bent Grass property line and connect to the RWT204 channel. No-rise certifications are complete, and permit issued. No LOMR is anticipated or proposed at this time.

## XIV. Drainage Credits/Reimbursements

Per the Drainage Basin Fee Addendum – Chapter 3 for El Paso County, drainage credits/reimbursements will be applicable to this development for construction costs associated with regional facilities. These specific credits/reimbursements will be better defined in the final drainage reports and site construction drawings.

Per discussions with El Paso County the fees will be offset by the cost of regional improvements. Costs of the improvements to the regional pond facility will be deducted from the overall drainage fees for the project, leaving a net balance, to be paid. The regional improvements include channel, detention pond modification, and pond inlet repair costs. Below is a table of the reimbursable costs limited to those shown in the Falcon DBPS.

Item	Quantity	Unit	Unit Cost	Cost
<b>Channel Improvements</b>				
30" Grouted Boulders	33	SY	\$ 190.00	\$ 6,270.00
Soil Rip Rap - Type M	20.8	CY	\$ 70.00	\$ 1,456.00
6' Cutoff Wall - Concrete	35	CY	\$ 600.00	\$ 21,000.00
<b>Subtotal</b>				<b>\$ 28,726.00</b>
<b>Regional Pond Improvements (Public)</b>				
18" RCP Storm Drain (Public)	126	LF	\$ 54.00	\$ 6,804.00
18" FES	2	EA	\$ 920.00	\$ 1,840.00
3' Concrete Headwall	2	CY	\$ 600.00	\$ 1,200.00
13' Cutoff Wall - Concrete	60	CY	\$ 600.00	\$ 36,000.00
13' Cutoff Wall - Steel Reinforcement	6380	LBS	\$ 0.90	\$ 5,742.00
13' Sheet Pile Cutoff Wall	155	LF	\$ 620.00	\$ 96,100.00
Rip Rap - Type VH	2260	CY	\$ 85.00	\$ 192,100.00
Pond Modification to Full Spectrum	1	LS	\$ 60,000.00	\$ 60,000.00
<b>Subtotal</b>				<b>\$ 399,786.00</b>
<b>Total (Public)</b>				<b>\$ 428,512.00</b>
Contingency			10%	\$ 42,851.20
<b>Grand Total (Public)</b>				<b>\$ 471,363.20</b>

Below is a cost estimate for all improvements for the development according to the approximate phasing. The improvements listed as Phase 1 are being proposed with the first phase of the development, Bent Grass Filing 2. When the areas to the north and south of Bent Grass Meadows Drive and adjacent to the channel develop, the improvements summarized below and described in the Construction Phasing will need to be completed.

Add the following to the text. Reimbursement is limited to items identified in the DBPS (adjusted for fee increases). These will be further identified in final drainage reports.

Item	Quantity	Unit	Unit Cost	Cost
<b>PHASE 1</b>				
<b>Culvert (Concrete Box Culvert) (Public)</b>				
6' x 12' Concrete Box Culvert	266	LF	\$ 1,600.00	\$ 425,600.00
30" Grouted Boulders	164	SY	\$ 190.00	\$ 31,160.00
Soil Rip Rap - Type M	52.44	CY	\$ 70.00	\$ 3,670.80
Headwalls - Concrete	35	CY	\$ 600.00	\$ 21,000.00
Wingwalls - Concrete	60	CY	\$ 600.00	\$ 36,000.00
Headwalls - Steel Reinforcement	1300	LBS	\$ 0.90	\$ 1,170.00
Wingwalls - Steel Reinforcement	4430	LBS	\$ 0.90	\$ 3,987.00
<b>Subtotal</b>				<b>\$ 522,587.80</b>
<b>Channel (Public)</b>				
Grouted Boulder Drop Structure	2	EA	\$ 50,000.00	\$ 100,000.00
Excavation and Recomaction	21030	CY	\$ 1.50	\$ 31,545.00
<b>Subtotal</b>				<b>\$ 131,545.00</b>
<b>WQCV Detention Ponds (Private)</b>				
Pond (North)	1	EA	\$ 80,000.00	\$ 80,000.00
Pond (South)	1	EA	\$ 80,000.00	\$ 80,000.00
<b>Subtotal</b>				<b>\$ 160,000.00</b>
<b>Total</b>				<b>\$ 814,132.80</b>
Contingency			10%	\$ 81,413.28
<b>Total Phase 1</b>				<b>\$ 895,546.08</b>

<b>NORTH OF BENT GRASS MEADOWS DRIVE</b>				
<b>Channel (Public)</b>				
Grouted Boulder Drop Structure	3	EA	\$ 60,000.00	\$ 180,000.00
Excavation and Recomaction	8350	CY	\$ 1.50	\$ 12,525.00
<b>Subtotal</b>				<b>\$ 192,525.00</b>
<b>WQCV Detention Ponds (Private)</b>				
Pond	2	EA	\$ 80,000.00	\$ 160,000.00
<b>Subtotal</b>				<b>\$ 160,000.00</b>
<b>Total</b>				<b>\$ 352,525.00</b>
Contingency			10%	\$ 35,252.50
<b>Total North BGMD</b>				<b>\$ 387,777.50</b>



SOUTH OF BENT GRASS MEADOWS DRIVE				
Channel (Public)				
Grouted Boulder Drop Structure	3	EA	\$ 50,000.00	\$ 150,000.00
Excavation and Recompaction	15400	CY	\$ 1.50	\$ 23,100.00
<b>Subtotal</b>				<b>\$ 173,100.00</b>
WQCV Detention Ponds (Private)				
Pond	1	EA	\$ 80,000.00	\$ 80,000.00
<b>Subtotal</b>				<b>\$ 80,000.00</b>
<b>Total</b>				<b>\$ 253,100.00</b>
Contingency			10%	\$ 25,310.00
<b>Total South BGMD</b>				<b>\$ 278,410.00</b>
<b>Grand Total</b>				<b>\$ 2,033,096.78</b>

## XV. Conclusion

Bent Grass Metro District until completion and County acceptance of the ultimate improvements.

The Bent Grass Residential Subdivision lies within the West Tributary of the Falcon Area Watershed. Recommendations are made within this report to establish and stabilize multiple drainageways through the project site. Detention for the site is provided in a regional pond that will be modified to provide water quality for the entire tributary area. Recommendations are also given for re-establishing the inlet to the regional pond. The Falcon DBPS included the design of a small sub-regional pond (SR3) to provide EURV for a portion of the Bent Grass development. The design of the pond in the DBPS only had a 1 ac-ft of volume. Due to this small size, no detention was actually provided with the pond. In lieu of this pond, 3 water quality ponds will be installed to treat developed flows before they enter the existing channel reaches (RWT 202, RWT 204 & RWT 210). These 3 ponds provide 1.34 ac-ft of volume, well over the 1 ac-ft which would have been provided by the SR3 pond. The removal of Pond SR3 will not have any adverse impacts or downstream developments or existing drainageways.

All drainage facilities within this report were sized according to the Drainage Criteria Manuals. All of the channel corridors will be publicly owned and maintained and shall be the responsibility of El Paso County. Upon development of the individual parcels within the Bent Grass Residential Subdivision, separate Final Drainage Reports will be required to be submitted and approved by El Paso County.

doesn't make sense

## XVI. References

1. *City of Colorado Springs/County of El Paso Drainage Criteria Manual*, October 1991.
2. *Drainage Criteria Manual, Volume 2*, City of Colorado Springs, November 2002.
3. *Urban Storm Drainage Criteria Manual*, Urban Drainage and Flood Control District, January 2016 (with current revisions).
4. *Falcon Drainage Basin Planning Study*, by Matrix Design Group, September 2015.
5. *Master Development Drainage Plan and Preliminary Drainage Plan – Bent Grass Subdivision*, by Kiowa Engineering Corporation, December 2006.
6. *Final Drainage Report for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2014.

This does not completely resolve the matter of releasing EURV from Bentgrass that will go through two properties before getting to Pond WU. It would be best if you could get permission letters from these property owners; and/or the Bentgrass district would maintain the natural channel through these properties.



7. *Final Drainage Report Addendum for Bent Grass Residential (Filing No. 1)*, by Classic Consulting Engineers & Surveyors, LLC, August 2015.
8. *Master Development Drainage Plan for The Ranch*, by Classic Consulting Engineers & Surveyors, LLC, November 2018.
9. *Falcon Highlands Master Development Drainage Plan & Preliminary Drainage Report & Final Drainage Report for Filing 1*, by URS, January 2005.
10. *Final Drainage Report and Erosion Control Plan – Latigo Business Center Filing No. 1 A Re-subdivision of a Portion of Latigo Business and Research Center Filing No. 1*, by Kiowa Engineering Corporation, November 2004.

## **APPENDIX A**

### **Exhibits and Figures**

# **APPENDIX A**

## **Exhibits and Figures**



BENT GRASS

-

BENT GRASS MEADOWS DRIVE

SCALE: 1" = 2,000'

VICINITY MAP

Project No:

CLH000014.20

Drawn By:

CMWJ

Checked By:

RGD

Date:

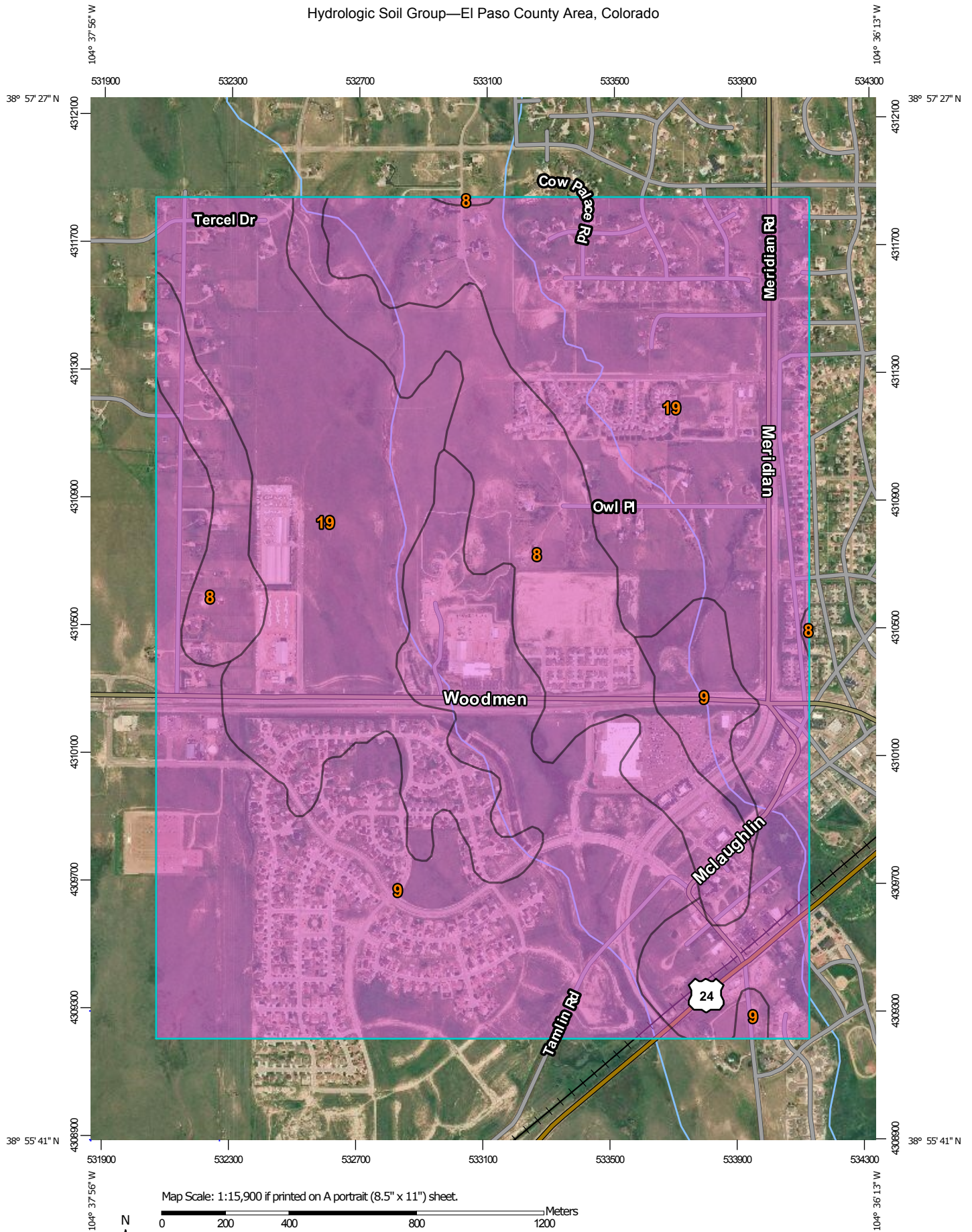
04/02/2019

**Galloway**

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Colorado Springs, CO 80920  
719.900.7220 • [GallowayUS.com](http://GallowayUS.com)



# Hydrologic Soil Group—El Paso County Area, Colorado



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

4/2/2019  
Page 1 of 4

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons





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

#### Soil Rating Lines


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

#### Soil Rating Points






 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available


### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 16, Sep 10, 2018

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

Date(s) aerial images were photographed: Jun 7, 2016—Aug 17, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	A	214.3	16.0%
9	Blakeland-Fluvaquentic Haplaquolls	A	465.8	34.7%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	A	662.6	49.3%
<b>Totals for Area of Interest</b>			<b>1,342.6</b>	<b>100.0%</b>

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher



## 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, NIMS12  
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.

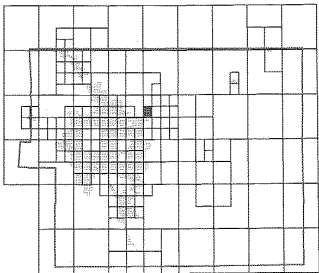
Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9820 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/nfp>.

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.

## 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.

Base Flood Elevation line and value; elevation in feet\*

Base Flood Elevation value where uniform within zone; elevation in feet\*

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

Cross section line

Transect line

67° 07' 30.00" 32° 22' 30.00" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4750000N 1000-meter Universal Transverse Mercator grid ticks, zone 13

6000000 FT 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPS ZONE 0552), 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



PANEL 0553G

**FIRM**

FLOOD INSURANCE RATE MAP

EL PASO COUNTY,  
COLORADO  
AND INCORPORATED AREAS

PANEL 553 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:  
COMMUNITY NUMBER PANEL SUFFIX  
EL PASO COUNTY 08059 5553 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  
08041C0553G

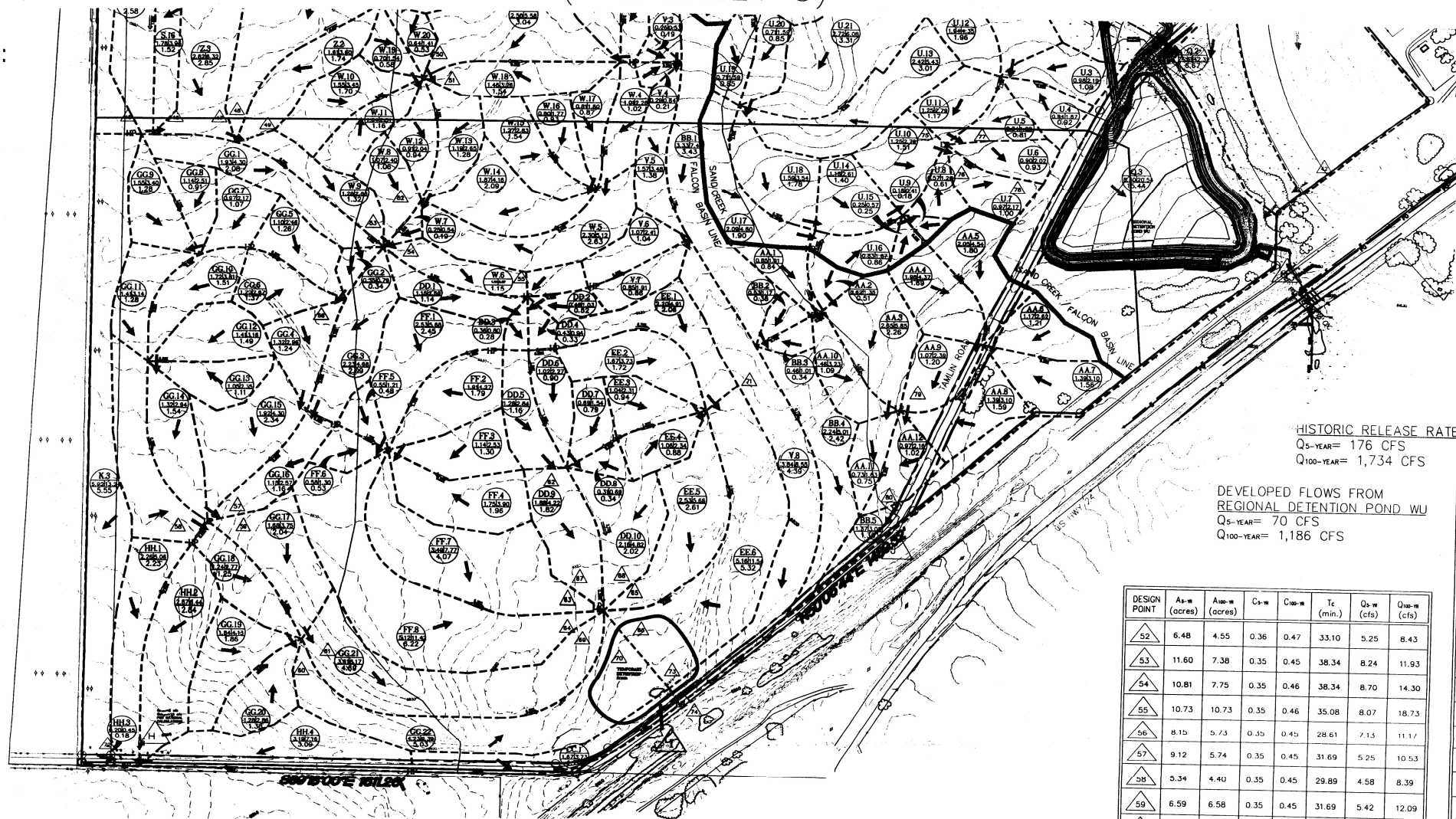
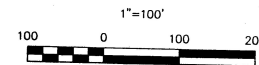
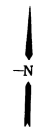
MAP REVISED  
DECEMBER 7, 2018

Federal Emergency Management Agency

# FINAL DRAINAGE FALCON HIGHL

SHEET 4 OF 4

(SEE SHEET 3)



HISTORIC RELEASE RATES  
Q<sub>5-YEAR</sub> = 176 CFS  
Q<sub>100-YEAR</sub> = 1,734 CFS

DEVELOPED FLOWS FROM  
REGIONAL DETENTION POND WU  
Q<sub>5-YEAR</sub> = 70 CFS  
Q<sub>100-YEAR</sub> = 1,186 CFS

DEVELOPED FLOWS FROM  
TEMP. DETENTION POND  
Q<sub>5-YEAR</sub> = 49.70 CFS  
Q<sub>100-YEAR</sub> = 126.74 CFS

HISTORIC RELEASE RATES  
Q<sub>5-YEAR</sub> = 64.50 CFS  
Q<sub>100-YEAR</sub> = 159.70 CFS

DESIGN POINT	A <sub>u-m</sub> (acres)	A <sub>u-m</sub> (acres)	C <sub>u-m</sub>	C <sub>u-m</sub>	T <sub>c</sub> (min.)	Q <sub>5-YEAR</sub> (cfs)	Q <sub>100-YEAR</sub> (cfs)
52	6.48	4.55	0.36	0.47	33.10	5.25	8.43
53	11.60	7.38	0.35	0.45	38.34	8.24	11.93
54	10.81	7.75	0.35	0.46	38.34	8.70	14.30
55	10.73	10.73	0.35	0.46	35.08	8.07	18.73
56	8.15	5.73	0.35	0.45	28.61	7.15	11.17
57	9.12	5.74	0.35	0.45	31.69	5.25	10.53
58	5.34	4.40	0.35	0.45	29.89	4.58	8.39
59	6.59	6.58	0.35	0.45	31.69	5.42	12.09
60	6.67	6.57	0.35	0.45	33.52	5.25	11.64
61	6.46	6.37	0.35	0.45	33.52	5.09	11.64
62	6.14	3.97	0.35	0.46	28.11	6.08	9.01
63	6.58	6.58	0.35	0.45	32.94	5.30	11.87
64	6.58	6.58	0.35	0.45	32.94	5.30	11.87
65	4.91	3.11	0.35	0.45	24.03	4.66	6.59
66	4.80	3.07	0.35	0.45	24.03	4.53	6.51

DESIGN POINT	A <sub>u-m</sub> (acres)	A <sub>u-m</sub> (acres)
67	5.30	5.24
68	5.24	5.24
69	16.51	16.51
70	16.51	16.51
71	7.99	5.79
72	8.34	8.34
73	21.57	21.57
74	21.57	21.57
75	17.68	17.63
76	6.11	6.19
77	6.11	6.19
78	7.39	7.39
79	7.30	7.30
80	8.23	8.23

# FALCON DRAINAGE BASIN PLANNING STUDY

## SELECTED PLAN REPORT

### FINAL - SEPTEMBER 2015

Prepared for:



El Paso County Public Services Department  
3275 Akers Drive  
Colorado Springs, CO 80922

Prepared By:

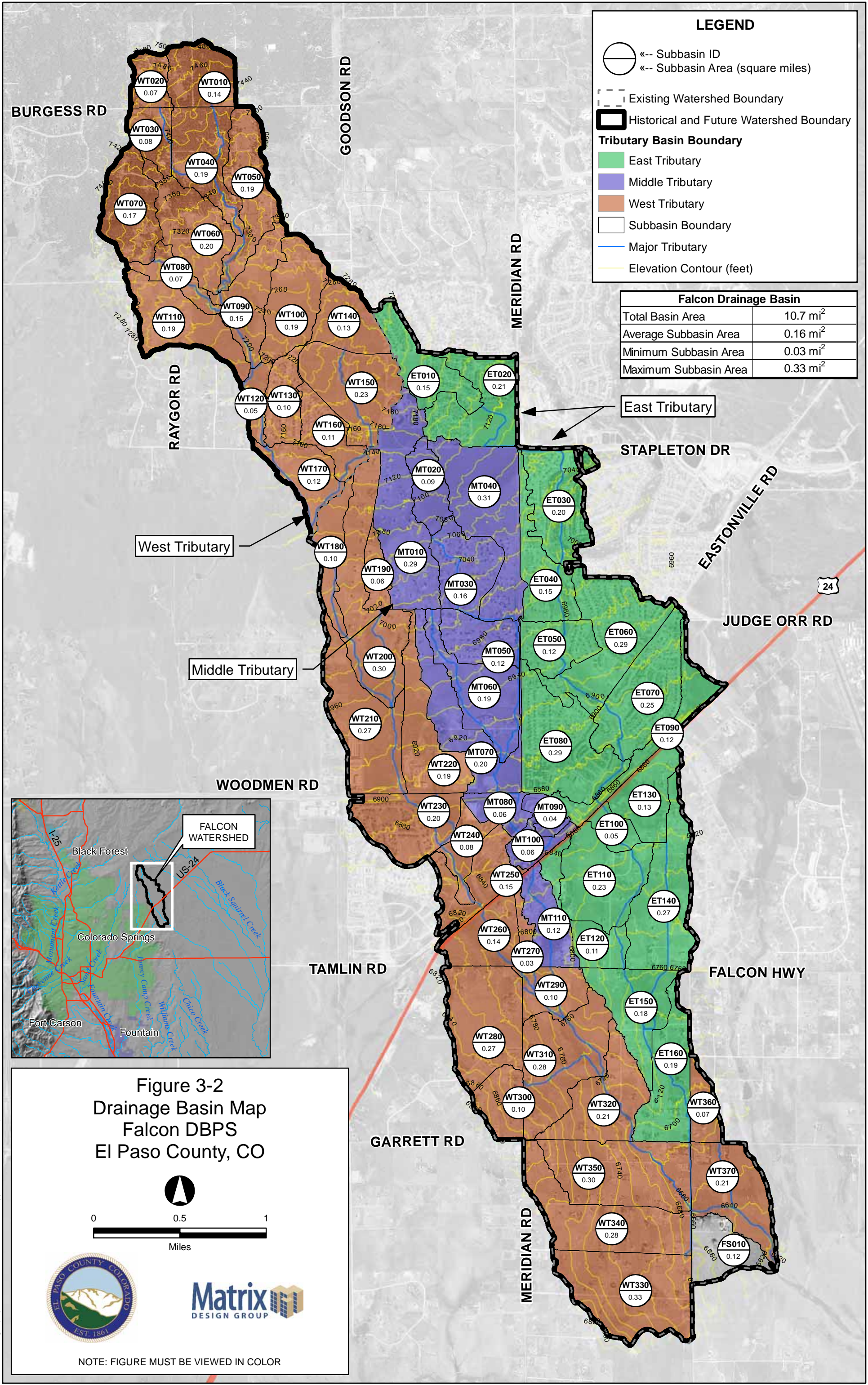


Matrix Design Group  
2435 Research Parkway, Suite 300  
Colorado Springs, CO 80920

Matrix Project No. 10.122.003



FILE: G:\gis\_projects\Falcon\_Creek\_DBPS\active\apps\20110613\basin\_map.mxd, 8/29/2011, wilson\_wheeler





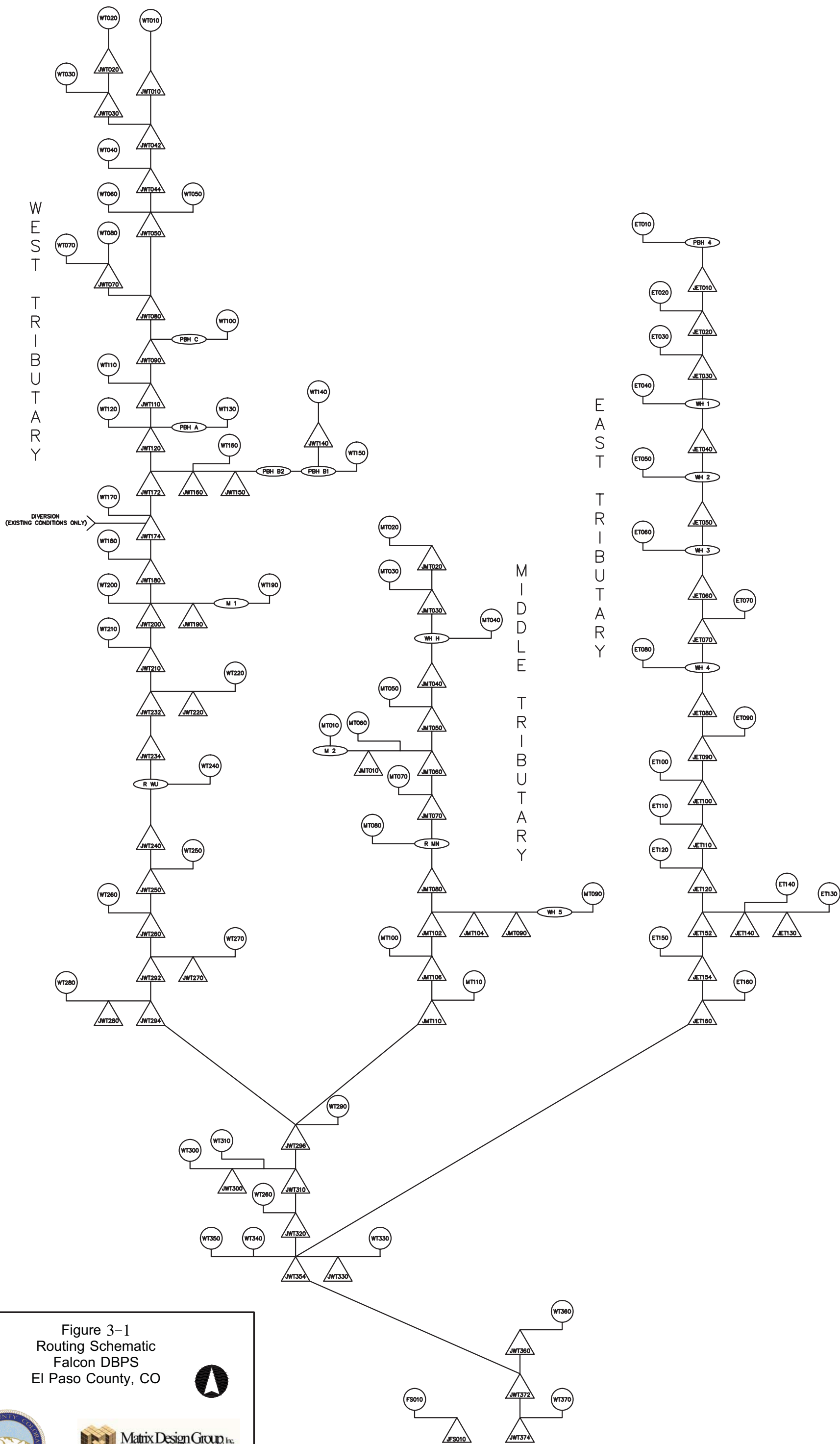


Figure 3-1  
Routing Schematic  
Falcon DBPS  
El Paso County, CO



DRAWING NOT TO SCALE



BURGESS RD

GOODSON RD

STAPLETON DR

EASTONVILLE RD

JUDGE ORR RD

WOODMEN RD

TAMLIN RD

FALCON HWY

GARRETT RD

MERIDIAN RD

Sub Regional Detention Alternative <sup>1</sup>						
Pond		Q <sub>2</sub> In (cfs)	Q <sub>2</sub> Out (cfs)	Q <sub>100</sub> In (cfs)	Q <sub>100</sub> Out (cfs)	Required Volume (AF) <sup>2</sup>
Paint Brush Hills Pond #4	PBH 4	38	29	200	150	1.34
Paint Brush Hills Pond A	PBH A	35	7	170	140	2.62
Paint Brush Hills Pond B1	PBH B1	80	51	420	270	9.17
Paint Brush Hills Pond B2	PBH B2	51	10	270	180	12.09
Paint Brush Hills Pond C	PBH C	56	3	300	140	6.77
Regional Pond MN	R MN	65	32	850	820	7.53
Regional Pond R1	R R1	110	77	1,600	1,500	25.00
Regional Pond R2	R R2	140	140	2,100	2,100	7.90
Regional Pond WU South	R WU	47	22	1,070	930	39.54
Sub Regional Pond SR1	SR 1	54	42	610	510	11.03
Sub Regional Pond SR2	SR 2	65	65	840	840	2.05
Sub Regional Pond SR3	SR 3	72	72	910	910	1.03
Sub Regional Pond SR4	SR 4	130	27	1,000	730	19.37
Sub Regional Pond SR6	SR 6	74	9	390	200	11.82
The Meadows Pond #1	M 1	11	0	75	2	3.25
The Meadows Pond #2	M 2	28	5	210	99	7.94
Woodmen Hills Pond #1 North	WH 1N	65	61	390	260	7.13
Woodmen Hills Pond #1 South	WH 1S	61	10	260	260	8.78
Woodmen Hills Pond #2	WH 2	37	10	270	250	9.18
Woodmen Hills Pond #3	WH 3	105	13	530	360	8.35
Woodmen Hills Pond #4	WH 4	110	15	790	260	40.45
Woodmen Hills Pond #5	WH 5	40	1	130	19	4.10
Woodmen Hills Pond H	WH H	140	110	750	750	2.66

Notes


1: Represents future hydrology with retrofit existing detention ponds and 5 new subregional detention ponds

2: Required volume to highest WSE


Reach Alternative	Total (ft)
Protect In Place	30,066
Natural Channel Design	32,359
Small Drop Structures w/ Toe Protection	76,812
Large Drop Structures w/ Toe Protection	0

LEGEND


Detention Pond




 Existing




 Proposed




 Existing Watershed Boundary




 Historical and Future Watershed Boundary




 Tributary Basin Boundary



 Subbasin Boundary




 Major Tributary




 Immediate Action Required to Preserve Existing Condition


Reach Alternative



 Protect In Place

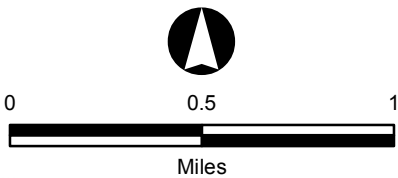


 Natural Channel Design



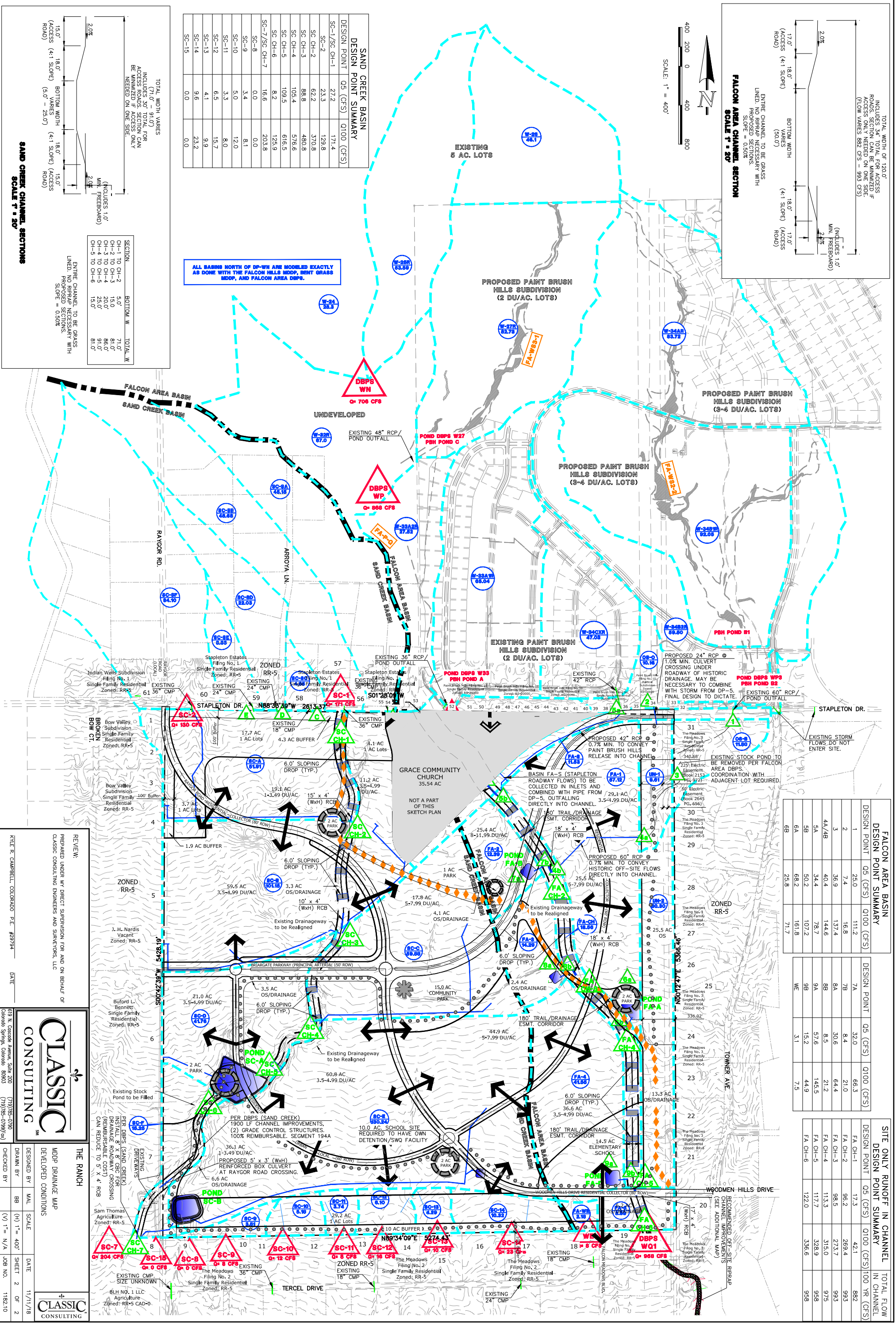
 Small Drop Structures w/ Toe Protection

Figure 5-3  
Sub-Regional Detention Alternative  
Falcon DBPS  
El Paso County, CO



NOTE: FIGURE MUST BE VIEWED IN COLOR





REVIEW:  
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF  
CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

KYLE R. CAMPBELL, COLORADO P.E. #29794 DATE

DESIGNED BY: MALL SCALE DATE: 11/11/18  
DRAWN BY: BB (H) 1" = 400' SHEET 2 OF 2  
CHECKED BY: (V) 1" = N/A JOB NO. 118210

**CLASSIC CONSULTING**

THE RANCH  
MDDP DRAINAGE MAP  
DEVELOPED CONDITIONS

FALCON AREA BASIN			SITE ONLY RUNOFF IN CHANNEL		
DESIGN POINT SUMMARY			DESIGN POINT SUMMARY		
DESIGN POINT	Q5 (CFS)	Q100 (CFS)	DESIGN POINT	Q5 (CFS)	Q100 (CFS)
1	25.0	111.2	7A	32.0	66.3
2	7.4	16.8	7B	8.4	21.0
3	36.9	137.4	8A	30.6	64.4
4A/4B	40.4	144.6	8B	8.5	21.2
5A	44.4	178.7	9A	57.6	145.5
5B	50.2	107.2	9B	15.2	44.9
6A	68.2	161.8	WE	3.1	7.5
6B	25.8	71.7			

## **APPENDIX B**

### **Hydrologic Computations**



## COMPOSITE % IMPERVIOUS CALCULATIONS: EXISTING

**Subdivision:** Bent Grass Metro District  
**Location:** CO, Colorado Springs

**Project Name:** Bent Grass  
**Project No.:** CLH000014.20  
**Calculated By:** CMWJ  
**Checked By:** \_\_\_\_\_  
**Date:** 10/25/19

Basin ID	Total Area (ac)	Paved/Dirt Roads			Lawns			Roofs			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
A-1	5.42	100	0.16	3.00	2	5.26	1.90	90	0.00	0.00	4.9
A-2	18.00	100	0.00	0.00	2	18.00	2.00	90	0.00	0.00	2.0
A-3	19.59	100	0.00	0.00	2	19.59	2.00	90	0.00	0.00	2.0
A-4	23.81	100	0.57	2.40	2	23.12	1.90	90	0.12	0.50	4.8
B-1	32.53	100	0.00	0.00	2	32.53	2.00	90	0.00	0.00	2.0
B-2	4.51	100	0.00	0.00	2	4.51	2.00	90	0.00	0.00	2.0
B-3	16.18	100	1.00	6.20	2	15.18	1.90	90	0.00	0.00	8.1
OS-1	13.06	100	0.84	6.40	2	11.65	1.80	90	0.57	3.90	12.1
OS-2	17.81	100	2.00	11.20	2	15.18	1.70	90	0.63	3.20	16.1
OS-3	9.99	100	0.69	6.90	2	9.08	1.80	90	0.22	2.00	10.7
OS-4	30.69	100	1.42	4.60	2	28.41	1.90	90	0.86	2.50	9.0
OS-5	14.13	100	0.17	1.20	2	13.74	1.90	90	0.22	1.40	4.5
OS-6	5.81	100	0.00	0.00	2	5.81	2.00	90	0.00	0.00	2.0

## COMPOSITE RUNOFF COEFFICIENT CALCULATIONS: EXISTING

**Subdivision:** Bent Grass Metro District  
**Location:** CO, Colorado Springs

**Project Name:** Bent Grass  
**Project No.:** CLH000014.20  
**Calculated By:** CMWJ  
**Checked By:** \_\_\_\_\_  
**Date:** 10/25/19

Basin ID	Total Area (ac)	Paved Roads			Lawns/Undeveloped			Roofs			Composite C <sub>5</sub>	Composite C <sub>100</sub>
		C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)		
A-1	5.42	0.90	0.96	0.16	0.09	0.36	5.26	0.73	0.81	0.00	0.11	0.38
A-2	18.00	0.90	0.96	0.00	0.09	0.36	18.00	0.73	0.81	0.00	0.09	0.36
A-3	19.59	0.90	0.96	0.00	0.09	0.36	19.59	0.73	0.81	0.00	0.09	0.36
A-4	23.81	0.90	0.96	0.57	0.09	0.36	23.12	0.73	0.81	0.12	0.11	0.38
B-1	32.53	0.90	0.96	0.00	0.09	0.36	32.53	0.73	0.81	0.00	0.09	0.36
B-2	4.51	0.90	0.96	0.00	0.09	0.36	4.51	0.73	0.81	0.00	0.09	0.36
B-3	16.18	0.90	0.96	1.00	0.09	0.36	15.18	0.73	0.81	0.00	0.14	0.40
OS-1	13.06	0.90	0.96	0.84	0.09	0.36	11.65	0.73	0.81	0.57	0.17	0.42
OS-2	17.81	0.90	0.96	2.00	0.09	0.36	15.18	0.73	0.81	0.63	0.20	0.44
OS-3	9.99	0.90	0.96	0.69	0.09	0.36	9.08	0.73	0.81	0.22	0.16	0.41
OS-4	30.69	0.90	0.96	1.42	0.09	0.36	28.41	0.73	0.81	0.86	0.15	0.40
OS-5	14.13	0.90	0.96	0.17	0.09	0.36	13.74	0.73	0.81	0.22	0.11	0.37
OS-6	5.81	0.90	0.96	0.00	0.09	0.36	5.81	0.73	0.81	0.00	0.09	0.36

*C values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. (Referencing UDFCD 2001)*

# STANDARD FORM SF-2: EXISTING TIME OF CONCENTRATION

**Subdivision:** Bent Grass Metro District  
**Location:** CO, Colorado Springs

**Project Name:** Bent Grass  
**Project No.:** CLH000014.20  
**Calculated By:** CMWJ  
**Checked By:**  
**Date:** 10/25/19

SUB-BASIN						INITIAL/OVERLAND			TRAVEL TIME					Tc CHECK			FINAL
DATA						(T <sub>i</sub> )			(T <sub>p</sub> )					(URBANIZED BASINS)			
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C <sub>100</sub>	C <sub>5</sub>	L (FT)	S (%)	T <sub>i</sub> (MIN)	L (FT)	S (%)	C <sub>v</sub>	VEL. (FPS)	T <sub>i</sub> (MIN)	COMP. T <sub>c</sub> (MIN)	TOTAL LENGTH(FT)	Urbanized T <sub>c</sub> (MIN)	
A-1	5.42	A	4.90	0.38	0.11	300	2.5	22.9	466	2.5	15.0	2.4	3.3	26.2	766.0	14.3	14.3
A-2	18.00	A	2.00	0.36	0.09	300	2.4	23.9	1130	2.0	15.0	2.1	8.9	32.8	1430.0	17.9	17.9
A-3	19.59	A	2.00	0.36	0.09	300	2.7	23.0	760	2.7	15.0	2.5	5.1	28.1	1060.0	15.9	15.9
A-4	23.81	A	4.80	0.38	0.11	300	2.0	24.9	1500	2.0	15.0	2.1	11.8	36.6	1800.0	20.0	20.0
B-1	32.53	A	2.00	0.36	0.09	300	2.6	23.3	1100	2.6	15.0	2.4	7.6	30.9	1400.0	17.8	17.8
B-2	4.51	A	2.00	0.36	0.09	300	3.0	22.2	323	5.0	15.0	3.4	1.6	23.8	623.0	13.5	13.5
B-3	16.18	A	8.10	0.40	0.14	300	2.9	21.4	780	2.9	15.0	2.6	5.1	26.4	1080.0	16.0	16.0
OS-1	13.06	A	12.10	0.42	0.17	300	2.5	21.7	1420	2.5	15.0	2.4	10.0	31.7	1720.0	19.6	19.6
OS-2	17.81	A	16.10	0.44	0.20	300	2.3	21.5	1370	2.3	15.0	2.3	10.0	31.6	1670.0	19.3	19.3
OS-3	9.99	A	10.70	0.41	0.16	300	2.0	23.7	850	2.0	15.0	2.1	6.7	30.3	1150.0	16.4	16.4
OS-4	30.69	A	9.00	0.40	0.15	300	2.3	22.9	2600	2.3	15.0	2.3	19.0	42.0	2900.0	26.1	26.1
OS-5	14.13	A	4.50	0.37	0.11	300	2.5	23.1	1400	3.0	15.0	2.6	9.0	32.1	1700.0	19.4	19.4
OS-6	5.81	A	2.00	0.36	0.09	300	2.0	25.4	400	2.0	15.0	2.1	3.1	28.6	700.0	13.9	13.9

## NOTES:

$T_i = (0.395 * (1.1 - C_5) * (L)^{0.5}) / ((S)^{0.33})$ , S in ft/ft

$T_i = L / 60V$  (Velocity From Fig. 501)

Velocity  $V = C_v * S^{0.5}$ , S in ft/ft

$T_c \text{ Check} = 10 + L / 180$

For Urbanized basins a minimum  $T_c$  of 5.0 minutes is required.

For non-urbanized basins a minimum  $T_c$  of 10.0 minutes is required

**STANDARD FORM SF-3: EXISTING  
STORM DRAINAGE SYSTEM DESIGN  
(RATIONAL METHOD PROCEDURE)**

**Subdivision:** Bent Grass Metro District  
**Location:** CO, Colorado Springs  
**Design Storm:** 5-Year

**Project Name:** Bent Grass  
**Project No.:** CLH000014.20  
**Calculated By:** CMWJ  
**Checked By:**  
**Date:** 10/25/19

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
		OS-1	13.06	0.17	19.6	2.22	3.12	6.9													
		A-1	5.42	0.11	14.3	0.62	3.60	2.2													
	1								19.6	2.84	3.12	8.9									Total flow going offsite to Bent Grass F1 Residential
		OS-2	17.81	0.20	19.3	3.63	3.14	11.4													
		A-2	18.00	0.09	17.9	1.62	3.25	5.3													
	2								19.3	5.25	3.14	16.5									Total Flow entering Junction of RWT202&204
		OS-3	9.99	0.16	16.4	1.60	3.39	5.4													
		A-3	19.59	0.09	15.9	1.76	3.43	6.0													
	3								16.4	3.36	3.39	11.4									Total Flow entering Junction of RWT202&204
		OS-4	30.69	0.15	26.1	4.46	2.69	12.0													
		A-4	23.81	0.11	20.0	2.68	3.09	8.3													
	4								26.1	7.14	2.69	19.2									
	5	B-1	32.53	0.09	17.8	2.93	3.27	9.6													
	6	B-2	4.51	0.09	13.5	0.41	3.68	1.5													
	7	B-3	16.18	0.14	16.0	2.27	3.42	7.8													
	8							4.0													RWT204 - Per Matrix DBPS Existing Hydrology
	9							0.0													RWT202 - Per Matrix DBPS Existing Hydrology
	10							14.0													RWT210 - Per Matrix DBPS Existing Hydrology
	20							98.1													Flows into Basin OS-5 from Bent Grass Filing No. 3
		OS-5	14.13	0.11	19.4	1.55	3.13	4.9													
	11											103.0									Flows into Basin OS-6
		OS-6	5.81	0.09	13.9	0.52	3.64	1.9													
	12											104.8									Existing Sediment Pond in Basin and then flows to Bent Grass Meadows Drive



**STANDARD FORM SF-3: EXISTING  
STORM DRAINAGE SYSTEM DESIGN  
(RATIONAL METHOD PROCEDURE)**

**Subdivision:** Bent Grass Metro District

**Location:** CO, Colorado Springs

**Design Storm:** 100-Year

**Project Name:** Bent Grass

**Project No.:** CLH000014.20

**Calculated By:** CMWJ

**Checked By:**

**Date:** 10/25/19

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
		OS-1	13.06	0.42	19.6	5.46	5.24	28.6													
		A-1	5.42	0.38	14.3	2.05	6.04	12.4													
	1								19.6	7.51	5.24	39.4									Total flow going offsite to Bent Grass F1 Residential
		OS-2	17.81	0.44	19.3	7.90	5.28	41.7													
		A-2	18.00	0.36	17.9	6.48	5.46	35.4													
	2								19.3	14.38	5.28	75.9									Total Flow entering Junction of RWT202&204
		OS-3	9.99	0.41	16.4	4.11	5.69	23.4													
		A-3	19.59	0.36	15.9	7.05	5.77	40.7													
	3								16.4	11.16	5.69	63.5									Total Flow entering Junction of RWT202&204
		OS-4	30.69	0.40	26.1	12.29	4.51	55.4													
		A-4	23.81	0.38	20.0	8.97	5.19	46.6													
	4								26.1	21.26	4.51	95.9									
	5	B-1	32.53	0.36	17.8	11.71	5.48	64.2													
	6	B-2	4.51	0.36	13.5	1.62	6.18	10.0													
	7	B-3	16.18	0.40	16.0	6.42	5.75	36.9													
	8							43.0													RWT204 - Per Matrix DBPS Existing Hydrology
	9							770													RWT202 - Per Matrix DBPS Existing Hydrology
	10							880													RWT210 - Per Matrix DBPS Existing Hydrology
	20							226													Flows into Basin OS-5 from Bent Grass Filing No. 3
		OS-5	14.13	0.37	19.4	5.29	5.26	27.8													
	11											253.8									Flows into Basin OS-6
		OS-6	5.81	0.36	13.9	2.09	6.10	12.7													
	12											266.6									Existing Sediment Pond in Basin and then flows to Bent Grass Meadows Drive

COMPOSITE % IMPERVIOUS CALCULATIONS: PROPOSED (LOTS)

Subdivision: Bent Grass  
Location: CO, Colorado Springs

Project Name: Bent Grass Residential Filing No. 2  
Project No.: CLH000014.20  
Calculated By: CMWJ  
Checked By: SMB  
Date: 1/30/20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Basin ID	Total Area (ac)	Paved Roads			Lawns			Roofs			1/8 Acre or Less			1/3 Acre			1 Acre			Basins Total Weighted % Imp.
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
A-1	22.13	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	16.89	49.6	30	0.00	0.0	20	5.24	4.7	54.3
A-2	19.05	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	14.24	48.6	30	0.00	0.0	20	4.81	5.0	53.6
A-3	4.05	100	1.78	44.0	2	2.27	1.1	90	0.00	0.0	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	45.1
A-4a	27.36	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	27.36	65.0	30	0.00	0.0	20	0.00	0.0	65.0
A-4b	0.35	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	0.35	65.0	30	0.00	0.0	20	0.00	0.0	65.0
A-5	0.80	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	0.80	65.0	30	0.00	0.0	20	0.00	0.0	65.0
B-1	0.34	100	0.20	58.8	2	0.14	0.8	90	0.00	0.0	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	59.6
B-2a	0.96	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	0.96	65.0	30	0.00	0.0	20	0.00	0.0	65.0
B-2b	0.41	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	0.41	65.0	30	0.00	0.0	20	0.00	0.0	65.0
C-1	19.95	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	11.75	38.3	30	5.83	8.8	20	2.37	2.4	49.5
C-2	1.88	100	1.01	53.7	2	0.87	0.9	90	0.00	0.0	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	54.6
D-1	21.44	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	21.44	65.0	30	0.00	0.0	20	0.00	0.0	65.0
E-1	0.26	100	0.20	76.9	2	0.06	0.5	90	0.00	0.0	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	77.4
OS-1	31.35	100	2.15	6.9	2	28.32	1.8	90	0.88	2.5	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	11.2
OS-2	20.07	80	0.90	3.6	2	18.61	1.9	90	0.56	2.5	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	8.0
OS-3	10.61	80	0.48	3.6	2	9.83	1.9	90	0.30	2.5	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	8.0
OS-4	2.64	100	0.00	0.0	2	2.64	2.0	90	0.00	0.0	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	2.0
OS-5	14.13	100	0.17	1.2	2	13.74	1.9	90	0.22	1.4	65	0.00	0.0	30	0.00	0.0	20	0.00	0.0	4.5
OS-6	5.38	100	0.00	0.0	2	0.00	0.0	90	0.00	0.0	65	5.38	65.0	30	0.00	0.0	20	0.00	0.0	65.0

Lot Type Identification:	
Lot Size (SF)	Lot Size (Acre)
< 8,167	1/8 Acre or Less
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS: PROPOSED

Subdivision: Bent Grass  
Location: CO, Colorado Springs

Project Name: Bent Grass Residential Filing No. 2  
Project No.: CLH000014.20  
Calculated By: CMWJ  
Checked By: SMB  
Date: 1/30/20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Basin ID	Total Area (ac)	Paved Roads			Lawns/Undeveloped			Roofs			1/8 Acre or Less			1/3 Acre			1 Acre			Composite C <sub>5</sub>	Composite C <sub>100</sub>
		C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)		
A-1	22.13	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	16.89	0.25	0.47	0.00	0.20	0.44	5.24	0.39	0.55
A-2	19.05	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	14.24	0.25	0.47	0.00	0.20	0.44	4.81	0.39	0.55
A-3	4.05	0.90	0.96	1.78	0.09	0.36	2.27	0.73	0.81	0.00	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.62
A-4a	27.36	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	27.36	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59
A-4b	0.35	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.35	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59
A-5	0.80	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.80	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59
B-1	0.34	0.90	0.96	0.20	0.09	0.36	0.14	0.73	0.81	0.00	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.57	0.71
B-2a	0.96	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.96	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59
B-2b	0.41	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	0.41	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59
C-1	19.95	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	11.75	0.25	0.47	5.83	0.20	0.44	2.37	0.36	0.54
C-2	1.88	0.90	0.96	1.01	0.09	0.36	0.87	0.73	0.81	0.00	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.53	0.68
D-1	21.44	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	21.44	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59
E-1	0.26	0.90	0.96	0.20	0.09	0.36	0.06	0.73	0.81	0.00	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.71	0.82
OS-1	31.35	0.90	0.96	2.15	0.09	0.36	28.32	0.73	0.81	0.88	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.16	0.41
OS-2	20.07	0.90	0.96	0.90	0.09	0.36	18.61	0.73	0.81	0.56	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.14	0.40
OS-3	10.61	0.90	0.96	0.48	0.09	0.36	9.83	0.73	0.81	0.30	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.14	0.40
OS-4	2.64	0.90	0.96	0.00	0.09	0.36	2.64	0.73	0.81	0.00	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.09	0.36
OS-5	14.13	0.90	0.96	0.17	0.09	0.36	13.74	0.73	0.81	0.22	0.45	0.59	0.00	0.25	0.47	0.00	0.20	0.44	0.00	0.11	0.37
OS-6	5.38	0.90	0.96	0.00	0.09	0.36	0.00	0.73	0.81	0.00	0.45	0.59	5.38	0.25	0.47	0.00	0.20	0.44	0.00	0.45	0.59

Lot Type Identification:	
Lot Size (SF)	Lot Size (Acre)
< 8,167	1/8 Acre or Less
8,168 - 12,704	1/4 Acre
12,705 - 18,149	1/3 Acre
18,150 - 32,670	1/2 Acre
32,671 - 43,560	1 Acre

C values are taken directly from Table 6-6 in the Colorado Springs DCM Vol. 1. CH. 6 (Referencing UDFCD 2001)  
Coefficients use HSG A&B soils - Refer to Appendix # for soil map

# STANDARD FORM SF-2: PROPOSED TIME OF CONCENTRATION

**Subdivision:** Bent Grass

**Location:** CO, Colorado Springs

**Project Name:** Bent Grass Residential Filing No. 2

**Project No.:** CLH000014.20

**Calculated By:** CMWJ

**Checked By:** SMB

**Date:** 1/30/20

SUB-BASIN						INITIAL/OVERLAND			TRAVEL TIME					Tc CHECK			FINAL
DATA						(Ti)			(Tt)					(URBANIZED BASINS)			
BASIN ID	D.A. (AC)	Hydrologic Soils Group	Impervious (%)	C100	C5	L (FT)	S (%)	Ti (MIN)	L (FT)	S (%)	Cv	VEL. (FPS)	Tt (MIN)	COMP. Tc (MIN)	TOTAL LENGTH(FT)	Urbanized Tc (MIN)	
A-1	22.13	A	54.30	0.55	0.39	100	2.0	10.3	1000	1.0	20.0	2.0	8.3	18.6	1100.0	16.1	16.1
A-2	19.05	A	53.60	0.55	0.39	100	2.0	10.4	900	1.0	20.0	2.0	7.5	17.9	1000.0	15.6	15.6
A-3	4.05	A	45.10	0.62	0.45	24	2.0	4.7	1050	1.0	20.0	2.0	8.8	13.4	1074.0	16.0	13.4
A-4a	27.36	A	65.00	0.59	0.45	100	2.0	9.4	1650	2.0	20.0	2.8	9.7	19.2	1750.0	19.7	19.2
A-4b	0.35	A	65.00	0.59	0.45	30	25.0	2.2						2.2	30.0	10.2	5.0
A-5	0.80	A	65.00	0.59	0.45	35	2.4	5.3	400	2.4	20.0	3.1	2.2	7.4	435.0	12.4	7.4
B-1	0.34	A	59.60	0.71	0.57	24	2.0	3.8	150	1.0	20.0	2.0	1.3	5.0	174.0	11.0	5.0
B-2a	0.96	A	65.00	0.59	0.45	20	2.0	4.2	740	1.5	15.0	1.8	6.7	10.9	760.0	14.2	10.9
B-2b	0.41	A	65.00	0.59	0.45	20	25.0	1.8						1.8	20.0	10.1	5.0
C-1	19.95	A	49.50	0.54	0.36	100	2.0	10.7	1400	2.0	20.0	2.8	8.2	19.0	1500.0	18.3	18.3
C-2	1.88	A	54.60	0.68	0.53	24	2.0	4.1	950	2.0	20.0	2.8	5.6	9.7	974.0	15.4	9.7
D-1	21.44	A	65.00	0.59	0.45	100	2.0	9.4	850	1.5	20.0	2.4	5.8	15.2	950.0	15.3	15.2
E-1	0.26	A	77.40	0.82	0.71	24	2.0	2.8	110	2.0	20.0	2.8	0.6	3.4	134.0	10.7	5.0
OS-1	31.35	A	11.20	0.41	0.16	100	2.4	12.8	1600	2.4	15.0	2.3	11.5	24.3	1700.0	19.4	19.4
OS-2	20.07	A	8.00	0.40	0.14	100	2.3	13.3	1400	2.3	15.0	2.3	10.3	23.5	1500.0	18.3	18.3
OS-3	10.61	A	8.00	0.40	0.14	100	2.0	13.9	1000	2.0	15.0	2.1	7.9	21.7	1100.0	16.1	16.1
OS-4	2.64	A	2.00	0.36	0.09	100	2.0	14.7	400	2.0	15.0	2.1	3.1	17.8	500.0	12.8	12.8
OS-5	14.13	A	4.50	0.37	0.11	100	2.5	13.4	1600	3.0	15.0	2.6	10.3	23.6	1700.0	19.4	19.4
OS-6	5.38	A	65.00	0.59	0.45	100	2.0	9.4	600	2.0	15.0	2.1	4.7	14.2	700.0	13.9	13.9

## NOTES:

$T_i = (0.395 * (1.1 - C_s) * (L)^{0.5}) / ((S)^{0.33})$ , S in ft/ft

$T_t = L / 60V$  (Velocity From Fig. 501)

Velocity  $V = C_v * S^{0.5}$ , S in ft/ft

$T_c \text{ Check} = 10 + L / 180$

For Urbanized basins a minimum  $T_c$  of 5.0 minutes is required.

For non-urbanized basins a minimum  $T_c$  of 10.0 minutes is required



**STANDARD FORM SF-3: PROPOSED  
STORM DRAINAGE SYSTEM DESIGN**  
(RATIONAL METHOD PROCEDURE)

**Subdivision:** Bent Grass  
**Location:** CO, Colorado Springs  
**Design Storm:** 5-Year

**Project Name:** Bent Grass Residential Filing No. 2  
**Project No.:** CLH000014.20  
**Calculated By:** CMWJ  
**Checked By:** SMB  
**Date:** 1/30/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME				REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)		
	1	OS-1	31.35	0.16	19.4	5.13	3.13	16.1														
	2	A-1	22.13	0.39	16.1	8.65	3.41	29.5														
	3	A-2	19.05	0.39	15.6	7.37	3.47	25.6														
		A-3	4.05	0.45	13.4	1.81	3.69	6.7														
	4								16.1	17.83	3.41	60.8										
	5	A-5	0.80	0.45	7.4	0.36	4.58	1.6														
		A-4a	27.36	0.45	19.2	12.31	3.15	38.8														
		B-2a	0.96	0.45	10.9	0.43	3.99	1.7														
	6								19.2	13.10	3.15	41.3										
	7	B-1	0.34	0.57	5.0	0.19	5.15	1.0														
	8	B-2b	0.41	0.45	5.0	0.18	5.17	0.9														
	18	A-4b	0.35	0.45	5.0	0.16	5.17	0.8														
	9	OS-2	20.07	0.14	18.3	2.89	3.22	9.3														
	11	OS-3	10.61	0.14	16.1	1.54	3.41	5.3														
		C-1	19.95	0.36	18.3	7.22	3.22	23.2														
	10								18.3	11.65	3.22	37.5										
	12	OS-4	2.64	0.09	12.8	0.24	3.76	0.9														
		C-2	1.88	0.53	9.7	0.99	4.18	4.1														
	13								18.3	12.88	3.22	41.5										
	14	D-1	21.44	0.45	15.2	9.65	3.50	33.8														
	15	E-1	0.26	0.71	5.0	0.19	5.17	1.0														
	20							98.1													Flows into Basin OS-5 from Bent Grass Filing No. 3	
		OS-5	14.13	0.11	19.4	1.55	3.13	4.9														
	16											103.0									Flowsinto Basin OS-6	
		OS-6	5.38	0.45	13.9	2.42	3.64	8.8													To be developed in the future	
	17											112.7										

**STANDARD FORM SF-3: PROPOSED  
STORM DRAINAGE SYSTEM DESIGN  
(RATIONAL METHOD PROCEDURE)**

**Subdivision:** Bent Grass  
**Location:** CO, Colorado Springs  
**Design Storm:** 100-Year

**Project Name:** Bent Grass Residential Filing No. 2  
**Project No.:** CLH000014.20  
**Calculated By:** CMWJ  
**Checked By:** SMB  
**Date:** 1/30/20

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME				REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)		
	1	OS-1	31.35	0.41	19.4	12.97	5.26	68.2														
	2	A-1	22.13	0.55	16.1	12.27	5.73	70.3														
	3	A-2	19.05	0.55	15.6	10.52	5.82	61.2														
		A-3	4.05	0.62	13.4	2.53	6.19	15.7														
	4								16.1	25.32	5.73	145.1										
	5	A-5	0.80	0.59	7.4	0.47	7.69	3.6														
		A-4a	27.36	0.59	19.2	16.14	5.29	85.4														
		B-2a	0.96	0.59	10.9	0.57	6.71	3.8														
	6								19.2	17.18	5.29	90.9										
	7	B-1	0.34	0.71	5.0	0.24	8.65	2.1														
	8	B-2b	0.41	0.59	5.0	0.24	8.68	2.1														
	18	A-4b	0.35	0.59	5.0	0.21	8.68	1.8														
	9	OS-2	20.07	0.40	18.3	8.02	5.41	43.4														
	11	OS-3	10.61	0.40	16.1	4.24	5.73	24.3														
		C-1	19.95	0.54	18.3	10.72	5.41	58.0														
	10								18.3	22.98	5.41	124.3										
	12	OS-4	2.64	0.36	12.8	0.95	6.31	6.0														
		C-2	1.88	0.68	9.7	1.28	7.01	9.0														
	13								18.3	25.21	5.41	136.4										
	14	D-1	21.44	0.59	15.2	12.65	5.87	74.3														
	15	E-1	0.26	0.82	5.0	0.21	8.68	1.8														
	20							226.0													Flows into Basin OS-5 from Bent Grass Filing No. 3	
		OS-5	14.13	0.37	19.4	5.29	5.26	27.8														
	16											253.8									Flows into Basin OS-6	
		OS-6	5.38	0.59	13.9	3.17	6.10	19.3													To be developed in the future	
	17											275.2										

**ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)**

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Bent Grass Residential

Inlet ID:

Ex BGMD Street

**Gutter Geometry (Enter data in the blue cells)**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

Max. Allowable Spread for Minor &amp; Major Storm

Max. Allowable Depth at Gutter Flowline for Minor &amp; Major Storm

Allow Flow Depth at Street Crown (leave blank for no)

$T_{BACK} = 8.0$  ft  
 $S_{BACK} = 0.020$  ft/ft  
 $n_{BACK} = 0.013$

$H_{CURB} = 6.00$  inches  
 $T_{CROWN} = 24.0$  ft  
 $W = 2.00$  ft  
 $S_x = 0.020$  ft/ft  
 $S_w = 0.083$  ft/ft  
 $S_o = 0.010$  ft/ft  
 $n_{STREET} = 0.016$

	Minor Storm	Major Storm	
$T_{MAX} =$	24.0	24.0	ft
$d_{MAX} =$	6.0	7.0	inches
	<input type="checkbox"/>	<input type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.8	23.2	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

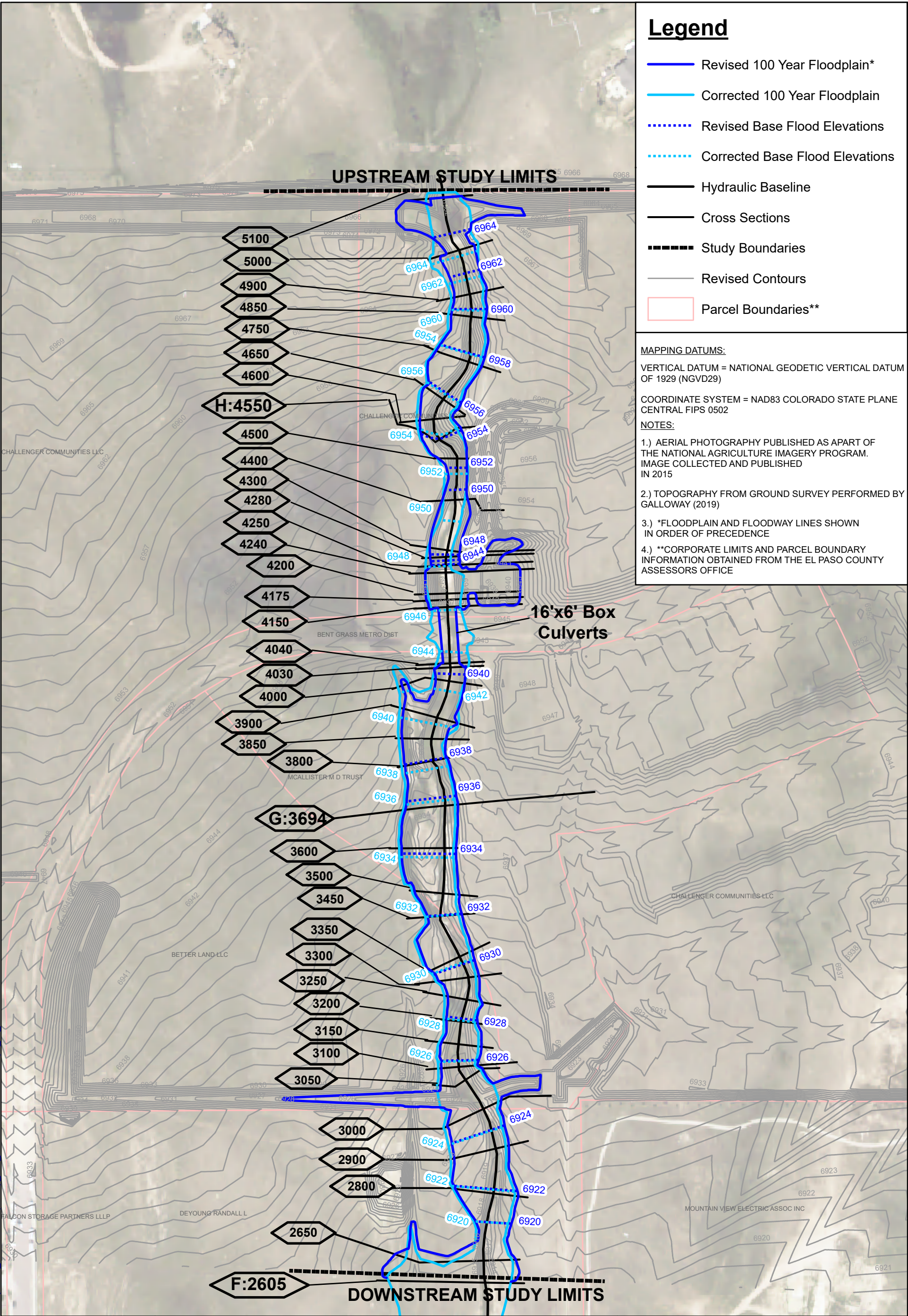
## **APPENDIX C**

### **Preliminary Channel HEC-RAS Models**



## Existing Conditions Model

Document Path: C:\Users\patrick\_oshea\Desktop\Temp\_GIS\_Data\Bent Grass Workmap1\_21\_2020.mxd



 Planning, Architecture, Engineering, 5265 Ronald Reagan Blvd., Suite 210 Johnstown, CO 80534 970.800.3300 GallowayUS.com	 Original Scale: 1" = 200' 0 50 100 200 300 400 Feet	DRAWN BY: PMO	PROJECT NUMBER: CLH0000014.20	<b>CORRECTED AND REVISED FLOODPLAINS, UNNAMED TRIBUTARY TO BLACK SQUIRREL CREEK #2</b>	<b>FIGURE 1</b>
		DESIGNED BY: PMO	PROJECT FILE: Effective Workmap		
		CHECKED BY: AL/CJP	DATE: 1/21/2020		

Ex RAS Input Report.txt

HEC-RAS HEC-RAS 5.0.7 March 2019  
U.S. Army Corps of Engineers  
Hydrologic Engineering Center  
609 Second Street  
Davis, California

X	X	XXXXXX	XXXX	XXXX	XX	XXXX
X	X	X	X X	X X	X X	X
X	X	X	X	X X	X X	X
XXXXXXXX	XXXX	X	XXX	XXXX	XXXXXX	XXXX
X	X	X	X	X X	X X	X
X	X	X	X X	X X	X X	X
X	X	XXXXXX	XXXX	X X	X X	XXXXX

PROJECT DATA

Project Title: HEC-RAS Model  
Project File : CLH14\_Final.prj  
Run Date and Time:

Project in English units

Project Description:

CRS Info=<SpatialReference> <CoordinateSystem Code="3502"  
Unit="US\_survey\_Foot" AcadCode="" /> <Registration OffsetX="0" OffsetY="0"  
OffsetZ="0" ScaleX="1" ScaleY="1" ScaleZ="1" /></SpatialReference>

PLAN DATA

Plan Title:  
Plan File :

Geometry Title: CE\_Reduced2

Geometry File : h:\Challenger Homes Inc\CO, El Paso  
County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras  
1\_24\_2020 Final\CLH14\_Final.g08

Flow Title : Phase 1

Flow File : h:\Challenger Homes Inc\CO, El Paso  
County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras  
1\_24\_2020 Final\CLH14\_Final.f03

## Ex RAS Input Report.txt

### Plan Description:

revised condition model for the Bent Grass Subdivision Project. Effective Hydrologic information was incorporated into a Revised condition with both resurveyed topography as of 2019 and design topography for the Bent Grass Subdivision.

Calculated using Hec-Ras v. 5.0.3

### Plan Summary Information:

Number of:	Cross Sections =	33	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

### Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.33
Flow tolerance factor	=	0.001

### Computation Options

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

## FLOW DATA

Flow Title: Phase 1

Flow File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1\_24\_2020 Final\CLH14\_Final.f03

Flow Data (cfs)

River	Reach	RS	DBPS 100-YR	DBPS 2-YR
100-YR				
UT_BSC2	NCONFL-BGM	5100	1200	110
1450				
UT_BSC2	NCONFL-BGM	3694	1200	110
1482				



# Ex RAS Input Report.txt

## Boundary Conditions

River Downstream	Reach	Profile	Upstream
UT_BSC2	NCONFL-BGM	DBPS 100-YR	Normal S = 0.003463
Normal S = 0.025094			
UT_BSC2	NCONFL-BGM	DBPS 2-YR	Normal S = 0.003463
Normal S = 0.025094			
UT_BSC2	NCONFL-BGM	100-YR	Normal S = 0.003463
Known WS = 6918.85			

## GEOMETRY DATA

Geometry Title: CE\_Reduced2

Geometry File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent  
Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1\_24\_2020 Final\CLH14\_Final.g08

## CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 5100

## INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 448

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6968.99	.52	6968.99	.67	6968.98	1.32	6968.94	1.52	6968.93
1.76	6968.92	2.25	6968.9	2.53	6968.88	2.85	6968.86	3.17	6968.85
3.53	6968.83	3.95	6968.81	4.1	6968.8	4.53	6968.78	5.03	6968.75
5.04	6968.75	5.54	6968.72	5.95	6968.7	6.14	6968.69	6.54	6968.67
6.88	6968.65	7.23	6968.64	7.54	6968.62	7.81	6968.6	8.32	6968.58
8.55	6968.57	8.73	6968.56	9.42	6968.52	9.55	6968.51	9.66	6968.51
10.51	6968.46	10.59	6968.46	11	6968.44	11.51	6968.41	11.61	6968.41
12.44	6968.36	12.56	6968.36	12.7	6968.35	13.37	6968.31	13.56	6968.3
13.79	6968.29	14.29	6968.26	14.57	6968.25	14.89	6968.23	15.22	6968.22
15.57	6968.2	15.98	6968.18	16.15	6968.17	16.57	6968.14	17.07	6968.12
17.08	6968.09	17.58	6968.06	18	6967.96	18.17	6967.92	18.58	6967.82



Ex RAS Input Report.txt

18.93	6967.74	19.26	6967.68	19.58	6967.6	19.85	6967.55	20.36	6967.45
20.59	6967.4	20.78	6967.36	21.45	6967.22	21.59	6967.19	21.71	6967.17
22.55	6967	22.59	6966.99	22.63	6966.98	23.12	6966.88	23.56	6966.79
23.6	6966.78	23.64	6966.77	24.49	6966.6	24.6	6966.57	24.73	6966.55
25.41	6966.41	25.6	6966.37	25.83	6966.32	26.16	6966.26	26.34	6966.22
26.61	6966.16	26.92	6966.1	27.27	6966.02	27.61	6965.95	28.02	6965.87
28.19	6965.83	28.61	6965.75	29.11	6965.65	29.12	6965.64	29.62	6965.54
30.05	6965.45	30.2	6965.42	30.62	6965.34	30.97	6965.26	31.3	6965.2
31.62	6965.13	31.9	6965.07	32.39	6964.97	32.63	6964.92	32.83	6964.88
33.49	6964.75	33.63	6964.72	33.75	6964.69	34.58	6964.52	34.63	6964.51
34.68	6964.5	35.25	6964.39	35.61	6964.33	35.64	6964.32	35.67	6964.32
36.53	6964.19	36.64	6964.17	36.77	6964.15	37.46	6964.04	37.64	6964.01
37.86	6963.98	38.39	6963.9	38.65	6963.86	38.96	6963.81	39.31	6963.76
39.65	6963.71	40.05	6963.65	40.24	6963.62	40.65	6963.55	41.14	6963.48
41.17	6963.47	41.66	6963.4	42.09	6963.33	42.24	6963.31	42.66	6963.25
43.02	6963.19	43.33	6963.14	43.67	6963.09	43.95	6963.05	44.42	6962.97
44.67	6962.94	44.88	6962.91	45.52	6962.81	45.67	6962.78	45.8	6962.76
46.61	6962.64	46.68	6962.63	46.73	6962.62	47.37	6962.52	47.66	6962.48
47.68	6962.48	47.71	6962.47	48.58	6962.34	48.68	6962.32	48.8	6962.3
49.51	6962.19	49.69	6962.17	49.89	6962.14	50.44	6962.05	50.69	6962.01
50.99	6961.97	51.36	6961.91	51.69	6961.86	52.08	6961.8	52.29	6961.77
52.7	6961.71	53.18	6961.66	53.22	6961.66	53.7	6961.61	54.14	6961.62
54.27	6961.62	54.7	6961.63	55.07	6961.64	55.36	6961.65	55.71	6961.66
56	6961.66	56.46	6961.68	56.71	6961.68	56.92	6961.69	57.55	6961.7
57.71	6961.71	57.85	6961.71	58.65	6961.73	58.78	6961.73	59.5	6961.75
59.74	6961.75	60.63	6961.78	60.83	6961.78	61.56	6961.8	61.73	6961.8
61.93	6961.81	62.48	6961.82	62.73	6961.83	63.02	6961.83	63.41	6961.84
63.73	6961.85	64.1	6961.86	64.12	6961.86	64.34	6961.87	64.74	6961.88
65.21	6961.89	65.26	6961.89	65.74	6961.9	66.19	6961.91	66.3	6961.91
66.74	6961.92	67.12	6961.93	67.4	6961.94	67.75	6961.95	68.04	6961.96
68.49	6961.97	68.75	6961.97	68.97	6961.98	69.59	6961.99	69.75	6962
69.9	6962	70.68	6962.02	70.82	6962.02	71.62	6962.04	71.75	6962.05
71.77	6962.05	72.68	6962.07	72.87	6962.07	73.6	6962.09	73.77	6962.09
73.96	6962.1	74.53	6962.11	74.77	6962.12	75.06	6962.12	75.46	6962.14
75.77	6962.14	76.15	6962.15	76.38	6962.15	76.78	6962.16	77.24	6962.17
77.31	6962.17	77.78	6962.18	78.24	6962.18	78.34	6962.19	78.78	6962.19
79.16	6962.2	79.43	6962.2	79.79	6962.21	80.09	6962.24	80.53	6962.29
80.79	6962.31	81.02	6962.35	81.62	6962.44	81.8	6962.47	81.94	6962.49
82.71	6962.62	82.8	6962.63	82.87	6962.64	83.74	6962.78	83.8	6962.79
83.81	6962.79	84.72	6962.93	84.81	6962.94	84.9	6962.96	85.65	6963.08
85.81	6963.1	85.99	6963.13	86.58	6963.22	86.81	6963.26	87.09	6963.3
87.5	6963.37	87.82	6963.42	88.18	6963.47	88.43	6963.51	88.82	6963.57
89.28	6963.65	89.36	6963.66	89.82	6963.73	90.28	6963.81	90.37	6963.82
90.83	6963.9	91.21	6963.97	91.46	6964	91.83	6964.06	92.14	6964.12
92.56	6964.18	92.83	6964.23	93.06	6964.27	93.65	6964.38	93.84	6964.41
93.99	6964.44	94.64	6964.56	94.75	6964.58	94.84	6964.59	94.92	6964.61
95.84	6964.78	95.87	6964.78	96.77	6964.94	96.85	6964.96	96.93	6964.97
97.7	6965.11	97.85	6965.14	98.03	6965.17	98.63	6965.28	98.85	6965.32

Ex RAS Input Report.txt

99.12	6965.37	99.55	6965.45	99.86	6965.5	100.22	6965.57	100.48	6965.62
100.86	6965.69	101.31	6965.77	101.41	6965.79	101.86	6965.87	102.33	6965.95
102.4	6965.97	102.87	6966.05	103.26	6966.12	103.5	6966.17	103.87	6966.23
104.19	6966.29	104.59	6966.36	104.87	6966.41	105.11	6966.46	105.69	6966.56
105.88	6966.6	106.04	6966.63	106.78	6966.76	106.88	6966.78	106.97	6966.79
107.87	6966.96	107.89	6966.96	107.99	6966.98	108.82	6967.13	108.89	6967.14
108.97	6967.16	109.75	6967.3	109.89	6967.33	110.06	6967.36	110.67	6967.47
110.89	6967.51	111.16	6967.56	111.6	6967.64	111.9	6967.69	112.25	6967.75
112.53	6967.8	112.9	6967.87	113.34	6967.95	113.45	6967.97	113.9	6968.05
114.38	6968.12	114.44	6968.13	114.91	6968.2	115.31	6968.22	115.53	6968.24
115.91	6968.26	116.23	6968.28	116.63	6968.3	116.91	6968.32	117.16	6968.33
117.72	6968.36	117.92	6968.38	118.09	6968.39	118.81	6968.43	118.92	6968.43
119.01	6968.44	119.91	6968.49	119.94	6968.49	120.12	6968.5	120.87	6968.54
120.93	6968.55	121	6968.55	121.79	6968.59	121.93	6968.6	122.1	6968.61
122.72	6968.65	122.94	6968.66	123.19	6968.67	123.65	6968.7	123.94	6968.72
124.28	6968.74	124.57	6968.75	124.94	6968.77	125.38	6968.8	125.5	6968.8
125.95	6968.83	126.43	6968.86	126.47	6968.86	126.95	6968.89	127.35	6968.91
127.57	6968.92	127.95	6968.94	128.28	6968.96	128.66	6968.98	128.96	6969
129.21	6969.01	129.75	6969.04	129.96	6969.06	130.13	6969.06	130.85	6969.11
130.96	6969.11	131.06	6969.12	131.94	6969.17	131.99	6969.17	132.24	6969.18
132.91	6969.22	132.97	6969.22	133.03	6969.23	133.84	6969.27	133.97	6969.28
134.13	6969.29	134.77	6969.33	134.98	6969.34	135.22	6969.36	135.69	6969.38
135.98	6969.4	136.32	6969.42	136.62	6969.44	136.98	6969.46	137.41	6969.5
137.55	6969.5	137.99	6969.53	138.47	6969.57	138.5	6969.57	138.99	6969.61
139.4	6969.64	139.6	6969.65	139.99	6969.68	140.33	6969.71	140.69	6969.74
141	6969.76	141.25	6969.78	141.79	6969.82	142	6969.84	142.18	6969.85
142.88	6969.9	143	6969.91	143.11	6969.92	143.97	6969.99	144.03	6969.99
144.37	6970.02	144.96	6970.06	145.01	6970.07	145.07	6970.07	145.89	6970.13
146.01	6970.14	146.16	6970.16	146.81	6970.21	147.02	6970.22	147.26	6970.24
147.74	6970.28	148.02	6970.3	148.35	6970.32	148.67	6970.35	149.02	6970.37
149.44	6970.41	149.59	6970.42	149.76	6970.42				

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	17.58	.035	114.44	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	17.58	114.44		105.09	123.89		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 5000

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

# Ex RAS Input Report.txt

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 459

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6966.49	.34	6966.49	.65	6966.47	1.26	6966.43	1.39	6966.42
1.46	6966.41	1.69	6966.4	2.26	6966.36	2.43	6966.35	2.76	6966.33
3.06	6966.31	3.48	6966.28	3.86	6966.26	4.26	6966.23	4.52	6966.21
4.66	6966.2	5.12	6966.18	5.46	6966.15	5.57	6966.15	5.77	6966.13
6.26	6966.1	6.61	6966.08	7.06	6966.05	7.27	6966.03	7.66	6966.01
7.87	6966	8.55	6965.95	8.67	6965.94	8.77	6965.94	9.47	6965.89
9.75	6965.87	10.27	6965.84	10.28	6965.84	10.8	6965.81	11.07	6965.79
11.78	6965.74	11.87	6965.74	11.98	6965.73	12.67	6965.68	12.89	6965.67
13.28	6965.64	13.47	6965.63	13.93	6965.6	14.28	6965.58	14.79	6965.55
14.98	6965.53	15.08	6965.53	15.41	6965.51	15.88	6965.47	16.02	6965.47
16.29	6965.45	16.68	6965.42	17.07	6965.4	17.48	6965.37	17.8	6965.35
18.11	6965.33	18.28	6965.32	18.84	6965.28	19.08	6965.27	19.16	6965.26
19.3	6965.25	19.88	6965.21	20.2	6965.19	20.69	6965.16	20.8	6965.15
21.25	6965.12	21.49	6965.11	22.27	6965.06	22.31	6965.06	23.09	6965
23.34	6964.99	23.81	6964.96	23.89	6964.95	24.39	6964.92	24.69	6964.9
25.31	6964.86	25.43	6964.85	25.49	6964.85	25.7	6964.84	26.29	6964.8
26.48	6964.78	26.82	6964.76	27.1	6964.74	27.52	6964.72	27.9	6964.69
28.32	6964.66	28.57	6964.65	28.7	6964.64	29.13	6964.61	29.5	6964.59
29.61	6964.58	29.83	6964.57	30.3	6964.54	30.66	6964.51	31.1	6964.48
31.33	6964.47	31.7	6964.44	31.9	6964.43	32.56	6964.39	32.7	6964.38
32.75	6964.38	32.83	6964.37	33.51	6964.33	33.79	6964.31	34.31	6964.27
34.34	6964.27	34.84	6964.24	35.11	6964.22	35.84	6964.17	35.99	6964.17
36.71	6964.12	36.93	6964.1	37.34	6964.08	37.51	6964.07	37.98	6964.04
38.31	6964.01	38.49	6964	38.85	6963.98	39.02	6963.97	39.11	6963.96
39.42	6963.94	39.91	6963.91	40.07	6963.9	40.35	6963.88	40.72	6963.86
41.11	6963.83	41.52	6963.8	41.85	6963.78	42.16	6963.76	42.32	6963.75
42.85	6963.72	43.12	6963.7	43.2	6963.7	43.36	6963.69	43.92	6963.65
44.25	6963.63	44.72	6963.59	44.86	6963.56	45.29	6963.52	45.52	6963.49
46.28	6963.38	46.32	6963.37	46.37	6963.37	47.13	6963.26	47.38	6963.22
47.87	6963.15	47.93	6963.14	48.43	6963.07	48.73	6963.04	49.37	6962.96
49.48	6962.95	49.53	6962.94	49.71	6962.93	50.33	6962.86	50.52	6962.84
50.88	6962.81	51.13	6962.78	51.57	6962.74	51.93	6962.7	52.38	6962.66
52.61	6962.63	52.73	6962.62	53.14	6962.58	53.54	6962.54	53.66	6962.53
53.88	6962.5	54.34	6962.46	54.7	6962.42	55.14	6962.38	55.39	6962.35
55.75	6962.32	55.94	6962.3	56.57	6962.23	56.74	6962.21	56.79	6962.21
56.89	6962.2	57.54	6962.13	57.84	6962.1	58.34	6962.05	58.39	6962.05
58.88	6962	59.14	6961.97	59.9	6961.9	59.93	6961.89	60	6961.89
60.75	6961.81	60.97	6961.79	61.4	6961.74	61.55	6961.73	62.02	6961.68
62.35	6961.65	62.91	6961.59	63.07	6961.58	63.15	6961.57	63.43	6961.54
63.95	6961.49	64.11	6961.47	64.41	6961.44	64.75	6961.41	65.16	6961.37
65.55	6961.32	65.91	6961.29	66.2	6961.26	66.36	6961.24	66.86	6961.19
67.16	6961.16	67.25	6961.15	67.42	6961.14	67.96	6961.08	68.29	6961.05
68.76	6961	68.92	6960.98	69.34	6960.94	69.56	6960.92	70.29	6960.85
70.36	6960.84	70.38	6960.84	70.42	6960.83	71.16	6960.76	71.43	6960.73

Ex RAS Input Report.txt

71.93	6960.68	71.96	6960.68	72.47	6960.63	72.77	6960.61	73.43	6960.53
73.52	6960.52	73.57	6960.52	73.72	6960.5	74.37	6960.43	74.56	6960.41
74.94	6960.38	75.17	6960.38	75.61	6960.33	75.97	6960.32	76.13	6960.29
76.44	6960.23	76.66	6960.22	76.77	6960.22	77.15	6960.16	77.57	6960.13
77.7	6960.12	77.94	6960.09	78.37	6960.1	78.75	6960.05	79.17	6960.03
79.45	6959.97	79.79	6959.94	79.98	6959.93	80.58	6959.88	80.78	6959.88
80.84	6959.87	80.95	6959.88	81.58	6959.92	81.88	6959.94	82.38	6959.99
82.45	6960.04	82.93	6960.1	83.18	6960.13	83.96	6960.3	83.98	6960.3
84.01	6960.31	84.78	6960.47	85.02	6960.52	85.46	6960.61	85.58	6960.63
86.06	6960.73	86.39	6960.8	86.96	6960.92	87.11	6960.95	87.19	6960.97
87.44	6961.02	87.99	6961.13	88.16	6961.17	88.47	6961.23	88.79	6961.3
89.2	6961.38	89.59	6961.47	89.97	6961.54	90.25	6961.6	90.39	6961.63
90.87	6961.73	91.19	6961.8	91.29	6961.82	91.48	6961.86	91.99	6961.96
92.34	6962.04	92.8	6962.13	92.98	6962.17	93.38	6962.25	93.6	6962.3
94.3	6962.44	94.4	6962.46	94.43	6962.47	94.48	6962.48	95.2	6962.63
95.47	6962.69	95.99	6962.75	96	6962.79	96.52	6962.85	96.8	6962.86
97.49	6962.88	97.56	6962.88	97.6	6962.89	97.73	6962.89	98.4	6962.91
98.61	6962.92	98.99	6962.93	99.21	6962.94	99.65	6962.96	100.01	6962.97
100.5	6962.99	100.7	6962.99	100.81	6963	101.16	6963.01	101.61	6963.02
101.75	6963.03	102	6963.04	102.41	6963.05	102.79	6963.06	103.21	6963.08
103.51	6963.09	103.84	6963.1	104.01	6963.11	104.34	6963.12	104.59	6963.13
104.81	6963.14	105.01	6963.14	105.62	6963.16	105.93	6963.17	106.42	6963.19
106.51	6963.19	106.97	6963.21	107.22	6963.22	108.02	6963.25	108.82	6963.27
109.06	6963.28	109.52	6963.3	109.62	6963.3	110.11	6963.32	110.42	6963.33
111.02	6963.35	111.15	6963.35	111.22	6963.36	111.45	6963.36	112.02	6963.38
112.2	6963.39	112.53	6963.4	112.83	6963.41	113.25	6963.43	113.63	6963.44
114.03	6963.45	114.29	6963.46	114.43	6963.46	114.88	6963.48	115.23	6963.5
115.34	6963.5	115.53	6963.51	116.03	6963.47	116.38	6963.49	116.83	6963.48
117.04	6963.48	117.43	6963.47	117.63	6963.46	118.31	6963.44	118.54	6963.44
119.24	6963.42	119.52	6963.41	120.04	6963.4	120.05	6963.4	120.56	6963.39
120.84	6963.38	121.55	6963.36	121.74	6963.36	122.44	6963.34	122.65	6963.34
123.05	6963.33	123.24	6963.32	123.7	6963.31	124.04	6963.3	124.56	6963.29
124.74	6963.28	124.84	6963.28	125.17	6963.29	125.65	6963.31	125.79	6963.32
126.06	6963.35	126.45	6963.39	126.84	6963.43	127.25	6963.47	127.56	6963.49
127.88	6963.53	128.05	6963.54	128.6	6963.56	128.85	6963.57	128.93	6963.57
129.07	6963.58	129.65	6963.59	129.97	6963.61	130.45	6963.62	130.57	6963.62
131.02	6963.64	131.25	6963.65	132.03	6963.67	132.08	6963.67	132.86	6963.71
133.11	6963.72	133.58	6963.75	133.66	6963.75	134.15	6963.78	134.46	6963.8
135.08	6963.84	135.2	6963.85	135.26	6963.85	135.46	6963.86	136.06	6963.9
136.24	6963.92	136.59	6963.94	136.86	6963.96	137.29	6963.98	137.66	6964.01
138.09	6964.04	138.33	6964.05	138.47	6964.06	138.89	6964.09	139.27	6964.11
139.38	6964.12	139.59	6964.14	140.07	6964.17	140.43	6964.19	140.87	6964.22
141.1	6964.23	141.47	6964.26	141.67	6964.27	142.32	6964.31	142.47	6964.32
142.52	6964.33	142.6	6964.33	143.27	6964.38	143.56	6964.4	144.07	6964.43
144.1	6964.43	144.61	6964.46	144.88	6964.48	145.61	6964.53	145.68	6964.53
145.75	6964.54	146.48	6964.59	146.7	6964.6	147.11	6964.63	147.28	6964.64
147.74	6964.67	148.08	6964.69	148.62	6964.73	148.79	6964.74	148.88	6964.75
149.18	6964.77	149.68	6964.8	149.83	6964.81	150	6964.81		

# Ex RAS Input Report.txt

Manning's n Values                      num=                      3  
           Sta    n Val            Sta    n Val            Sta    n Val  
           0       .05       45.52       .035            96       .05

Bank Sta: Left    Right           Lengths: Left Channel    Right           Coeff Contr.    Expan.  
           45.52       96                    101.57    100.09       91.93               .1               .3

## CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 4900

## INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		464					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6964.23	.38	6964.23	.59	6964.22	1.02	6964.21	1.43	6964.19
1.67	6964.19	2.04	6964.17	2.28	6964.16	2.97	6964.14	3.06	6964.14
3.12	6964.13	3.41	6964.12	3.96	6964.1	4.08	6964.1	4.26	6964.09
4.81	6964.07	5.1	6964.06	5.56	6964.04	5.65	6964.04	6.13	6964.02
6.5	6964.01	6.85	6964	7.15	6963.99	7.34	6963.98	8.15	6963.95
8.25	6963.95	9.03	6963.92	9.19	6963.91	9.44	6963.9	9.87	6963.89
10.21	6963.88	10.72	6963.86	10.74	6963.86	11.24	6963.84	11.56	6963.83
12.03	6963.81	12.26	6963.8	12.4	6963.8	13.1	6963.77	13.25	6963.77
13.28	6963.76	13.33	6963.76	14.09	6963.74	14.3	6963.73	14.62	6963.72
14.94	6963.71	15.32	6963.69	15.78	6963.67	15.92	6963.67	16.35	6963.65
16.62	6963.64	17.21	6963.62	17.37	6963.62	17.47	6963.61	17.95	6963.59
18.31	6963.58	18.39	6963.58	18.51	6963.57	19.16	6963.55	19.41	6963.54
19.8	6963.52	20	6963.51	20.43	6963.49	20.84	6963.48	20.95	6963.48
21.1	6963.47	21.46	6963.45	21.69	6963.45	22.39	6963.42	22.48	6963.41
22.53	6963.41	22.79	6963.4	23.38	6963.38	23.5	6963.37	23.69	6963.37
24.22	6963.35	24.52	6963.33	24.98	6963.31	25.06	6963.31	25.54	6963.29
25.91	6963.28	26.28	6963.26	26.57	6963.25	26.75	6963.23	27.57	6963.15
27.6	6963.15	27.64	6963.14	28.44	6963.03	28.61	6963	28.87	6962.97
29.28	6962.91	29.63	6962.86	30.13	6962.79	30.16	6962.78	30.65	6962.71
30.97	6962.67	31.46	6962.6	31.68	6962.56	31.82	6962.54	32.48	6962.45
32.66	6962.42	32.7	6962.42	32.75	6962.41	33.5	6962.3	33.72	6962.27
34.05	6962.23	34.35	6962.18	34.74	6962.13	35.19	6962.07	35.34	6962.05
35.76	6962	36.04	6961.96	36.64	6961.88	36.79	6961.86	36.88	6961.85
37.33	6961.79	37.72	6961.74	37.81	6961.73	37.93	6961.71	38.57	6961.63
38.83	6961.59	39.23	6961.54	39.41	6961.52	39.85	6961.46	40.26	6961.41
40.52	6961.37	40.87	6961.33	41.1	6961.3	41.82	6961.2	41.9	6961.19
41.94	6961.19	42.18	6961.15	42.79	6961.07	42.92	6961.06	43.12	6961.03



Ex RAS Input Report.txt

43.63	6960.96	43.94	6960.92	44.41	6960.86	44.48	6960.85	44.96	6960.78
45.32	6960.73	45.71	6960.68	45.98	6960.64	46.16	6960.62	47	6960.51
47.01	6960.51	47.02	6960.5	47.85	6960.39	48.03	6960.37	48.3	6960.33
48.7	6960.28	49.05	6960.23	49.54	6960.16	49.59	6960.16	50.07	6960.09
50.38	6960.05	50.89	6959.98	51.09	6959.96	51.23	6959.94	51.87	6959.85
52.07	6959.82	52.12	6959.82	52.18	6959.81	52.92	6959.71	53.14	6959.68
53.48	6959.63	53.76	6959.6	54.16	6959.54	54.6	6959.48	54.77	6959.46
55.18	6959.4	55.45	6959.37	56.07	6959.28	56.2	6959.27	56.29	6959.25
56.72	6959.2	57.14	6959.14	57.23	6959.13	57.36	6959.11	57.98	6959.03
58.25	6958.99	58.66	6958.94	58.83	6958.91	59.27	6958.85	59.67	6958.8
59.95	6958.76	60.29	6958.72	60.51	6958.69	61.25	6958.59	61.31	6958.58
61.36	6958.57	61.56	6958.54	62.2	6958.46	62.34	6958.44	62.54	6958.42
63.05	6958.36	63.36	6958.32	63.84	6958.25	63.89	6958.25	64.38	6958.18
64.73	6958.14	65.13	6958.09	65.4	6958.06	65.58	6958.03	66.41	6957.93
66.43	6957.93	67.27	6957.82	67.45	6957.8	67.72	6957.77	68.11	6957.72
68.47	6957.67	68.95	6957.61	69.02	6957.6	69.49	6957.54	69.8	6957.51
70.31	6957.44	70.51	6957.42	70.64	6957.4	71.26	6957.32	71.49	6957.29
71.53	6957.29	71.61	6957.28	72.33	6957.19	72.56	6957.16	72.9	6957.12
73.17	6957.08	73.58	6957.03	74.02	6956.98	74.2	6956.96	74.6	6956.91
74.86	6956.87	75.49	6956.79	75.62	6956.78	75.71	6956.77	75.72	6956.76
76.1	6956.72	76.55	6956.66	76.64	6956.65	76.79	6956.63	77.39	6956.56
77.67	6956.52	78.08	6956.49	78.24	6956.47	78.69	6956.44	79.08	6956.41
79.38	6956.39	79.71	6956.36	79.93	6956.35	80.67	6956.29	80.73	6956.29
80.77	6956.28	80.95	6956.27	81.61	6956.22	81.75	6956.21	81.97	6956.2
82.46	6956.17	82.78	6956.15	83.26	6956.15	83.3	6956.13	83.8	6956.13
84.15	6956.19	84.56	6956.27	84.82	6956.31	84.99	6956.34	85.8	6956.48
85.83	6956.49	85.85	6956.49	86.68	6956.64	86.86	6956.67	87.15	6956.72
87.52	6956.79	87.89	6956.85	88.37	6956.94	88.44	6956.94	88.91	6957.03
89.21	6957.08	89.74	6957.16	89.93	6957.19	90.05	6957.21	90.64	6957.31
90.9	6957.35	90.95	6957.36	91.03	6957.37	91.74	6957.48	91.97	6957.52
92.33	6957.57	92.59	6957.62	92.99	6957.68	93.43	6957.75	93.62	6957.78
94.02	6957.84	94.27	6957.88	94.92	6957.99	95.04	6958.01	95.12	6958.02
95.49	6958.08	95.96	6958.15	96.06	6958.17	96.21	6958.19	96.81	6958.29
97.08	6958.33	97.51	6958.4	97.65	6958.42	98.1	6958.49	98.49	6958.56
98.8	6958.6	99.13	6958.66	99.34	6958.69	100.1	6958.81	100.15	6958.82
100.18	6958.82	100.34	6958.85	101.03	6958.96	101.17	6958.98	101.39	6959.02
101.87	6959.09	102.19	6959.14	102.69	6959.22	102.71	6959.23	103.21	6959.31
103.56	6959.36	103.98	6959.43	104.24	6959.47	104.4	6959.5	105.18	6959.62
105.25	6959.63	105.28	6959.63	106.09	6959.76	106.28	6959.79	106.57	6959.83
106.93	6959.89	107.3	6959.93	107.78	6959.97	107.87	6959.98	108.32	6960.02
108.62	6960.04	109.16	6960.09	109.35	6960.11	109.47	6960.12	110.03	6960.16
110.31	6960.19	110.37	6960.19	110.46	6960.2	111.15	6960.26	111.39	6960.28
111.75	6960.31	112	6960.33	112.41	6960.36	112.84	6960.4	113.05	6960.42
113.43	6960.45	113.69	6960.47	114.34	6960.53	114.46	6960.54	114.53	6960.54
114.88	6960.57	115.37	6960.62	115.48	6960.62	115.64	6960.64	116.22	6960.69
116.5	6960.71	116.93	6960.75	117.06	6960.76	117.52	6960.8	117.91	6960.83
118.23	6960.86	118.54	6960.88	118.75	6960.9	119.52	6960.97	119.59	6960.97
119.72	6960.98	120.44	6961.04	120.59	6961.06	120.82	6961.08	121.28	6961.11

Ex RAS Input Report.txt

121.61	6961.14	122.11	6961.18	122.13	6961.19	122.63	6961.23	122.97	6961.26
123.41	6961.29	123.65	6961.32	123.81	6961.33	124.57	6961.39	124.66	6961.4
124.7	6961.4	125.5	6961.47	125.7	6961.49	126	6961.51	126.33	6961.54
126.35	6961.54	126.72	6961.57	127.19	6961.61	127.29	6961.62	127.74	6961.66
128.03	6961.69	128.59	6961.73	128.76	6961.75	128.88	6961.76	129.42	6961.8
129.72	6961.83	129.79	6961.83	129.89	6961.84	130.57	6961.9	130.81	6961.92
131.18	6961.95	131.41	6961.97	131.83	6962.01	132.25	6962.04	132.48	6962.06
132.85	6962.09	133.1	6962.11	133.77	6962.17	133.87	6962.18	133.94	6962.18
134.26	6962.21	134.79	6962.25	134.9	6962.26	135.07	6962.27	135.63	6962.32
135.92	6962.34	136.36	6962.37	136.47	6962.38	136.94	6962.42	137.32	6962.44
137.66	6962.47	137.96	6962.49	138.16	6962.51	138.95	6962.56	138.98	6962.57
139.01	6962.57	139.11	6962.58	139.85	6962.63	140.01	6962.64	140.25	6962.66
140.69	6962.69	141.03	6962.71	141.54	6962.75	142.05	6962.79	142.38	6962.81
142.84	6962.85	143.07	6962.86	143.23	6962.87	143.96	6962.93	144.07	6962.94
144.13	6962.94	144.91	6963	145.12	6963.01	145.43	6963.03	145.76	6963.06
146.14	6963.09	146.6	6963.12	146.72	6963.13	147.16	6963.16	147.45	6963.18
148.02	6963.22	148.18	6963.24	148.29	6963.24	148.8	6963.28	149.13	6963.3
149.2	6963.31	149.31	6963.32	149.98	6963.37	150	6963.37		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	26.75	.035	106.93	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	26.75	106.93		70.83 50.05	32.48	.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4850

INPUT  
 Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 454							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6962.3	.62	6962.3	.78	6962.29	.98	6962.28	1.53	6962.25
1.79	6962.24	2.11	6962.22	2.43	6962.2	2.79	6962.18	3.24	6962.15
3.34	6962.15	3.8	6962.12	4.24	6962.1	4.38	6962.09	4.8	6962.06
5.15	6962.04	5.51	6962.02	5.81	6962.01	6.05	6961.99	6.64	6961.96
6.82	6961.95	6.96	6961.94	7.78	6961.89	7.86	6961.89	8.18	6961.87
8.76	6961.84	8.83	6961.83	8.91	6961.83	9.67	6961.78	9.84	6961.78
10.05	6961.76	10.57	6961.73	10.84	6961.72	11.18	6961.7	11.48	6961.68
11.85	6961.66	12.31	6961.63	12.38	6961.63	12.86	6961.6	13.29	6961.58
13.45	6961.57	13.86	6961.54	14.19	6961.53	14.58	6961.5	14.87	6961.49

Ex RAS Input Report.txt

15.1	6961.47	15.72	6961.44	15.87	6961.43	16	6961.42	16.85	6961.37
16.9	6961.37	17.12	6961.36	17.81	6961.32	17.89	6961.31	17.98	6961.31
18.71	6961.27	18.89	6961.26	19.12	6961.24	19.62	6961.22	19.9	6961.2
20.25	6961.18	20.52	6961.16	20.91	6961.14	21.39	6961.11	21.43	6961.11
21.91	6961.08	22.33	6961.06	22.52	6961.05	22.92	6961.03	23.24	6961.01
23.65	6960.98	23.92	6960.97	24.14	6960.96	24.79	6960.92	24.93	6960.91
25.05	6960.9	25.92	6960.85	26.06	6960.85	26.85	6960.8	26.94	6960.8
27.06	6960.79	27.76	6960.75	27.95	6960.74	28.19	6960.72	28.66	6960.7
28.96	6960.68	29.32	6960.66	29.57	6960.65	29.96	6960.62	30.46	6960.59
30.47	6960.59	30.97	6960.57	31.38	6960.54	31.59	6960.53	31.98	6960.51
32.28	6960.49	32.72	6960.46	32.98	6960.45	33.19	6960.44	33.86	6960.4
33.99	6960.39	34.09	6960.39	34.99	6960.34	35.01	6960.33	35.9	6960.28
36	6960.28	36.13	6960.27	36.8	6960.23	37.01	6960.22	37.26	6960.21
37.71	6960.18	38.01	6960.16	38.39	6960.14	38.61	6960.13	39.02	6960.1
39.52	6960.08	39.53	6960.08	40.03	6960.05	40.42	6960.02	40.66	6960.01
41.03	6959.99	41.33	6959.97	41.8	6959.95	42.04	6959.93	42.23	6959.92
42.93	6959.88	43.04	6959.87	43.14	6959.87	43.95	6959.83	44.04	6959.82
44.06	6959.82	44.95	6959.77	45.06	6959.77	45.2	6959.76	45.85	6959.72
46.06	6959.71	46.33	6959.7	46.75	6959.67	47.07	6959.66	47.47	6959.64
47.66	6959.63	48.08	6959.6	48.56	6959.58	48.6	6959.58	49.08	6959.55
49.47	6959.53	49.73	6959.52	50.09	6959.5	50.37	6959.48	50.87	6959.45
51.1	6959.44	51.28	6959.43	52	6959.39	52.1	6959.39	52.18	6959.38
52.89	6959.35	53.09	6959.34	53.11	6959.33	53.14	6959.33	53.99	6959.29
54.11	6959.28	54.27	6959.27	54.42	6959.26	54.89	6959.24	55.12	6959.23
55.4	6959.21	55.8	6959.19	56.13	6959.17	56.54	6959.15	56.7	6959.14
57.13	6959.12	57.61	6959.09	57.67	6959.09	58.14	6959.07	58.51	6959.05
58.8	6959.03	59.15	6959.01	59.42	6959	59.94	6958.96	60.15	6958.94
60.32	6958.91	61.07	6958.73	61.16	6958.71	61.23	6958.69	61.83	6958.55
62.13	6958.48	62.16	6958.47	62.21	6958.46	63.04	6958.26	63.17	6958.23
63.34	6958.19	63.94	6958.05	64.18	6957.99	64.47	6957.92	64.84	6957.83
65.18	6957.75	65.61	6957.65	65.75	6957.62	66.19	6957.51	66.65	6957.4
66.74	6957.38	67.2	6957.28	67.56	6957.19	67.88	6957.11	68.2	6957.04
68.46	6956.98	69.01	6956.85	69.21	6956.8	69.37	6956.76	70.14	6956.58
70.21	6956.56	70.27	6956.55	70.78	6956.43	71.18	6956.33	71.22	6956.32
71.28	6956.31	72.08	6956.12	72.23	6956.08	72.41	6956.04	72.99	6955.9
73.23	6955.84	73.55	6955.77	73.89	6955.69	74.24	6955.6	74.46	6955.55
74.68	6955.5	74.79	6955.47	75.25	6955.36	75.7	6955.26	75.81	6955.23
76.25	6955.13	76.6	6955.04	76.95	6954.96	77.26	6954.89	77.51	6954.83
78.08	6954.69	78.27	6954.65	78.41	6954.63	79.21	6954.56	79.32	6954.56
79.72	6954.55	80.22	6954.53	80.35	6954.53	81.13	6954.51	81.28	6954.52
81.48	6954.54	82.03	6954.59	82.29	6954.61	82.62	6954.65	82.94	6954.68
83.3	6954.73	83.75	6954.8	83.84	6954.81	84.3	6954.89	84.74	6954.96
84.88	6954.98	85.31	6955.05	85.65	6955.1	86.02	6955.16	86.32	6955.21
86.55	6955.24	87.15	6955.34	87.32	6955.36	87.46	6955.39	88.29	6955.52
88.33	6955.52	88.36	6955.53	88.66	6955.58	89.27	6955.67	89.33	6955.68
89.42	6955.7	90.17	6955.82	90.34	6955.84	90.55	6955.88	91.08	6955.96
91.35	6956	91.69	6956.06	91.98	6956.1	92.35	6956.16	92.82	6956.24
92.88	6956.25	93.36	6956.32	93.79	6956.39	93.96	6956.42	94.37	6956.48

Ex RAS Input Report.txt

94.69	6956.53	95.09	6956.6	95.37	6956.64	95.6	6956.68	96.22	6956.78
96.38	6956.8	96.5	6956.82	97.36	6956.96	97.41	6956.96	97.61	6957
98.31	6957.11	98.39	6957.12	98.49	6957.14	99.22	6957.26	99.4	6957.28
99.63	6957.32	100.12	6957.42	100.4	6957.46	100.76	6957.52	101.03	6957.57
101.41	6957.64	101.89	6957.73	101.93	6957.74	102.42	6957.82	102.83	6957.9
103.03	6957.93	103.42	6958	103.74	6958.03	104.16	6958.07	104.43	6958.1
104.64	6958.11	105.29	6958.16	105.44	6958.17	105.55	6958.18	106.43	6958.24
106.44	6958.24	106.45	6958.25	106.55	6958.25	107.36	6958.31	107.45	6958.32
107.56	6958.33	108.26	6958.38	108.45	6958.39	108.7	6958.41	109.17	6958.45
109.46	6958.47	109.83	6958.5	110.07	6958.51	110.47	6958.55	110.96	6958.59
110.98	6958.59	111.09	6958.6	111.47	6958.63	111.88	6958.66	112.1	6958.68
112.48	6958.71	112.78	6958.73	113.23	6958.77	113.49	6958.79	113.69	6958.81
114.37	6958.86	114.49	6958.87	114.59	6958.88	115.49	6958.96	115.5	6958.96
116.4	6959.03	116.51	6959.04	116.63	6959.05	117.31	6959.11	117.51	6959.12
117.77	6959.14	118.21	6959.18	118.52	6959.2	118.9	6959.24	119.12	6959.25
119.52	6959.29	120.02	6959.33	120.04	6959.33	120.53	6959.37	120.93	6959.4
121.17	6959.42	121.54	6959.45	121.83	6959.48	122.3	6959.51	122.54	6959.53
122.73	6959.55	123.44	6959.61	123.55	6959.62	123.64	6959.62	124.43	6959.69
124.54	6959.7	124.57	6959.7	125.45	6959.77	125.56	6959.78	125.71	6959.79
126.35	6959.85	126.57	6959.86	126.84	6959.89	127.26	6959.92	127.57	6959.95
127.97	6959.98	128.16	6959.99	128.58	6960.03	129.07	6960.07	129.11	6960.07
129.59	6960.11	129.97	6960.14	130.24	6960.16	130.59	6960.19	130.87	6960.22
131.37	6960.26	131.6	6960.28	131.78	6960.29	132.51	6960.35	132.61	6960.36
132.68	6960.36	133.38	6960.42	133.59	6960.44	133.64	6960.44	134.49	6960.52
134.62	6960.53	134.78	6960.54	135.4	6960.6	135.63	6960.62	135.91	6960.65
136.3	6960.68	136.63	6960.71	137.04	6960.75	137.21	6960.76	137.64	6960.8
138.11	6960.85	138.18	6960.85	138.64	6960.9	139.02	6960.93	139.31	6960.96
139.65	6960.99	139.92	6961.01	140.45	6961.06	140.66	6961.08	140.82	6961.09
141.58	6961.16	141.66	6961.17	141.73	6961.18	142.32	6961.23	142.63	6961.26
142.67	6961.26	142.71	6961.27	143.54	6961.34	143.68	6961.35	143.85	6961.37
144.44	6961.42	144.68	6961.45	144.98	6961.47	145.35	6961.51	145.69	6961.54
146.12	6961.58	146.25	6961.59	146.69	6961.63	147.16	6961.67	147.25	6961.68
147.7	6961.72	148.06	6961.75	148.38	6961.78	148.71	6961.81	148.97	6961.84
149.52	6961.89	149.71	6961.91	149.87	6961.92	150	6961.92		

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.05	60.15	.035
		104.16	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	60.15	104.16		109.19	100.34		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4750

# Ex RAS Input Report.txt

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 448

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6959.53	.14	6959.53	.37	6959.52	.6	6959.52	1.17	6959.5
1.5	6959.49	1.96	6959.48	2.16	6959.47	2.55	6959.46	2.76	6959.46
3.38	6959.44	3.55	6959.44	3.61	6959.43	3.71	6959.43	4.34	6959.41
4.66	6959.41	5.14	6959.39	5.27	6959.39	5.71	6959.38	5.93	6959.37
6.62	6959.35	6.83	6959.35	7.52	6959.33	7.81	6959.32	8.31	6959.31
8.38	6959.3	8.86	6959.29	9.11	6959.29	9.86	6959.26	9.94	6959.26
10.69	6959.24	10.96	6959.23	11.49	6959.22	11.5	6959.22	12.02	6959.21
12.28	6959.2	13.05	6959.18	13.1	6959.18	13.87	6959.16	14.12	6959.15
14.61	6959.14	14.66	6959.13	15.17	6959.12	15.46	6959.11	16.16	6959.09
16.34	6959.09	17.04	6959.07	17.27	6959.06	17.72	6959.05	17.84	6959.05
18.32	6959.03	18.63	6959.03	19.28	6959.01	19.37	6959.01	19.43	6959
19.58	6959	20.22	6958.98	20.43	6958.98	20.83	6958.97	21.01	6958.96
21.48	6958.95	21.81	6958.94	22.39	6958.92	22.6	6958.92	22.82	6958.91
23.39	6958.9	23.58	6958.89	23.94	6958.88	24.19	6958.88	24.63	6958.86
24.98	6958.85	25.5	6958.84	25.68	6958.83	25.78	6958.83	26.06	6958.82
26.57	6958.81	26.73	6958.81	27.06	6958.8	27.36	6958.79	27.79	6958.78
28.16	6958.77	28.61	6958.76	28.84	6958.75	28.95	6958.75	29.3	6958.74
29.74	6958.73	30.94	6958.73	31.33	6958.72	33.04	6958.72	33.28	6958.71
35.3	6958.71	35.78	6958.7	37.25	6958.7	37.68	6958.69	39.03	6958.69
39.27	6958.68	39.35	6958.68	39.51	6958.67	40.06	6958.64	40.25	6958.62
40.4	6958.61	40.86	6958.57	41.06	6958.55	41.45	6958.52	41.65	6958.5
42.27	6958.45	42.45	6958.44	42.5	6958.43	42.62	6958.42	43.24	6958.37
43.55	6958.34	44.03	6958.3	44.17	6958.29	44.61	6958.26	44.83	6958.24
45.51	6958.18	45.62	6958.17	45.66	6958.17	45.73	6958.15	46.41	6958.03
46.71	6957.98	47.21	6957.89	47.29	6957.88	47.76	6957.8	48	6957.76
48.75	6957.63	48.8	6957.62	48.81	6957.61	48.84	6957.61	49.59	6957.48
49.86	6957.43	50.38	6957.34	50.4	6957.34	50.91	6957.25	51.18	6957.2
51.95	6957.06	51.99	6957.06	52.76	6956.92	53.02	6956.88	53.51	6956.79
53.56	6956.78	54.07	6956.69	54.35	6956.64	55.07	6956.52	55.12	6956.51
55.15	6956.5	55.23	6956.49	55.94	6956.37	56.17	6956.32	56.62	6956.25
56.73	6956.23	57.22	6956.14	57.53	6956.09	58.18	6955.97	58.27	6955.95
58.32	6955.95	58.47	6955.92	59.11	6955.81	59.32	6955.77	59.74	6955.7
59.91	6955.67	60.38	6955.58	60.7	6955.52	61.29	6955.42	61.43	6955.4
61.5	6955.38	61.71	6955.35	62.29	6955.24	62.48	6955.21	62.85	6955.15
63.08	6955.1	63.53	6955.02	63.88	6954.96	64.4	6954.87	64.58	6954.84
64.67	6954.82	64.95	6954.77	65.47	6954.68	65.63	6954.65	65.96	6954.59
66.26	6954.54	66.68	6954.47	67.05	6954.4	67.52	6954.32	67.73	6954.28
67.85	6954.26	68.19	6954.2	68.64	6954.12	68.79	6954.09	69.07	6954.04
69.43	6953.98	69.84	6953.91	70.23	6953.84	70.63	6953.77	70.89	6953.72
71.02	6953.7	71.43	6953.62	71.82	6953.56	71.94	6953.54	72.18	6953.49
72.61	6953.42	72.99	6953.35	73.4	6953.28	73.69	6953.23	73.74	6953.22



Ex RAS Input Report.txt

74.04	6953.16	74.2	6953.14	74.67	6953.05	74.99	6953	75.09	6952.98
75.3	6952.94	75.78	6952.85	76.15	6952.79	76.58	6952.71	76.85	6952.67
77.2	6952.6	77.37	6952.57	77.91	6952.48	78.17	6952.43	78.25	6952.42
78.41	6952.42	78.96	6952.39	79.3	6952.38	79.75	6952.37	79.96	6952.36
80.35	6952.35	80.55	6952.35	81.15	6952.36	81.34	6952.37	81.4	6952.37
81.52	6952.38	82.13	6952.42	82.45	6952.48	82.93	6952.59	83.08	6952.62
83.5	6952.72	83.72	6952.77	84.39	6952.92	84.52	6952.95	84.56	6952.96
84.63	6952.98	85.31	6953.13	85.61	6953.2	86.1	6953.32	86.19	6953.34
86.66	6953.44	86.9	6953.5	87.64	6953.67	87.69	6953.68	87.71	6953.69
87.75	6953.69	88.49	6953.87	88.76	6953.93	89.28	6954.05	89.3	6954.05
89.81	6954.17	90.07	6954.23	90.86	6954.39	90.87	6954.39	91.66	6954.54
91.91	6954.59	92.41	6954.69	92.45	6954.7	92.97	6954.8	93.25	6954.85
93.97	6954.99	94.02	6955	94.04	6955.01	94.12	6955.02	94.84	6955.16
95.07	6955.21	95.53	6955.29	95.63	6955.31	96.12	6955.41	96.38	6955.46
96.42	6955.47	97.08	6955.6	97.17	6955.61	97.22	6955.62	97.36	6955.65
98.01	6955.78	98.22	6955.82	98.64	6955.9	98.8	6955.93	99.27	6956.02
99.6	6956.09	100.19	6956.2	100.33	6956.23	100.39	6956.24	100.6	6956.28
101.19	6956.39	101.38	6956.43	101.75	6956.48	101.98	6956.52	102.43	6956.57
102.77	6956.59	103.31	6956.62	103.48	6956.63	103.57	6956.63	103.84	6956.65
104.36	6956.67	104.53	6956.68	104.86	6956.7	105.15	6956.71	105.58	6956.73
105.95	6956.75	106.42	6956.78	106.63	6956.79	106.74	6956.79	107.08	6956.81
107.54	6956.83	107.68	6956.84	107.97	6956.85	108.33	6956.87	108.74	6956.89
109.12	6956.9	109.53	6956.89	109.79	6956.9	111.09	6956.9	111.51	6956.89
114.68	6956.89	115.04	6956.88	118.2	6956.88	118.65	6956.87	121.98	6956.87
122.4	6956.86	128.17	6956.86	128.2	6956.85	134.53	6956.85	135.02	6956.84
139.3	6956.84	139.54	6956.86	139.96	6956.86	140.39	6956.89	140.72	6956.91
141.46	6956.95	141.48	6956.95	141.5	6956.96	142.24	6957	142.58	6957.02
142.99	6957.05	143.46	6957.07	143.67	6957.09	143.75	6957.09	143.93	6957.1
144.51	6957.14	144.76	6957.15	145.27	6957.18	145.43	6957.19	145.86	6957.22
146.03	6957.23	146.4	6957.25	146.78	6957.27	146.95	6957.28	147.39	6957.31
147.54	6957.32	148.05	6957.35	148.3	6957.37	148.87	6957.4	149.06	6957.41
149.14	6957.42	149.35	6957.43	149.82	6957.46	150.23	6957.48	150.57	6957.5
151.32	6957.55	151.34	6957.55	152.09	6957.6	152.42	6957.62	152.85	6957.64
153.28	6957.67	153.51	6957.68	153.61	6957.69	153.81	6957.7	154.36	6957.73
154.61	6957.75	155.12	6957.78	155.24	6957.79	155.7	6957.81	155.88	6957.82
156.28	6957.85	156.64	6957.87	156.79	6957.88	157.2	6957.9	157.4	6957.92
157.89	6957.95	158.15	6957.96	158.75	6958	158.91	6958.01	158.98	6958.01
159.17	6958.02	159.67	6958.05	160.08	6958.08	160.43	6958.1	161.13	6958.14
161.19	6958.14	161.22	6958.15	161.94	6958.18	162.26	6958.2	162.7	6958.21
163.09	6958.23	163.36	6958.24	163.46	6958.25	163.69	6958.25	164.22	6958.28
164.45	6958.28	164.98	6958.31	165.06	6958.31	165.54	6958.33	165.73	6958.34
166.16	6958.35	166.49	6958.37	166.64	6958.37	167.02	6958.39	167.25	6958.4
167.73	6958.41	168.01	6958.43	168.63	6958.45	168.77	6958.46	168.98	6958.46
169.52	6958.49	169.92	6958.5	170.28	6958.52	170.94	6958.54	171.01	6958.55
171.1	6958.55	171.8	6958.58	172.11	6958.59	172.56	6958.61	172.91	6958.62
173.2	6958.63	173.31	6958.64	173.57	6958.65	174.07	6958.67	174.29	6958.68
174.83	6958.7	174.87	6958.7	175.39	6958.72	175.59	6958.73	176.04	6958.75
176.35	6958.76	176.48	6958.76	176.83	6958.78	177.1	6958.79	177.57	6958.81

Ex RAS Input Report.txt

177.86 6958.82 178.51 6958.84 178.53 6958.84

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 0 .05 44.61 .035 104.53 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 44.61 104.53 111.78 100.72 82.51 .1 .3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4650

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 403							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6957	.01	6957	.38	6956.99	.64	6956.98	1.1	6956.96
1.75	6956.93	1.86	6956.93	2.14	6956.91	2.53	6956.9	3.09	6956.88
3.25	6956.87	3.48	6956.86	3.97	6956.84	4.31	6956.83	4.68	6956.81
5.21	6956.79	5.4	6956.78	5.53	6956.78	6.12	6956.76	6.31	6956.75
6.76	6956.73	6.84	6956.73	6.95	6956.72	7.55	6956.7	7.98	6956.68
8.27	6956.67	8.68	6956.65	8.99	6956.64	9.21	6956.63	9.71	6956.61
10.41	6956.58	10.47	6956.58	11.14	6956.55	11.66	6956.53	11.86	6956.53
12.15	6956.51	12.58	6956.5	12.88	6956.48	13.29	6956.47	13.88	6956.44
14.01	6956.44	14.1	6956.43	14.64	6956.4	14.73	6956.39	15.33	6956.36
15.45	6956.35	15.62	6956.35	16.16	6956.31	16.55	6956.28	16.88	6956.26
17.35	6956.23	17.6	6956.21	17.78	6956.2	18.32	6956.17	18.8	6956.14
19	6956.12	19.08	6956.12	19.75	6956.07	20.22	6956.04	20.47	6956.03
20.82	6956	21.19	6955.98	21.45	6955.96	21.9	6955.93	22.55	6955.89
22.62	6955.88	22.67	6955.88	22.97	6955.86	23.34	6955.83	23.9	6955.8
24.06	6955.78	24.28	6955.76	24.77	6955.72	25.12	6955.7	25.49	6955.67
26.02	6955.62	26.21	6955.61	26.35	6955.6	26.93	6955.55	27.13	6955.53
27.57	6955.5	27.64	6955.49	27.75	6955.48	28.36	6955.43	28.79	6955.4
29.08	6955.38	29.48	6955.34	29.8	6955.32	30.02	6955.3	30.51	6955.26
31.22	6955.2	31.3	6955.2	31.95	6955.14	32.47	6955.1	32.67	6955.09
32.95	6955.06	33.38	6955.03	33.69	6955	34.1	6954.97	34.69	6954.92
34.82	6954.91	34.91	6954.9	35.46	6954.86	35.54	6954.85	36.14	6954.8
36.25	6954.8	36.42	6954.78	36.97	6954.74	37.36	6954.71	37.69	6954.68
38.15	6954.64	38.41	6954.62	38.59	6954.61	39.12	6954.56	39.63	6954.52
39.7	6954.52	39.81	6954.51	39.84	6954.51	39.89	6954.5	40.56	6954.45
41.04	6954.41	41.28	6954.39	41.62	6954.36	42	6954.33	42.26	6954.31
42.71	6954.27	43.35	6954.16	43.43	6954.15	43.48	6954.14	43.8	6954.09

Ex RAS Input Report.txt

44.15	6954.02	44.71	6953.92	44.87	6953.89	45.09	6953.85	45.58	6953.76
45.93	6953.7	46.3	6953.64	46.82	6953.54	47.02	6953.51	47.16	6953.48
47.74	6953.38	47.96	6953.34	48.38	6953.26	48.45	6953.25	48.56	6953.23
49.17	6953.12	49.6	6953.04	49.89	6952.99	50.29	6952.92	50.61	6952.86
50.83	6952.82	51.32	6952.73	52.02	6952.61	52.04	6952.6	52.05	6952.6
52.13	6952.59	52.76	6952.48	53.28	6952.38	53.48	6952.35	53.76	6952.3
54.19	6952.22	54.5	6952.16	54.91	6952.09	55.49	6951.99	55.63	6951.96
55.73	6951.95	56.29	6951.85	56.35	6951.84	56.95	6951.73	57.06	6951.71
57.22	6951.68	57.78	6951.58	58.17	6951.51	58.5	6951.46	58.96	6951.37
59.18	6951.34	59.22	6951.33	59.4	6951.3	59.93	6951.2	60.46	6951.11
60.62	6951.08	60.65	6951.08	60.69	6951.07	61.37	6950.95	61.85	6950.86
62.09	6950.82	62.42	6950.76	62.8	6950.7	63.07	6950.68	63.52	6950.66
64.16	6950.7	64.24	6950.71	64.29	6950.71	64.62	6950.73	64.96	6950.75
65.52	6950.78	65.67	6950.79	65.89	6950.8	66.39	6950.83	66.74	6950.85
67.11	6950.87	67.63	6950.93	67.83	6950.95	67.97	6950.98	68.54	6951.1
68.79	6951.14	69.19	6951.22	69.26	6951.24	69.36	6951.26	69.98	6951.38
70.42	6951.46	70.7	6951.51	71.09	6951.59	71.41	6951.65	71.64	6951.7
72.13	6951.79	72.83	6951.92	72.85	6951.93	72.86	6951.93	72.95	6951.95
73.57	6952.07	74.09	6952.17	74.28	6952.2	74.56	6952.26	75	6952.34
75.31	6952.4	75.72	6952.48	76.29	6952.59	76.44	6952.62	76.54	6952.64
77.12	6952.75	77.15	6952.76	77.76	6952.87	77.87	6952.89	78.03	6952.92
78.59	6953.03	78.98	6953.11	79.31	6953.17	79.76	6953.26	80.02	6953.31
80.21	6953.34	80.74	6953.45	81.28	6953.55	81.43	6953.58	81.46	6953.58
81.49	6953.59	81.56	6953.6	82.18	6953.72	82.66	6953.82	82.89	6953.86
83.23	6953.92	83.61	6954	83.88	6954.05	84.33	6954.14	84.96	6954.26
85.05	6954.28	85.11	6954.28	85.45	6954.31	85.76	6954.35	86.33	6954.38
86.48	6954.39	86.7	6954.4	87.2	6954.42	87.55	6954.44	87.92	6954.46
88.43	6954.48	88.63	6954.49	88.78	6954.5	89.35	6954.52	89.62	6954.54
90	6954.55	90.07	6954.56	90.16	6954.56	90.79	6954.59	91.23	6954.61
91.5	6954.63	91.9	6954.65	92.22	6954.66	92.45	6954.67	92.94	6954.69
93.63	6954.73	93.67	6954.73	93.78	6954.74	94.37	6954.78	94.9	6954.81
95.09	6954.82	95.36	6954.84	95.81	6954.87	96.12	6954.89	96.53	6954.92
97.1	6954.95	97.24	6954.96	97.35	6954.97	97.95	6955.01	97.96	6955.01
98.57	6955.05	98.68	6955.06	98.83	6955.07	99.4	6955.11	99.8	6955.14
100.11	6955.16	100.57	6955.19	100.83	6955.2	101.02	6955.22	101.55	6955.25
102.11	6955.29	102.24	6955.3	102.3	6955.3	102.98	6955.35	103.47	6955.38
103.7	6955.4	104.03	6955.42	104.42	6955.45	104.69	6955.46	105.14	6955.49
105.77	6955.54	105.85	6955.54	105.92	6955.55	106.28	6955.57	106.57	6955.59
107.14	6955.63	107.29	6955.64	107.5	6955.65	108.01	6955.69	108.36	6955.71
108.72	6955.74	109.23	6955.77	109.44	6955.78	109.59	6955.79	110.16	6955.83
110.44	6955.85	110.81	6955.88	110.97	6955.88	111.59	6955.9	112.04	6955.91
112.31	6955.91	112.7	6955.92	113.03	6955.92	113.26	6955.93	113.75	6955.93
114.43	6955.94	114.46	6955.95	114.61	6955.95	115.18	6955.96	115.71	6955.96
115.9	6955.97	116.17	6955.97	116.62	6955.98	116.93	6955.98	117.33	6955.99
117.9	6955.99	118.05	6956	118.16	6956	118.77	6956.01	119.38	6956.01
119.49	6956.02	119.64	6956.02	120.2	6956.03	120.61	6956.03	120.92	6956.04
121.37	6956.04	121.64	6956.05	121.83	6956.05	122.36	6956.06	122.94	6956.08
123.1	6956.08	123.79	6956.1	124.28	6956.11	124.51	6956.12	124.84	6956.13

Ex RAS Input Report.txt

125.23	6956.14	125.5	6956.15	125.94	6956.16	126.57	6956.18	126.73	6956.18
127.1	6956.19	127.38	6956.2	127.95	6956.22	128.1	6956.22	128.3	6956.23
128.81	6956.24	129.18	6956.25	129.53	6956.26	130.04	6956.28	130.25	6956.28
130.4	6956.29	130.97	6956.3	131.27	6956.31	131.62	6956.32	131.77	6956.32
132.4	6956.34	132.85	6956.35	133.12	6956.36	133.5	6956.37	133.84	6956.38
134.07	6956.39	134.56	6956.4	135.24	6956.42	135.3	6956.42	135.44	6956.43
135.99	6956.44	136.52	6956.46	136.54	6956.46				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	42.71	.035	85.05	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	42.71	85.05		17.98 49.31	85.86		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4600

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 348							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6956.76	.77	6956.76	.96	6956.75	1.69	6956.69	1.76	6956.68
1.85	6956.67	2.61	6956.61	2.77	6956.6	2.96	6956.58	3.52	6956.54
3.77	6956.52	4.07	6956.49	4.44	6956.46	4.78	6956.43	5.19	6956.4
5.35	6956.39	5.78	6956.35	6.27	6956.31	6.3	6956.31	6.78	6956.27
7.18	6956.24	7.41	6956.22	7.79	6956.19	8.1	6956.16	8.53	6956.13
8.79	6956.11	9.02	6956.09	9.64	6956.04	9.8	6956.03	9.93	6956.01
10.75	6955.94	10.8	6955.94	10.85	6955.93	11.28	6955.89	11.76	6955.84
11.81	6955.83	11.86	6955.83	12.68	6955.74	12.81	6955.73	12.98	6955.71
13.59	6955.65	13.82	6955.63	14.09	6955.6	14.51	6955.55	14.82	6955.52
15.2	6955.48	15.42	6955.46	15.83	6955.42	16.32	6955.37	16.34	6955.37
16.83	6955.32	17.26	6955.28	17.43	6955.26	17.84	6955.22	18.17	6955.21
18.54	6955.18	18.84	6955.17	19.09	6955.16	19.66	6955.12	19.85	6955.11
20	6955.1	20.77	6955.06	20.85	6955.06	20.92	6955.05	21.61	6955.02
21.83	6955	21.88	6955	22.75	6954.95	22.86	6954.95	23	6954.94
23.66	6954.9	23.87	6954.89	24.11	6954.88	24.58	6954.85	24.87	6954.84
25.22	6954.82	25.5	6954.8	25.87	6954.78	26.33	6954.75	26.41	6954.75
26.88	6954.72	27.33	6954.69	27.45	6954.69	27.88	6954.66	28.24	6954.63
28.56	6954.61	28.89	6954.59	29.16	6954.57	29.67	6954.53	29.89	6954.51
30.07	6954.5	30.79	6954.45	30.9	6954.44	30.99	6954.43	31.9	6954.36
31.93	6954.36	32.82	6954.3	32.91	6954.29	33.01	6954.28	33.74	6954.23

Ex RAS Input Report.txt

33.91	6954.22	34.13	6954.2	34.65	6954.16	34.92	6954.14	35.24	6954.12
35.57	6954.09	35.92	6954.07	36.35	6954.04	36.48	6954.03	36.93	6953.99
37.4	6953.96	37.46	6953.95	37.93	6953.92	38.31	6953.89	38.58	6953.87
38.94	6953.84	39.05	6953.83	39.23	6953.82	39.69	6953.79	39.94	6953.77
40.15	6953.76	40.8	6953.71	40.95	6953.7	41.06	6953.69	41.92	6953.62
41.98	6953.62	42.26	6953.6	42.89	6953.55	42.95	6953.55	43.03	6953.54
43.81	6953.48	43.96	6953.47	44.14	6953.46	44.72	6953.42	44.96	6953.4
45.26	6953.37	45.64	6953.35	45.97	6953.32	46.37	6953.26	46.56	6953.24
46.97	6953.18	47.47	6953.11	47.48	6953.11	47.98	6953.04	48.39	6952.98
48.59	6952.95	48.98	6952.89	49.3	6952.85	49.71	6952.79	49.99	6952.75
50.22	6952.71	50.82	6952.62	50.99	6952.6	51.13	6952.58	51.93	6952.46
52	6952.45	52.05	6952.45	52.58	6952.37	52.96	6952.31	53	6952.31
53.05	6952.3	53.88	6952.18	54.01	6952.16	54.16	6952.14	54.8	6952.05
55.01	6952.02	55.27	6951.98	55.71	6951.91	56.02	6951.87	56.39	6951.82
56.63	6951.78	57.02	6951.72	57.5	6951.65	57.54	6951.65	58.03	6951.58
58.46	6951.52	58.61	6951.49	59.03	6951.43	59.37	6951.38	59.73	6951.33
60.04	6951.29	60.29	6951.25	60.84	6951.17	61.04	6951.14	61.21	6951.12
61.95	6951.01	62.04	6950.99	62.12	6950.98	62.91	6950.87	63.04	6950.85
63.06	6950.85	63.95	6950.72	64.05	6950.7	64.18	6950.69	64.87	6950.58
65.06	6950.56	65.29	6950.52	65.78	6950.45	66.06	6950.41	66.4	6950.36
66.7	6950.32	67.07	6950.27	67.52	6950.2	67.61	6950.19	68.07	6950.12
68.53	6950.05	68.63	6950.04	69.08	6949.97	69.45	6949.92	69.52	6949.91
69.74	6949.88	70.08	6949.83	70.36	6949.79	70.86	6949.73	71.09	6949.69
71.28	6949.67	71.97	6949.58	72.09	6949.56	72.19	6949.55	73.08	6949.43
73.1	6949.43	73.11	6949.42	73.23	6949.41	74.02	6949.35	74.1	6949.34
74.19	6949.34	74.94	6949.33	75.11	6949.33	75.31	6949.32	75.86	6949.31
76.11	6949.31	76.42	6949.3	76.77	6949.29	77.12	6949.29	77.53	6949.33
77.69	6949.34	78.12	6949.39	78.6	6949.5	78.65	6949.51	79.12	6949.61
79.52	6949.7	79.76	6949.75	80.13	6949.83	80.43	6949.9	80.87	6949.99
81.13	6950.05	81.35	6950.1	81.99	6950.24	82.14	6950.27	82.26	6950.3
83.1	6950.5	83.14	6950.51	83.18	6950.52	83.56	6950.61	84.1	6950.74
84.15	6950.75	84.21	6950.77	85.01	6950.96	85.15	6950.99	85.32	6951.04
85.93	6951.18	86.16	6951.24	86.44	6951.3	86.84	6951.4	87.16	6951.48
87.55	6951.57	87.76	6951.62	88.17	6951.72	88.66	6951.84	88.67	6951.84
88.89	6951.89	89.17	6951.96	89.59	6952.06	89.78	6952.11	90.18	6952.21
90.51	6952.29	90.89	6952.38	91.18	6952.45	91.42	6952.51	92	6952.65
92.19	6952.69	92.34	6952.73	93.12	6952.92	93.19	6952.93	93.25	6952.95
93.88	6953.1	94.17	6953.17	94.2	6953.18	94.23	6953.18	95.08	6953.31
95.2	6953.33	95.34	6953.34	96	6953.39	96.21	6953.41	96.46	6953.43
96.91	6953.46	97.21	6953.48	97.57	6953.51	97.83	6953.53	98.21	6953.56
98.68	6953.6	98.75	6953.6	99.22	6953.64	99.66	6953.68	99.79	6953.69
100.22	6953.72	100.58	6953.75	100.91	6953.77	101.23	6953.8	101.49	6953.82
102.02	6953.86	102.23	6953.88	102.41	6953.89	103.13	6953.95	103.24	6953.95
103.32	6953.96	104.21	6954.03	104.25	6954.03	105.16	6954.1	105.25	6954.11
105.36	6954.12	106.07	6954.17	106.25	6954.19	106.47	6954.21	106.99	6954.25
107.26	6954.27	107.59	6954.3	107.9	6954.32	108.26	6954.35	108.7	6954.4
108.82	6954.4	109.27	6954.45	109.73	6954.49	109.81	6954.5	110.27	6954.55
110.65	6954.56	110.92	6954.55	111.56	6954.55	112.04	6954.54	113.4	6954.54



Ex RAS Input Report.txt

114.26	6954.53	122.33	6954.53	122.55	6954.52	130.79	6954.52	130.96	6954.51
139.41	6954.51	139.86	6954.5	144.24	6954.5				

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	45.64	.035	95.2	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	45.64	95.2		48.42    48.42	48.42	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4550

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		491					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48.02	6958.32	-47.84	6958.32	-47.4	6958.3	-47.13	6958.28	-46.9	6958.27
-46.32	6958.23	-45.96	6958.21	-45.24	6958.16	-45.03	6958.15	-44.17	6958.09
-44.09	6958.09	-43.57	6958.06	-43.15	6958.03	-43.09	6958.03	-42.21	6957.97
-42.01	6957.96	-41.12	6957.9	-40.34	6957.86	-40.11	6957.84	-39.86	6957.83
-39.11	6957.78	-38.47	6957.74	-38.11	6957.72	-37.7	6957.69	-37.11	6957.65
-36.59	6957.62	-35.65	6957.56	-35.55	6957.56	-35.1	6957.53	-34.72	6957.5
-34.47	6957.49	-33.78	6957.45	-33.1	6957.4	-32.84	6957.39	-32.31	6957.35
-31.91	6957.33	-31.24	6957.29	-30.97	6957.27	-30.16	6957.22	-30.03	6957.21
-29.18	6957.16	-29.08	6957.15	-28.16	6957.09	-28	6957.09	-26.93	6957.02
-26.28	6956.98	-26.08	6956.97	-25.85	6956.95	-25.35	6956.92	-24.77	6956.88
-24.08	6956.84	-23.69	6956.82	-23.47	6956.8	-23.07	6956.77	-22.62	6956.74
-22.53	6956.73	-22.07	6956.7	-21.6	6956.66	-21.54	6956.65	-21.07	6956.62
-20.66	6956.58	-20.46	6956.57	-20.07	6956.54	-19.38	6956.48	-19.06	6956.46
-18.79	6956.43	-18.06	6956.37	-17.85	6956.36	-17.23	6956.31	-16.91	6956.28
-16.15	6956.22	-15.97	6956.21	-15.07	6956.13	-14.79	6956.11	-14	6956.03
-13.16	6955.94	-12.92	6955.92	-11.84	6955.81	-11.29	6955.75	-11.04	6955.73
-10.76	6955.7	-10.04	6955.63	-9.69	6955.59	-9.04	6955.52	-8.48	6955.47
-8.04	6955.42	-7.04	6955.32	-6.6	6955.28	-6.45	6955.26	-6.03	6955.22
-5.38	6955.15	-5.03	6955.12	-4.73	6955.09	-4.3	6955.04	-4.03	6955.02
-3.79	6954.99	-3.03	6954.91	-2.85	6954.9	-2.14	6954.82	-1.92	6954.8
-1.07	6954.71	-.98	6954.71	-.4	6954.65	-.04	6954.61	.01	6954.6
.89	6954.51	1.09	6954.5	1.83	6954.42	1.99	6954.4	2.17	6954.39
2.77	6954.32	3.24	6954.28	3.99	6954.2	4.32	6954.17	4.64	6954.13
4.99	6954.1	5.4	6954.08	5.58	6954.06	6	6954.04	6.48	6954.01
6.74	6954	7.05	6953.98	7.29	6953.96	7.66	6953.94	8.01	6953.91

Ex RAS Input Report.txt

8.24	6953.9	8.73	6953.86	9.36	6953.82	10.07	6953.77	10.18	6953.76
10.63	6953.73	11.31	6953.68	11.83	6953.65	12.35	6953.61	12.82	6953.56
13.13	6953.53	13.79	6953.43	15.24	6953.23	15.42	6953.21	15.96	6953.13
16.28	6953.08	16.61	6953.04	16.78	6953.01	17.4	6952.93	17.81	6952.87
18.12	6952.83	18.61	6952.76	18.85	6952.73	19	6952.7	19.57	6952.62
19.75	6952.6	20.2	6952.54	20.29	6952.52	21.01	6952.42	21.39	6952.37
21.74	6952.32	22.26	6952.25	22.59	6952.2	23.18	6952.12	23.21	6952.12
23.78	6952.04	24.09	6951.99	24.63	6951.92	25.35	6951.82	25.91	6951.74
26.17	6951.7	26.67	6951.63	26.79	6951.61	28.24	6951.41	28.57	6951.37
28.96	6951.31	29.56	6951.23	29.68	6951.21	30.14	6951.15	30.4	6951.11
30.96	6951.03	31.13	6951.01	31.39	6950.97	32.15	6950.87	33.21	6950.72
33.6	6950.66	34.02	6950.6	34.54	6950.53	35.74	6950.36	36.86	6950.21
37.06	6950.18	38.13	6950.03	38.69	6949.95	39.07	6949.9	39.32	6949.86
39.79	6949.8	40.51	6949.7	40.53	6949.69	41.24	6949.59	41.71	6949.53
41.96	6949.49	42.34	6949.44	43.99	6949.21	44.16	6949.19	44.85	6949.09
45.3	6949.03	45.99	6948.93	46.3	6948.89	47.02	6948.78	47.45	6948.72
47.69	6948.69	48.46	6948.57	48.89	6948.54	49.18	6948.51	49.64	6948.47
50.63	6948.36	50.92	6948.34	51.28	6948.31	52.47	6948.19	52.8	6948.15
53.29	6948.1	53.52	6948.08	53.67	6948.06	54.24	6948	54.38	6947.99
54.96	6947.93	55.12	6947.92	55.69	6947.94	56.06	6948	56.94	6948.15
57.25	6948.2	57.84	6948.36	57.85	6948.36	58.77	6948.62	59.3	6948.76
59.3	6948.77	59.65	6948.86	60.01	6948.96	60.52	6949.11	60.73	6949.16
60.88	6949.21	61.45	6949.36	61.74	6949.45	62.1	6949.55	62.88	6949.76
63.33	6949.89	63.6	6949.96	63.98	6950.07	64.32	6950.16	64.56	6950.23
65.04	6950.36	65.78	6950.57	65.95	6950.62	66.17	6950.65	66.52	6950.69
66.84	6950.69	67.86	6950.72	68.72	6950.74	68.97	6950.75	69.19	6950.75
69.68	6950.77	70.23	6950.78	70.38	6950.78	70.52	6950.79	71.09	6950.8
71.74	6950.82	71.85	6950.82	72.51	6950.84	72.68	6950.84	73.25	6950.86
73.93	6950.88	74.52	6950.89	74.77	6950.9	75.34	6950.91	75.85	6950.93
76.05	6950.93	76.28	6950.94	77.18	6950.96	77.79	6950.98	78.18	6950.99
78.52	6950.99	79.31	6951.01	79.85	6951.03	80.82	6951.05	81.01	6951.06
81.18	6951.06	81.72	6951.08	82.33	6951.09	82.52	6951.1	83.14	6951.12
84.55	6951.16	85.18	6951.19	85.36	6951.19	85.97	6951.21	86.51	6951.23
86.87	6951.25	87.39	6951.26	87.85	6951.28	88.38	6951.3	88.81	6951.32
89.83	6951.35	89.9	6951.35	90.5	6951.37	90.93	6951.39	91.43	6951.4
91.82	6951.42	92.35	6951.43	92.97	6951.46	93.06	6951.46	93.77	6951.55
94.7	6951.69	95.19	6951.77	95.82	6951.88	96.6	6952.02	97.16	6952.11
97.31	6952.14	98.73	6952.38	99	6952.43	99.82	6952.56	100.15	6952.62
100.52	6952.68	100.83	6952.74	100.86	6952.74	101.12	6952.79	101.58	6952.89
102.34	6953.04	103.03	6953.08	103.5	6953.15	104.13	6953.17	104.47	6953.19
104.69	6953.19	104.75	6953.2	105.19	6953.21	105.81	6953.23	105.97	6953.24
107.25	6953.28	107.42	6953.28	108.03	6953.3	108.52	6953.32	109.28	6953.38
109.62	6953.41	109.93	6953.43	110.27	6953.47	110.73	6953.51	111.02	6953.53
111.68	6953.6	112.55	6953.68	113.33	6953.75	113.96	6953.81	114.11	6953.82
114.52	6953.86	114.89	6953.9	115.02	6953.91	115.6	6953.97	115.67	6953.97
116.42	6954.04	117.15	6954.11	117.23	6954.12	118.29	6954.21	119.2	6954.3
119.46	6954.31	119.72	6954.33	120.27	6954.35	121.09	6954.35	121.45	6954.34
122.07	6954.34	122.49	6954.33	123.23	6954.33	123.46	6954.32	123.72	6954.32

Ex RAS Input Report.txt

124.4	6954.31	124.78	6954.31	125.23	6954.3	125.57	6954.3	126.07	6954.29
126.9	6954.29	128.48	6954.27	129.12	6954.27	129.28	6954.26	130.07	6954.26
130.59	6954.25	130.9	6954.25	131.36	6954.24	132.84	6954.24	133.34	6954.25
134.2	6954.25	134.67	6954.26	135.72	6954.26	135.89	6954.27	136.95	6954.27
137.29	6954.28	138.42	6954.28	138.56	6954.29	141.98	6954.29	142.25	6954.3
144.05	6954.3	144.3	6954.31	145.19	6954.31	145.76	6954.32	146.61	6954.32
147.05	6954.33	148.32	6954.33	148.92	6954.34	150.13	6954.34	150.98	6954.35
152.11	6954.35	152.43	6954.36	154.13	6954.36	154.62	6954.37	158.59	6954.37
159.13	6954.39	159.31	6954.39	159.57	6954.4	160.03	6954.41	160.35	6954.42
160.75	6954.42	161.31	6954.44	161.57	6954.44	162.18	6954.46	162.79	6954.47
162.9	6954.48	163.05	6954.48	163.62	6954.49	164.33	6954.51	164.79	6954.52
165.05	6954.53	165.24	6954.53	165.77	6954.55	166.29	6954.56	166.53	6954.56
167.21	6954.58	167.68	6954.59	168.27	6954.61	168.64	6954.61	168.9	6954.62
169.36	6954.63	169.66	6954.64	170.12	6954.65	171.59	6954.69	172.22	6954.71
172.4	6954.71	173.42	6954.74	173.83	6954.75	174.68	6954.78	175.65	6954.81
176.57	6954.83	176.76	6954.84	176.96	6954.84	177.87	6954.87	178.32	6954.88
178.75	6954.9	178.99	6954.9	179.07	6954.91	179.26	6954.91	180.08	6954.94
180.58	6954.95	180.75	6954.95	181.18	6954.97	181.34	6954.97	182.1	6954.99
182.27	6955	182.74	6955.01	182.85	6955.02	183.37	6955.03	183.61	6955.04
184.14	6955.05	184.36	6955.06	185.12	6955.08	185.56	6955.1	185.88	6955.1
187.39	6955.15	188.15	6955.17	188.71	6955.19	188.9	6955.19	189.02	6955.2
189.94	6955.23	190.43	6955.24	190.58	6955.25	191.02	6955.27	191.2	6955.27
191.66	6955.29	191.97	6955.3	192.1	6955.31	192.74	6955.33	193.17	6955.35
194.2	6955.38	194.32	6955.39	195.04	6955.41	195.33	6955.43	195.81	6955.44
196.41	6955.47	196.58	6955.47	196.99	6955.49	197.34	6955.5	197.49	6955.51
198.12	6955.53								

Manning's n Values      num=      3

Sta	n Val	Sta	n Val	Sta	n Val
-48.02	.05	10.07	.035	66.52	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	10.07	66.52	60.05	60.05	60.05		.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM      RS: 4500

INPUT  
 Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		268	
Sta	Elev	Sta	Elev	Sta	Elev
33.56	6954.42	34.02	6954.42	34.16	6954.41
				34.3	6954.4
				35.03	6954.35

Ex RAS Input Report.txt

35.16	6954.34	35.29	6954.33	36.05	6954.27	36.16	6954.26	36.27	6954.25
37.06	6954.2	37.16	6954.19	37.26	6954.18	38.07	6954.12	38.16	6954.11
38.25	6954.11	39.08	6954.04	39.16	6954.04	39.24	6954.03	40.09	6953.97
40.16	6953.96	40.23	6953.96	41.1	6953.89	41.16	6953.89	41.22	6953.88
42.11	6953.81	42.21	6953.81	43.12	6953.74	43.16	6953.73	43.2	6953.73
44.13	6953.66	44.19	6953.66	45.15	6953.58	45.18	6953.58	46.11	6953.51
46.17	6953.51	46.59	6953.47	47.16	6953.43	47.17	6953.43	48.14	6953.35
48.18	6953.35	49.13	6953.27	49.19	6953.27	50.12	6953.19	50.2	6953.19
51.11	6953.11	51.21	6953.11	52.1	6953.04	52.16	6953.03	52.22	6953.02
53.09	6952.89	53.16	6952.88	53.24	6952.87	54.08	6952.7	54.16	6952.68
54.25	6952.67	55.07	6952.5	55.16	6952.49	55.26	6952.47	56.06	6952.31
56.16	6952.29	56.27	6952.27	57.05	6952.11	57.16	6952.09	57.28	6952.07
58.04	6951.92	58.16	6951.89	58.29	6951.87	59.03	6951.72	59.16	6951.7
59.3	6951.67	60.02	6951.53	60.16	6951.5	60.31	6951.47	61	6951.33
61.16	6951.3	61.32	6951.27	61.99	6951.14	62.16	6951.1	62.34	6951.07
62.98	6950.94	63.16	6950.91	63.35	6950.87	63.97	6950.75	64.16	6950.71
64.36	6950.67	64.96	6950.55	65.16	6950.51	65.37	6950.46	65.95	6950.33
66.16	6950.28	66.38	6950.23	66.94	6950.09	67.16	6950.04	67.39	6949.99
67.93	6949.86	68.16	6949.8	68.4	6949.75	68.92	6949.63	69.16	6949.57
69.41	6949.51	69.91	6949.39	70.16	6949.33	70.42	6949.27	70.9	6949.16
71.16	6949.1	71.44	6949.03	71.89	6948.93	72.16	6948.86	72.45	6948.79
72.87	6948.69	73.16	6948.62	73.46	6948.55	73.86	6948.46	74.16	6948.39
74.47	6948.32	74.85	6948.23	75.16	6948.15	75.48	6948.08	75.84	6947.99
76.16	6947.92	76.34	6947.89	76.49	6947.87	76.83	6947.82	77.16	6947.77
77.5	6947.78	78.51	6947.78	78.81	6947.79	79.52	6947.79	79.8	6947.8
80.79	6947.8	81.16	6947.81	82.16	6947.81	82.56	6947.8	82.77	6947.79
83.16	6947.78	83.57	6947.78	83.76	6947.76	84.16	6947.76	84.58	6947.85
84.75	6947.89	85.16	6947.98	85.59	6948.07	85.73	6948.11	86.16	6948.2
86.6	6948.3	86.72	6948.33	87.16	6948.42	87.61	6948.52	87.71	6948.54
88.16	6948.64	88.63	6948.74	88.7	6948.76	89.16	6948.86	89.64	6948.93
89.69	6948.97	90.16	6949.04	90.65	6949.11	90.68	6949.12	91.16	6949.19
91.66	6949.26	91.67	6949.27	92.16	6949.34	92.66	6949.41	92.67	6949.41
93.16	6949.49	93.65	6949.56	93.68	6949.56	94.16	6949.64	94.64	6949.71
94.69	6949.71	95.16	6949.78	95.63	6949.85	95.7	6949.86	96.16	6949.93
96.62	6950	96.71	6950.02	97.16	6950.08	97.61	6950.15	97.73	6950.17
98.16	6950.23	98.59	6950.29	98.74	6950.32	99.16	6950.38	99.58	6950.44
99.75	6950.47	100.16	6950.53	100.57	6950.59	100.76	6950.62	101.16	6950.68
101.56	6950.74	101.77	6950.77	102.17	6950.83	102.55	6950.88	102.78	6950.92
103.17	6950.97	103.54	6951.03	103.79	6951.07	104.17	6951.12	104.53	6951.18
104.8	6951.22	105.17	6951.27	105.52	6951.32	105.81	6951.37	106.17	6951.42
106.51	6951.47	106.83	6951.52	107.17	6951.57	107.5	6951.62	107.55	6951.63
107.84	6951.67	108.17	6951.72	108.49	6951.76	108.85	6951.82	109.17	6951.87
109.48	6951.91	109.86	6951.97	110.17	6952.01	110.46	6952.06	110.87	6952.12
111.17	6952.16	111.45	6952.21	111.88	6952.27	112.17	6952.31	112.44	6952.34
112.89	6952.42	113.17	6952.45	113.43	6952.46	113.9	6952.48	114.17	6952.49
114.42	6952.5	114.92	6952.51	115.17	6952.52	115.41	6952.53	115.93	6952.55
116.17	6952.55	116.4	6952.56	116.94	6952.58	117.17	6952.59	117.39	6952.59
117.95	6952.61	118.17	6952.62	118.38	6952.63	118.96	6952.65	119.17	6952.65

Ex RAS Input Report.txt

119.37	6952.66	119.97	6952.68	120.17	6952.69	120.36	6952.69	120.98	6952.71
121.17	6952.72	121.35	6952.72	121.99	6952.74	122.17	6952.75	122.34	6952.75
123	6952.77	123.17	6952.77	123.32	6952.78	124.02	6952.8	124.31	6952.8
125.03	6952.82	125.17	6952.82	125.3	6952.83	126.04	6952.85	126.29	6952.85
126.61	6952.86	126.93	6952.87	127.51	6952.87				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
33.56	.05	52.22	.035	112.89	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	52.22	112.89		90.12 91.85	93.21		.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4400

INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 433							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.22	6953.61	-46.79	6953.61	-46.3	6953.6	-44.3	6953.6	-43.84	6953.59
-41.75	6953.59	-41.3	6953.58	-39.3	6953.58	-38.88	6953.57	-34.69	6953.57
-34.3	6953.58	-32.3	6953.58	-31.94	6953.59	-29.95	6953.59	-29.65	6953.6
-27.64	6953.6	-27.3	6953.61	-25.3	6953.61	-24.99	6953.62	-23.01	6953.62
-22.6	6953.63	-20.58	6953.63	-20.3	6953.64	-18.3	6953.64	-18.04	6953.65
-16.06	6953.65	-15.54	6953.66	-14.08	6953.66	-13.53	6953.67	-11.51	6953.67
-11.3	6953.68	-9.11	6953.68	-8.49	6953.69	-7.13	6953.69	-6.47	6953.7
-6.14	6953.7	-5.46	6953.69	-5.3	6953.68	-5.15	6953.68	-4.46	6953.67
-4.3	6953.66	-4.15	6953.66	-3.45	6953.64	-3.16	6953.64	-2.44	6953.62
-2.17	6953.62	-1.43	6953.6	-1.3	6953.6	-1.18	6953.59	-.42	6953.58
-.3	6953.58	-.18	6953.57	.58	6953.56	.7	6953.55	.81	6953.55
1.59	6953.53	1.76	6953.53	2.37	6953.55	2.78	6953.56	3.11	6953.57
3.68	6953.59	3.93	6953.59	4.25	6953.6	4.58	6953.61	5.08	6953.63
5.31	6953.63	5.73	6953.65	6.05	6953.65	6.22	6953.66	6.78	6953.68
6.85	6953.68	7.37	6953.69	7.51	6953.7	7.78	6953.7	8.25	6953.72
8.51	6953.73	9.45	6953.75	9.66	6953.76	9.83	6953.76	10.45	6953.78
10.81	6953.79	11.19	6953.8	11.87	6953.82	11.92	6953.82	11.95	6953.83
12.05	6953.83	12.66	6953.85	13.1	6953.86	13.39	6953.87	13.92	6953.88
14.13	6953.89	14.24	6953.89	14.65	6953.9	14.86	6953.91	15.39	6953.92
15.6	6953.93	15.97	6953.94	16.33	6953.95	16.53	6953.96	17.07	6953.97
17.25	6953.98	17.68	6953.99	17.8	6953.99	18.02	6954	18.54	6954.02
18.83	6954.02	19.27	6954.04	19.85	6954.05	19.97	6954.06	20.07	6954.06



Ex RAS Input Report.txt

20.74	6954.08	21.12	6954.09	21.48	6954.1	22.12	6954.12	22.26	6954.12
22.45	6954.13	22.95	6954.14	23.41	6954.16	23.68	6954.16	24.16	6954.18
24.41	6954.19	24.56	6954.19	25.05	6954.2	25.15	6954.21	25.7	6954.22
25.88	6954.23	26.21	6954.24	26.62	6954.25	26.85	6954.26	27.35	6954.27
27.65	6954.28	27.99	6954.29	28.09	6954.29	28.26	6954.3	28.82	6954.31
29.56	6954.31	30.25	6954.25	30.31	6954.25	30.69	6954.22	30.85	6954.2
31.51	6954.12	31.8	6954.09	32.23	6954.04	32.51	6954.01	32.75	6953.98
33.29	6953.92	33.51	6953.89	33.7	6953.87	34.35	6953.8	34.51	6953.78
34.66	6953.76	35.41	6953.68	35.61	6953.66	36.46	6953.56	36.51	6953.55
36.56	6953.55	37.41	6953.45	37.51	6953.44	37.52	6953.44	38.46	6953.35
38.52	6953.34	38.58	6953.34	39.33	6953.27	39.41	6953.26	39.52	6953.25
39.63	6953.23	40.36	6953.16	40.52	6953.15	40.69	6953.13	41.31	6953.07
41.52	6953.05	41.75	6953.03	42.26	6952.98	42.52	6952.95	42.81	6952.92
43.21	6952.88	43.52	6952.85	43.86	6952.82	44.17	6952.79	44.52	6952.76
44.92	6952.7	45.12	6952.67	45.53	6952.61	45.98	6952.51	46.07	6952.49
46.53	6952.39	47.02	6952.28	47.04	6952.27	47.53	6952.16	47.97	6952.06
48.09	6952.03	48.53	6951.94	48.92	6951.85	49.15	6951.8	49.53	6951.71
49.87	6951.64	50.21	6951.56	50.53	6951.49	50.82	6951.42	51.27	6951.32
51.53	6951.27	51.77	6951.21	52.32	6951.09	52.53	6951.04	52.73	6951
53.38	6950.85	53.54	6950.82	53.68	6950.79	54.44	6950.62	54.54	6950.6
54.63	6950.58	55.5	6950.38	55.54	6950.37	55.58	6950.37	56.32	6950.2
56.53	6950.15	56.55	6950.15	57.48	6949.94	57.54	6949.93	57.61	6949.91
58.43	6949.73	58.54	6949.71	58.67	6949.68	59.38	6949.52	59.54	6949.48
59.72	6949.44	60.33	6949.31	60.55	6949.26	60.78	6949.21	61.28	6949.1
61.55	6949.04	61.84	6948.97	62.24	6948.88	62.55	6948.82	62.9	6948.74
63.19	6948.67	63.55	6948.59	63.95	6948.5	64.14	6948.46	64.55	6948.37
65.01	6948.27	65.09	6948.25	65.55	6948.15	66.04	6948.04	66.07	6948.03
66.55	6947.92	66.99	6947.83	67.13	6947.8	67.56	6947.7	67.94	6947.62
68.18	6947.56	68.56	6947.48	68.89	6947.4	69.24	6947.33	69.56	6947.26
69.84	6947.19	70.3	6947.09	70.56	6947.03	70.8	6946.98	71.36	6946.86
71.56	6946.81	71.75	6946.77	72.41	6946.62	72.56	6946.59	72.7	6946.56
73.47	6946.39	73.56	6946.37	73.65	6946.35	74.53	6946.15	74.57	6946.14
74.6	6946.14	75.11	6946.02	75.24	6945.99	75.55	6945.92	75.59	6945.92
76.5	6945.71	76.57	6945.7	76.64	6945.68	77.45	6945.57	77.57	6945.55
77.7	6945.52	78.4	6945.41	78.57	6945.38	78.76	6945.35	79.35	6945.25
79.57	6945.21	79.82	6945.17	80.31	6945.09	80.57	6945.04	80.87	6945.06
81.26	6945.06	81.58	6945.08	81.93	6945.19	82.21	6945.27	82.58	6945.38
82.99	6945.5	83.16	6945.55	83.58	6945.67	84.04	6945.8	84.11	6945.82
84.58	6945.96	85.06	6946.1	85.1	6946.11	85.58	6946.25	86.01	6946.38
86.16	6946.42	86.58	6946.55	86.96	6946.66	87.22	6946.73	87.58	6946.84
87.91	6946.93	88.27	6947.04	88.59	6947.13	88.87	6947.21	89.33	6947.35
89.59	6947.42	89.82	6947.49	90.39	6947.66	90.59	6947.72	90.77	6947.77
91.45	6947.97	91.59	6948.01	91.72	6948.05	92.5	6948.28	92.59	6948.3
92.67	6948.32	93.56	6948.58	93.62	6948.6	94.15	6948.76	94.57	6948.88
94.59	6948.89	94.62	6948.89	95.52	6949.16	95.6	6949.18	95.68	6949.2
96.47	6949.44	96.6	6949.47	96.73	6949.51	97.42	6949.71	97.6	6949.76
97.79	6949.82	98.38	6949.99	98.6	6950.06	98.65	6950.07	98.85	6950.13
99.33	6950.27	99.6	6950.35	99.91	6950.44	100.28	6950.55	100.6	6950.65

Ex RAS Input Report.txt

100.96	6950.76	101.23	6950.86	101.6	6950.97	102.02	6951.12	102.18	6951.17
102.6	6951.31	103.08	6951.47	103.13	6951.49	103.61	6951.65	104.08	6951.77
104.13	6951.81	104.61	6951.93	105.98	6951.93	106.25	6951.94	107.61	6951.94
107.89	6951.95	109.42	6951.95	109.61	6951.96	110.74	6951.96	111.54	6951.97
112.64	6951.97	113.06	6951.98	114.54	6951.98	114.62	6951.99	115.77	6951.99
116.45	6952	117.88	6952	118.35	6952.01	119.63	6952.01	120	6952.02
121.2	6952.02	121.63	6952.03	123.1	6952.03	123.17	6952.04	124.64	6952.04
125	6952.05	125.96	6952.05	126.34	6952.06	126.91	6952.06	127.4	6952.07
127.86	6952.07	128.45	6952.08	128.81	6952.08	129.51	6952.09	129.76	6952.09
130.57	6952.1	130.71	6952.1	131.63	6952.11	131.98	6952.11	132.61	6952.12
132.68	6952.12	133.56	6952.13	133.74	6952.13	134.52	6952.14	135.47	6952.14
135.65	6952.15	136.42	6952.15	136.65	6952.16	137.37	6952.16	137.65	6952.17
138.66	6952.17	139.03	6952.18	139.66	6952.18	140.09	6952.19	140.66	6952.19
141.14	6952.2	141.66	6952.2	142.12	6952.21	142.66	6952.21	143.07	6952.22
143.66	6952.22	144.03	6952.23	144.66	6952.23	144.98	6952.24	145.93	6952.24
146.43	6952.25	146.88	6952.25	147.49	6952.26	147.83	6952.26	148.54	6952.27
148.78	6952.27	149.6	6952.28	149.99	6952.28				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.22	.05	44.52	.035	104.61	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

44.52	104.61	126.25	112.69	105.25	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-47.22	4.43	6945.81	T

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4300

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-124.14	6951.97	-123.19	6951.95	-123.09	6951.95	-122.22	6951.93	-122.06	6951.93
-121.25	6951.91	-121.03	6951.91	-119.99	6951.88	-119.64	6951.88	-118.64	6951.85
-118.35	6951.85	-117.64	6951.83	-117.38	6951.83	-116.9	6951.82	-116.64	6951.81
-116.41	6951.81	-115.86	6951.79	-115.44	6951.79	-114.83	6951.77	-114.64	6951.77
-114.47	6951.76	-113.64	6951.75	-113.5	6951.74	-112.76	6951.73	-112.53	6951.72
-111.73	6951.71	-111.56	6951.7	-110.7	6951.68	-110.59	6951.68	-109.66	6951.66
-108.91	6951.65	-108.63	6951.64	-106.71	6951.6	-106.56	6951.59	-105.74	6951.58

Ex RAS Input Report.txt

-105.64	6951.57	-104.77	6951.56	-104.64	6951.55	-103.8	6951.54	-102.83	6951.51
-102.43	6951.51	-101.86	6951.49	-101.64	6951.49	-101.4	6951.48	-100.89	6951.47
-100.63	6951.47	-99.92	6951.45	-99.63	6951.45	-98.63	6951.42	-98.3	6951.42
-97.27	6951.39	-97.01	6951.39	-96.23	6951.37	-96.04	6951.37	-95.2	6951.35
-95.07	6951.35	-92.63	6951.3	-92.16	6951.28	-91.19	6951.26	-91.07	6951.26
-90.22	6951.24	-90.03	6951.24	-89.25	6951.22	-89	6951.22	-87.97	6951.19
-87.63	6951.19	-86.93	6951.17	-86.63	6951.17	-85.9	6951.15	-85.63	6951.14
-85.37	6951.14	-84.87	6951.13	-84.63	6951.12	-84.4	6951.12	-83.83	6951.11
-83.63	6951.1	-83.43	6951.1	-82.8	6951.08	-82.46	6951.08	-81.77	6951.06
-81.49	6951.06	-80.73	6951.04	-80.52	6951.03	-79.62	6951.02	-79.55	6951.01
-77.62	6950.99	-77.61	6950.98	-77.27	6950.98	-76.6	6950.97	-74.62	6950.95
-74.54	6950.94	-73.73	6950.93	-73.5	6950.93	-72.76	6950.92	-72.47	6950.92
-71.62	6950.91	-71.44	6950.9	-70.82	6950.89	-70.4	6950.89	-69.85	6950.88
-69.37	6950.88	-68.88	6950.87	-68.62	6950.87	-68.34	6950.86	-67.91	6950.86
-67.62	6950.85	-67.3	6950.85	-66.94	6950.84	-66.62	6950.84	-66.27	6950.83
-65.62	6950.83	-65.24	6950.82	-65	6950.82	-64.62	6950.81	-64.2	6950.81
-64.03	6950.8	-63.62	6950.8	-63.17	6950.79	-62.62	6950.79	-61.62	6950.77
-61.1	6950.77	-60.16	6950.75	-59.61	6950.75	-58.61	6950.73	-58.22	6950.73
-58	6950.72	-57.61	6950.72	-57.25	6950.71	-56.61	6950.71	-56.28	6950.7
-55.94	6950.7	-55.61	6950.69	-55.31	6950.69	-54.91	6950.68	-54.34	6950.68
-53.87	6950.67	-53.61	6950.67	-53.37	6950.66	-52.84	6950.66	-52.61	6950.65
-52.4	6950.65	-51.81	6950.64	-51.43	6950.64	-50.77	6950.63	-49.49	6950.63
-48.71	6950.62	-47.55	6950.62	-46.64	6950.61	-45.61	6950.61	-44.64	6950.6
-43.54	6950.6	-42.7	6950.59	-41.47	6950.59	-40.76	6950.58	-38.82	6950.58
-38.6	6950.57	-36.6	6950.57	-36.31	6950.56	-34.6	6950.56	-34.24	6950.55
-32.6	6950.55	-32.18	6950.54	-30.6	6950.54	-30.11	6950.53	-28.15	6950.53
-28.04	6950.52	-26.6	6950.52	-26.21	6950.51	-24.94	6950.51	-24.6	6950.5
-23.91	6950.5	-23.6	6950.49	-22.33	6950.49	-21.84	6950.48	-21.36	6950.48
-20.81	6950.47	-19.78	6950.47	-19.59	6950.46	-18.45	6950.46	-17.71	6950.45
-17.48	6950.45	-16.68	6950.44	-15.65	6950.43	-14.57	6950.43	-13.98	6950.42
-13.58	6950.42	-11.66	6950.4	-10.59	6950.4	-10.48	6950.39	-9.45	6950.39
-8.75	6950.38	-8.41	6950.38	-7.78	6950.37	-6.81	6950.37	-6.59	6950.36
-5.59	6950.36	-5.31	6950.35	-4.88	6950.35	-4.59	6950.34	-4.28	6950.34
-3.91	6950.33	-3.25	6950.33	-2.94	6950.32	-2.59	6950.32	-2.21	6950.31
-1.97	6950.31	-1.59	6950.3	-1.18	6950.3	-1	6950.29	-.59	6950.29
.42	6950.27	.94	6950.27	2.42	6950.24	2.95	6950.24	3.85	6950.22
4.42	6950.22	4.82	6950.21	5.02	6950.21	5.42	6950.2	5.79	6950.2
6.05	6950.19	6.42	6950.19	6.76	6950.18	7.08	6950.18	7.42	6950.17
7.73	6950.17	8.12	6950.16	8.42	6950.16	8.7	6950.15	9.15	6950.15
9.42	6950.14	9.67	6950.14	10.18	6950.13	10.64	6950.13	11.22	6950.12
11.42	6950.11	11.61	6950.11	12.25	6950.1	12.58	6950.1	13.42	6950.09
13.55	6950.08	14.32	6950.07	14.52	6950.07	15.49	6950.06	16.38	6950.04
17.42	6950.03	17.66	6950.03	18.4	6950.01	20.43	6949.99	20.52	6949.98
21.31	6949.97	21.55	6949.97	22.28	6949.96	22.58	6949.95	23.25	6949.94
23.62	6949.94	24.22	6949.93	24.43	6949.93	24.65	6949.92	25.19	6949.92
25.43	6949.91	25.68	6949.91	26.16	6949.9	26.71	6949.9	27.43	6949.88
28.1	6949.88	28.43	6949.87	28.78	6949.87	29.07	6949.86	29.43	6949.86
29.81	6949.85	30.04	6949.85	30.43	6949.84	30.85	6949.84	31.01	6949.83

Ex RAS Input Report.txt

31.43	6949.83	32.43	6949.81	32.95	6949.81	34.43	6949.78	34.94	6949.78
35.44	6949.77	35.83	6949.77	36.1	6949.76	36.71	6949.76	37.11	6949.75
37.28	6949.74	37.59	6949.74	38.46	6949.72	39.36	6949.71	39.63	6949.7
40.25	6949.69	40.49	6949.69	41.13	6949.67	41.5	6949.67	42.51	6949.65
42.9	6949.64	43.16	6949.64	43.52	6949.63	43.79	6949.63	44.34	6949.62
44.67	6949.61	45.52	6949.59	46.55	6949.58	46.69	6949.57	47.33	6949.56
47.56	6949.56	48.21	6949.54	48.57	6949.54	49.58	6949.52	49.98	6949.51
50.22	6949.51	50.59	6949.5	50.87	6949.5	51.4	6949.49	52.58	6949.46
52.82	6949.45	53.62	6949.37	54.63	6949.15	55.64	6948.92	56.1	6948.82
56.17	6948.8	56.65	6948.7	57.28	6948.56	57.66	6948.47	58.83	6948.22
59.95	6947.97	60.69	6947.8	60.81	6947.78	61.7	6947.58	61.99	6947.52
62.37	6947.43	62.71	6947.36	63.16	6947.25	63.25	6947.24	63.72	6947.13
64.14	6947.04	64.34	6946.99	64.73	6946.91	65.02	6946.84	65.74	6946.68
65.91	6946.65	66.69	6946.47	67.08	6946.39	67.76	6946.24	67.87	6946.21
68.56	6946.06	69.44	6945.86	69.78	6945.79	70.22	6945.69	70.33	6945.68
70.79	6945.57	71.21	6945.49	72.1	6945.31	72.58	6945.21	72.81	6945.17
72.98	6945.13	73.75	6944.98	73.82	6944.97	74.75	6944.78	74.83	6944.77
75.84	6944.57	76.11	6944.51	76.85	6944.37	77.41	6944.25	77.86	6944.16
78.29	6944.08	78.46	6944.04	79.64	6943.81	79.88	6943.76	80.81	6943.61
80.95	6943.59	81.35	6943.61	81.99	6943.65	83.17	6943.7	83.6	6943.73
83.92	6943.74	84.48	6943.77	85.37	6943.81	85.94	6943.84	86.25	6943.86
87.14	6943.9	87.96	6943.92	88.48	6944.02	88.91	6944.11	89.79	6944.3
90.23	6944.39	91.4	6944.65	91.56	6944.68	92.45	6944.88	92.58	6944.9
93.01	6945	94.22	6945.26	94.93	6945.42	95.1	6945.45	95.61	6945.57
96.04	6945.66	96.11	6945.67	97.28	6945.93	97.75	6946.03	98.46	6946.19
98.64	6946.22	99.07	6946.32	99.52	6946.42	99.64	6946.44	100.08	6946.54
100.81	6946.7	101.29	6946.8	101.99	6946.95	102.18	6947	102.48	6947.06
103.17	6947.21	103.95	6947.38	104.34	6947.47	104.83	6947.57	105.13	6947.64
105.52	6947.72	105.72	6947.77	107.15	6948.08	107.49	6948.15	107.87	6948.24
108.37	6948.34	109.05	6948.49	109.26	6948.54	109.88	6948.67	110.23	6948.75
111.03	6948.92	111.19	6948.96	111.4	6949	111.91	6949.12	112.58	6949.26
112.79	6949.31	113.68	6949.5	114.22	6949.62	114.93	6949.77	115.45	6949.89
116.11	6950.03	116.33	6950.08	117.01	6950.19	117.29	6950.23	118.26	6950.3
118.46	6950.3	118.99	6950.31	119.64	6950.31	119.87	6950.32	121.64	6950.32
121.99	6950.33	123.41	6950.33	124.14	6950.34	125.52	6950.34	126.07	6950.35
127.35	6950.35	127.83	6950.36	129.37	6950.36	129.6	6950.37	131.41	6950.37
132.26	6950.38	132.58	6950.38	133.14	6950.39	133.76	6950.39	134.03	6950.4
134.42	6950.4	134.91	6950.41	134.93	6950.4	135.43	6950.41	136.11	6950.41
136.44	6950.42	136.68	6950.42	137.29	6950.43	137.57	6950.43	139.34	6950.45
139.64	6950.45	140.22	6950.46	140.82	6950.46	141.11	6950.47	141.49	6950.47
141.99	6950.48	142.5	6950.48	142.87	6950.49	143.51	6950.49	143.76	6950.5
144.52	6950.5	144.64	6950.51	145.52	6950.52	146.41	6950.52	146.54	6950.53
147.3	6950.53	147.55	6950.54	148.18	6950.54	148.56	6950.55	149.07	6950.55
149.57	6950.56	150.01	6950.56						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-124.14	.05	52.82	.035	118.46	.05

# Ex RAS Input Report.txt

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
52.82	118.46	30.91	33.98	43.47		.1	.3
Ineffective Flow		num=	1				
Sta L	Sta R	Elev	Permanent				
-124.14	5.3	6945.81	T				

## CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4250

## INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-147.06	6951.4	-146.68	6951.4	-146.54	6951.39	-145.86	6951.38	-145.49	6951.37
-144.9	6951.36	-144.68	6951.35	-144.44	6951.35	-143.94	6951.34	-143.4	6951.32
-142.98	6951.31	-142.68	6951.31	-142.02	6951.29	-141.68	6951.29	-140.68	6951.26
-140.26	6951.26	-140.11	6951.25	-137.68	6951.2	-137.12	6951.19	-136.27	6951.17
-136.07	6951.16	-135.67	6951.16	-134.67	6951.13	-134.35	6951.13	-133.67	6951.11
-133.39	6951.11	-132.93	6951.1	-132.67	6951.09	-132.43	6951.09	-131.88	6951.07
-131.67	6951.07	-131.47	6951.06	-130.67	6951.05	-130.52	6951.04	-129.79	6951.03
-129.56	6951.02	-128.74	6951.01	-128.6	6951	-127.7	6950.98	-127	6950.97
-126.65	6950.96	-125.72	6950.94	-125.6	6950.94	-124.76	6950.92	-124.56	6950.91
-123.8	6950.9	-123.51	6950.89	-122.84	6950.88	-121.88	6950.86	-121.66	6950.85
-121.42	6950.85	-120.92	6950.84	-120.37	6950.82	-119.97	6950.81	-119.66	6950.81
-119.01	6950.79	-118.66	6950.79	-118.05	6950.77	-117.23	6950.75	-117.09	6950.75
-114.65	6950.7	-114.09	6950.69	-113.25	6950.67	-113.04	6950.66	-112.65	6950.66
-111.65	6950.63	-111.33	6950.63	-110.65	6950.61	-110.37	6950.61	-109.9	6950.6
-109.42	6950.58	-108.86	6950.57	-108.65	6950.57	-108.46	6950.56	-107.65	6950.55
-107.5	6950.54	-106.76	6950.53	-106.54	6950.52	-105.72	6950.5	-105.58	6950.5
-104.67	6950.48	-104.09	6950.47	-102.7	6950.44	-102.58	6950.44	-101.74	6950.42
-101.53	6950.41	-100.78	6950.4	-100.48	6950.39	-99.64	6950.38	-99.44	6950.37
-98.87	6950.37	-98.64	6950.36	-98.39	6950.36	-97.91	6950.35	-97.34	6950.35
-96.95	6950.34	-96.64	6950.34	-96.3	6950.33	-95.99	6950.33	-95.64	6950.32
-95.25	6950.32	-95.03	6950.31	-94.63	6950.31	-94.2	6950.3	-93.63	6950.3
-92.63	6950.28	-92.11	6950.28	-91.19	6950.26	-90.63	6950.26	-90.23	6950.25
-90.02	6950.25	-89.63	6950.24	-89.28	6950.24	-88.97	6950.23	-88.63	6950.23
-88.32	6950.22	-87.92	6950.22	-87.63	6950.21	-87.36	6950.21	-86.88	6950.2
-86.4	6950.2	-85.83	6950.19	-85.44	6950.19	-84.78	6950.18	-84.48	6950.17
-83.74	6950.16	-83.52	6950.16	-82.56	6950.15	-81.64	6950.13	-81.18	6950.13
-80.6	6950.12	-79.55	6950.11	-78.73	6950.09	-78.5	6950.09	-77.77	6950.08
-77.46	6950.08	-76.81	6950.07	-76.41	6950.06	-75.85	6950.06	-75.62	6950.05



Ex RAS Input Report.txt

-75.36	6950.05	-74.89	6950.04	-74.62	6950.04	-74.32	6950.03	-73.61	6950.03
-73.27	6950.02	-72.97	6950.02	-72.61	6950.01	-72.22	6950.01	-72.01	6950
-71.61	6950	-70.61	6949.98	-70.09	6949.98	-69.14	6949.96	-68.61	6949.96
-67.61	6949.94	-66.99	6949.94	-66.61	6949.93	-66.26	6949.93	-65.94	6949.92
-65.61	6949.92	-65.3	6949.91	-64.9	6949.91	-64.61	6949.9	-64.34	6949.9
-63.85	6949.89	-63.38	6949.89	-62.8	6949.88	-62.42	6949.87	-61.76	6949.86
-61.46	6949.86	-60.71	6949.85	-60.5	6949.85	-59.66	6949.84	-58.59	6949.83
-58.26	6949.82	-57.57	6949.81	-55.71	6949.79	-55.48	6949.79	-54.75	6949.78
-54.43	6949.78	-53.79	6949.77	-53.38	6949.77	-52.83	6949.76	-52.59	6949.76
-52.34	6949.75	-51.87	6949.75	-51.59	6949.74	-50.91	6949.74	-50.59	6949.73
-50.24	6949.73	-49.95	6949.72	-49.59	6949.72	-49	6949.71	-48.15	6949.69
-48.04	6949.69	-47.1	6949.67	-47.08	6949.66	-46.59	6949.65	-45.59	6949.61
-45.16	6949.6	-45.01	6949.59	-44.59	6949.58	-43.96	6949.55	-42.92	6949.52
-42.58	6949.5	-41.87	6949.48	-41.32	6949.46	-40.82	6949.45	-40.58	6949.44
-40.36	6949.44	-39.78	6949.41	-39.4	6949.41	-38.45	6949.38	-37.68	6949.37
-36.53	6949.36	-35.59	6949.34	-35.35	6949.34	-34.61	6949.33	-33.65	6949.32
-33.5	6949.31	-32.69	6949.3	-32.45	6949.3	-31.57	6949.29	-31.4	6949.28
-30.77	6949.27	-30.36	6949.27	-29.81	6949.26	-29.57	6949.26	-29.31	6949.25
-28.86	6949.25	-28.57	6949.24	-28.26	6949.24	-27.9	6949.23	-27.57	6949.23
-27.22	6949.22	-26.94	6949.22	-26.57	6949.21	-26.17	6949.21	-25.98	6949.2
-25.57	6949.2	-24.57	6949.18	-24.08	6949.18	-24.06	6949.17	-23.57	6949.17
-22.57	6949.15	-22.14	6949.15	-21.98	6949.14	-21.56	6949.14	-21.18	6949.13
-20.94	6949.13	-20.56	6949.12	-20.22	6949.12	-19.89	6949.11	-19.56	6949.11
-18.84	6949.09	-18.31	6949.09	-17.79	6949.08	-17.56	6949.07	-17.35	6949.07
-16.56	6949.06	-16.39	6949.05	-15.7	6949.04	-15.43	6949.04	-14.65	6949.03
-14.47	6949.02	-13.51	6949.01	-12.56	6948.99	-11.51	6948.98	-10.63	6948.96
-9.67	6948.95	-9.42	6948.95	-8.72	6948.93	-8.37	6948.93	-7.76	6948.92
-7.55	6948.92	-7.33	6948.91	-6.8	6948.9	-6.28	6948.9	-5.55	6948.88
-5.23	6948.88	-4.88	6948.87	-4.55	6948.87	-4.19	6948.86	-3.92	6948.86
-3.55	6948.85	-3.14	6948.85	-2.96	6948.84	-2.55	6948.84	-1.05	6948.81
-.54	6948.81	.88	6948.78	1.46	6948.77	1.83	6948.77	2.09	6948.76
2.46	6948.76	2.79	6948.75	3.14	6948.75	3.46	6948.74	3.75	6948.74
4.19	6948.73	4.46	6948.73	4.71	6948.72	5.23	6948.71	5.67	6948.71
6.28	6948.7	6.46	6948.69	7.33	6948.68	7.59	6948.68	8.37	6948.66
9.51	6948.65	10.47	6948.63	11.42	6948.62	11.51	6948.61	12.56	6948.6
13.34	6948.59	13.47	6948.58	14.3	6948.57	14.65	6948.57	15.26	6948.56
15.47	6948.55	15.7	6948.55	16.22	6948.54	16.47	6948.54	16.75	6948.53
17.18	6948.53	17.47	6948.52	17.79	6948.52	18.47	6948.5	19.1	6948.5
19.89	6948.48	20.48	6948.47	20.94	6948.47	21.01	6948.46	21.48	6948.46
22.92	6948.43	23.48	6948.43	23.88	6948.42	24.09	6948.42	24.83	6948.4
25.14	6948.4	25.48	6948.39	25.79	6948.39	26.2	6948.38	26.48	6948.38
26.74	6948.37	27.25	6948.37	27.48	6948.36	27.7	6948.36	28.48	6948.35
28.65	6948.34	29.35	6948.33	29.61	6948.33	30.4	6948.32	30.56	6948.31
31.49	6948.3	31.52	6948.29	32.2	6948.23	32.48	6948.21	32.5	6948.2
33.43	6948.04	34.39	6947.88	34.49	6947.86	35.34	6947.72	35.49	6947.69
36.71	6947.48	37.25	6947.39	37.49	6947.34	37.76	6947.3	38.5	6947.17
38.81	6947.12	39.86	6946.94	40.12	6946.89	40.91	6946.76	41.5	6946.65
42.5	6946.48	42.99	6946.4	43.02	6946.39	43.5	6946.31	43.94	6946.23

Ex RAS Input Report.txt

44.5	6946.14	45.5	6945.96	46.17	6945.85	46.5	6945.79	46.81	6945.74
47.76	6945.58	48.72	6945.41	49.33	6945.31	49.51	6945.27	49.67	6945.25
50.38	6945.13	50.51	6945.1	51.43	6944.94	52.48	6944.74	53.5	6944.54
53.53	6944.53	54.45	6944.35	54.58	6944.32	55.52	6944.14	55.63	6944.11
56.52	6943.94	56.69	6943.9	57.74	6943.7	58.52	6943.54	58.79	6943.49
59.52	6943.34	59.84	6943.28	60.52	6943.14	61.14	6943.02	61.52	6942.94
61.94	6942.91	62.1	6942.91	62.52	6942.87	62.99	6942.9	63.52	6942.92
64.53	6942.98	64.96	6943	65.1	6943	65.53	6943.03	65.92	6943.04
66.53	6943.07	66.87	6943.09	67.2	6943.1	67.53	6943.12	68.53	6943.16
69.3	6943.28	69.53	6943.31	70.35	6943.51	70.69	6943.6	71.41	6943.77
71.53	6943.81	71.65	6943.83	72.46	6944.03	72.61	6944.07	73.43	6944.27
73.51	6944.29	73.56	6944.31	74.09	6944.44	74.52	6944.54	75.47	6944.78
75.61	6944.81	76.43	6945.02	76.54	6945.04	77.54	6945.29	77.71	6945.33
78.54	6945.54	78.76	6945.6	79.29	6945.72	79.54	6945.79	79.82	6945.85
80.25	6945.95	81.2	6946.18	81.92	6946.35	82.16	6946.41	82.97	6946.6
83.12	6946.63	83.55	6946.74	84.55	6946.97	85.07	6947.1	85.98	6947.31
86.12	6947.35	86.94	6947.54	87.55	6947.69	88.23	6947.85	88.55	6947.92
89.28	6948.09	89.8	6948.22	90.33	6948.34	90.76	6948.45	91.56	6948.63
91.71	6948.67	92.56	6948.87	93.48	6949.05	94.54	6949.11	95.03	6949.14
95.54	6949.16	95.59	6949.17	96.49	6949.21	96.64	6949.22	97.45	6949.26
97.69	6949.28	98.4	6949.31	98.74	6949.33	99.79	6949.38	100.31	6949.37
100.57	6949.38	101.9	6949.38	102.22	6949.37	104.14	6949.37	104.57	6949.36
105.22	6949.36								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-147.06	.05	31.52	.035	93.48	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

31.52	93.48	91.84	91.84	91.84	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-147.06	-.5	6945.81	T

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4150

INPUT  
 Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-88.61	6949.58	-88.32	6949.57	-87.48	6949.56	-87.35	6949.55	-86.58	6949.54

Ex RAS Input Report.txt

-86.38	6949.54	-85.55	6949.52	-85.41	6949.52	-84.51	6949.5	-84.44	6949.5
-82.51	6949.46	-81.54	6949.45	-81.48	6949.44	-80.47	6949.43	-80.38	6949.42
-79.6	6949.41	-79.34	6949.4	-78.63	6949.38	-78.31	6949.38	-77.66	6949.36
-77.47	6949.36	-77.27	6949.35	-76.69	6949.34	-76.47	6949.33	-76.24	6949.33
-75.72	6949.32	-75.21	6949.3	-74.75	6949.29	-74.47	6949.29	-73.47	6949.26
-73.14	6949.26	-72.1	6949.23	-71.85	6949.23	-71.07	6949.21	-70.88	6949.2
-70.47	6949.2	-70.04	6949.19	-69.91	6949.18	-69	6949.16	-67	6949.12
-66.93	6949.11	-66.03	6949.09	-65.9	6949.09	-65.06	6949.07	-64.87	6949.07
-64.09	6949.05	-63.47	6949.03	-63.12	6949.03	-62.15	6949	-61.76	6949
-61.18	6948.98	-60.73	6948.97	-60.46	6948.96	-60.21	6948.96	-59.7	6948.95
-59.46	6948.94	-59.25	6948.94	-58.66	6948.92	-58.46	6948.92	-58.28	6948.91
-57.63	6948.9	-57.46	6948.9	-57.31	6948.89	-56.59	6948.88	-56.34	6948.87
-55.56	6948.85	-55.37	6948.85	-54.53	6948.83	-54.4	6948.83	-53.49	6948.8
-51.49	6948.76	-51.42	6948.76	-50.52	6948.74	-50.39	6948.73	-49.55	6948.71
-49.36	6948.71	-48.58	6948.69	-48.32	6948.69	-47.62	6948.67	-47.46	6948.67
-47.29	6948.66	-46.65	6948.65	-46.46	6948.64	-46.25	6948.64	-45.68	6948.62
-45.46	6948.62	-45.22	6948.61	-44.71	6948.6	-44.46	6948.6	-44.19	6948.59
-43.74	6948.58	-43.46	6948.57	-43.15	6948.57	-42.77	6948.56	-41.8	6948.53
-41.45	6948.53	-40.83	6948.51	-40.05	6948.49	-39.86	6948.49	-39.02	6948.47
-38.89	6948.47	-37.98	6948.45	-37.45	6948.45	-36.95	6948.44	-36.45	6948.44
-35.45	6948.42	-34.88	6948.42	-34.45	6948.41	-33.85	6948.41	-33.45	6948.4
-33.08	6948.4	-32.45	6948.38	-32.11	6948.38	-31.45	6948.36	-31.14	6948.36
-30.75	6948.35	-30.45	6948.35	-30.17	6948.34	-29.71	6948.33	-29.45	6948.33
-29.2	6948.32	-28.68	6948.31	-28.45	6948.31	-28.23	6948.3	-27.64	6948.29
-27.45	6948.29	-27.26	6948.28	-26.61	6948.27	-26.29	6948.27	-25.58	6948.25
-25.32	6948.25	-24.54	6948.23	-24.36	6948.23	-23.51	6948.21	-23.39	6948.21
-21.57	6948.17	-21.44	6948.17	-19.51	6948.13	-19.37	6948.13	-18.54	6948.11
-18.34	6948.11	-17.57	6948.1	-17.44	6948.09	-17.3	6948.09	-16.6	6948.08
-16.44	6948.07	-16.27	6948.07	-15.63	6948.06	-15.44	6948.05	-15.24	6948.05
-14.66	6948.04	-14.44	6948.04	-14.2	6948.03	-13.69	6948.02	-13.44	6948.02
-13.17	6948.01	-12.73	6948	-12.44	6948	-11.76	6947.98	-11.44	6947.98
-11.1	6947.97	-10.79	6947.97	-10.07	6947.95	-9.82	6947.95	-9.03	6947.93
-8.85	6947.93	-8	6947.91	-7.88	6947.91	-4	6947.83	-3.86	6947.83
-3.03	6947.81	-2.83	6947.81	-2.43	6947.8	-2.06	6947.8	-1.43	6947.78
-1.1	6947.78	-.43	6947.76	-.13	6947.76	.27	6947.75	.57	6947.75
.84	6947.74	1.31	6947.73	1.57	6947.73	1.81	6947.72	2.34	6947.71
2.57	6947.71	2.78	6947.7	3.38	6947.69	3.57	6947.69	3.75	6947.68
4.41	6947.67	4.65	6947.67	4.72	6947.66	5.46	6947.65	5.67	6947.65
6.51	6947.63	6.63	6947.63	7.56	6947.61	7.8	6947.6	8.61	6947.59
9.49	6947.57	9.67	6947.57	10.45	6947.55	10.72	6947.55	11.4	6947.53
11.77	6947.53	12.36	6947.51	12.82	6947.51	13.31	6947.49	13.58	6947.49
13.87	6947.48	14.27	6947.46	15.22	6947.43	15.58	6947.41	15.98	6947.4
16.18	6947.39	16.58	6947.38	17.03	6947.36	17.13	6947.36	17.58	6947.34
18.59	6947.3	19.04	6947.28	19.14	6947.28	19.59	6947.26	20	6947.25
20.59	6947.22	21.24	6947.2	21.59	6947.18	21.91	6947.17	22.29	6947.15
22.86	6947.13	23.82	6947.09	24.4	6947.07	24.59	6947.06	24.77	6947.06
25.45	6947.03	26.5	6946.99	26.68	6946.98	27.55	6946.94	27.64	6946.94
28.46	6946.91	28.6	6946.9	29.55	6946.87	29.66	6946.86	30.5	6946.83

Ex RAS Input Report.txt

31.46	6946.79	31.6	6946.78	31.76	6946.78	32.6	6946.74	32.81	6946.74
33.37	6946.71	33.87	6946.69	34.32	6946.68	34.6	6946.66	35.28	6946.64
35.61	6946.62	36.23	6946.6	36.61	6946.58	37.02	6946.57	37.61	6946.54
38.07	6946.53	38.14	6946.52	38.61	6946.5	39.09	6946.49	39.13	6946.48
39.61	6946.46	40.05	6946.45	40.18	6946.44	40.61	6946.42	41	6946.41
41.23	6946.4	41.61	6946.39	41.96	6946.37	42.61	6946.35	42.91	6946.33
43.34	6946.32	43.87	6946.3	44.39	6946.27	44.62	6946.27	45.44	6946.23
45.62	6946.23	46.62	6946.16	46.73	6946.14	47.54	6946.01	47.69	6945.99
48.6	6945.85	48.64	6945.84	49.11	6945.76	49.6	6945.68	49.65	6945.68
50.55	6945.53	51.51	6945.41	51.62	6945.39	51.75	6945.38	52.46	6945.29
52.8	6945.25	53.42	6945.17	53.86	6945.11	54.63	6945.02	54.88	6944.98
54.91	6944.98	55.33	6944.93	55.63	6944.89	56.28	6944.81	56.63	6944.76
57.01	6944.72	57.63	6944.64	58.07	6944.58	58.19	6944.57	58.63	6944.51
59.12	6944.45	59.15	6944.45	59.63	6944.39	60.64	6944.26	61.22	6944.19
61.64	6944.13	62.01	6944.09	62.27	6944.05	62.64	6944.01	62.97	6943.97
63.64	6943.88	63.92	6943.85	64.38	6943.79	64.64	6943.76	65.43	6943.66
65.64	6943.63	65.83	6943.61	66.64	6943.5	66.79	6943.49	67.54	6943.39
67.74	6943.36	68.59	6943.26	68.7	6943.24	69.64	6943.13	69.77	6943.11
70.61	6943	71.56	6942.88	71.74	6942.86	72.52	6942.76	72.65	6942.75
73.47	6942.64	73.85	6942.6	74.65	6942.49	75.38	6942.4	75.95	6942.34
76.34	6942.28	76.65	6942.25	77	6942.24	77.29	6942.22	78.06	6942.2
78.25	6942.2	79.11	6942.18	79.2	6942.18	80.66	6942.15	81.21	6942.14
82.06	6942.12	82.27	6942.11	82.66	6942.11	83.32	6942.09	83.66	6942.09
84.37	6942.07	84.66	6942.07	84.93	6942.06	85.42	6942.05	85.66	6942.05
85.88	6942.04	86.47	6942.03	86.67	6942.02	86.84	6942.02	87.53	6942.01
87.79	6942	88.58	6941.99	88.75	6941.98	89.63	6941.94	90.42	6941.92
90.68	6941.91	91.61	6942.1	91.74	6942.12	92.67	6942.31	92.79	6942.33
93.67	6942.51	93.84	6942.54	94.48	6942.67	94.89	6942.75	95.68	6942.91
95.94	6942.96	96.68	6943.11	97	6943.17	97.68	6943.31	97.76	6943.33
98.05	6943.38	98.68	6943.51	99.25	6943.62	99.68	6943.7	100.15	6943.8
100.68	6943.9	101.16	6944	101.2	6944	101.68	6944.1	102.12	6944.18
102.68	6944.3	103.07	6944.37	103.31	6944.42	103.69	6944.49	104.03	6944.56
104.36	6944.62	104.98	6944.75	105.41	6944.83	105.69	6944.89	105.94	6944.93
106.47	6945.04	107.52	6945.24	107.69	6945.28	108.57	6945.45	108.8	6945.49
109.62	6945.65	109.76	6945.68	110.67	6945.86	110.71	6945.86	111.08	6945.94
111.73	6946.06	112.62	6946.24	112.78	6946.26	113.58	6946.41	113.83	6946.43
114.53	6946.45	114.7	6946.46	114.88	6946.46	115.49	6946.49	115.7	6946.49
116.44	6946.52	116.7	6946.54	117.4	6946.56	117.7	6946.58	118.35	6946.6
118.7	6946.62	119.09	6946.63	119.7	6946.66	120.14	6946.67	120.26	6946.68
120.71	6946.7	121.71	6946.74	122.17	6946.76	122.25	6946.76	122.71	6946.78
123.13	6946.79	123.71	6946.82	124.35	6946.84	124.71	6946.86	125.03	6946.87
125.4	6946.89	125.99	6946.91	126.94	6946.95	127.51	6946.97	127.9	6946.99
128.56	6947.01	128.85	6947.03	129.61	6947.06	129.81	6947.07	130.67	6947.1
130.76	6947.1	132.67	6947.18	132.77	6947.18	133.82	6947.23	134.87	6947.27
135.54	6947.3	135.72	6947.3	136.49	6947.34	136.72	6947.34	137.45	6947.37
137.73	6947.39	138.4	6947.41	138.73	6947.43	139.36	6947.45	139.73	6947.47
140.14	6947.48	140.73	6947.51	141.27	6947.52	141.73	6947.54	142.73	6947.54
143.18	6947.55	144.13	6947.55	144.34	6947.56	145.09	6947.56	145.4	6947.57

Ex RAS Input Report.txt

146.45 6947.57 146.74 6947.58 147.74 6947.58 147.95 6947.59 148.91 6947.59  
149.6 6947.6 150 6947.6

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-88.61 .05 46.62 .035 113.58 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
46.62 113.58 164.63 164.63 164.63 .3 .5

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4000

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 491							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6944.95	.14	6944.95	.56	6944.92	1.02	6944.9	1.18	6944.9
2.1	6944.85	2.36	6944.84	2.79	6944.82	3.11	6944.8	3.54	6944.78
3.67	6944.78	4.12	6944.76	4.55	6944.74	4.72	6944.73	5.13	6944.71
5.44	6944.69	6.14	6944.66	6.32	6944.65	7.09	6944.61	7.2	6944.61
7.54	6944.59	8.08	6944.57	8.16	6944.56	8.27	6944.56	8.97	6944.53
9.17	6944.52	9.45	6944.5	9.85	6944.48	10.18	6944.47	10.63	6944.45
10.73	6944.44	11.19	6944.42	11.61	6944.4	12.2	6944.37	12.5	6944.36
13	6944.33	13.22	6944.32	13.38	6944.32	14.18	6944.28	14.26	6944.27
14.51	6944.26	15.14	6944.23	15.24	6944.23	15.36	6944.22	16.25	6944.18
16.54	6944.16	16.91	6944.15	17.26	6944.13	17.72	6944.11	17.79	6944.11
18.27	6944.08	18.67	6944.06	18.9	6944.05	19.28	6944.03	20.09	6944
20.29	6943.99	20.44	6943.98	21.27	6943.94	21.32	6943.94	21.48	6943.93
22.2	6943.9	22.45	6943.88	23.09	6943.84	23.32	6943.82	23.63	6943.79
23.97	6943.76	24.33	6943.73	24.81	6943.68	24.85	6943.69	25.34	6943.64
25.99	6943.59	26.35	6943.56	26.62	6943.53	27.18	6943.49	27.36	6943.47
27.5	6943.46	28.36	6943.39	28.45	6943.38	29.26	6943.32	29.38	6943.31
29.54	6943.29	30.39	6943.22	30.72	6943.2	31.03	6943.17	31.9	6943.1
31.91	6943.1	32.79	6943.03	33.08	6943	33.42	6942.97	33.68	6942.95
34.27	6942.91	34.43	6942.89	35.37	6942.81	35.45	6942.81	36.46	6942.73
36.63	6942.71	37.21	6942.66	37.47	6942.64	37.81	6942.61	38.09	6942.59
38.48	6942.56	38.97	6942.52	38.99	6942.52	39.86	6942.45	40.17	6942.42
40.5	6942.39	40.74	6942.37	41.36	6942.32	41.51	6942.31	41.62	6942.3
42.4	6942.24	42.5	6942.23	42.54	6942.23	43.39	6942.16	43.53	6942.14
43.72	6942.13	44.27	6942.08	44.54	6942.06	45.15	6942.01	45.55	6941.98
46.03	6941.94	46.08	6941.93	46.56	6941.89	46.92	6941.87	47.26	6941.84

Ex RAS Input Report.txt

47.57	6941.81	47.8	6941.79	48.58	6941.73	48.68	6941.72	49.37	6941.66
49.56	6941.65	49.63	6941.64	50.45	6941.58	50.6	6941.56	50.81	6941.55
51.33	6941.5	51.61	6941.48	51.99	6941.45	52.21	6941.43	52.62	6941.4
53.09	6941.36	53.17	6941.35	53.63	6941.31	53.98	6941.29	54.35	6941.25
54.64	6941.23	54.86	6941.21	55.54	6941.16	55.74	6941.14	56.34	6941.09
56.62	6941.07	56.72	6941.06	57.51	6941	57.67	6940.98	57.9	6940.96
58.39	6940.92	58.69	6940.9	59.08	6940.87	59.27	6940.85	59.7	6940.82
60.71	6940.73	61.04	6940.71	61.45	6940.67	61.72	6940.65	61.92	6940.63
62.63	6940.58	62.8	6940.56	63.32	6940.52	63.68	6940.49	63.74	6940.48
63.81	6940.48	64.57	6940.42	64.75	6940.4	64.99	6940.38	65.45	6940.34
65.76	6940.32	66.17	6940.28	66.33	6940.27	66.77	6940.23	67.35	6940.19
67.78	6940.15	68.1	6940.13	68.54	6940.09	68.79	6940.07	68.98	6940.05
69.72	6939.99	69.8	6939.99	69.86	6939.98	70.29	6939.95	70.74	6939.91
70.81	6939.9	70.9	6939.9	71.63	6939.84	71.82	6939.82	72.08	6939.8
72.62	6939.75	72.83	6939.74	73.26	6939.7	73.39	6939.69	73.84	6939.65
74.27	6939.62	74.44	6939.6	74.85	6939.57	75.16	6939.55	75.86	6939.49
76.04	6939.47	76.81	6939.41	76.87	6939.4	76.92	6939.4	77.26	6939.37
77.8	6939.33	77.99	6939.31	78.69	6939.26	78.89	6939.24	79.17	6939.22
79.57	6939.18	79.9	6939.16	80.35	6939.12	80.45	6939.11	80.91	6939.07
81.34	6939.04	81.53	6939.02	81.93	6938.99	82.22	6938.97	82.72	6938.92
82.94	6938.91	83.1	6938.89	83.9	6938.83	83.98	6938.82	84.24	6938.8
84.87	6938.75	85.08	6938.73	85.75	6938.68	85.97	6938.66	86.26	6938.63
86.63	6938.6	86.98	6938.57	87.44	6938.54	87.51	6938.53	87.99	6938.49
88.4	6938.46	88.62	6938.44	89	6938.41	89.28	6938.4	89.81	6938.39
90.01	6938.38	90.16	6938.38	90.99	6938.36	91.21	6938.36	91.93	6938.35
92.03	6938.34	92.17	6938.34	92.81	6938.33	93.35	6938.33	93.69	6938.32
94.05	6938.32	94.53	6938.45	94.57	6938.43	95.06	6938.56	95.46	6938.67
96.07	6938.84	96.34	6938.92	96.9	6939.07	97.22	6939.16	98.08	6939.4
98.1	6939.4	98.18	6939.42	98.99	6939.65	99.1	6939.68	99.26	6939.72
99.87	6939.89	100.11	6939.96	100.44	6940.05	100.75	6940.14	101.12	6940.24
101.62	6940.38	101.63	6940.38	102.13	6940.52	102.52	6940.62	102.8	6940.7
103.14	6940.8	103.99	6941.03	104.15	6941.08	104.28	6941.11	105.15	6941.34
105.16	6941.34	106.05	6941.57	106.18	6941.6	106.35	6941.65	106.93	6941.8
107.53	6941.96	107.81	6942.03	108.2	6942.13	108.69	6942.26	108.71	6942.26
109.21	6942.39	109.58	6942.49	109.89	6942.57	110.22	6942.65	110.46	6942.72
110.82	6942.81	111.08	6942.87	111.23	6942.91	111.34	6942.92	112.13	6942.91
113.99	6942.91	114.26	6942.9	116.28	6942.9	116.64	6942.89	118.4	6942.89
119.1	6942.88	121.33	6942.88	121.71	6942.87	123.35	6942.87	123.7	6942.86
125.46	6942.86	125.91	6942.85	127.05	6942.85	127.47	6942.84	127.83	6942.84
128.34	6942.83	129.4	6942.83	129.58	6942.82	130.19	6942.82	130.64	6942.81
130.97	6942.81	131.59	6942.8	132.76	6942.8	133.21	6942.79	133.82	6942.79
134.11	6942.78	134.96	6942.78	135.68	6942.77	135.94	6942.77	136.46	6942.76
137.26	6942.76	138	6942.75	138.09	6942.75	138.83	6942.74	139.61	6942.74
139.71	6942.73	140.4	6942.73	141.03	6942.72	141.34	6942.72	141.97	6942.71
142.97	6942.71	143.35	6942.7	144.07	6942.7	144.32	6942.69	145.11	6942.69
145.47	6942.68	146.53	6942.68	146.68	6942.67	147.59	6942.67	147.84	6942.66
148.65	6942.66	149.03	6942.65	149.82	6942.65	150.15	6942.64	151.09	6942.64
151.39	6942.63	152.18	6942.63	152.72	6942.62	153.19	6942.62	153.75	6942.61



Ex RAS Input Report.txt

154.53	6942.61	155	6942.6	155.32	6942.6	155.97	6942.59	156.89	6942.59
157.12	6942.58	157.67	6942.58	158.18	6942.57	159.24	6942.57	159.27	6942.56
160.03	6942.48	160.29	6942.42	160.81	6942.29	160.84	6942.29	161.35	6942.16
162.31	6941.93	162.39	6941.91	162.41	6941.91	162.47	6941.89	163.17	6941.73
163.47	6941.65	163.96	6941.54	164.1	6941.5	164.53	6941.4	164.74	6941.35
165.35	6941.2	165.53	6941.16	165.59	6941.14	165.72	6941.11	166.65	6940.89
167.1	6940.78	167.35	6940.72	167.71	6940.63	167.88	6940.59	168.67	6940.4
168.97	6940.34	169.45	6940.24	169.83	6940.15	170.24	6940.06	170.6	6939.98
171.02	6939.89	171.42	6939.8	171.94	6939.68	172.59	6939.54	173	6939.45
173.85	6939.27	174.06	6939.22	174.16	6939.2	174.46	6939.13	174.95	6939.02
175.12	6938.99	175.47	6938.91	175.74	6938.85	176.18	6938.76	176.52	6938.73
177.1	6938.72	177.24	6938.71	177.31	6938.71	177.5	6938.7	178.09	6938.69
178.3	6938.69	178.72	6938.68	178.88	6938.67	179.36	6938.66	179.66	6938.66
180.35	6938.64	180.54	6938.64	181.23	6938.62	181.47	6938.62	181.97	6938.6
182.02	6938.6	182.53	6938.59	182.8	6938.59	183.58	6938.66	183.6	6938.66
184.37	6938.83	184.65	6938.89	185.16	6939.02	185.23	6939.03	185.71	6939.15
185.94	6939.21	186.62	6939.38	186.85	6939.44	187.52	6939.6	187.83	6939.68
188.3	6939.8	188.48	6939.85	188.89	6939.95	189.09	6940	189.66	6940.14
189.87	6940.2	189.95	6940.21	190.1	6940.25	190.66	6940.39	191.44	6940.59
191.73	6940.66	192.06	6940.75	192.7	6940.9	193.01	6940.98	193.35	6941.07
193.8	6941.18	194.18	6941.28	194.98	6941.48	195.37	6941.57	195.73	6941.67
196.15	6941.77	196.3	6941.81	196.6	6941.88	196.94	6941.97	197.36	6942.07
197.72	6942.17	198.23	6942.29	198.42	6942.34	198.51	6942.36	198.77	6942.43
199.29	6942.56	199.48	6942.59	199.85	6942.6	200.08	6942.62	200.54	6942.63
200.87	6942.64	201.48	6942.65	201.65	6942.65	201.81	6942.66	202.44	6942.67
202.62	6942.67								

Manning's n Values      num=      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	35.37	.035	110.82	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	35.37	110.82	93.31	85.66	98.56		.1	.3

Ineffective Flow      num=      1

Sta L	Sta R	Elev	Permanent
111.09	202.62	6942.98	F

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM      RS: 3900

INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Ex RAS Input Report.txt

Station Elevation Data		num=		459					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6943.24	1.31	6943.24	1.92	6943.25	2.94	6943.25	3.08	6943.26
4.12	6943.26	4.57	6943.27	5.39	6943.27	6.17	6943.28	7.02	6943.28
7.23	6943.29	7.58	6943.27	7.84	6943.28	8.26	6943.26	8.65	6943.21
8.99	6943.18	9.3	6943.14	9.47	6943.12	10.12	6943.05	10.29	6943.04
10.33	6943.03	10.41	6943.02	11.1	6942.95	11.37	6942.92	11.82	6942.87
11.92	6942.86	12.4	6942.81	12.74	6942.77	13.24	6942.72	13.44	6942.69
13.55	6942.68	13.98	6942.63	14.37	6942.59	14.47	6942.58	14.65	6942.56
15.19	6942.5	15.51	6942.47	16	6942.42	16.07	6942.41	16.54	6942.36
16.82	6942.33	17.48	6942.26	17.58	6942.25	17.64	6942.24	17.85	6942.22
18.45	6942.15	18.61	6942.13	18.89	6942.1	19.65	6942.02	20.08	6941.97
20.31	6941.95	20.68	6941.91	20.9	6941.88	21.71	6941.8	21.72	6941.8
22.53	6941.71	22.75	6941.68	23.14	6941.64	23.35	6941.62	23.79	6941.57
24.17	6941.53	24.55	6941.49	24.83	6941.46	24.98	6941.44	25.57	6941.38
25.8	6941.35	25.86	6941.35	25.97	6941.34	26.62	6941.27	26.9	6941.23
27.38	6941.18	27.43	6941.18	27.93	6941.12	28.25	6941.09	28.79	6941.03
28.97	6941.01	29.07	6941	29.44	6940.96	29.88	6940.91	30	6940.9
30.21	6940.88	30.7	6940.83	31.04	6940.8	31.52	6940.75	31.62	6940.74
32.07	6940.7	32.33	6940.67	33.04	6940.6	33.11	6940.6	33.15	6940.59
33.3	6940.58	33.96	6940.52	34.14	6940.5	34.45	6940.47	34.78	6940.44
35.18	6940.4	35.6	6940.36	35.87	6940.33	36.21	6940.3	36.41	6940.28
37.16	6940.18	37.23	6940.18	37.25	6940.17	37.28	6940.17	38.05	6940.07
38.28	6940.04	38.69	6939.99	38.86	6939.97	39.32	6939.91	39.68	6939.87
40.11	6939.84	40.35	6939.81	40.5	6939.8	41.03	6939.76	41.31	6939.75
41.39	6939.74	41.52	6939.73	42.13	6939.7	42.43	6939.68	42.94	6939.65
42.95	6939.65	43.46	6939.62	43.76	6939.6	44.35	6939.56	44.5	6939.55
44.58	6939.55	44.89	6939.53	45.4	6939.5	45.53	6939.49	45.77	6939.47
46.21	6939.45	46.57	6939.42	47.03	6939.4	47.18	6939.39	47.6	6939.36
47.85	6939.35	48.59	6939.3	48.64	6939.3	48.66	6939.29	48.75	6939.29
49.48	6939.24	49.67	6939.23	50.01	6939.21	50.29	6939.2	50.71	6939.17
51.11	6939.16	51.42	6939.14	51.74	6939.13	51.93	6939.12	52.62	6939.1
52.74	6939.09	52.98	6939.09	53.56	6939.07	53.81	6939.06	54.25	6939.05
54.38	6939.04	54.85	6939.03	55.19	6939.02	55.67	6939	55.88	6938.99
56.01	6938.99	56.48	6938.98	56.83	6938.96	57.08	6938.96	57.64	6938.94
57.95	6938.93	58.46	6938.91	58.49	6938.91	58.99	6938.9	59.28	6938.89
59.91	6938.87	60.03	6938.86	60.09	6938.86	60.34	6938.85	60.91	6938.83
61.06	6938.83	61.32	6938.82	61.73	6938.81	62.1	6938.8	62.54	6938.78
62.74	6938.78	63.13	6938.76	63.36	6938.76	64.15	6938.73	64.21	6938.73
64.99	6938.7	65.2	6938.7	65.57	6938.69	65.81	6938.68	66.24	6938.67
66.62	6938.65	66.98	6938.64	67.27	6938.63	67.44	6938.63	68.07	6938.61
68.26	6938.6	68.39	6938.6	69.07	6938.58	69.34	6938.57	69.81	6938.55
69.89	6938.55	70.38	6938.54	70.71	6938.53	71.22	6938.51	71.41	6938.5
71.52	6938.5	71.93	6938.49	72.34	6938.48	72.45	6938.47	72.64	6938.47
73.16	6938.46	73.48	6938.45	73.97	6938.43	74.05	6938.43	74.52	6938.41
74.79	6938.41	75.47	6938.39	75.61	6938.39	75.8	6938.38	76.42	6938.36
76.59	6938.36	76.88	6938.35	77.24	6938.34	77.62	6938.33	78.06	6938.32
78.29	6938.31	78.66	6938.3	78.87	6938.3	79.66	6938.28	79.69	6938.27

Ex RAS Input Report.txt

79.71	6938.27	80.5	6938.25	80.73	6938.25	81.12	6938.24	81.32	6938.23
81.77	6938.22	82.14	6938.21	82.54	6938.2	82.8	6938.19	82.95	6938.19
83.52	6938.17	83.77	6938.16	83.95	6938.16	84.59	6938.14	84.87	6938.13
85.22	6938.12	85.4	6938.12	85.91	6938.11	86.22	6938.1	86.78	6938.08
86.94	6938.08	87.04	6938.07	87.39	6938.07	87.85	6938.05	87.98	6938.05
88.19	6938.04	88.67	6938.03	89.01	6938.02	89.49	6938.01	89.61	6938.01
90.05	6937.99	90.3	6937.99	91.02	6937.97	91.08	6937.96	91.25	6937.96
91.94	6937.94	92.12	6937.93	92.44	6937.92	92.75	6937.9	93.15	6937.88
93.57	6937.86	93.85	6937.85	94.19	6937.83	94.38	6937.82	95.11	6937.78
95.22	6937.78	95.27	6937.77	96.02	6937.73	96.26	6937.72	96.68	6937.7
96.83	6937.69	97.3	6937.67	97.65	6937.65	98.09	6937.63	98.33	6937.61
98.47	6937.61	98.98	6937.6	100.92	6937.6	101.44	6937.61	105.58	6937.61
105.82	6937.62	107.45	6937.62	107.65	6937.63	108.26	6937.63	108.68	6937.64
109.08	6937.65	109.41	6937.65	109.72	6937.66	109.9	6937.66	110.57	6937.67
110.71	6937.68	110.82	6937.68	111.53	6937.69	111.79	6937.7	112.24	6937.7
112.35	6937.71	112.82	6937.71	113.16	6937.72	113.65	6937.73	113.98	6937.73
114.43	6937.74	114.8	6937.75	115.06	6937.75	115.61	6937.76	115.93	6937.77
116.43	6937.78	116.48	6937.77	116.97	6937.78	118.88	6937.78	119.04	6937.77
121.33	6937.77	122.14	6937.76	123.78	6937.76	124.21	6937.75	126.38	6937.75
127.04	6937.74	129.39	6937.74	129.49	6937.73	131.94	6937.73	132.04	6937.72
134.57	6937.72	134.86	6937.71	136.84	6937.71	137.61	6937.7	139.74	6937.7
140.11	6937.69	141.94	6937.69	142.56	6937.68	144.92	6937.68	145.01	6937.67
146.99	6937.67	147.46	6937.66	148.27	6937.66	149.01	6937.65	150.42	6937.65
150.72	6937.64	152.35	6937.64	153.06	6937.63	154.24	6937.63	154.66	6937.62
155.27	6937.62	155.62	6937.59	156.08	6937.57	156.31	6937.56	156.44	6937.54
156.56	6937.53	156.93	6937.5	157.25	6937.47	157.34	6937.46	157.49	6937.45
158.07	6937.39	158.38	6937.36	158.89	6937.32	158.91	6937.31	159.41	6937.27
159.7	6937.33	160.32	6937.47	160.45	6937.49	160.52	6937.51	160.79	6937.59
161.34	6937.74	161.48	6937.78	161.74	6937.85	162.15	6937.96	162.52	6938.06
162.97	6938.18	163.15	6938.23	163.55	6938.35	163.79	6938.41	164.56	6938.62
164.59	6938.63	164.6	6938.63	164.65	6938.65	165.42	6938.86	165.62	6938.91
165.98	6939.01	166.24	6939.08	166.66	6939.2	167.05	6939.31	167.39	6939.4
167.69	6939.48	167.87	6939.53	168.52	6939.71	168.68	6939.76	168.73	6939.77
168.81	6939.79	169.5	6939.98	169.76	6940.05	170.22	6940.18	170.32	6940.2
170.8	6940.34	171.13	6940.43	171.64	6940.57	171.84	6940.62	171.95	6940.65
172.38	6940.77	172.77	6940.88	172.87	6940.91	173.05	6940.96	173.58	6941.1
173.91	6941.19	174.4	6941.33	174.46	6941.35	174.94	6941.48	175.22	6941.55
175.88	6941.73	175.98	6941.76	176.03	6941.78	176.24	6941.83	176.85	6942
177.01	6942.03	177.29	6942.05	177.67	6942.07	178.05	6942.09	178.48	6942.11
178.71	6942.11	179.08	6942.12	179.3	6942.13	180.11	6942.15	180.12	6942.15
180.93	6942.18	181.15	6942.18	181.54	6942.19	181.75	6942.2	182.19	6942.21
182.56	6942.22	182.95	6942.23	183.22	6942.24	183.38	6942.24	183.97	6942.26
184.2	6942.27	184.36	6942.27	185.01	6942.29	185.29	6942.3	185.78	6942.31
185.83	6942.31	186.33	6942.33	186.65	6942.34	187.19	6942.35	187.36	6942.36
187.46	6942.36	187.83	6942.37	188.28	6942.38	188.4	6942.39	188.61	6942.39
189.1	6942.41	189.44	6942.42	189.91	6942.43	190.37	6942.43		

Manning's n Values

num=

3

Ex RAS Input Report.txt

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	8.26	.035	177.67	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	8.26	177.67		26.02	48.36	73.69	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3850

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 461

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6942.72	.83	6942.72	.98	6942.7	1.68	6942.64	1.83	6942.62
2	6942.61	2.66	6942.53	2.83	6942.51	3.02	6942.49	3.64	6942.42
3.83	6942.4	4.04	6942.38	4.62	6942.31	4.83	6942.29	5.05	6942.26
5.6	6942.2	5.83	6942.18	6.07	6942.15	6.59	6942.09	6.83	6942.06
7.09	6942.04	7.57	6941.98	7.83	6941.95	8.11	6941.92	8.55	6941.87
8.83	6941.84	9.13	6941.81	9.53	6941.76	9.84	6941.73	10.15	6941.69
10.51	6941.66	10.84	6941.62	11.17	6941.6	11.5	6941.59	11.84	6941.57
12.19	6941.55	12.48	6941.54	12.84	6941.52	13.21	6941.51	13.46	6941.49
13.84	6941.48	14.23	6941.46	14.44	6941.45	14.84	6941.43	15.25	6941.41
15.42	6941.41	15.84	6941.39	16.27	6941.37	16.4	6941.36	16.84	6941.34
17.28	6941.32	17.39	6941.32	17.84	6941.29	18.3	6941.27	18.37	6941.27
18.84	6941.25	19.32	6941.23	19.35	6941.23	19.84	6941.2	20.33	6941.18
20.34	6941.18	20.84	6941.16	21.31	6941.14	21.36	6941.13	21.84	6941.11
22.3	6941.09	22.38	6941.09	22.84	6941.07	23.28	6941.05	23.4	6941.04
23.84	6941.02	24.26	6941	24.42	6940.99	24.84	6940.97	25.24	6940.96
25.44	6940.95	25.84	6940.93	26.22	6940.9	26.46	6940.9	26.84	6940.88
27.21	6940.86	27.48	6940.85	27.84	6940.82	28.19	6940.8	28.5	6940.78
28.84	6940.76	29.17	6940.74	29.51	6940.72	29.84	6940.7	30.15	6940.69
30.53	6940.66	30.84	6940.64	31.13	6940.63	31.55	6940.6	31.84	6940.58
32.11	6940.57	32.57	6940.54	32.84	6940.53	33.1	6940.51	33.59	6940.48
33.84	6940.47	34.08	6940.45	34.61	6940.42	34.84	6940.41	35.06	6940.39
35.63	6940.36	35.84	6940.35	36.04	6940.33	36.65	6940.3	36.84	6940.29
37.02	6940.28	37.67	6940.24	37.84	6940.23	38.01	6940.22	38.69	6940.18
38.84	6940.17	38.99	6940.16	39.71	6940.11	39.84	6940.11	39.97	6940.1
40.73	6940.05	40.84	6940.05	40.95	6940.04	41.74	6939.99	41.84	6939.99
41.93	6939.98	42.76	6939.93	42.84	6939.93	42.92	6939.92	43.78	6939.87
43.84	6939.87	43.9	6939.86	44.8	6939.81	44.84	6939.81	44.88	6939.8
45.82	6939.75	45.86	6939.75	46.84	6939.69	46.9	6939.68	47.82	6939.63
47.86	6939.63	48.21	6939.61	48.81	6939.57	48.88	6939.57	49.79	6939.51

Ex RAS Input Report.txt

49.9	6939.51	50.77	6939.46	50.84	6939.45	50.92	6939.45	51.75	6939.4
51.84	6939.4	51.94	6939.39	52.73	6939.35	52.84	6939.34	52.96	6939.33
53.72	6939.29	53.84	6939.28	53.97	6939.28	54.7	6939.23	54.84	6939.23
54.99	6939.22	55.68	6939.18	55.84	6939.17	56.01	6939.16	56.66	6939.12
56.84	6939.11	57.03	6939.1	57.64	6939.07	57.84	6939.06	58.05	6939.05
58.63	6939.01	58.84	6939	59.07	6938.99	59.61	6938.96	59.84	6938.95
60.09	6938.93	60.59	6938.9	60.84	6938.89	61.11	6938.88	61.57	6938.85
61.84	6938.83	62.13	6938.82	62.55	6938.79	62.84	6938.78	63.15	6938.76
63.53	6938.74	63.84	6938.72	64.17	6938.7	64.52	6938.68	64.84	6938.67
65.19	6938.65	65.5	6938.63	65.84	6938.61	66.2	6938.59	66.48	6938.57
66.84	6938.55	67.22	6938.53	67.46	6938.52	67.85	6938.5	68.24	6938.48
68.44	6938.46	68.85	6938.44	69.26	6938.42	69.43	6938.41	69.85	6938.39
70.28	6938.36	70.41	6938.35	70.85	6938.33	71.3	6938.3	71.39	6938.3
71.85	6938.27	72.32	6938.25	72.37	6938.24	72.85	6938.22	73.34	6938.19
73.35	6938.19	73.85	6938.16	74.34	6938.13	74.36	6938.13	74.85	6938.1
75.32	6938.08	75.38	6938.08	75.85	6938.05	76.3	6938.02	76.4	6938.02
76.85	6937.99	77.28	6937.97	77.42	6937.96	77.85	6937.94	78.26	6937.91
78.43	6937.9	78.85	6937.88	79.24	6937.86	79.45	6937.85	79.85	6937.82
80.23	6937.8	80.47	6937.79	80.85	6937.77	81.21	6937.75	81.49	6937.73
81.85	6937.71	82.19	6937.69	82.33	6937.69	82.51	6937.67	82.85	6937.66
83.17	6937.63	83.53	6937.62	83.85	6937.6	84.15	6937.58	84.55	6937.56
84.85	6937.54	85.14	6937.52	85.57	6937.49	85.85	6937.47	86.12	6937.45
86.59	6937.42	86.85	6937.4	87.1	6937.39	87.61	6937.35	87.85	6937.34
88.08	6937.32	88.63	6937.28	88.85	6937.27	89.06	6937.25	89.65	6937.21
89.85	6937.2	90.05	6937.18	90.66	6937.14	90.85	6937.13	91.03	6937.12
91.68	6937.07	91.85	6937.06	92.01	6937.05	92.7	6937	92.85	6936.99
92.99	6936.98	93.72	6936.93	93.85	6936.92	93.97	6936.91	94.74	6936.86
94.85	6936.85	94.95	6936.85	95.76	6936.88	95.94	6936.88	96.78	6936.92
96.85	6936.93	96.92	6936.93	97.8	6936.97	97.9	6936.97	98.82	6937.01
98.85	6937.02	98.88	6937.02	99.84	6937.06	99.86	6937.06	100.57	6937.09
100.85	6937.11	100.86	6937.11	101.83	6937.15	101.88	6937.15	102.81	6937.19
102.89	6937.19	103.79	6937.24	103.85	6937.24	103.91	6937.23	104.77	6937.26
104.93	6937.26	105.76	6937.25	105.85	6937.24	105.95	6937.24	106.74	6937.23
106.97	6937.23	107.72	6937.22	107.99	6937.22	108.7	6937.21	109.01	6937.21
109.68	6937.2	109.85	6937.2	110.03	6937.19	110.66	6937.19	110.85	6937.18
111.05	6937.18	111.65	6937.17	112.07	6937.17	112.63	6937.16	113.09	6937.16
113.61	6937.15	113.85	6937.15	114.11	6937.14	114.59	6937.14	114.85	6937.13
115.12	6937.13	115.57	6937.12	116.14	6937.12	116.56	6937.11	116.85	6937.11
117.16	6937.1	117.85	6937.1	118.18	6937.09	118.52	6937.09	118.85	6937.08
119.5	6937.08	119.85	6937.07	120.22	6937.07	120.48	6937.06	120.85	6937.06
121.24	6937.05	121.85	6937.05	122.26	6937.04	122.45	6937.04	122.85	6937.03
123.43	6937.03	123.85	6937.02	124.41	6937.02	124.85	6937.01	125.32	6937
125.86	6937	126.34	6936.99	126.86	6936.99	127.35	6936.98	127.86	6936.97
128.37	6936.97	128.86	6936.96	129.32	6936.96	129.39	6936.95	129.86	6936.95
130.3	6936.94	130.86	6936.94	131.28	6936.89	131.43	6936.93	131.86	6936.88
132.27	6936.81	132.45	6936.79	132.86	6936.72	133.25	6936.64	133.47	6936.6
133.86	6936.53	134.23	6936.46	134.49	6936.41	134.86	6936.34	135.21	6936.27
135.51	6936.21	135.86	6936.15	136.19	6936.08	136.53	6936.02	136.86	6935.96

Ex RAS Input Report.txt

137.18	6935.9	137.55	6935.83	137.86	6935.77	138.16	6935.71	138.57	6935.63
138.86	6935.58	139.14	6935.52	139.58	6935.44	139.86	6935.39	140.12	6935.44
140.6	6935.5	140.86	6935.55	141.1	6935.61	141.62	6935.75	141.86	6935.81
142.08	6935.87	142.64	6936.01	142.86	6936.07	143.07	6936.12	143.66	6936.28
143.86	6936.33	144.05	6936.38	144.68	6936.54	144.86	6936.59	145.03	6936.63
145.7	6936.81	145.86	6936.85	146.01	6936.89	146.72	6937.07	146.86	6937.11
146.99	6937.14	147.74	6937.34	147.86	6937.37	147.98	6937.4	148.76	6937.6
148.86	6937.63	148.96	6937.65	149.05	6937.67	149.78	6937.87	149.86	6937.89
149.94	6937.91	150.8	6938.13	150.86	6938.15	150.92	6938.16	151.81	6938.4
151.86	6938.41	151.9	6938.42	152.83	6938.66	152.86	6938.67	152.89	6938.67
153.85	6938.92	153.87	6938.92	154.24	6939.02	154.85	6939.17	154.86	6939.17
154.87	6939.18	155.83	6939.42	155.86	6939.43	155.89	6939.43	156.81	6939.67
156.86	6939.68	156.91	6939.69	157.79	6939.92	157.86	6939.93	157.93	6939.95
158.78	6940.16	158.86	6940.19	158.95	6940.21	159.76	6940.41	159.86	6940.44
159.97	6940.47	160.74	6940.66	160.86	6940.69	160.99	6940.72	161.72	6940.91
161.79	6940.91								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	48.21	.035	160.74	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	48.21	160.74		46.06	51.61	64.96	.1 .3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 3800

INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 436							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6940.48	.2	6940.48	.53	6940.46	.96	6940.44	1.22	6940.43
1.39	6940.42	2.21	6940.38	2.25	6940.38	2.34	6940.37	3.11	6940.32
3.25	6940.31	3.45	6940.3	3.97	6940.27	4.27	6940.25	4.7	6940.22
4.83	6940.21	5.28	6940.19	5.69	6940.16	5.94	6940.14	6.3	6940.12
6.55	6940.11	7.19	6940.07	7.32	6940.06	7.4	6940.05	7.89	6940.02
8.26	6940	8.33	6939.99	8.43	6939.99	9.12	6939.95	9.35	6939.93
9.68	6939.91	9.98	6939.89	10.37	6939.87	10.84	6939.84	10.92	6939.83
11.38	6939.8	11.7	6939.78	12.17	6939.75	12.4	6939.74	12.56	6939.73
13.41	6939.68	13.42	6939.68	13.44	6939.67	14.28	6939.62	14.43	6939.61
14.65	6939.6	15.14	6939.57	15.45	6939.55	15.9	6939.52	16	6939.51
16.47	6939.48	16.86	6939.46	17.14	6939.44	17.48	6939.42	17.71	6939.41



Ex RAS Input Report.txt

18.39	6939.36	18.5	6939.36	18.57	6939.35	18.99	6939.33	19.43	6939.3
19.52	6939.29	19.63	6939.29	20.29	6939.24	20.53	6939.23	20.88	6939.21
21.15	6939.19	21.55	6939.17	22.01	6939.14	22.12	6939.13	22.57	6939.1
22.87	6939.08	23.37	6939.05	23.58	6939.04	23.73	6939.03	23.83	6939.02
24.53	6938.98	24.59	6938.97	24.61	6938.97	25.45	6938.92	25.61	6938.91
25.86	6938.89	26.31	6938.87	26.63	6938.85	27.1	6938.82	27.17	6938.81
27.65	6938.78	28.03	6938.76	28.35	6938.74	28.66	6938.72	28.88	6938.7
29.59	6938.66	29.68	6938.65	29.74	6938.65	30.08	6938.61	30.6	6938.56
30.7	6938.54	30.84	6938.52	31.46	6938.45	31.71	6938.4	32.08	6938.36
32.32	6938.35	32.73	6938.29	33.18	6938.25	33.33	6938.23	33.75	6938.19
34.04	6938.16	34.57	6938.11	34.76	6938.09	34.9	6938.08	35.63	6938.01
35.76	6937.99	35.82	6937.99	36.62	6937.91	36.8	6937.89	37.06	6937.86
37.48	6937.82	37.81	6937.79	38.3	6937.74	38.34	6937.74	38.83	6937.69
39.2	6937.65	39.55	6937.62	39.85	6937.59	40.05	6937.57	40.79	6937.49
40.86	6937.49	40.91	6937.48	41.18	6937.46	41.77	6937.4	41.88	6937.39
42.04	6937.37	42.63	6937.31	42.9	6937.29	43.28	6937.25	43.49	6937.23
43.91	6937.19	44.35	6937.14	44.53	6937.13	44.93	6937.09	45.21	6937.06
45.77	6937	45.95	6936.98	46.07	6936.97	46.73	6936.91	46.93	6936.89
46.96	6936.88	47.02	6936.88	47.79	6936.8	47.98	6936.78	48.26	6936.76
48.65	6936.72	49	6936.68	49.51	6936.63	50.01	6936.58	50.36	6936.55
50.75	6936.51	51.03	6936.48	51.22	6936.46	52	6936.39	52.05	6936.38
52.08	6936.38	52.28	6936.36	52.94	6936.29	53.06	6936.28	53.24	6936.26
53.8	6936.21	54.08	6936.18	54.49	6936.14	54.66	6936.12	55.1	6936.08
55.52	6936.04	55.73	6936.02	56.11	6935.98	56.38	6935.95	56.98	6935.89
57.13	6935.88	57.24	6935.87	57.82	6935.81	58.1	6935.78	58.15	6935.78
58.22	6935.77	58.96	6935.7	59.16	6935.68	59.46	6935.65	59.82	6935.61
60.18	6935.58	60.68	6935.53	60.71	6935.52	61.2	6935.48	61.53	6935.44
61.95	6935.4	62.21	6935.38	62.39	6935.36	63.01	6935.3	63.2	6935.28
63.23	6935.27	63.25	6935.27	63.37	6935.26	64.11	6935.19	64.25	6935.17
64.44	6935.15	64.97	6935.1	65.26	6935.07	65.69	6935.03	65.83	6935.02
66.28	6934.97	66.69	6934.93	66.93	6934.91	67.3	6934.87	67.55	6934.85
68.18	6934.78	68.31	6934.77	68.41	6934.76	68.92	6934.71	69.27	6934.68
69.33	6934.67	69.42	6934.66	70.13	6934.59	70.35	6934.57	70.67	6934.55
70.99	6934.51	71.36	6934.48	71.85	6934.46	71.91	6934.57	72.38	6934.57
72.7	6934.64	73.16	6934.73	73.4	6934.78	73.56	6934.82	74.4	6934.99
74.41	6934.99	74.42	6935	74.47	6935	75.28	6935.17	75.43	6935.2
75.65	6935.25	76.14	6935.36	76.45	6935.42	76.89	6935.52	77	6935.57
77.46	6935.67	77.86	6935.77	78.14	6935.84	78.48	6935.93	78.72	6935.99
79.38	6936.16	79.5	6936.19	79.58	6936.21	80.02	6936.33	80.44	6936.43
80.51	6936.45	80.62	6936.48	81.3	6936.66	81.53	6936.72	81.87	6936.81
82.16	6936.88	82.55	6936.98	83.01	6937.1	83.11	6937.13	83.56	6937.24
83.87	6937.32	84.36	6937.45	84.58	6937.51	84.73	6937.54	85.57	6937.66
85.59	6937.67	85.6	6937.67	86.45	6937.79	86.61	6937.81	86.85	6937.84
87.31	6937.9	87.63	6937.95	88.09	6938.01	88.17	6938.02	88.65	6938.09
89.03	6938.14	89.34	6938.18	89.66	6938.23	89.89	6938.26	90.58	6938.36
90.68	6938.37	90.75	6938.38	91.12	6938.43	91.61	6938.5	91.7	6938.51
91.83	6938.53	92.47	6938.62	92.71	6938.65	93.07	6938.68	93.33	6938.7
93.73	6938.73	94.18	6938.7	94.32	6938.65	94.75	6938.61	95.04	6938.54

Ex RAS Input Report.txt

95.56	6938.41	95.76	6938.36	95.9	6938.32	96.66	6938.14	96.76	6938.11
96.78	6938.11	96.81	6938.1	97.62	6937.92	97.8	6937.89	98.05	6937.84
98.48	6937.75	98.81	6937.68	99.3	6937.59	99.34	6937.58	99.83	6937.48
100.2	6937.4	100.54	6937.34	100.85	6937.27	101.06	6937.23	101.79	6937.08
101.86	6937.07	101.92	6937.06	102.21	6937	102.78	6936.88	102.88	6936.86
103.03	6936.83	103.64	6936.71	103.9	6936.66	104.27	6936.58	104.5	6936.54
104.91	6936.45	105.35	6936.36	105.52	6936.33	105.93	6936.25	106.21	6936.19
106.76	6936.08	106.95	6936.04	107.07	6936.02	107.76	6935.88	107.93	6935.84
107.96	6935.84	108.01	6935.83	108.79	6935.67	108.98	6935.63	109.25	6935.58
109.65	6935.5	110	6935.43	110.5	6935.33	110.51	6935.33	111.01	6935.22
111.37	6935.15	111.74	6935.08	112.03	6935.02	112.23	6934.98	112.99	6934.83
113.05	6934.81	113.09	6934.81	113.31	6934.78	113.95	6934.71	114.06	6934.71
114.23	6934.74	114.81	6934.86	115.08	6934.92	115.48	6935	115.66	6935.04
116.1	6935.13	116.52	6935.22	116.72	6935.26	117.11	6935.34	117.38	6935.4
117.97	6935.52	118.13	6935.55	118.24	6935.58	118.86	6935.7	119.1	6935.75
119.15	6935.76	119.21	6935.78	119.96	6935.93	120.16	6935.98	120.46	6936.04
120.82	6936.11	121.18	6936.19	121.68	6936.29	121.7	6936.3	122.2	6936.4
122.54	6936.47	122.95	6936.55	123.21	6936.61	123.4	6936.65	124.19	6936.81
124.23	6936.82	124.26	6936.83	124.41	6936.86	125.12	6937.01	125.25	6937.03
125.43	6937.07	125.98	6937.19	126.26	6937.24	126.68	6937.33	126.83	6937.36
127.28	6937.46	127.69	6937.54	127.92	6937.59	128.3	6937.67	128.55	6937.72
129.17	6937.85	129.31	6937.88	129.41	6937.9	129.95	6938.01	130.27	6938.08
130.33	6938.09	130.41	6938.11	131.13	6938.26	131.35	6938.3	131.66	6938.37
131.99	6938.44	132.36	6938.51	132.8	6938.61	132.85	6938.62	132.9	6938.63
133.38	6938.73	133.71	6938.79	134.15	6938.89	134.4	6938.94	134.57	6938.97
135.39	6939.15	135.43	6939.15	135.5	6939.17	136.29	6939.33	136.43	6939.36
136.64	6939.4	137.15	6939.5	137.45	6939.56	137.88	6939.64	138	6939.67
138.46	6939.76	138.86	6939.81	139.13	6939.83	139.48	6939.87	139.72	6939.88
140	6939.88								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	29.74	.035	93.73	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	29.74	93.73		106.47	105.93	.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 3694

INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Ex RAS Input Report.txt

Station Elevation Data		num=		490					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6941.33	.76	6941.33	1.68	6941.31	2.22	6941.31	3.22	6941.29
4.44	6941.28	6.19	6941.26	6.24	6941.25	9.25	6941.22	10.87	6941.19
12.26	6941.18	13.27	6941.16	16.28	6941.13	16.39	6941.12	17.57	6941.11
20.06	6941.08	20.3	6941.07	22.3	6941.05	23.31	6941.03	23.89	6941.03
25	6941.01	25.58	6941.01	26.5	6940.99	27.21	6940.99	27.32	6940.98
30.53	6940.95	32.01	6940.93	32.75	6940.93	33.85	6940.91	36.61	6940.88
37.37	6940.88	37.53	6940.87	38.28	6940.87	38.37	6940.86	39.29	6940.86
39.38	6940.85	43.05	6940.81	43.81	6940.81	43.97	6940.8	46.72	6940.77
47.41	6940.77	47.64	6940.76	48.41	6940.76	48.56	6940.75	49.34	6940.75
49.42	6940.74	50.15	6940.74	50.4	6940.73	52.66	6940.71	54.08	6940.69
54.88	6940.69	55.92	6940.67	57.45	6940.66	57.75	6940.65	58.46	6940.65
58.67	6940.64	59.46	6940.64	59.59	6940.63	60.41	6940.63	60.47	6940.62
62.62	6940.6	65.11	6940.57	65.94	6940.57	66.95	6940.55	68.79	6940.53
69.5	6940.53	69.71	6940.52	70.51	6940.52	70.62	6940.51	71.88	6940.5
75.22	6940.46	75.9	6940.46	77.01	6940.44	78.54	6940.43	79.82	6940.41
80.55	6940.41	80.74	6940.4	81.56	6940.4	81.66	6940.39	85.33	6940.35
85.86	6940.35	86.97	6940.33	88.59	6940.32	89.59	6940.3	90.29	6940.3
91.39	6940.28	92.5	6940.27	93.6	6940.27	94.53	6940.26	97.28	6940.26
97.62	6940.25	100.25	6940.25	100.64	6940.24	103.72	6940.24	104.47	6940.23
107.4	6940.23	107.67	6940.22	110.68	6940.22	111.07	6940.21	113.83	6940.21
114.63	6940.2	117.51	6940.2	117.71	6940.19	120.72	6940.19	121.18	6940.18
123.94	6940.18	124.59	6940.17	127.75	6940.17	127.91	6940.16	131.23	6940.16
131.3	6940.15	134.55	6940.15	134.78	6940.14	137.87	6940.14	138.65	6940.13
141.19	6940.13	141.41	6940.12	142.82	6940.12	143.25	6940.11	144.17	6940.11
145.62	6940.09	146.83	6940.09	146.92	6940.08	147.91	6940.08	150.6	6940.05
151.85	6940.05	152.25	6940.04	153.36	6940.03	154.28	6940.03	154.47	6940.02
155.57	6940.02	155.87	6940.01	156.68	6940.01	156.87	6940	157.96	6940
160.71	6939.97	161.63	6939.97	161.9	6939.96	162.9	6939.96	164.39	6939.94
165.53	6939.94	165.91	6939.93	166.64	6939.93	166.92	6939.92	167.92	6939.92
168.07	6939.91	168.99	6939.91	171.94	6939.88	172.17	6939.87	172.94	6939.87
176.96	6939.83	177.26	6939.82	177.96	6939.82	178.18	6939.81	179.1	6939.81
180.5	6939.79	181.86	6939.78	182.13	6939.77	182.99	6939.77	183.24	6939.76
183.99	6939.76	186	6939.74	187.37	6939.72	188.29	6939.72	189.88	6939.7
191.97	6939.68	193.03	6939.68	193.2	6939.67	194.3	6939.67	194.73	6939.66
195.65	6939.65	196.56	6939.65	197.05	6939.64	198.05	6939.64	199.05	6939.63
199.32	6939.62	200.24	6939.62	203	6939.59	204.08	6939.59	204.26	6939.58
205.08	6939.58	205.37	6939.57	206.48	6939.57	206.68	6939.56	207.6	6939.56
209.1	6939.54	210.1	6939.54	210.35	6939.53	211.27	6939.53	214.03	6939.5
214.95	6939.5	215.12	6939.49	216.13	6939.49	216.44	6939.48	217.13	6939.48
217.54	6939.47	218.63	6939.47	218.65	6939.46	219.76	6939.46	220.14	6939.45
220.86	6939.45	221.15	6939.44	221.97	6939.44	222.15	6939.43	223.22	6939.43
225.06	6939.41	227.5	6939.41	227.82	6939.4	231.19	6939.4	231.5	6939.39
231.93	6939.4	232.42	6939.39	233.34	6939.39	234.81	6939.37	237.93	6939.3
238.85	6939.29	241.61	6939.23	242.24	6939.22	243.45	6939.19	244.37	6939.18
246.31	6939.14	247.42	6939.11	248.26	6939.1	249.88	6939.06	250.27	6939.06
253.28	6939	255.4	6938.95	256.27	6938.94	257.3	6938.92	257.38	6938.91

Ex RAS Input Report.txt

259.31	6938.88	260.91	6938.84	261.32	6938.84	263.33	6938.8	264.02	6938.78
265.34	6938.76	266.43	6938.73	267.35	6938.72	267.4	6938.71	268.27	6938.7
269.35	6938.67	270.66	6938.65	271.36	6938.63	273.37	6938.59	273.78	6938.59
276.38	6938.53	277.3	6938.52	278.4	6938.49	279.3	6938.48	281.72	6938.43
282.41	6938.41	284.42	6938.37	284.81	6938.37	286.42	6938.33	287.26	6938.32
288.36	6938.29	289.47	6938.27	290.44	6938.19	292.45	6937.91	293.09	6937.83
293.45	6937.77	294.46	6937.64	295.85	6937.44	296.77	6937.32	299.52	6936.93
300.44	6936.81	303.85	6936.33	306.07	6936.03	306.51	6935.96	307.51	6935.82
307.8	6935.79	309.39	6935.56	310.85	6935.36	311.47	6935.28	313.54	6934.99
314.23	6934.89	315.15	6934.77	319.35	6934.18	322.5	6933.75	325.26	6933.36
326.18	6933.24	328.94	6932.85	329.86	6932.73	332.57	6932.35	332.63	6932.35
333.73	6932.19	335.37	6931.97	335.63	6931.93	336.64	6931.87	337.21	6931.93
338.65	6932.1	339.65	6932.21	342.73	6932.58	343.69	6932.69	344.8	6932.83
347.68	6933.17	348.69	6933.3	350.08	6933.46	351.44	6933.63	352.54	6933.75
352.84	6933.77	354.3	6933.9	354.76	6933.93	355.6	6934.01	356.72	6934.1
357.73	6934.09	358.36	6934.07	360.74	6934.02	361.11	6934.02	362.03	6934
363.87	6933.98	364.72	6933.96	365.16	6933.96	366.63	6933.94	367.55	6933.92
368.04	6933.92	370.31	6933.88	370.78	6933.88	372.46	6933.85	373.06	6933.85
373.98	6933.83	375.82	6933.81	376.02	6933.8	378	6933.78	379.5	6933.75
380.21	6933.75	381.83	6933.72	382.42	6933.72	383.84	6933.7	384.08	6933.69
386.11	6933.67	386.96	6933.65	388.1	6933.64	389.25	6933.62	389.88	6933.62
392.18	6933.58	392.9	6933.58	393.08	6933.57	394.6	6933.55	395.78	6933.54
395.92	6933.53	397.25	6933.52	398.94	6933.49	399.38	6933.49	401.82	6933.43
402.08	6933.43	403.88	6933.39	404.99	6933.37	405.99	6933.34	408.67	6933.29
410.19	6933.25	411.09	6933.24	412.04	6933.21	412.89	6933.36	413.24	6933.41
414.38	6933.62	415.53	6933.82	415.59	6933.84	417.07	6934.1	417.81	6934.24
418.08	6934.28	420.1	6934.65	421.24	6934.85	422.38	6935.06	423.69	6935.29
424.67	6935.47	425.49	6935.61	426.39	6935.78	427.29	6935.92	430.38	6936.41
430.89	6936.5	431.52	6936.59	431.79	6936.64	433.59	6936.92	434.49	6937.07
436.29	6937.35	440.23	6937.98	441.24	6938.13	441.69	6938.21	442.25	6938.29
442.95	6938.41	443.25	6938.45	444.09	6938.59	445.27	6938.73	445.53	6938.73
448.29	6938.8	448.66	6938.8	449.3	6938.82	450.3	6938.84	450.95	6938.86
451.31	6938.86	453.23	6938.91	454.01	6938.92	456.1	6938.97	458.8	6939.03
459.37	6939.05	460.6	6939.07	461.5	6939.1	463.3	6939.14	463.51	6939.14
466	6939.2	468.08	6939.24	470.37	6939.3	471.51	6939.32	473.46	6939.37
476.8	6939.44	478.37	6939.48	478.6	6939.48	480.4	6939.52	481.3	6939.55
482.53	6939.57	483.1	6939.59	485.22	6939.63	485.8	6939.65	486.55	6939.66
487.51	6939.69	488.65	6939.71	490.58	6939.76	490.93	6939.76	491.59	6939.78
493.6	6939.82	495.51	6939.87	496.65	6939.89	497.79	6939.92	498.41	6939.93
498.93	6939.95	499.31	6939.95	500.21	6939.98	502.01	6940.02	502.36	6940.02
502.91	6940.04	503.67	6940.05	504.65	6940.08	504.94	6940.08	507.7	6940.15
508.07	6940.15	508.71	6940.17	509.72	6940.19	510.72	6940.22	511.01	6940.22
512.81	6940.26	513.71	6940.29	514.93	6940.31	516.77	6940.36	518.36	6940.39
521.78	6940.47	523.81	6940.52	524.51	6940.53	525.41	6940.53	525.83	6940.54
528.11	6940.54	528.64	6940.55	530.92	6940.55	531.72	6940.56	533.88	6940.56
534.35	6940.57	537.12	6940.57	537.78	6940.58	540.06	6940.58	540.72	6940.59
542.95	6940.59	543.42	6940.6	546.12	6940.6	546.92	6940.61	549.21	6940.61
549.72	6940.62	552.63	6940.62	553.02	6940.63	555.87	6940.63	556.02	6940.64

# Ex RAS Input Report.txt

559.06	6940.64	559.49	6940.65	562.32	6940.65	562.92	6940.66	565.2	6940.66
565.92	6940.67	568.63	6940.67	569.13	6940.68	571.32	6940.68	572.06	6940.69
573.2	6940.69	574.03	6940.7	574.93	6940.7	576.18	6940.72	577.77	6940.73
578.19	6940.74	578.91	6940.74	579.2	6940.75	580.05	6940.75	580.54	6940.76

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	289.47	.035	445.27	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	289.47	445.27		95.37	93.53		.1	.3

## CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 3600

INPUT  
 Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 492							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6937.68	7.19	6937.68	8.11	6937.66	8.2	6937.66	9.11	6937.63
9.2	6937.63	10.1	6937.61	10.21	6937.61	11.1	6937.58	11.21	6937.58
12.09	6937.56	12.16	6937.56	12.22	6937.55	12.79	6937.54	13.09	6937.53
13.23	6937.53	14.08	6937.51	14.16	6937.5	14.23	6937.5	15.08	6937.48
15.24	6937.48	16.07	6937.45	16.24	6937.45	17.07	6937.43	17.16	6937.43
17.25	6937.42	18.06	6937.4	18.25	6937.4	19.06	6937.38	19.16	6937.37
19.26	6937.37	20.05	6937.35	20.16	6937.35	20.26	6937.34	21.04	6937.3
21.16	6937.3	21.27	6937.29	22.04	6937.25	22.16	6937.25	22.27	6937.24
23.03	6937.2	23.16	6937.2	23.28	6937.19	24.03	6937.15	24.16	6937.14
24.28	6937.14	25.02	6937.1	25.16	6937.09	25.29	6937.09	26.02	6937.05
26.3	6937.03	27.01	6937	27.3	6936.98	28.01	6936.95	28.31	6936.93
29	6936.9	29.31	6936.88	30	6936.85	30.32	6936.83	30.99	6936.8
31.32	6936.78	31.99	6936.74	32.16	6936.74	32.33	6936.73	32.98	6936.69
33.16	6936.68	33.33	6936.68	33.98	6936.64	34.34	6936.62	34.97	6936.59
35.34	6936.57	35.97	6936.54	36.35	6936.52	36.96	6936.46	37.16	6936.45
37.35	6936.42	37.95	6936.34	38.16	6936.31	38.36	6936.28	38.95	6936.2
39.16	6936.17	39.37	6936.15	39.94	6936.07	40.16	6936.04	40.37	6936.01
40.94	6935.93	41.38	6935.87	41.93	6935.8	42.16	6935.77	42.38	6935.74
42.93	6935.66	43.39	6935.6	43.92	6935.53	44.16	6935.5	44.39	6935.46
44.92	6935.39	45.4	6935.33	45.91	6935.26	46.16	6935.23	46.4	6935.19
46.91	6935.12	47.41	6935.06	47.9	6934.99	48.16	6934.95	48.41	6934.92
48.9	6934.85	49.16	6934.82	49.42	6934.78	49.89	6934.72	50.16	6934.68
50.42	6934.64	50.89	6934.58	51.16	6934.54	51.43	6934.51	51.88	6934.44

Ex RAS Input Report.txt

52.44	6934.36	53.16	6934.26	53.44	6934.22	53.87	6934.16	54.16	6934.12
54.45	6934.07	54.86	6934.01	55.16	6933.97	55.45	6933.93	55.86	6933.87
56.46	6933.79	56.85	6933.73	57.16	6933.69	57.46	6933.64	57.85	6933.59
58.16	6933.54	58.47	6933.5	58.84	6933.44	59.16	6933.4	59.47	6933.35
59.84	6933.3	60.16	6933.26	60.48	6933.21	60.83	6933.16	61.16	6933.11
61.48	6933.07	61.83	6933.02	62.82	6932.87	63.16	6932.83	63.82	6932.73
64.5	6932.63	64.81	6932.59	65.51	6932.49	65.81	6932.45	66.51	6932.35
66.8	6932.3	67.52	6932.2	67.8	6932.16	68.52	6932.06	68.79	6932.02
69.16	6931.97	69.53	6931.91	69.78	6931.88	70.16	6931.82	70.53	6931.77
70.78	6931.73	71.54	6931.63	71.77	6931.59	72.16	6931.54	72.54	6931.48
72.77	6931.45	73.15	6931.39	73.55	6931.34	73.76	6931.31	74.16	6931.25
74.55	6931.19	74.76	6931.16	75.16	6931.11	75.56	6931.05	75.75	6931.02
76.16	6930.96	76.57	6930.91	76.75	6930.88	77.57	6930.76	77.74	6930.74
78.16	6930.68	78.58	6930.66	78.74	6930.65	79.16	6930.63	79.58	6930.66
80.16	6930.7	80.59	6930.74	80.73	6930.75	81.59	6930.81	81.72	6930.82
82.16	6930.86	82.6	6930.89	82.72	6930.9	83.16	6930.93	83.6	6930.97
83.71	6930.97	84.16	6931.01	84.61	6931.04	84.7	6931.05	85.16	6931.08
85.61	6931.12	85.7	6931.13	86.16	6931.16	86.62	6931.2	86.69	6931.2
87.16	6931.24	87.62	6931.27	87.69	6931.28	88.16	6931.31	88.63	6931.35
88.68	6931.35	89.64	6931.43	89.68	6931.43	90.16	6931.47	90.64	6931.5
90.67	6931.5	91.65	6931.58	91.67	6931.58	92.65	6931.66	92.66	6931.66
93.16	6931.69	94.16	6931.77	94.65	6931.8	94.66	6931.8	95.16	6931.84
95.65	6931.87	95.67	6931.87	96.16	6931.9	96.64	6931.93	96.67	6931.93
97.16	6931.96	97.64	6931.99	97.68	6931.99	98.16	6932.02	98.63	6932.04
98.68	6932.05	99.16	6932.08	99.62	6932.1	99.69	6932.11	100.16	6932.14
100.62	6932.16	100.69	6932.17	101.16	6932.2	101.61	6932.22	101.7	6932.23
102.16	6932.26	102.61	6932.28	102.71	6932.29	103.16	6932.32	103.6	6932.34
103.71	6932.35	104.16	6932.38	104.6	6932.42	104.72	6932.42	105.16	6932.46
105.59	6932.51	105.72	6932.52	106.16	6932.56	106.59	6932.6	106.73	6932.62
107.16	6932.66	107.58	6932.7	107.73	6932.71	108.16	6932.75	108.58	6932.8
108.74	6932.81	109.16	6932.85	109.57	6932.89	109.74	6932.91	110.16	6932.95
110.57	6932.98	110.75	6933	111.16	6933.04	111.56	6933.07	111.75	6933.1
112.16	6933.13	112.56	6933.16	112.76	6933.17	113.16	6933.2	113.55	6933.23
113.76	6933.25	114.16	6933.28	114.55	6933.31	114.77	6933.32	115.16	6933.35
115.54	6933.38	115.78	6933.4	116.16	6933.43	116.53	6933.46	116.78	6933.47
117.16	6933.5	117.53	6933.53	117.79	6933.55	118.16	6933.58	118.52	6933.61
118.79	6933.63	119.16	6933.65	119.52	6933.68	119.8	6933.7	120.16	6933.73
120.51	6933.76	120.8	6933.78	121.16	6933.81	121.51	6933.83	121.81	6933.85
122.16	6933.88	122.5	6933.91	122.81	6933.93	123.16	6933.96	123.5	6933.98
123.82	6934.01	124.16	6934.03	124.49	6934.06	124.82	6934.08	125.16	6934.11
125.49	6934.13	125.83	6934.16	126.16	6934.18	126.48	6934.21	126.84	6934.23
127.16	6934.26	127.48	6934.28	127.84	6934.31	128.16	6934.33	128.47	6934.36
128.85	6934.39	129.47	6934.43	129.85	6934.46	130.16	6934.49	130.46	6934.51
130.86	6934.54	131.16	6934.56	131.45	6934.52	131.86	6934.47	132.16	6934.44
132.45	6934.4	132.87	6934.34	133.16	6934.3	133.44	6934.27	133.87	6934.21
134.16	6934.17	134.44	6934.13	134.88	6934.08	135.16	6934.04	135.43	6934
135.88	6933.94	136.16	6933.91	136.43	6933.87	136.89	6933.81	137.16	6933.77
137.42	6933.74	137.89	6933.68	138.16	6933.64	138.42	6933.61	138.9	6933.54

Ex RAS Input Report.txt

139.16	6933.51	139.41	6933.47	140.16	6933.38	140.41	6933.34	140.91	6933.27
141.16	6933.24	141.4	6933.21	141.92	6933.14	142.4	6933.08	142.92	6933.01
143.16	6932.98	143.39	6932.95	143.93	6932.87	145.16	6932.71	145.38	6932.68
145.94	6932.61	146.16	6932.58	146.37	6932.55	146.94	6932.47	147.16	6932.45
147.37	6932.42	147.95	6932.34	148.16	6932.31	148.36	6932.29	148.95	6932.21
149.16	6932.19	149.36	6932.16	149.96	6932.09	150.16	6932.07	150.35	6932.04
150.96	6931.97	151.35	6931.93	151.97	6931.85	152.34	6931.81	152.98	6931.73
153.34	6931.69	153.98	6931.61	154.16	6931.59	154.33	6931.57	154.99	6931.49
155.33	6931.45	155.99	6931.37	156.16	6931.35	156.32	6931.33	157	6931.25
157.32	6931.21	158	6931.13	158.31	6931.09	159.01	6931.01	159.16	6930.99
159.31	6930.98	160.01	6930.94	160.16	6930.93	160.3	6930.96	161.02	6931.13
161.16	6931.16	161.3	6931.2	162.02	6931.37	162.16	6931.4	163.16	6931.63
163.28	6931.66	164.03	6931.84	164.16	6931.87	164.28	6931.89	165.04	6932.07
165.16	6932.1	165.27	6932.13	166.05	6932.31	166.16	6932.33	166.27	6932.36
167.05	6932.54	167.16	6932.57	167.26	6932.59	168.06	6932.78	168.26	6932.82
169.06	6933.01	169.16	6933.03	169.25	6933.06	170.07	6933.25	170.25	6933.29
171.07	6933.48	171.16	6933.5	171.24	6933.52	172.08	6933.72	172.16	6933.74
172.24	6933.75	173.08	6933.95	173.16	6933.97	173.23	6933.99	174.09	6934.19
174.16	6934.2	174.23	6934.22	175.09	6934.42	175.16	6934.44	175.22	6934.45
176.1	6934.66	176.22	6934.68	177.11	6934.89	177.21	6934.91	178.2	6935.13
179.12	6935.33	179.2	6935.35	180.12	6935.56	180.16	6935.56	180.19	6935.57
181.06	6935.76	181.13	6935.78	181.16	6935.78	181.19	6935.79	182.13	6936
182.16	6936.01	182.18	6936.01	183.14	6936.22	183.16	6936.23	183.18	6936.23
184.14	6936.44	184.17	6936.45	185.15	6936.66	185.17	6936.67	186.15	6936.89
186.16	6936.89	186.96	6937.06	187.16	6937.11	188.15	6937.18	188.16	6937.18
189.15	6937.22	189.17	6937.22	190.14	6937.26	190.18	6937.26	191.14	6937.3
191.18	6937.3	192.13	6937.34	192.19	6937.34	193.13	6937.37	193.19	6937.37
194.12	6937.39	194.98	6937.39						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	36.35	.035	130.86	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	36.35	130.86		108.43 100.15	91.04	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3500

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 430



Ex RAS Input Report.txt

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6935.12	.58	6935.12	1.24	6935.13	1.56	6935.13	2.43	6935.14
2.66	6935.14	3.35	6935.15	3.76	6935.15	4.27	6935.16	4.54	6935.16
4.86	6935.17	5.54	6935.17	5.96	6935.18	6.55	6935.18	7.04	6935.19
7.55	6935.19	7.96	6935.2	8.56	6935.2	8.88	6935.21	9.56	6935.21
9.81	6935.22	10.56	6935.22	10.73	6935.23	11.65	6935.23	12.57	6935.24
12.61	6935.24	13.5	6935.25	13.58	6935.25	13.67	6935.26	14.58	6935.26
14.77	6935.27	15.01	6935.27	15.58	6935.27	15.87	6935.28	16.59	6935.28
16.97	6935.29	17.19	6935.29	17.59	6935.3	18.11	6935.3	18.6	6935.31
19.18	6935.31	19.6	6935.32	20.6	6935.32	20.88	6935.3	21.38	6935.26
21.61	6935.25	21.8	6935.23	22.48	6935.18	22.61	6935.16	22.72	6935.16
23.58	6935.09	23.61	6935.08	23.64	6935.08	23.97	6935.06	24.57	6935.01
24.62	6935	24.68	6935	25.49	6934.93	25.62	6934.92	25.78	6934.91
26.41	6934.86	26.63	6934.84	26.88	6934.82	27.33	6934.78	27.63	6934.76
27.98	6934.73	28.26	6934.71	28.63	6934.68	29.09	6934.64	29.18	6934.64
29.64	6934.6	30.1	6934.56	30.19	6934.55	30.64	6934.52	31.02	6934.49
31.29	6934.47	31.65	6934.44	31.94	6934.41	32.39	6934.38	32.65	6934.36
32.87	6934.35	33.49	6934.3	33.65	6934.29	33.79	6934.28	34.59	6934.23
34.66	6934.23	34.71	6934.22	35.33	6934.18	35.63	6934.16	35.69	6934.16
36.56	6934.1	36.67	6934.09	36.79	6934.08	37.48	6934.04	37.67	6934.02
37.9	6934.01	38.4	6933.97	38.67	6933.96	39	6933.93	39.32	6933.91
39.68	6933.89	40.1	6933.86	40.25	6933.85	40.68	6933.82	41.17	6933.79
41.2	6933.79	41.68	6933.75	42.09	6933.7	42.3	6933.67	42.69	6933.62
43.01	6933.57	43.4	6933.52	43.69	6933.48	43.94	6933.44	44.5	6933.36
44.7	6933.34	44.86	6933.32	45.6	6933.21	45.7	6933.2	45.78	6933.19
46.7	6933.06	47.63	6932.93	47.71	6932.92	47.81	6932.9	48.55	6932.8
48.71	6932.78	48.91	6932.75	49.47	6932.67	49.72	6932.64	50.01	6932.6
50.39	6932.54	50.72	6932.5	51.11	6932.44	51.32	6932.41	51.72	6932.36
52.21	6932.29	52.24	6932.29	52.73	6932.22	53.16	6932.16	53.31	6932.14
53.73	6932.08	54.08	6932.03	54.41	6931.98	54.74	6931.94	55	6931.9
55.51	6931.83	55.74	6931.8	55.93	6931.77	56.62	6931.67	56.74	6931.66
56.85	6931.64	57.72	6931.52	57.75	6931.52	57.77	6931.51	58.06	6931.47
58.69	6931.38	58.75	6931.38	58.82	6931.37	59.62	6931.26	59.75	6931.24
59.92	6931.21	60.54	6931.13	60.76	6931.1	61.02	6931.06	61.46	6931.02
61.76	6930.98	62.12	6930.93	62.38	6930.91	62.77	6930.85	63.22	6930.8
63.31	6930.79	63.77	6930.74	64.23	6930.69	64.32	6930.67	64.77	6930.62
65.15	6930.58	65.42	6930.55	65.78	6930.51	66.07	6930.47	66.53	6930.42
66.78	6930.39	67	6930.37	67.63	6930.29	67.79	6930.27	67.92	6930.26
68.73	6930.17	68.79	6930.16	68.84	6930.15	69.42	6930.09	69.76	6930.05
69.79	6930.04	69.83	6930.04	70.69	6929.94	70.8	6929.93	70.93	6929.91
71.61	6929.83	71.8	6929.81	72.03	6929.78	72.53	6929.73	72.81	6929.69
73.13	6929.66	73.45	6929.62	73.81	6929.58	74.23	6929.53	74.38	6929.51
74.81	6929.46	75.3	6929.41	75.34	6929.4	75.82	6929.35	76.14	6929.31
76.22	6929.3	76.44	6929.27	76.82	6929.23	77.14	6929.19	77.54	6929.15
77.82	6929.11	78.06	6929.09	78.64	6929.02	78.83	6929	78.99	6928.98
79.74	6928.89	79.83	6928.88	79.91	6928.88	80.78	6928.82	80.83	6928.81
80.84	6928.81	81.75	6928.9	81.84	6928.91	81.94	6928.92	82.68	6928.99
82.84	6929.01	83.04	6929.03	83.6	6929.08	83.85	6929.1	84.15	6929.13

Ex RAS Input Report.txt

84.52	6929.17	84.85	6929.2	85.25	6929.24	85.44	6929.26	85.86	6929.3
86.35	6929.34	86.37	6929.34	86.86	6929.39	87.29	6929.43	87.45	6929.45
87.86	6929.49	88.21	6929.52	88.55	6929.55	88.87	6929.58	89.13	6929.61
89.65	6929.66	89.87	6929.68	90.06	6929.7	90.75	6929.77	90.88	6929.78
90.98	6929.79	91.85	6929.87	91.88	6929.87	91.9	6929.88	92.15	6929.9
92.82	6929.96	92.88	6929.97	92.95	6929.98	93.75	6930.05	93.89	6930.07
94.06	6930.08	94.67	6930.14	94.89	6930.16	95.16	6930.19	95.59	6930.23
95.89	6930.26	96.26	6930.29	96.51	6930.32	96.9	6930.36	97.36	6930.39
97.44	6930.37	97.9	6930.41	98.36	6930.39	98.46	6930.39	98.91	6930.37
99.28	6930.35	99.56	6930.36	99.91	6930.34	100.2	6930.33	100.66	6930.32
100.91	6930.31	101.12	6930.31	101.76	6930.29	102.05	6930.29	102.87	6930.27
102.97	6930.27	103.51	6930.25	103.93	6930.25	103.97	6930.24	104.81	6930.23
104.93	6930.22	105.07	6930.22	105.74	6930.2	106.17	6930.2	106.66	6930.18
106.94	6930.18	107.27	6930.17	107.58	6930.16	107.94	6930.16	108.37	6930.15
108.5	6930.14	108.95	6930.13	109.43	6930.12	109.47	6930.12	109.95	6930.11
110.35	6930.1	110.57	6930.1	110.95	6930.09	111.27	6930.08	111.67	6930.07
111.96	6930.07	112.19	6930.06	112.78	6930.05	112.96	6930.04	113.12	6930.04
113.88	6930.02	114.04	6930.02	114.87	6930	114.98	6930	115.88	6929.98
115.97	6929.98	116.08	6929.97	116.81	6929.96	116.98	6929.95	117.18	6929.94
117.73	6929.9	117.98	6929.87	118.28	6929.85	118.65	6929.81	118.98	6929.78
119.38	6929.75	119.57	6929.73	119.99	6929.69	120.48	6929.65	120.5	6929.65
120.99	6929.6	121.42	6929.56	121.59	6929.55	122	6929.51	122.34	6929.48
122.69	6929.45	123	6929.42	123.26	6929.4	123.79	6929.35	124	6929.33
124.18	6929.31	124.89	6929.25	125.01	6929.24	125.11	6929.23	125.99	6929.15
126.03	6929.15	126.24	6929.13	126.95	6929.06	127.02	6929.06	127.09	6929.05
127.87	6928.99	128.02	6928.98	128.19	6928.99	128.8	6929.15	129.02	6929.16
129.29	6929.21	129.72	6929.3	130.03	6929.37	130.39	6929.44	130.64	6929.49
131.03	6929.57	131.5	6929.67	131.56	6929.68	132.03	6929.78	132.49	6929.88
132.6	6929.9	133.04	6929.99	133.41	6930.07	133.7	6930.13	134.04	6930.2
134.33	6930.26	134.8	6930.35	135.05	6930.41	135.25	6930.45	135.9	6930.58
136.05	6930.61	136.18	6930.64	137	6930.81	137.05	6930.82	137.1	6930.83
137.6	6930.93	138.02	6931.02	138.06	6931.03	138.1	6931.04	138.94	6931.21
139.06	6931.24	139.2	6931.27	139.87	6931.4	140.07	6931.45	140.31	6931.5
140.79	6931.6	141.07	6931.67	141.41	6931.76	141.71	6931.84	142.07	6931.94
142.51	6932.06	142.63	6932.1	143.08	6932.22	143.56	6932.36	143.61	6932.37
144.08	6932.51	144.48	6932.62	144.71	6932.68	145.09	6932.79	145.4	6932.88
145.81	6932.99	146.09	6933.07	146.26	6933.11	146.32	6933.13	146.91	6933.3
147.09	6933.35	147.24	6933.39	148.01	6933.61	148.1	6933.63	148.17	6933.65
148.96	6933.87	149.09	6933.91	149.1	6933.91	149.11	6933.92	150	6933.92

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	42.09	.035	149.09	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	42.09	149.09		40.72    50.26	59.45		.1	.3

CROSS SECTION

# Ex RAS Input Report.txt

RIVER: UT\_BSC2  
REACH: NCONFL-BGM

RS: 3450

## INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 419

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6934.24	.15	6934.24	.26	6934.25	.71	6934.24	1.19	6934.24
1.23	6934.23	2.12	6934.23	2.32	6934.22	2.71	6934.22	3.05	6934.21
3.41	6934.21	3.72	6934.2	3.98	6934.2	4.49	6934.19	4.72	6934.18
4.91	6934.18	5.58	6934.16	5.84	6934.16	6.67	6934.14	6.77	6934.14
7.41	6934.13	7.7	6934.12	7.75	6934.12	8.64	6934.1	8.84	6934.1
9.57	6934.08	9.93	6934.08	10.5	6934.07	10.74	6934.06	11.01	6934.06
11.43	6934.05	11.74	6934.04	12.09	6934.03	12.36	6934.03	12.74	6934.02
13.19	6934.01	13.29	6934.01	13.75	6934	14.22	6933.99	14.27	6933.99
14.75	6933.98	15.15	6933.97	15.36	6933.97	15.75	6933.96	16.08	6933.95
16.45	6933.95	16.75	6933.94	17.02	6933.93	17.54	6933.92	17.95	6933.92
18.62	6933.9	18.76	6933.9	18.88	6933.88	19.71	6933.76	19.76	6933.75
19.81	6933.74	20.41	6933.63	20.74	6933.57	20.77	6933.56	20.8	6933.56
21.67	6933.39	21.77	6933.38	21.88	6933.35	22.6	6933.22	22.77	6933.19
22.97	6933.16	23.53	6933.05	23.77	6933.02	24.06	6932.99	24.46	6932.95
24.78	6932.92	25.14	6932.89	25.4	6932.86	25.78	6932.83	26.23	6932.78
26.33	6932.78	26.78	6932.73	27.26	6932.69	27.32	6932.68	27.79	6932.64
28.19	6932.6	28.4	6932.58	28.79	6932.54	29.12	6932.51	29.49	6932.48
29.79	6932.45	30.05	6932.42	30.58	6932.37	30.8	6932.35	30.98	6932.34
31.66	6932.27	31.8	6932.26	31.91	6932.25	32.75	6932.17	32.8	6932.16
32.84	6932.16	33.41	6932.11	33.78	6932.07	33.84	6932.07	34.71	6931.98
34.81	6931.97	34.92	6931.96	35.64	6931.89	35.81	6931.88	36.01	6931.86
36.57	6931.81	36.81	6931.78	37.1	6931.76	37.5	6931.72	37.82	6931.69
38.19	6931.65	38.43	6931.64	38.82	6931.6	39.27	6931.56	39.36	6931.55
39.82	6931.51	40.29	6931.47	40.36	6931.47	40.83	6931.43	41.22	6931.39
41.45	6931.38	41.83	6931.34	42.16	6931.32	42.53	6931.28	42.83	6931.26
43.09	6931.24	43.62	6931.19	43.83	6931.17	44.02	6931.16	44.71	6931.1
44.84	6931.09	44.95	6931.08	45.79	6931.01	45.84	6931	45.88	6931
46.4	6930.96	46.81	6930.92	46.88	6930.92	47.74	6930.84	47.85	6930.84
47.97	6930.83	48.67	6930.77	48.85	6930.75	49.05	6930.73	49.6	6930.69
49.85	6930.67	50.14	6930.64	50.54	6930.61	50.85	6930.58	51.23	6930.55
51.47	6930.53	51.86	6930.5	52.31	6930.46	52.4	6930.45	52.86	6930.41
53.33	6930.37	53.4	6930.37	53.86	6930.33	54.26	6930.29	54.49	6930.27
54.87	6930.24	55.19	6930.22	55.57	6930.18	55.87	6930.16	56.12	6930.14
56.66	6930.09	56.87	6930.07	57.05	6930.06	57.75	6930	57.88	6929.99
57.98	6929.98	58.84	6929.91	58.88	6929.9	58.92	6929.9	59.4	6929.86
59.85	6929.82	59.92	6929.82	60.78	6929.74	60.88	6929.73	61.01	6929.72

Ex RAS Input Report.txt

61.71	6929.67	61.89	6929.65	62.1	6929.63	62.64	6929.59	62.89	6929.57
63.18	6929.54	63.57	6929.51	63.89	6929.48	64.27	6929.45	64.5	6929.43
64.9	6929.4	65.36	6929.36	65.43	6929.35	65.9	6929.31	66.37	6929.27
66.44	6929.27	66.9	6929.23	67.3	6929.19	67.53	6929.17	67.91	6929.14
68.23	6929.11	68.62	6929.08	68.91	6929.06	69.16	6929.04	69.7	6928.99
69.91	6928.97	70.09	6928.96	70.79	6928.9	70.91	6928.89	71.02	6928.88
71.88	6928.81	71.95	6928.81	72.4	6928.79	72.88	6928.78	72.96	6928.78
73.81	6928.76	73.92	6928.75	74.05	6928.75	74.75	6928.73	74.93	6928.73
75.14	6928.72	75.68	6928.71	75.93	6928.7	76.11	6928.69	76.22	6928.69
76.61	6928.68	76.93	6928.67	77.31	6928.66	77.54	6928.66	77.94	6928.64
78.4	6928.63	78.47	6928.63	78.94	6928.62	79.4	6928.6	79.49	6928.6
79.94	6928.59	80.33	6928.58	80.57	6928.57	80.94	6928.56	81.26	6928.55
81.66	6928.54	81.95	6928.53	82.19	6928.52	82.75	6928.51	82.95	6928.5
83.13	6928.5	83.83	6928.47	83.95	6928.47	84.06	6928.46	84.92	6928.43
84.96	6928.43	84.99	6928.42	85.4	6928.41	85.92	6928.39	85.96	6928.39
86.01	6928.38	86.85	6928.35	86.96	6928.35	87.09	6928.34	87.78	6928.31
87.96	6928.31	88.18	6928.3	88.71	6928.28	88.97	6928.27	89.27	6928.26
89.64	6928.24	89.97	6928.23	90.35	6928.21	90.57	6928.2	90.97	6928.19
91.44	6928.17	91.51	6928.17	91.98	6928.15	92.44	6928.13	92.53	6928.13
92.98	6928.11	93.37	6928.1	93.61	6928.09	93.98	6928.07	94.3	6928.06
94.7	6928.04	94.99	6928.03	95.23	6928.02	95.79	6928.09	95.99	6928.08
96.16	6928.12	96.87	6928.32	96.99	6928.35	97.09	6928.38	97.96	6928.62
97.99	6928.63	98.02	6928.64	98.39	6928.74	98.95	6928.9	99	6928.91
99.05	6928.93	99.89	6929.16	100	6929.19	100.13	6929.23	100.82	6929.42
101	6929.47	101.22	6929.53	101.75	6929.68	102.01	6929.75	102.31	6929.83
102.68	6929.94	103.01	6930.03	103.4	6930.14	103.61	6930.2	104.01	6930.31
104.48	6930.44	104.54	6930.46	105.02	6930.59	105.47	6930.71	105.57	6930.74
106.02	6930.87	106.4	6930.97	106.66	6931.04	107.02	6931.15	107.33	6931.23
107.74	6931.35	108.02	6931.43	108.27	6931.49	108.83	6931.63	109.03	6931.69
109.2	6931.73	109.55	6931.81	109.92	6931.9	110.03	6931.93	110.13	6931.96
111	6932.17	111.03	6932.18	111.06	6932.18	111.39	6932.26	111.99	6932.4
112.04	6932.42	112.09	6932.43	112.92	6932.63	113.04	6932.66	113.18	6932.68
113.85	6932.85	114.04	6932.88	114.26	6932.89	114.78	6932.93	115.05	6932.94
115.35	6932.95	115.71	6932.97	116.05	6932.99	116.44	6933	116.65	6933.01
117.05	6933.03	117.52	6933.06	117.58	6933.06	118.05	6933.08	118.51	6933.09
118.61	6933.11	119.06	6933.11	119.44	6933.12	119.7	6933.12	120.06	6933.13
120.78	6933.13	121.06	6933.14	121.3	6933.14	121.87	6933.15	122.23	6933.15
122.96	6933.16	123.16	6933.16	124.05	6933.17	124.39	6933.17	125.03	6933.18
125.13	6933.18	125.96	6933.19	126.22	6933.19	126.89	6933.2	127.31	6933.2
127.82	6933.21	128.39	6933.21	128.75	6933.22	129.68	6933.22	130.09	6933.23
130.61	6933.23	131.09	6933.24	131.65	6933.24	132.1	6933.25	132.47	6933.25
132.74	6933.26	133.41	6933.26	133.83	6933.27	134.34	6933.27	134.91	6933.28
135.27	6933.28	136	6933.29	136.2	6933.29	137.09	6933.3	137.39	6933.3
138.06	6933.31	138.17	6933.31	138.99	6933.32	139.26	6933.32	139.92	6933.33
140.35	6933.33	140.85	6933.34	141.43	6933.34	141.79	6933.35	142.13	6933.35
142.52	6933.36	143.13	6933.36	143.61	6933.37	144.13	6933.37	144.58	6933.38
145.13	6933.38	145.51	6933.39	146.14	6933.39	146.44	6933.4	147.37	6933.4
147.96	6933.41	148.3	6933.41	149.04	6933.42	150	6933.42		

# Ex RAS Input Report.txt

Manning's n Values                      num=                      3  
          Sta    n Val            Sta    n Val            Sta    n Val  
          0       .05       18.88       .035       114.78       .05

Bank Sta: Left    Right            Lengths: Left Channel    Right            Coeff Contr.    Expan.  
          18.88    114.78                      75.69    100.23            119            .1            .3

## CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3350

## INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		492							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6932.84	.31	6932.84	.72	6932.83	1.27	6932.83	1.42	6932.82		
1.58	6932.82	2.22	6932.81	2.53	6932.81	2.97	6932.8	3.4	6932.8		
3.64	6932.79	3.89	6932.79	4.47	6932.78	4.75	6932.78	5.22	6932.77		
5.85	6932.77	5.97	6932.76	6.72	6932.76	6.96	6932.75	7.47	6932.75		
7.67	6932.74	8.22	6932.74	8.51	6932.73	8.96	6932.73	9.18	6932.72		
9.8	6932.72	10.29	6932.71	10.46	6932.71	10.83	6932.7	11.21	6932.7		
11.4	6932.69	11.93	6932.69	11.96	6932.68	12.51	6932.68	12.71	6932.67		
13.14	6932.64	13.46	6932.63	13.62	6932.62	14.06	6932.59	14.21	6932.59		
14.73	6932.56	14.96	6932.55	15.45	6932.52	15.71	6932.51	15.84	6932.5		
16.19	6932.49	16.46	6932.48	16.94	6932.45	17.21	6932.44	17.76	6932.41		
17.96	6932.4	18.05	6932.4	18.32	6932.39	18.71	6932.37	19.16	6932.35		
19.46	6932.33	20.08	6932.3	20.27	6932.3	20.45	6932.29	20.96	6932.26		
21.38	6932.24	21.71	6932.23	22.39	6932.2	22.46	6932.19	22.58	6932.19		
23.21	6932.16	23.6	6932.14	23.96	6932.12	24.7	6932.09	24.72	6932.09		
25.46	6932.06	25.82	6932.04	26.2	6932.02	26.85	6931.99	26.95	6931.99		
27.01	6931.98	27.7	6931.95	28.04	6931.94	28.45	6931.92	28.98	6931.89		
29.14	6931.88	29.33	6931.88	29.95	6931.85	30.25	6931.83	30.7	6931.81		
31.11	6931.79	31.36	6931.78	31.45	6931.78	31.64	6931.77	32.2	6931.74		
32.47	6931.73	32.95	6931.71	33.24	6931.69	33.58	6931.68	33.7	6931.67		
33.95	6931.66	34.45	6931.64	34.69	6931.63	35.04	6931.61	35.2	6931.6		
35.37	6931.59	35.8	6931.57	35.95	6931.57	36.26	6931.55	36.7	6931.53		
36.91	6931.52	37.45	6931.5	37.5	6931.5	38.02	6931.47	38.2	6931.46		
38.58	6931.45	38.95	6931.43	39.13	6931.42	39.63	6931.4	39.7	6931.39		
40.24	6931.37	40.45	6931.36	40.89	6931.34	41.2	6931.32	41.34	6931.32		
41.76	6931.26	41.95	6931.24	42.45	6931.18	43.2	6931.06	43.44	6931.02		
43.56	6931	43.9	6930.95	44.19	6930.9	44.67	6930.82	44.94	6930.78		
45.51	6930.69	45.69	6930.66	45.78	6930.65	46.03	6930.61	46.44	6930.54		

Ex RAS Input Report.txt

46.89	6930.47	47.19	6930.42	47.83	6930.32	47.94	6930.31	48	6930.3
48.16	6930.27	48.69	6930.19	49.11	6930.12	49.44	6930.07	50.14	6929.96
50.19	6929.95	50.22	6929.95	50.29	6929.93	50.94	6929.83	51.33	6929.77
51.69	6929.71	52.42	6929.6	52.43	6929.59	52.45	6929.59	53.19	6929.48
53.54	6929.42	53.94	6929.36	54.55	6929.26	54.65	6929.24	54.69	6929.24
54.76	6929.23	55.44	6929.12	55.76	6929.07	56.19	6929	56.68	6928.92
56.87	6928.89	57.08	6928.86	57.69	6928.76	57.98	6928.72	58.44	6928.64
58.81	6928.58	59.09	6928.54	59.19	6928.53	59.39	6928.49	59.94	6928.41
60.2	6928.37	60.69	6928.29	60.94	6928.25	61.31	6928.19	61.43	6928.17
61.7	6928.13	62.18	6928.05	62.42	6928.01	62.93	6927.93	63.08	6927.91
63.53	6927.84	63.68	6927.82	64.01	6927.76	64.43	6927.69	64.63	6927.66
65.18	6927.59	65.21	6927.57	65.74	6927.49	65.93	6927.47	66.33	6927.41
66.68	6927.36	66.85	6927.33	67.34	6927.26	67.43	6927.26	67.96	6927.18
68.18	6927.15	68.64	6927.09	68.93	6927.06	69.07	6927.04	69.47	6926.99
69.68	6926.96	70.18	6926.89	70.43	6926.86	70.95	6926.79	71.18	6926.76
71.29	6926.75	71.6	6926.71	71.93	6926.67	72.4	6926.6	72.68	6926.57
73.16	6926.51	73.26	6926.49	73.43	6926.47	73.51	6926.46	73.73	6926.45
74.18	6926.41	75.72	6926.41	75.86	6926.42	76.43	6926.43	76.83	6926.44
77.18	6926.45	77.89	6926.47	77.99	6926.47	78.67	6926.5	79.05	6926.51
79.42	6926.52	80.12	6926.54	80.2	6926.54	80.92	6926.56	81.27	6926.57
81.67	6926.59	82.26	6926.6	82.38	6926.61	82.51	6926.61	83.17	6926.63
83.49	6926.64	83.92	6926.65	84.39	6926.67	84.6	6926.68	84.83	6926.68
85.42	6926.7	85.71	6926.71	86.17	6926.72	86.52	6926.73	86.82	6926.74
86.92	6926.75	87.14	6926.75	87.67	6926.77	87.92	6926.78	88.42	6926.81
88.65	6926.83	89.03	6926.86	89.17	6926.87	89.45	6926.89	89.92	6926.92
90.14	6926.94	90.67	6926.98	90.78	6926.98	91.25	6927.02	91.42	6927.03
91.76	6927.06	92.17	6927.09	92.36	6927.1	92.91	6927.14	93.47	6927.18
93.67	6927.2	94.08	6927.23	94.42	6927.25	94.58	6927.26	95.04	6927.3
95.17	6927.31	95.69	6927.35	95.91	6927.36	96.39	6927.4	96.66	6927.42
96.8	6927.43	97.17	6927.45	97.41	6927.47	97.91	6927.51	98.16	6927.53
98.7	6927.57	98.91	6927.58	99.01	6927.59	99.3	6927.61	99.66	6927.64
100.12	6927.67	100.41	6927.69	101.01	6927.74	101.16	6927.75	101.23	6927.75
101.43	6927.77	101.91	6927.8	102.34	6927.83	102.66	6927.86	103.33	6927.91
103.41	6927.91	103.45	6927.92	103.57	6927.92	104.16	6927.97	104.56	6928
104.91	6928.02	105.64	6928.08	105.7	6928.08	106.41	6928.13	106.78	6928.16
107.16	6928.19	107.83	6928.24	107.91	6928.24	107.95	6928.25	108.66	6928.3
109	6928.32	109.41	6928.35	109.96	6928.39	110.11	6928.4	110.16	6928.41
110.26	6928.42	110.91	6928.46	111.21	6928.49	111.66	6928.52	112.09	6928.55
112.32	6928.57	112.41	6928.57	112.58	6928.59	113.16	6928.63	113.43	6928.65
113.9	6928.68	114.22	6928.71	114.54	6928.73	114.65	6928.74	114.89	6928.76
115.4	6928.79	115.65	6928.81	116.15	6928.85	116.35	6928.86	116.76	6928.89
116.9	6928.9	117.2	6928.93	117.65	6928.96	117.87	6928.97	118.4	6929.01
118.48	6929.02	118.98	6929.06	119.15	6929.07	119.51	6929.09	119.9	6929.12
120.09	6929.14	120.61	6929.18	120.65	6929.18	121.2	6929.22	121.4	6929.23
121.83	6929.26	122.15	6929.29	122.3	6929.3	122.75	6929.33	122.9	6929.34
123.41	6929.38	123.65	6929.4	124.14	6929.43	124.4	6929.45	124.52	6929.46
124.88	6929.49	125.15	6929.51	125.63	6929.54	125.9	6929.55	126.45	6929.57
126.65	6929.58	126.74	6929.58	127.01	6929.59	127.4	6929.6	127.85	6929.61

Ex RAS Input Report.txt

128.15	6929.62	128.76	6929.64	128.96	6929.64	129.14	6929.65	129.65	6929.66
130.07	6929.67	130.4	6929.68	131.08	6929.7	131.14	6929.7	131.18	6929.71
131.27	6929.71	131.89	6929.73	132.29	6929.74	132.64	6929.75	133.39	6929.77
133.4	6929.77	134.14	6929.79	134.5	6929.8	134.89	6929.81	135.53	6929.83
135.7	6929.83	136.39	6929.85	136.72	6929.86	137.14	6929.87	137.66	6929.89
137.89	6929.89	138.01	6929.9	138.64	6929.92	138.94	6929.92	139.39	6929.94
139.79	6929.95	140.05	6929.95	140.14	6929.96	140.33	6929.96	140.89	6929.98
141.16	6929.99	141.64	6930	141.93	6930.01	142.27	6930.02	142.39	6930.02
142.64	6930.03	143.14	6930.04	143.38	6930.05	143.89	6930.06	144.06	6930.07
144.49	6930.08	144.64	6930.08	144.95	6930.09	145.39	6930.1	145.6	6930.11
146.14	6930.13	146.19	6930.13	146.7	6930.14	146.89	6930.15	147.26	6930.16
147.64	6930.17	147.81	6930.17	148.32	6930.19	148.38	6930.19	148.92	6930.2
149.13	6930.21	149.58	6930.22	149.88	6930.23	150.03	6930.24	150.45	6930.25
150.63	6930.25	151.14	6930.26	151.38	6930.27	151.89	6930.28	152.13	6930.29
152.25	6930.29	152.58	6930.3	152.88	6930.31	153.36	6930.32	153.63	6930.33
154.2	6930.34	154.38	6930.34	154.47	6930.35	154.71	6930.35	155.13	6930.36
155.58	6930.37	155.88	6930.38	156.51	6930.39	156.63	6930.4	156.84	6930.4
157.38	6930.41	157.79	6930.42	158.13	6930.43	158.83	6930.45	158.97	6930.45
159.63	6930.46	160.01	6930.47	160.38	6930.48	161.11	6930.5	161.14	6930.5
161.88	6930.52	162.23	6930.53	162.24	6930.53	162.63	6930.53	163.24	6930.55
163.45	6930.55	164.13	6930.57	164.45	6930.58	164.88	6930.59	165.37	6930.6
165.62	6930.6	165.76	6930.61	166.37	6930.62	166.67	6930.63	167.12	6930.64
167.5	6930.65	167.78	6930.65	167.87	6930.66	168.08	6930.66	168.62	6930.67
168.89	6930.68	169.23	6930.68						

Manning's n Values      num=      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	41.34	.035	125.63	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	41.34	125.63	63.32	50.1	22.83		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3300

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		491					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6931.23	1.4	6931.23	1.67	6931.22	4.09	6931.22	4.39	6931.21
6.77	6931.21	7.09	6931.2	8.56	6931.2	9.39	6931.19	10.44	6931.19
10.55	6931.18	11.25	6931.17	11.45	6931.16	11.7	6931.16	12.15	6931.15



Ex RAS Input Report.txt

12.45	6931.14	12.85	6931.13	13.04	6931.13	13.46	6931.12	13.94	6931.11
14	6931.11	14.47	6931.1	14.83	6931.09	15.48	6931.07	15.73	6931.07
16.31	6931.05	16.62	6931.05	17.46	6931.03	17.52	6931.03	17.71	6931.02
18.41	6931.01	18.5	6931	18.61	6931	19.31	6930.99	19.51	6930.98
19.77	6930.98	20.2	6930.97	20.52	6930.96	20.92	6930.95	21.1	6930.95
21.52	6930.94	21.99	6930.93	22.07	6930.92	22.53	6930.91	22.89	6930.91
23.54	6930.89	23.78	6930.89	24.38	6930.87	24.68	6930.87	25.53	6930.85
25.58	6930.84	25.73	6930.84	26.47	6930.82	26.68	6930.82	27.37	6930.8
27.57	6930.8	27.84	6930.79	28.26	6930.78	28.58	6930.78	28.99	6930.77
29.16	6930.76	30.05	6930.74	30.14	6930.74	30.6	6930.73	30.95	6930.72
31.29	6930.72	31.6	6930.71	31.84	6930.7	32.45	6930.69	32.61	6930.69
32.74	6930.68	33.6	6930.66	33.75	6930.66	34.53	6930.64	34.75	6930.64
35.42	6930.62	35.63	6930.62	35.91	6930.61	36.32	6930.6	36.64	6930.59
37.06	6930.59	37.21	6930.58	38.11	6930.56	38.21	6930.56	38.66	6930.55
39.36	6930.53	39.67	6930.53	39.9	6930.52	40.52	6930.51	40.67	6930.5
40.8	6930.5	41.67	6930.48	41.77	6930.48	42.59	6930.46	42.69	6930.46
42.82	6930.45	43.48	6930.44	43.7	6930.43	43.98	6930.43	44.38	6930.42
44.71	6930.41	44.98	6930.4	45.27	6930.4	46.17	6930.38	46.28	6930.38
46.72	6930.37	47.43	6930.35	47.73	6930.34	47.96	6930.34	48.59	6930.32
48.85	6930.32	49.74	6930.3	49.79	6930.3	50.64	6930.27	50.75	6930.27
50.89	6930.26	51.54	6930.19	51.76	6930.17	52.04	6930.14	52.44	6930.1
53.2	6930.03	53.33	6930.01	53.78	6929.97	54.23	6929.92	54.35	6929.91
54.78	6929.87	55.12	6929.8	55.5	6929.71	55.79	6929.65	56.02	6929.59
56.66	6929.42	56.91	6929.35	57.8	6929.11	58.7	6928.88	58.82	6928.85
58.96	6928.81	59.6	6928.64	60.11	6928.5	60.83	6928.31	61.39	6928.17
61.84	6928.05	62.28	6927.93	62.42	6927.89	62.85	6927.78	63.18	6927.69
63.57	6927.59	63.85	6927.51	64.07	6927.46	64.72	6927.28	64.86	6927.25
65.82	6926.99	65.88	6926.98	66.76	6926.75	67.03	6926.68	67.66	6926.51
67.89	6926.45	68.18	6926.37	68.55	6926.28	68.89	6926.19	69.34	6926.09
69.45	6926.09	69.9	6925.99	70.34	6925.9	70.49	6925.88	70.91	6925.8
71.24	6925.73	71.64	6925.66	71.92	6925.61	72.13	6925.57	72.79	6925.44
72.93	6925.42	73.14	6925.38	73.84	6925.24	73.92	6925.23	73.95	6925.22
74.82	6925.06	74.94	6925.04	75.1	6925.02	75.71	6924.9	75.95	6924.89
76.25	6924.9	76.96	6924.94	77.4	6924.96	77.5	6924.97	77.96	6924.99
78.4	6925.02	78.56	6925.03	78.97	6925.05	79.3	6925.07	79.71	6925.09
79.98	6925.1	80.19	6925.11	80.86	6925.15	80.99	6925.16	81.09	6925.16
82.02	6925.22	83	6925.3	83.17	6925.31	84.01	6925.38	84.32	6925.4
85.02	6925.46	85.47	6925.49	85.56	6925.5	86.03	6925.53	86.46	6925.57
86.63	6925.58	87.04	6925.61	87.35	6925.64	87.78	6925.67	88.04	6925.69
88.25	6925.71	88.93	6925.76	89.14	6925.78	89.88	6925.84	90.08	6925.85
90.93	6925.92	91.24	6925.94	92.07	6926.01	92.73	6926.05	93.08	6926.08
93.54	6926.11	93.62	6926.11	94.09	6926.15	94.52	6926.18	94.7	6926.19
95.1	6926.22	95.41	6926.24	95.85	6926.27	96.11	6926.29	96.31	6926.31
97	6926.35	97.2	6926.37	97.9	6926.42	98.1	6926.43	98.15	6926.44
99.13	6926.51	99.31	6926.52	99.89	6926.56	100.14	6926.58	100.78	6926.62
101.15	6926.65	101.61	6926.68	101.68	6926.69	102.15	6926.72	102.57	6926.75
102.76	6926.76	103.16	6926.79	103.92	6926.84	104.17	6926.86	104.36	6926.88
105.07	6926.93	105.18	6926.93	105.26	6926.94	105.92	6926.99	106.16	6927

Ex RAS Input Report.txt

106.22	6927.01	107.19	6927.08	107.38	6927.09	107.95	6927.13	108.2	6927.15
108.84	6927.19	109.21	6927.22	109.68	6927.25	109.74	6927.26	110.22	6927.29
110.63	6927.32	110.83	6927.33	111.22	6927.36	111.53	6927.38	111.99	6927.42
112.23	6927.43	112.42	6927.45	113.14	6927.5	113.24	6927.51	113.32	6927.51
113.94	6927.56	114.21	6927.58	114.25	6927.58	114.29	6927.59	115.11	6927.65
115.26	6927.67	115.45	6927.68	116	6927.73	116.26	6927.75	116.6	6927.78
116.9	6927.8	117.27	6927.83	117.75	6927.87	117.79	6927.88	118.28	6927.92
118.69	6927.95	118.9	6927.97	119.29	6928	119.59	6928.03	120.3	6928.09
120.48	6928.1	121.21	6928.16	121.38	6928.18	121.96	6928.23	122.27	6928.25
122.31	6928.26	122.36	6928.26	123.17	6928.33	123.32	6928.34	123.51	6928.36
124.33	6928.42	124.67	6928.45	124.96	6928.48	125.82	6928.55	125.85	6928.55
126.34	6928.59	126.75	6928.63	126.97	6928.65	127.35	6928.68	127.64	6928.7
128.13	6928.74	128.36	6928.76	128.54	6928.78	128.8	6928.8	129.28	6928.84
129.37	6928.85	129.43	6928.85	129.98	6928.9	130.33	6928.93	130.43	6928.93
131.22	6929	131.38	6929.01	131.58	6929.03	132.12	6929.08	132.39	6929.1
132.74	6929.13	133.02	6929.15	133.4	6929.18	133.89	6929.22	133.91	6929.23
134.41	6929.27	134.81	6929.29	135.04	6929.3	135.41	6929.33	135.7	6929.34
136.19	6929.34	136.42	6929.35	136.6	6929.35	137.35	6929.37	137.49	6929.37
138	6929.38	138.39	6929.39	138.5	6929.39	139.28	6929.4	139.44	6929.41
139.65	6929.41	140.18	6929.42	140.45	6929.42	140.81	6929.43	141.07	6929.44
141.46	6929.44	142.47	6929.46	142.86	6929.47	143.11	6929.47	143.48	6929.48
143.76	6929.49	144.26	6929.5	144.65	6929.5	145.42	6929.52	145.55	6929.52
146.02	6929.53	146.45	6929.54	146.57	6929.54	147.34	6929.57	147.51	6929.57
147.72	6929.58	148.24	6929.6	148.52	6929.61	148.87	6929.62	149.13	6929.63
149.52	6929.64	150.53	6929.68	150.92	6929.69	151.18	6929.7	151.54	6929.71
151.82	6929.72	152.33	6929.74	152.55	6929.75	152.71	6929.75	153.49	6929.78
153.61	6929.78	154.04	6929.8	154.5	6929.82	154.64	6929.82	155.4	6929.85
155.57	6929.85	155.79	6929.86	156.29	6929.88	156.58	6929.89	156.94	6929.9
157.19	6929.91	157.59	6929.92	158.1	6929.94	158.59	6929.96	158.98	6929.97
159.25	6929.98	159.6	6930	159.88	6930	160.4	6930.02	160.61	6930.03
160.77	6930.04	161.55	6930.06	161.62	6930.07	161.67	6930.07	162.05	6930.08
162.56	6930.1	162.71	6930.1	163.46	6930.13	163.63	6930.14	163.86	6930.14
164.35	6930.16	164.64	6930.17	165.01	6930.18	165.25	6930.19	165.65	6930.21
166.17	6930.22	166.66	6930.24	167.04	6930.26	167.32	6930.27	167.66	6930.28
168.47	6930.31	168.67	6930.31	168.83	6930.32	169.62	6930.35	169.72	6930.35
170.07	6930.36	170.62	6930.38	170.69	6930.38	170.78	6930.39	171.52	6930.41
171.7	6930.42	171.93	6930.43	172.41	6930.44	172.7	6930.45	173.08	6930.47
173.31	6930.48	173.71	6930.49	174.2	6930.51	174.24	6930.51	174.72	6930.52
175.1	6930.54	175.39	6930.55	175.73	6930.56	176.54	6930.59	176.74	6930.6
176.89	6930.6	177.69	6930.63	177.78	6930.63	178.68	6930.66	178.75	6930.67
178.85	6930.67	179.57	6930.69	179.76	6930.7	180.47	6930.73	180.77	6930.74
181.15	6930.75	181.36	6930.76	181.77	6930.77	182.26	6930.79	182.3	6930.79
182.78	6930.81	183.15	6930.82	183.79	6930.84	184.05	6930.85	184.61	6930.87
184.8	6930.88	184.95	6930.88	185.76	6930.91	185.84	6930.91	186.11	6930.92
186.74	6930.95	186.92	6930.95	187.63	6930.98	187.82	6930.98	188.07	6930.99
188.53	6931	188.83	6931.01	189.22	6931.03	189.42	6931.03	189.84	6931.05
190.32	6931.06	190.37	6931.06	190.85	6931.08	191.21	6931.09	191.85	6931.11
192	6931.11								

# Ex RAS Input Report.txt

Manning's n Values                      num=                      3  
       Sta    n Val            Sta    n Val            Sta    n Val  
       0       .05       53.78       .035       135.41       .05

Bank Sta: Left    Right            Lengths: Left Channel    Right            Coeff Contr.    Expan.  
           53.78   135.41                    64.11    49.63       23.06                    .1            .3

## CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 3250

## INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		492					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6929.69	.07	6929.69	.5	6929.68	.68	6929.68	1.36	6929.67
1.59	6929.66	1.92	6929.66	2.22	6929.65	2.6	6929.65	3.09	6929.64
3.15	6929.64	3.62	6929.63	3.95	6929.63	4.38	6929.62	4.81	6929.62
5.62	6929.61	7.4	6929.61	7.68	6929.6	8.09	6929.59	8.26	6929.59
9.13	6929.57	9.32	6929.56	9.71	6929.55	9.99	6929.54	10.56	6929.53
10.73	6929.52	10.85	6929.52	11.54	6929.5	11.71	6929.49	11.79	6929.49
12.58	6929.47	12.76	6929.46	13.02	6929.46	13.44	6929.45	13.78	6929.44
14.26	6929.42	14.3	6929.42	14.79	6929.41	15.16	6929.4	15.81	6929.38
16.03	6929.38	16.73	6929.36	16.89	6929.36	17.27	6929.35	17.75	6929.34
17.84	6929.34	17.96	6929.33	18.61	6929.32	18.85	6929.31	19.2	6929.31
19.48	6929.3	19.87	6929.29	20.34	6929.28	20.43	6929.28	20.89	6929.27
21.2	6929.27	21.66	6929.26	21.9	6929.25	22.07	6929.25	22.9	6929.23
23	6929.23	23.79	6929.21	24.13	6929.21	24.65	6929.19	24.95	6929.19
25.37	6929.18	25.52	6929.18	26.38	6929.16	26.6	6929.15	26.98	6929.15
27.24	6929.14	27.84	6929.13	27.99	6929.13	28.1	6929.12	28.73	6929.11
28.97	6929.11	29.01	6929.1	29.07	6929.1	29.83	6929.09	30.03	6929.08
30.3	6929.08	30.69	6929.07	31.04	6929.06	32.06	6929.04	32.42	6929.03
32.77	6929.03	33.07	6929.02	33.28	6929.02	34.01	6929	34.14	6929
34.46	6928.99	35.01	6928.98	35.24	6928.98	35.87	6928.96	36.12	6928.96
36.48	6928.95	36.73	6928.95	37.13	6928.94	37.59	6928.93	37.71	6928.93
38.15	6928.92	38.46	6928.91	38.95	6928.9	39.17	6928.9	39.32	6928.89
40.18	6928.87	41.04	6928.86	41.2	6928.85	41.41	6928.85	41.91	6928.84
42.21	6928.83	42.65	6928.82	42.77	6928.82	43.23	6928.81	43.63	6928.8
43.88	6928.8	44.24	6928.79	44.5	6928.79	45.12	6928.77	45.36	6928.77
45.92	6928.76	46.22	6928.75	46.35	6928.75	47.08	6928.73	47.29	6928.73
47.59	6928.72	47.95	6928.71	48.31	6928.71	49.32	6928.69	49.67	6928.68
50.05	6928.67	50.34	6928.67	50.53	6928.66	50.59	6928.66	51.29	6928.65

Ex RAS Input Report.txt

51.35	6928.64	51.65	6928.64	52.26	6928.63	52.37	6928.62	52.52	6928.62
53.12	6928.61	53.38	6928.6	53.76	6928.59	53.99	6928.59	54.4	6928.58
54.85	6928.57	54.99	6928.57	55.41	6928.56	55.71	6928.54	56.23	6928.48
56.43	6928.46	56.57	6928.43	57.38	6928.21	57.44	6928.19	57.46	6928.19
58.3	6927.96	58.46	6927.92	58.69	6927.86	59.16	6927.73	59.48	6927.65
59.93	6927.52	60.02	6927.5	60.49	6927.37	60.89	6927.27	61.16	6927.19
61.51	6927.1	61.75	6927.04	62.4	6926.86	62.52	6926.83	62.61	6926.81
63.11	6926.68	63.48	6926.59	63.54	6926.57	63.63	6926.55	64.34	6926.39
64.87	6926.27	65.2	6926.2	65.57	6926.11	66.06	6926	66.1	6925.99
66.59	6925.88	66.93	6925.81	67.33	6925.71	67.6	6925.65	67.79	6925.61
68.57	6925.43	68.65	6925.41	68.84	6925.37	69.51	6925.22	69.63	6925.19
69.8	6925.15	70.38	6925.02	70.65	6924.96	71.04	6924.87	71.24	6924.83
71.66	6924.73	72.1	6924.63	72.27	6924.59	72.68	6924.5	72.96	6924.44
73.51	6924.31	73.7	6924.27	74.57	6924.07	74.69	6924.04	74.74	6924.04
75.39	6923.91	75.55	6923.88	75.73	6923.87	75.97	6923.89	76.42	6923.92
76.74	6923.95	77.21	6923.99	77.28	6924	77.76	6924.04	78.14	6924.07
78.44	6924.09	78.77	6924.12	79	6924.14	79.68	6924.19	79.79	6924.2
79.87	6924.21	80.3	6924.25	80.73	6924.28	80.8	6924.29	80.91	6924.3
81.59	6924.35	81.82	6924.37	82.15	6924.4	82.45	6924.42	82.84	6924.45
83.32	6924.49	83.38	6924.5	83.85	6924.54	84.18	6924.57	84.62	6924.6
84.87	6924.62	85.04	6924.64	85.85	6924.71	85.91	6924.71	86.03	6924.72
86.77	6924.8	86.9	6924.81	87.08	6924.83	87.63	6924.9	87.91	6924.93
88.32	6924.98	88.49	6925	88.93	6925.05	89.36	6925.11	89.55	6925.12
89.94	6925.17	90.22	6925.2	90.79	6925.26	90.96	6925.28	91.08	6925.29
91.76	6925.36	91.94	6925.38	92.02	6925.38	92.81	6925.46	93.26	6925.51
93.67	6925.55	94.01	6925.59	94.49	6925.64	94.53	6925.64	95.02	6925.69
95.39	6925.73	95.72	6925.76	96.04	6925.79	96.26	6925.82	96.96	6925.89
97.05	6925.9	97.12	6925.9	97.98	6925.99	98.07	6926	98.19	6926.01
98.85	6926.08	99.08	6926.11	99.43	6926.14	99.71	6926.17	100.1	6926.21
100.66	6926.27	101.12	6926.31	101.43	6926.35	101.9	6926.39	102.13	6926.42
102.3	6926.43	103.13	6926.52	103.16	6926.52	103.23	6926.53	104.02	6926.61
104.16	6926.62	104.36	6926.65	104.88	6926.7	105.18	6926.73	105.6	6926.77
105.75	6926.79	106.19	6926.83	106.61	6926.88	106.83	6926.9	107.21	6926.94
107.47	6926.97	108.07	6927.03	108.22	6927.04	108.34	6927.05	108.96	6927.12
109.2	6927.14	109.24	6927.15	109.3	6927.15	110.06	6927.23	110.26	6927.25
110.92	6927.32	111.27	6927.36	111.77	6927.41	111.79	6927.41	112.29	6927.46
112.65	6927.5	113	6927.54	113.3	6927.57	114.24	6927.66	114.32	6927.67
114.37	6927.68	114.69	6927.71	115.33	6927.78	115.47	6927.79	116.1	6927.86
116.35	6927.88	116.71	6927.92	116.96	6927.94	117.37	6927.99	117.82	6928.03
117.94	6928.04	118.38	6928.09	118.69	6928.12	119.18	6928.17	119.4	6928.19
119.55	6928.21	120.41	6928.3	120.42	6928.3	121.28	6928.39	121.43	6928.4
121.65	6928.43	122.14	6928.48	122.44	6928.51	122.82	6928.54	122.88	6928.55
123	6928.57	123.46	6928.61	123.86	6928.66	124.11	6928.68	124.47	6928.71
124.73	6928.74	125.35	6928.79	125.49	6928.8	125.59	6928.81	126.15	6928.86
126.45	6928.88	126.51	6928.88	126.58	6928.89	127.31	6928.95	127.52	6928.97
127.82	6928.99	128.54	6929.05	129.04	6929.08	129.05	6929.09	129.55	6929.12
129.9	6929.13	130.29	6929.14	130.57	6929.14	130.77	6929.15	131.52	6929.16
131.58	6929.16	131.63	6929.17	131.88	6929.17	132.49	6929.18	132.6	6929.18

Ex RAS Input Report.txt

132.75	6929.19	133.35	6929.2	133.61	6929.2	133.99	6929.21	134.22	6929.22
134.63	6929.22	135.08	6929.23	135.22	6929.24	135.65	6929.24	135.94	6929.25
136.46	6929.26	136.66	6929.26	136.8	6929.27	137.61	6929.28	137.69	6929.28
138.53	6929.3	138.69	6929.3	138.93	6929.31	139.39	6929.32	139.71	6929.32
140.16	6929.33	140.25	6929.34	140.72	6929.34	141.12	6929.35	141.39	6929.36
141.74	6929.36	141.98	6929.37	142.63	6929.38	142.75	6929.38	142.84	6929.39
143.34	6929.4	143.77	6929.4	143.86	6929.41	144.57	6929.42	144.79	6929.42
145.43	6929.44	145.8	6929.44	146.29	6929.45	146.33	6929.45	146.82	6929.46
147.16	6929.47	147.57	6929.48	147.83	6929.48	148.02	6929.49	148.8	6929.5
148.88	6929.5	149.07	6929.51	149.74	6929.52	149.86	6929.52	150.03	6929.53
150.61	6929.54	150.88	6929.54	151.27	6929.55	151.47	6929.56	151.89	6929.56
152.33	6929.57	152.5	6929.58	152.91	6929.58	153.2	6929.59	153.74	6929.6
153.93	6929.6	154.06	6929.61	154.8	6929.62	154.97	6929.62	155.78	6929.64
155.96	6929.64	156.21	6929.65	156.65	6929.66	156.97	6929.66	157.44	6929.67
157.51	6929.67	157.99	6929.68	158.37	6929.69	158.67	6929.7	159	6929.7
159.23	6929.71	159.91	6929.73	160.02	6929.73	160.1	6929.74	160.53	6929.75
160.96	6929.77	161.04	6929.77	161.14	6929.78	161.82	6929.8	162.05	6929.81
162.38	6929.83	162.68	6929.84	163.07	6929.85	163.55	6929.87	163.61	6929.87
164.08	6929.89	164.41	6929.9	164.85	6929.92	165.1	6929.93	165.27	6929.94
166.08	6929.97	166.14	6929.97	166.26	6929.98	167	6930	167.13	6930.01
167.32	6930.02	168.14	6930.05	168.55	6930.06	168.72	6930.07	169.16	6930.09
169.59	6930.1	170.18	6930.13	170.45	6930.14	171.02	6930.16	171.19	6930.17
171.31	6930.17	171.99	6930.2	172.17	6930.2	172.21	6930.21	172.25	6930.21
173.04	6930.24	173.05	6930.24						

Manning's n Values      num=      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	55.71	.035	128.54	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	55.71	128.54		50.23    50.23	50.23		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3200

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		405					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.77	1.46	6928.77	1.7	6928.76	3.48	6928.76	3.97	6928.75
5.49	6928.75	5.8	6928.74	7.61	6928.74	8.5	6928.73	9.51	6928.73
9.64	6928.72	11.53	6928.72	11.91	6928.71	13.54	6928.71	13.94	6928.7

Ex RAS Input Report.txt

15.55	6928.7	15.75	6928.69	17.58	6928.69	18.46	6928.68	19.58	6928.68
19.85	6928.67	21.59	6928.67	22.08	6928.66	23.6	6928.66	23.88	6928.65
24.61	6928.65	24.79	6928.64	25.61	6928.64	25.69	6928.63	26.39	6928.61
26.6	6928.6	26.65	6928.6	27.5	6928.58	27.63	6928.57	27.78	6928.57
28.41	6928.55	28.63	6928.54	28.92	6928.53	29.31	6928.52	29.64	6928.51
30.05	6928.5	30.22	6928.49	30.65	6928.48	31.12	6928.47	31.19	6928.46
31.65	6928.45	32.02	6928.44	32.32	6928.43	32.66	6928.42	32.93	6928.41
33.46	6928.39	33.67	6928.39	33.83	6928.38	34.59	6928.36	34.67	6928.36
34.74	6928.35	35.32	6928.34	35.64	6928.33	35.68	6928.33	35.72	6928.32
36.55	6928.3	36.68	6928.29	36.86	6928.29	37.45	6928.27	37.69	6928.26
37.99	6928.25	38.36	6928.24	38.7	6928.23	39.13	6928.22	39.26	6928.22
39.7	6928.2	40.16	6928.19	40.26	6928.18	40.71	6928.17	41.07	6928.16
41.39	6928.14	41.72	6928.13	41.97	6928.12	42.53	6928.09	42.72	6928.08
42.88	6928.07	43.66	6928.04	43.73	6928.03	43.78	6928.03	44.25	6928.01
44.69	6927.99	44.74	6927.98	44.8	6927.98	45.59	6927.94	45.74	6927.93
45.93	6927.92	46.5	6927.9	46.75	6927.88	47.06	6927.87	47.4	6927.85
47.75	6927.83	47.88	6927.82	48.2	6927.81	48.3	6927.81	48.76	6927.78
49.21	6927.76	49.33	6927.76	49.77	6927.74	50.11	6927.72	50.47	6927.7
50.77	6927.69	51.02	6927.67	51.6	6927.65	51.78	6927.64	51.92	6927.63
52.74	6927.59	52.79	6927.59	52.83	6927.58	53.18	6927.55	53.73	6927.5
53.79	6927.5	53.87	6927.49	54.63	6927.36	54.8	6927.33	55	6927.3
55.54	6927.21	55.8	6927.17	56.14	6927.11	56.44	6927.06	56.81	6927
57.27	6926.92	57.35	6926.91	57.82	6926.83	58.25	6926.76	58.41	6926.74
58.82	6926.67	59.16	6926.61	59.54	6926.55	59.83	6926.5	60.06	6926.46
60.67	6926.36	60.84	6926.34	60.97	6926.31	61.81	6926.18	61.84	6926.17
61.87	6926.17	62.11	6926.13	62.77	6926.02	62.85	6926	62.94	6925.99
63.68	6925.87	63.86	6925.83	64.08	6925.79	64.58	6925.71	64.86	6925.65
65.21	6925.58	65.49	6925.53	65.87	6925.46	66.34	6925.36	66.39	6925.35
66.87	6925.26	67.3	6925.18	67.48	6925.14	67.88	6925.07	68.2	6925
68.61	6924.92	68.89	6924.87	69.11	6924.83	69.75	6924.7	69.89	6924.68
70.01	6924.65	70.88	6924.48	70.91	6924.48	71.04	6924.45	71.82	6924.3
71.91	6924.29	72.02	6924.26	72.72	6924.13	72.91	6924.09	73.15	6924.04
73.63	6923.95	73.92	6923.9	74.28	6923.82	74.53	6923.78	74.92	6923.7
75.42	6923.6	75.44	6923.6	75.93	6923.51	76.22	6923.48	76.34	6923.46
76.55	6923.46	76.94	6923.42	77.25	6923.41	77.69	6923.39	77.94	6923.39
78.15	6923.38	78.82	6923.35	79.05	6923.35	79.95	6923.32	79.97	6923.31
80.86	6923.28	81.09	6923.28	81.77	6923.25	81.97	6923.25	82.22	6923.24
82.67	6923.24	82.98	6923.23	83.36	6923.25	83.58	6923.23	83.98	6923.26
84.48	6923.32	84.49	6923.34	84.99	6923.4	85.38	6923.46	85.62	6923.5
85.99	6923.55	86.29	6923.6	86.76	6923.67	87	6923.71	87.19	6923.74
87.89	6923.84	88.01	6923.86	88.1	6923.88	88.91	6924	89	6924.01
89.01	6924.02	89.03	6924.02	89.91	6924.15	90.02	6924.17	90.16	6924.19
90.81	6924.29	91.03	6924.32	91.3	6924.36	91.72	6924.43	92.03	6924.47
92.43	6924.54	92.62	6924.56	93.04	6924.63	93.52	6924.7	93.56	6924.71
94.05	6924.78	94.43	6924.84	94.7	6924.88	95.05	6924.93	95.33	6924.98
95.83	6925.05	96.06	6925.09	96.24	6925.12	96.97	6925.23	97.06	6925.24
97.14	6925.25	97.84	6925.36	98.05	6925.39	98.07	6925.39	98.1	6925.4
98.95	6925.53	99.08	6925.55	99.23	6925.57	99.86	6925.66	100.08	6925.7

Ex RAS Input Report.txt

100.37	6925.74	100.76	6925.8	101.09	6925.85	101.5	6925.91	101.66	6925.93
102.1	6926	102.57	6926.07	102.64	6926.08	103.1	6926.15	103.47	6926.2
103.77	6926.25	104.11	6926.3	104.38	6926.34	104.91	6926.42	105.11	6926.45
105.28	6926.47	106.04	6926.59	106.12	6926.6	106.19	6926.61	106.77	6926.7
107.09	6926.74	107.13	6926.75	107.17	6926.76	108	6926.88	108.13	6926.9
108.31	6926.93	108.9	6927.02	109.14	6927.05	109.33	6927.08	109.44	6927.1
109.8	6927.15	110.15	6927.2	110.58	6927.27	110.71	6927.29	111.15	6927.35
111.61	6927.42	111.71	6927.44	112.16	6927.5	112.52	6927.56	112.84	6927.61
113.17	6927.65	113.42	6927.69	113.98	6927.78	114.17	6927.8	114.33	6927.83
115.11	6927.95	115.18	6927.96	115.23	6927.96	115.7	6927.98	116.13	6928
116.18	6928.01	116.25	6928.01	117.04	6928.04	117.19	6928.04	117.38	6928.05
117.94	6928.07	118.2	6928.08	118.51	6928.09	118.85	6928.1	119.2	6928.12
119.65	6928.13	119.75	6928.14	120.21	6928.15	120.66	6928.17	120.78	6928.18
121.22	6928.19	121.56	6928.2	121.92	6928.22	122.22	6928.23	122.47	6928.24
123.05	6928.26	123.23	6928.26	123.37	6928.27	124.19	6928.3	124.27	6928.3
124.63	6928.32	125.18	6928.34	125.32	6928.34	126.08	6928.37	126.25	6928.37
126.45	6928.38	126.99	6928.4	127.25	6928.41	127.59	6928.42	127.89	6928.43
128.26	6928.45	128.72	6928.46	128.8	6928.47	129.27	6928.49	129.7	6928.5
129.86	6928.51	130.27	6928.52	130.61	6928.53	130.99	6928.55	131.28	6928.56
131.51	6928.57	132.12	6928.59	132.29	6928.6	132.41	6928.6	133.26	6928.63
133.32	6928.63	133.56	6928.64	134.22	6928.67	134.39	6928.67	135.13	6928.7
135.3	6928.71	135.53	6928.71	136.03	6928.73	136.31	6928.74	136.66	6928.75
136.94	6928.76	137.32	6928.78	137.79	6928.8	137.84	6928.8	138.32	6928.82
138.75	6928.83	138.93	6928.84	139.33	6928.85	139.65	6928.86	140.06	6928.88
140.34	6928.89	140.55	6928.9	141.2	6928.92	141.34	6928.93	141.46	6928.93
142.33	6928.96	142.36	6928.96	142.49	6928.97	143.27	6928.99	143.36	6929
143.47	6929	144.17	6929.02	144.36	6929.02	144.6	6929.03	145.08	6929.04
145.37	6929.05	145.73	6929.06	145.98	6929.07	146.37	6929.08	146.87	6929.09
146.88	6929.09	147.38	6929.11	147.79	6929.12	148	6929.12	148.39	6929.13
148.69	6929.14	149.14	6929.15	149.39	6929.16	149.6	6929.17	150	6929.17

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	51.92	.035	115.18	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	51.92	115.18		50.08    50.08	50.08		.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 3150

INPUT  
 Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate



Ex RAS Input Report.txt

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 431

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6927.71	.14	6927.71	.51	6927.7	.85	6927.69	1.28	6927.68
1.42	6927.68	1.86	6927.66	2.32	6927.65	2.41	6927.65	2.86	6927.64
3.23	6927.63	3.54	6927.62	3.87	6927.61	4.13	6927.6	4.68	6927.59
4.88	6927.58	5.03	6927.58	5.81	6927.56	5.88	6927.55	5.94	6927.55
6.44	6927.54	6.84	6927.53	6.95	6927.53	7.75	6927.5	7.9	6927.5
8.08	6927.49	8.65	6927.48	8.9	6927.47	9.21	6927.46	9.56	6927.45
9.91	6927.44	10.35	6927.43	10.46	6927.43	10.91	6927.42	11.37	6927.4
11.48	6927.4	11.92	6927.39	12.27	6927.38	12.62	6927.37	12.93	6927.36
13.17	6927.36	13.75	6927.34	13.93	6927.33	14.08	6927.33	14.89	6927.31
14.98	6927.31	15.37	6927.3	15.89	6927.28	16.02	6927.28	16.79	6927.26
16.95	6927.25	17.15	6927.25	17.7	6927.23	17.96	6927.22	18.29	6927.22
18.6	6927.21	18.97	6927.2	19.42	6927.18	19.51	6927.18	19.97	6927.17
20.41	6927.16	20.56	6927.15	20.98	6927.14	21.31	6927.13	21.69	6927.12
21.98	6927.11	22.22	6927.11	22.82	6927.09	22.99	6927.09	23.12	6927.08
23.96	6927.06	24.03	6927.06	24.3	6927.05	24.93	6927.03	25.09	6927.03
25.84	6927.01	26.01	6927	26.23	6927	26.74	6926.98	27.02	6926.98
27.36	6926.97	27.65	6926.96	28.02	6926.95	28.49	6926.94	28.55	6926.94
29.03	6926.92	29.45	6926.91	29.63	6926.91	30.03	6926.89	30.36	6926.89
30.76	6926.87	31.04	6926.87	31.26	6926.86	31.9	6926.84	32.17	6926.84
33.03	6926.81	33.23	6926.81	33.98	6926.79	34.06	6926.79	34.17	6926.78
34.88	6926.76	35.07	6926.76	35.3	6926.75	35.78	6926.74	36.07	6926.73
36.43	6926.72	36.69	6926.71	37.08	6926.7	37.57	6926.69	37.59	6926.68
38.09	6926.67	38.5	6926.66	38.7	6926.65	39.09	6926.64	39.4	6926.63
39.84	6926.62	40.1	6926.61	40.31	6926.61	40.97	6926.59	41.1	6926.58
41.21	6926.58	42.1	6926.55	42.16	6926.55	43.02	6926.53	43.12	6926.52
43.24	6926.52	43.92	6926.5	44.12	6926.49	44.37	6926.49	44.83	6926.47
45.13	6926.46	45.51	6926.45	45.77	6926.45	46.14	6926.43	46.64	6926.42
47.14	6926.4	47.54	6926.39	47.78	6926.39	48.15	6926.38	48.45	6926.37
48.91	6926.35	49.16	6926.35	49.35	6926.34	50.04	6926.32	50.16	6926.32
50.26	6926.31	51.09	6926.29	51.18	6926.29	52.06	6926.2	52.17	6926.19
52.31	6926.17	52.97	6926.05	53.18	6926.02	53.45	6925.97	53.87	6925.89
54.19	6925.84	54.58	6925.77	54.78	6925.73	55.19	6925.66	55.68	6925.57
55.71	6925.57	56.2	6925.48	56.59	6925.41	56.85	6925.36	57.21	6925.3
57.49	6925.25	57.98	6925.16	58.21	6925.12	58.4	6925.08	59.12	6924.95
59.22	6924.93	59.3	6924.92	60.02	6924.78	60.2	6924.75	60.22	6924.75
60.25	6924.74	61.11	6924.59	61.23	6924.56	61.38	6924.53	62.01	6924.42
62.24	6924.38	62.52	6924.33	62.92	6924.25	63.24	6924.19	63.65	6924.12
63.82	6924.09	64.25	6924.01	64.73	6923.92	64.79	6923.91	65.26	6923.83
65.63	6923.76	65.92	6923.7	66.26	6923.64	66.53	6923.59	67.06	6923.5
67.27	6923.46	67.44	6923.43	68.19	6923.29	68.28	6923.27	68.34	6923.27
68.95	6923.2	69.25	6923.17	69.32	6923.17	70.15	6923.18	70.29	6923.19
70.46	6923.19	71.06	6923.2	71.29	6923.2	71.59	6923.21	71.96	6923.22
72.3	6923.22	72.73	6923.23	72.87	6923.23	73.31	6923.24	73.77	6923.25
73.86	6923.25	74.31	6923.26	74.67	6923.27	74.99	6923.27	75.32	6923.28
75.58	6923.29	76.13	6923.3	76.48	6923.3	77.26	6923.32	77.39	6923.32

Ex RAS Input Report.txt

77.88	6923.33	78.29	6923.34	78.4	6923.34	79.2	6923.35	79.34	6923.36
79.53	6923.36	80.1	6923.37	80.35	6923.38	80.66	6923.38	81.01	6923.39
81.36	6923.39	81.8	6923.4	81.91	6923.4	82.36	6923.41	82.81	6923.42
82.93	6923.42	83.37	6923.43	83.72	6923.44	84.07	6923.45	84.38	6923.45
84.62	6923.46	85.2	6923.47	85.53	6923.47	86.34	6923.49	86.43	6923.49
86.81	6923.5	87.34	6923.51	87.47	6923.51	88.24	6923.52	88.4	6923.53
88.6	6923.53	89.15	6923.54	89.41	6923.55	89.74	6923.55	90.05	6923.56
90.41	6923.56	90.87	6923.57	90.95	6923.57	91.42	6923.58	91.86	6923.59
92.01	6923.59	92.43	6923.6	92.76	6923.61	93.14	6923.62	93.67	6923.62
94.27	6923.64	94.57	6923.64	95.41	6923.65	95.74	6923.65	96.38	6923.66
97.28	6923.66	97.46	6923.67	98.47	6923.67	98.81	6923.7	99.09	6923.69
99.47	6923.72	99.94	6923.82	100	6923.83	100.48	6923.93	100.9	6924.02
101.08	6924.05	101.48	6924.13	101.81	6924.2	102.21	6924.28	102.49	6924.34
102.71	6924.39	103.35	6924.52	103.5	6924.55	103.62	6924.57	104.48	6924.76
104.52	6924.76	104.67	6924.8	105.42	6924.95	105.51	6924.97	105.62	6924.99
106.33	6925.14	106.52	6925.18	106.55	6925.19	106.75	6925.23	107.23	6925.33
107.52	6925.39	107.88	6925.47	108.14	6925.52	108.53	6925.6	109.02	6925.71
109.04	6925.71	109.53	6925.81	109.95	6925.9	110.15	6925.94	110.54	6926.02
110.85	6926.09	111.29	6926.18	111.55	6926.24	111.76	6926.27	112.42	6926.38
112.55	6926.4	112.66	6926.41	113.55	6926.47	113.56	6926.47	113.6	6926.48
114.47	6926.54	114.57	6926.54	114.69	6926.55	115.37	6926.6	115.57	6926.61
115.82	6926.63	116.28	6926.66	116.58	6926.68	116.96	6926.71	117.18	6926.73
117.59	6926.76	118.09	6926.79	118.59	6926.83	118.99	6926.85	119.23	6926.87
119.6	6926.9	119.9	6926.92	120.36	6926.95	120.6	6926.97	120.8	6926.98
121.49	6927.03	121.61	6927.04	121.7	6927.05	122.53	6927.1	122.61	6927.11
122.63	6927.11	123.51	6927.17	123.62	6927.18	123.76	6927.19	124.42	6927.24
124.63	6927.25	124.9	6927.27	125.32	6927.3	125.64	6927.32	126.03	6927.35
126.23	6927.36	126.64	6927.39	127.13	6927.43	127.16	6927.43	127.65	6927.46
128.04	6927.49	128.3	6927.51	128.65	6927.53	128.94	6927.55	129.43	6927.59
129.66	6927.61	129.84	6927.62	130.57	6927.67	130.67	6927.68	130.75	6927.68
131.46	6927.73	131.65	6927.75	131.7	6927.75	132.56	6927.81	132.68	6927.82
132.83	6927.83	133.46	6927.87	133.69	6927.89	133.97	6927.91	134.37	6927.94
134.69	6927.96	135.1	6927.98	135.27	6928	135.7	6928.02	136.17	6928.05
136.24	6928.04	136.71	6928.07	137.08	6928.09	137.37	6928.1	137.71	6928.11
137.98	6928.12	138.51	6928.14	138.72	6928.15	138.89	6928.15	139.64	6928.18
139.72	6928.18	139.79	6928.19	140.4	6928.21	140.7	6928.22	140.77	6928.22
141.6	6928.25	141.74	6928.26	141.91	6928.27	142.51	6928.29	142.74	6928.3
143.04	6928.31	143.41	6928.32	143.75	6928.33	144.18	6928.35	144.31	6928.36
144.76	6928.37	145.22	6928.39	145.31	6928.39	145.76	6928.41	146.12	6928.42
146.44	6928.44	146.77	6928.45	147.03	6928.46	147.58	6928.48	147.78	6928.48
147.93	6928.49	148.71	6928.52	148.84	6928.52	149.33	6928.54	149.74	6928.56
150	6928.56								

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	51.18	.035	111.76	.05

Bank Sta: Left      Right      Lengths: Left Channel      Right      Coeff Contr.      Expan.

Ex RAS Input Report.txt

51.18 111.76

39.96 50.14 58.01

.1

.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3100

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.19	.15	6928.19	.58	6928.18	.85	6928.18	1.08	6928.17
1.67	6928.16	2.01	6928.16	2.76	6928.15	2.86	6928.14	2.93	6928.14
3.9	6928.13	4.79	6928.11	4.95	6928.11	5.72	6928.1	5.87	6928.1
6.04	6928.09	6.65	6928.08	6.87	6928.08	7.13	6928.07	7.57	6928.07
7.87	6928.06	8.22	6928.06	8.5	6928.05	8.88	6928.05	9.32	6928.04
9.43	6928.04	10.36	6928.02	10.88	6928.01	11.28	6928.01	11.5	6928
11.89	6928	12.21	6927.99	12.59	6927.98	13.14	6927.98	13.68	6927.97
13.89	6927.96	14.07	6927.96	14.78	6927.95	14.89	6927.95	15	6927.94
15.92	6927.93	16.24	6927.92	16.85	6927.91	16.96	6927.91	17.78	6927.9
17.9	6927.9	18.05	6927.89	18.71	6927.88	19.14	6927.88	19.64	6927.87
19.91	6927.86	20.24	6927.86	20.56	6927.85	20.91	6927.85	21.33	6927.84
21.49	6927.84	21.92	6927.83	22.92	6927.81	23.35	6927.81	23.51	6927.8
23.92	6927.8	24.27	6927.79	24.6	6927.79	24.93	6927.78	25.2	6927.78
25.7	6927.77	25.93	6927.76	26.13	6927.76	26.79	6927.75	27.06	6927.75
27.88	6927.73	27.99	6927.73	28.58	6927.72	28.91	6927.72	28.97	6927.71
29.84	6927.7	30.07	6927.7	30.77	6927.68	31.16	6927.68	31.7	6927.67
31.95	6927.66	32.25	6927.66	32.63	6927.65	32.95	6927.65	33.34	6927.64
33.55	6927.64	33.96	6927.63	34.43	6927.62	34.96	6927.62	35.41	6927.61
35.53	6927.61	36.34	6927.59	36.62	6927.59	36.97	6927.58	37.26	6927.58
37.71	6927.57	37.97	6927.57	38.19	6927.56	38.8	6927.55	39.12	6927.55
39.89	6927.53	40.05	6927.53	40.92	6927.52	40.99	6927.52	41.9	6927.5
42.08	6927.5	42.83	6927.49	42.99	6927.48	43.17	6927.48	43.76	6927.47
44.26	6927.45	44.69	6927.43	44.99	6927.41	45.35	6927.4	45.62	6927.38
46	6927.36	46.45	6927.34	46.54	6927.34	47	6927.31	47.47	6927.29
47.54	6927.29	48	6927.26	48.4	6927.25	48.63	6927.23	49.01	6927.21
49.33	6927.2	49.72	6927.18	50.25	6927.16	50.82	6927.14	51.01	6927.14
51.18	6927.13	51.91	6927.11	52.02	6927.1	52.11	6927.1	53	6927.07
53.26	6927.06	53.97	6927.04	54.09	6927.03	54.89	6927.01	55.03	6927
55.18	6927	55.82	6926.97	56.03	6926.97	56.75	6926.94	57.03	6926.93
57.68	6926.91	58.04	6926.9	58.46	6926.89	58.61	6926.88	59.04	6926.87
60.04	6926.83	60.46	6926.82	60.64	6926.81	61.05	6926.8	61.74	6926.78
62.05	6926.76	62.32	6926.76	62.83	6926.74	63.24	6926.72	63.92	6926.7
64.06	6926.7	64.17	6926.69	65.01	6926.66	65.1	6926.66	65.6	6926.64

Ex RAS Input Report.txt

66.03	6926.63	66.1	6926.63	66.96	6926.6	67.07	6926.59	67.2	6926.59
67.88	6926.57	68.29	6926.55	68.81	6926.54	69.38	6926.52	69.74	6926.5
70.47	6926.48	70.67	6926.47	71.08	6926.46	71.56	6926.44	72.08	6926.43
72.52	6926.41	72.66	6926.41	73.09	6926.39	73.45	6926.38	74.38	6926.35
75.09	6926.32	75.31	6926.32	75.93	6926.3	76.23	6926.28	77.03	6926.26
77.1	6926.26	77.16	6926.25	77.94	6926.23	78.12	6926.22	79.02	6926.19
79.11	6926.19	79.21	6926.18	79.95	6926.16	80.11	6926.15	80.3	6926.15
80.87	6926.13	81.39	6926.11	81.8	6926.1	82.12	6926.09	82.49	6926.07
82.73	6926.07	83.12	6926.05	83.58	6926.04	83.66	6926.03	84.12	6926.02
84.59	6926	84.67	6926	85.13	6925.98	85.51	6925.97	85.76	6925.96
86.13	6925.95	86.44	6925.94	86.85	6925.93	87.37	6925.91	87.95	6925.89
88.14	6925.88	88.3	6925.88	89.04	6925.85	89.22	6925.85	90.13	6925.82
90.15	6925.81	90.28	6925.81	91.08	6925.78	91.22	6925.78	92.01	6925.75
92.15	6925.75	92.31	6925.74	92.94	6925.72	93.41	6925.7	93.86	6925.69
94.5	6925.67	94.79	6925.66	95.16	6925.65	95.21	6925.65	95.59	6925.63
95.72	6925.63	96.16	6925.61	96.65	6925.59	97.17	6925.58	97.58	6925.56
97.77	6925.56	98.17	6925.54	98.87	6925.52	99.17	6925.51	99.96	6925.48
100.18	6925.48	100.36	6925.47	101.05	6925.45	101.29	6925.43	102.14	6925.33
102.62	6925.26	103.14	6925.18	103.24	6925.16	104.07	6925.03	104.33	6924.99
105	6924.89	105.19	6924.85	105.42	6924.81	105.93	6924.73	106.2	6924.68
106.51	6924.62	106.85	6924.55	107.6	6924.4	107.78	6924.37	108.2	6924.29
108.7	6924.19	108.71	6924.19	109.2	6924.09	109.64	6924.01	109.79	6923.98
110.21	6923.9	110.88	6923.77	111.21	6923.7	111.49	6923.65	111.97	6923.56
112.21	6923.51	113.22	6923.32	113.35	6923.29	114.16	6923.13	114.28	6923.11
114.96	6922.98	115.25	6922.92	116.34	6922.71	117.06	6922.57	117.23	6922.54
117.99	6922.39	118.23	6922.35	118.52	6922.29	118.92	6922.21	119.24	6922.15
119.62	6922.15	119.84	6922.12	120.24	6922.13	120.71	6922.15	120.77	6922.15
121.7	6922.19	121.8	6922.19	122.25	6922.21	122.63	6922.23	122.89	6922.24
123.25	6922.25	123.56	6922.27	123.98	6922.28	124.25	6922.3	124.48	6922.31
125.08	6922.33	125.26	6922.34	125.41	6922.34	126.17	6922.38	126.34	6922.38
127.26	6922.42	127.3	6922.43	128.19	6922.46	128.27	6922.47	128.35	6922.47
128.58	6922.48	129.12	6922.5	129.45	6922.52	130.05	6922.52	130.54	6922.54
130.98	6922.54	131.28	6922.55	131.91	6922.55	132.28	6922.56	132.83	6922.56
133.76	6922.58	134.29	6922.58	134.69	6922.59	135.29	6922.59	135.62	6922.6
136.29	6922.6	136.55	6922.61	137.09	6922.61	137.3	6922.62	137.47	6922.62
138.18	6922.63	138.4	6922.63	139.27	6922.64	139.64	6922.64	140.26	6922.65
140.37	6922.65	141.18	6922.66	141.31	6922.66	141.46	6922.67	142.11	6922.67
142.31	6922.68	143.04	6922.68	143.32	6922.69	143.64	6922.69	143.97	6922.7
144.73	6922.7	144.9	6922.71	145.32	6922.71	145.82	6922.72	146.33	6922.72
146.75	6922.73	146.92	6922.73	147.33	6922.74	148.01	6922.74	148.33	6922.75
148.61	6922.75	149.1	6922.76	149.54	6922.76	150.19	6922.77	150.46	6922.77
151.29	6922.78	151.39	6922.78	151.98	6922.79	152.38	6922.79	153.25	6922.8
153.35	6922.81	153.47	6922.81	154.17	6922.82	154.56	6922.82	155.1	6922.83
155.36	6922.83	155.66	6922.88	156.03	6922.91	156.75	6923.04	156.96	6923.07
157.36	6923.15	157.84	6923.23	158.37	6923.33	158.81	6923.41	158.93	6923.43
159.37	6923.51	159.74	6923.58	160.02	6923.63	160.67	6923.74	161.12	6923.82
161.38	6923.87	162.21	6924.02	162.38	6924.05	162.53	6924.08	162.73	6924.12
163.3	6924.22	163.38	6924.24	163.45	6924.25	164.32	6924.42	164.39	6924.43

Ex RAS Input Report.txt

165.31	6924.62	165.48	6924.66	166.39	6924.84	167.4	6925.05	167.67	6925.1
168.09	6925.19	168.4	6925.25	168.76	6925.3	169.02	6925.34	169.4	6925.38
169.95	6925.43	170.41	6925.46	170.88	6925.5	170.94	6925.5	171.41	6925.54
171.8	6925.57	172.41	6925.62	172.73	6925.64	173.13	6925.67	173.42	6925.69
173.66	6925.71	174.22	6925.75	174.42	6925.77	174.59	6925.78	175.31	6925.84
175.42	6925.85	175.52	6925.85	176.41	6925.92	176.44	6925.93	176.66	6925.94
177.37	6926	177.43	6926	177.5	6926.01	178.43	6926.08	178.59	6926.09
179.23	6926.14	179.44	6926.16	179.68	6926.18	180.15	6926.21	180.44	6926.23
180.77	6926.26	181.08	6926.28	181.44	6926.31	182.01	6926.35	182.45	6926.39
182.94	6926.43	182.96	6926.43	183.45	6926.47	183.87	6926.5	184.05	6926.51
184.45	6926.54	185.14	6926.6	185.46	6926.62	186.23	6926.68	186.46	6926.7
186.65	6926.71	187.46	6926.77	188.42	6926.85	188.51	6926.85	189	6926.89
189.43	6926.93	189.51	6926.93	190.6	6927.02	191.29	6927.07	191.48	6927.09
191.69	6927.1	192.48	6927.16	192.79	6927.19	193.15	6927.22	193.48	6927.24
193.88	6927.27	194.07	6927.29	194.49	6927.32	194.97	6927.36	195	6927.36
195.49	6927.4	196.06	6927.44	196.49	6927.48	196.86	6927.51	197.15	6927.53
197.5	6927.56	197.78	6927.57	198.25	6927.59	198.5	6927.61	199.64	6927.61
200.43	6927.62	200.66	6927.62						

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.05	100.36	.035
		169.02	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	100.36	169.02		33.13	33.13	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3050

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 25	
Sta	Elev	Sta	Elev
-6.37	6927.39	2.14	6927.27
33.84	6926.18	42.43	6925.86
65.26	6923.3	74.15	6921.58
105.87	6921.74	108.65	6921.76
128.84	6924.75	130.4	6924.89
		142.64	6925.7
		147.29	6926.02
		156.89	6926.65

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
-6.37	.035	56.26	.035
		128.84	.035

# Ex RAS Input Report.txt

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
56.26	128.84	75.27	75.27	75.27		.1	.3

## CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3000

## INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-79.24	6927.64	-78.83	6927.63	-77.35	6927.63	-77.05	6927.62	-76.04	6927.62
-75.64	6927.61	-74.52	6927.61	-74.04	6927.6	-72.62	6927.6	-72.44	6927.59
-71.04	6927.59	-70.73	6927.58	-69.79	6927.58	-69.24	6927.57	-67.9	6927.57
-66.05	6927.55	-64.98	6927.55	-64.12	6927.54	-63.02	6927.54	-62.85	6927.53
-61.78	6927.53	-61.28	6927.52	-60.02	6927.52	-59.65	6927.51	-58.45	6927.51
-58.01	6927.5	-57.01	6927.5	-56.56	6927.49	-55.39	6927.49	-55.01	6927.48
-53.72	6927.48	-53.26	6927.47	-52.19	6927.47	-52	6927.46	-50.89	6927.46
-48.05	6927.43	-46.99	6927.43	-46.87	6927.42	-45.8	6927.42	-45.21	6927.41
-44.74	6927.41	-44.27	6927.4	-43.32	6927.4	-42.99	6927.39	-41.98	6927.39
-41.54	6927.38	-40.98	6927.38	-40.49	6927.37	-39.54	6927.37	-39.41	6927.36
-38.34	6927.36	-37.98	6927.35	-36.97	6927.35	-36.71	6927.34	-35.76	6927.34
-34.08	6927.32	-33.01	6927.31	-31.95	6927.31	-30.88	6927.3	-29.15	6927.28
-28.75	6927.28	-27.96	6927.27	-27.69	6927.26	-26.96	6927.26	-26.62	6927.25
-25.96	6927.25	-24.95	6927.23	-24.42	6927.23	-23.95	6927.22	-23.42	6927.22
-22.95	6927.21	-22.36	6927.21	-21.95	6927.2	-21.29	6927.2	-20.95	6927.19
-20.23	6927.18	-19.69	6927.18	-19.16	6927.17	-18.75	6927.17	-18.1	6927.16
-15.91	6927.14	-15.51	6927.13	-14.9	6927.13	-13.08	6927.11	-12.77	6927.1
-11.93	6927.1	-11.7	6927.09	-11.19	6927.09	-10.93	6927.08	-10.24	6927.08
-9.93	6927.07	-9.3	6927.07	-8.92	6927.06	-8.35	6927.06	-7.92	6927.05
-7.41	6927.05	-6.92	6927.04	-6.37	6927.04	-5.92	6927.03	-5.52	6927.03
-5.31	6927.02	-4.57	6927.02	-4.24	6927.01	-3.63	6927.01	-3.18	6927
-2.68	6927	1.1	6926.96	1.22	6926.95	2.1	6926.95	2.15	6926.94
2.99	6926.94	3.1	6926.93	3.94	6926.93	4.1	6926.92	4.88	6926.92
5.1	6926.91	5.83	6926.91	6.1	6926.9	6.77	6926.9	7.1	6926.89
7.72	6926.89	8.11	6926.88	8.66	6926.88	9.61	6926.86	10.11	6926.86
10.55	6926.85	11.12	6926.85	11.39	6926.84	12.99	6926.82	13.22	6926.82
14.26	6926.8	15.39	6926.79	16.19	6926.77	16.68	6926.77	17.4	6926.75
17.79	6926.75	18.36	6926.7	18.54	6926.7	19.29	6926.62	20.71	6926.49
20.95	6926.46	22.29	6926.35	23.79	6926.21	24.54	6926.15	25.14	6926.09
25.59	6926.06	27.54	6925.88	28.29	6925.82	28.97	6925.76	29.57	6925.7
29.79	6925.69	30.68	6925.61	31.29	6925.55	32.04	6925.49	33.22	6925.38

Ex RAS Input Report.txt

33.54	6925.36	34.01	6925.31	34.29	6925.29	35.79	6925.16	37.19	6925.03
38.04	6924.96	38.44	6924.92	39.51	6924.83	39.58	6924.82	41.04	6924.7
42.87	6924.53	43.29	6924.5	44.01	6924.43	44.15	6924.42	44.79	6924.37
46.29	6924.23	47.04	6924.17	47.31	6924.14	48.54	6924.04	48.79	6924.01
49.52	6923.95	50.2	6923.88	51.11	6923.8	51.54	6923.75	53.43	6923.55
53.79	6923.52	55.06	6923.38	56.03	6923.28	56.56	6923.22	58.07	6923.07
58.28	6923.04	59.03	6922.97	59.78	6922.89	60.81	6922.77	61.71	6922.64
62.03	6922.6	62.78	6922.49	63.53	6922.39	63.93	6922.33	64.28	6922.29
65.05	6922.18	66.15	6922.03	66.53	6921.97	68.03	6921.76	68.36	6921.72
70.28	6921.45	71.03	6921.35	71.42	6921.29	71.69	6921.26	72.8	6921.1
73.28	6921.04	74.2	6920.91	74.3	6920.89	75.01	6920.8	75.53	6920.72
76.12	6920.65	77.03	6920.61	77.23	6920.61	78.94	6920.55	79.28	6920.53
80.03	6920.51	81.53	6920.45	82.03	6920.44	83.88	6920.37	84.15	6920.37
84.99	6920.35	85.28	6920.35	85.9	6920.33	86.1	6920.33	86.27	6920.36
86.78	6920.34	87.2	6920.44	88.4	6920.7	89.03	6920.85	89.42	6920.93
89.78	6921.02	91.64	6921.43	92.03	6921.52	95.78	6922.37	96.07	6922.43
96.53	6922.54	96.89	6922.61	98.29	6922.93	99.01	6923.09	99.82	6923.28
100.28	6923.38	101.61	6923.68	102.53	6923.86	103.83	6923.88	104.03	6923.89
104.46	6923.89	106.05	6923.92	106.78	6923.94	107.78	6923.95	108.53	6923.97
109.1	6923.98	109.62	6923.98	110.48	6924	110.78	6924	111.42	6924.02
111.74	6924.02	112.69	6924.04	113.03	6924.04	113.74	6924.06	115.28	6924.08
116.78	6924.11	117.13	6924.12	117.53	6924.12	119.03	6924.15	119.34	6924.15
121.28	6924.19	121.56	6924.19	123.53	6924.23	124.48	6924.24	125.78	6924.27
125.99	6924.27	127.65	6924.3	128.03	6924.3	128.21	6924.31	129.97	6924.34
130.43	6924.35	130.84	6924.35	131.03	6924.36	132.29	6924.38	133.28	6924.4
133.75	6924.4	134.03	6924.41	134.86	6924.42	135.53	6924.44	135.97	6924.44
136.28	6924.45	137.78	6924.47	138.53	6924.49	140.03	6924.51	140.78	6924.53
142.28	6924.55	143.03	6924.57	144.53	6924.59	144.83	6924.6	145.28	6924.6
146.78	6924.63	147.05	6924.64	147.53	6924.64	149.03	6924.67	149.27	6924.67
151.28	6924.71	151.48	6924.71	152.59	6924.73	152.78	6924.74	153.16	6924.74
154.82	6924.77	155.02	6924.77	155.93	6924.79	157.7	6924.82	158.16	6924.83
158.61	6924.83	158.76	6924.84	159.97	6924.86	160.39	6924.86	161.5	6924.88
161.75	6924.88	162.49	6924.9	162.98	6924.9	163.73	6924.92	164.85	6924.93
166.78	6924.96	166.98	6924.97	167.36	6924.97	168.19	6924.99	168.47	6924.99
169.55	6925.01	169.96	6925.01	170.71	6925.03	171.32	6925.03	172.64	6925.06
173.76	6925.07	173.92	6925.08	174.45	6925.08	174.66	6925.09	175.37	6925.1
175.85	6925.12	177.34	6925.15	177.85	6925.17	179.85	6925.21	180.41	6925.23
181.85	6925.26	182.27	6925.26	182.44	6925.25	183.25	6925.25	183.45	6925.24
184.24	6925.24	184.47	6925.23	185.48	6925.23	185.85	6925.22	186.5	6925.22
186.85	6925.21	187.51	6925.21	187.85	6925.2	188.53	6925.2	188.85	6925.19
189.54	6925.19	189.85	6925.18	190.56	6925.18	190.85	6925.17	191.57	6925.17
191.85	6925.16	192.59	6925.16	192.85	6925.15	193.6	6925.15	193.85	6925.14
194.62	6925.14	194.85	6925.13	195.63	6925.13	195.85	6925.12	196.65	6925.12
196.85	6925.11	197.66	6925.11	197.85	6925.1	198.68	6925.1	198.85	6925.09
199.69	6925.09	199.85	6925.08	200.7	6925.08	200.85	6925.07	201.85	6925.07
201.98	6925.06	202.85	6925.06	202.97	6925.05	203.85	6925.05	203.95	6925.04
204.85	6925.04	204.94	6925.03	205.85	6925.03	205.93	6925.02	206.91	6925.02
210.91	6924.98	223.67	6924.85	224.05	6924.85	224.66	6924.84	225.06	6924.84

Ex RAS Input Report.txt

225.64	6924.83	226.07	6924.83	226.63	6924.82	227.09	6924.82	227.61	6924.81
228.1	6924.81	228.6	6924.8	229.12	6924.8	229.59	6924.79	230.13	6924.79
230.86	6924.78	231.86	6924.72	232.54	6924.57	233.53	6924.38	234.19	6924.24
235.21	6924.04	235.86	6923.92	236.22	6923.84	237.47	6923.6	238.25	6923.44
239.27	6923.24	239.86	6923.12	241.42	6922.82	242.4	6922.62	243.39	6922.43
243.86	6922.33	244.86	6922.14	246.86	6921.74	247.39	6921.75	247.86	6921.77
248.32	6921.89	248.86	6922.02	249.3	6922.14	250.29	6922.39	251.27	6922.65
252.86	6923.05	253.24	6923.15	253.86	6923.29	254.49	6923.44	254.86	6923.52
255.86	6923.76	256.52	6923.91	257.53	6924.15	257.86	6924.22	258.17	6924.3
258.55	6924.38	258.86	6924.46	259.16	6924.46	259.56	6924.48	261.59	6924.54
262.12	6924.56	263.1	6924.58	263.86	6924.61	264.09	6924.61	264.86	6924.64
265.07	6924.64	265.86	6924.67	266.06	6924.67	271.98	6924.85	272.76	6924.87
272.96	6924.87	273.77	6924.9	273.95	6924.9	274.79	6924.93	274.93	6924.93
279.86	6925.08	279.94	6925.08	281.83	6925.14	283.92	6925.2	284.79	6925.23
284.93	6925.24	285.78	6925.26	285.95	6925.27	286.76	6925.29	286.96	6925.3
287.75	6925.32	293.66	6925.5	294.07	6925.51	294.86	6925.54	295.08	6925.54
295.64	6925.56	297.11	6925.62	297.61	6925.63	299.58	6925.71	300.56	6925.74
300.86	6925.76	302.19	6925.8	302.54	6925.82	303.52	6925.85	303.86	6925.87
304.86	6925.9	305.49	6925.93	306.24	6925.95	306.86	6925.98	307.26	6925.99
308.37	6926.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-79.24	.05	44.01	.035	102.53	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

44.01	102.53	92.31	92.31	92.31	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
181.81	308.37	6925.28	F

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 2900

INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6925.35	.76	6925.35	1.6	6925.34	1.86	6925.33	2.27	6925.33
2.63	6925.32	3.66	6925.3	3.94	6925.3	4.77	6925.29	5.6	6925.27
5.89	6925.27	6.74	6925.25	7.26	6925.25	8.1	6925.23	8.57	6925.23
9.51	6925.21	9.82	6925.21	9.92	6925.2	10.59	6925.19	10.85	6925.19



Ex RAS Input Report.txt

11.87	6925.17	12.25	6925.17	12.6	6925.16	12.9	6925.16	13.09	6925.15
14.75	6925.13	14.96	6925.12	15.29	6925.12	15.58	6925.11	15.98	6925.11
17.24	6925.09	17.97	6925.07	18.25	6925.07	19.06	6925.06	19.32	6925.05
19.74	6925.05	20.09	6925.04	21.12	6925.02	21.4	6925.02	22	6925.01
22.24	6925.01	23.07	6924.99	23.34	6924.99	23.9	6924.98	24.2	6924.97
24.73	6924.97	25.56	6924.95	26.03	6924.95	26.25	6924.94	27.23	6924.93
27.37	6924.92	28.06	6924.91	28.31	6924.91	28.72	6924.88	28.89	6924.88
29.72	6924.82	30.55	6924.77	31.36	6924.71	31.4	6924.71	33.05	6924.61
33.45	6924.58	33.88	6924.56	34.09	6924.54	34.71	6924.51	35.73	6924.44
36.38	6924.4	36.53	6924.4	37.21	6924.35	38.04	6924.3	38.12	6924.3
38.87	6924.25	39.46	6924.22	39.7	6924.2	40.1	6924.18	40.8	6924.13
41.37	6924.1	41.82	6924.07	42.14	6924.05	42.2	6924.05	43.49	6923.97
43.72	6923.95	43.86	6923.95	44.47	6923.91	44.69	6923.89	44.83	6923.89
45.52	6923.84	45.77	6923.83	46.17	6923.8	46.8	6923.77	47.19	6923.74
47.83	6923.7	48.02	6923.67	48.84	6923.51	48.86	6923.51	49.68	6923.32
50.2	6923.21	51.35	6922.95	51.55	6922.91	53.21	6922.54	53.84	6922.39
54.23	6922.31	55.51	6922.02	56.05	6921.9	56.34	6921.84	56.92	6921.71
57.07	6921.67	58	6921.47	58.83	6921.28	59.13	6921.22	60.5	6920.91
61.18	6920.76	61.33	6920.72	61.95	6920.59	62.99	6920.35	63.24	6920.3
64.26	6920.07	64.65	6919.99	65.49	6919.81	67.34	6919.41	67.66	6919.39
67.98	6919.36	68.37	6919.35	75.72	6919.35	76.3	6919.34	82.75	6919.34
82.95	6919.33	88.92	6919.33	89.61	6919.42	90.44	6919.54	90.97	6919.62
91.83	6919.74	92.1	6919.77	93.03	6919.9	94.05	6920.05	94.6	6920.12
95.86	6920.3	96.26	6920.35	96.91	6920.45	97.92	6920.59	98.55	6920.67
99	6920.73	99.89	6920.86	100.42	6920.94	101.23	6921.05	101.28	6921.05
102.08	6921.14	102.57	6921.19	103.92	6921.34	104.58	6921.41	105.26	6921.47
105.65	6921.49	106.38	6921.5	106.6	6921.51	107.41	6921.53	108.43	6921.55
108.74	6921.56	109.29	6921.57	109.57	6921.58	110.4	6921.6	110.63	6921.61
111.23	6921.62	111.52	6921.63	112.54	6921.65	113.32	6921.67	113.57	6921.67
113.73	6921.68	114.4	6921.69	115.39	6921.72	115.63	6921.72	116.22	6921.74
117.05	6921.76	117.35	6921.76	117.89	6921.78	119.55	6921.82	119.73	6921.82
120.38	6921.84	120.76	6921.84	121.21	6921.85	121.79	6921.87	122.05	6921.87
122.72	6921.89	123.71	6921.91	124.87	6921.94	125.4	6921.95	125.9	6921.97
126.2	6921.97	126.75	6921.99	127.04	6921.99	127.87	6922.01	128.09	6922.02
128.7	6922.03	128.98	6922.04	130.01	6922.06	131.19	6922.09	131.88	6922.11
132.12	6922.11	132.86	6922.13	133.09	6922.14	133.46	6922.14	133.69	6922.15
134.52	6922.17	134.8	6922.18	135.14	6922.18	135.35	6922.19	137.02	6922.23
137.2	6922.23	138.23	6922.26	139.25	6922.28	139.51	6922.29	140.28	6922.3
140.34	6922.31	140.62	6922.31	141.18	6922.33	141.52	6922.33	142.01	6922.35
142.33	6922.35	142.84	6922.37	144.2	6922.4	144.5	6922.4	144.99	6922.42
145.33	6922.42	145.42	6922.43	146.17	6922.44	146.44	6922.45	147.47	6922.47
148.66	6922.5	149.36	6922.52	149.58	6922.52	150.33	6922.54	150.92	6922.56
151.16	6922.56	151.99	6922.58	152.61	6922.6	152.82	6922.6	153.6	6922.62
153.73	6922.62	154.48	6922.64	154.66	6922.64	155.69	6922.67	156.72	6922.69
156.98	6922.7	157.63	6922.71	157.74	6922.72	158.64	6922.74	159.8	6922.77
160.82	6922.79	162.8	6922.84	163	6922.84	163.63	6922.86	163.91	6922.86
164.35	6922.87	164.46	6922.88	165.3	6922.9	165.69	6922.9	166.13	6922.92
166.84	6922.93	167.03	6922.94	167.79	6922.95	168.38	6922.97	168.62	6922.97

Ex RAS Input Report.txt

169.46	6922.99	170.07	6923.01	170.29	6923.01	171.06	6923.03	171.21	6923.03
171.95	6923.05	172.12	6923.06	172.41	6923.06	173.61	6923.09	173.75	6923.1
174.18	6923.11	174.45	6923.11	175.09	6923.13	176.23	6923.15	176.43	6923.16
177.26	6923.18	178.29	6923.2	180.46	6923.25	181.1	6923.27	181.37	6923.27
181.81	6923.29	182.4	6923.3	183.15	6923.32	183.42	6923.32	184.2	6923.35
184.42	6923.35	185.19	6923.38	185.42	6923.38	186.18	6923.41	186.42	6923.41
186.67	6923.42	187.18	6923.43	187.67	6923.45	188.17	6923.46	188.68	6923.48
189.16	6923.49	189.69	6923.51	190.15	6923.52	190.7	6923.54	191.15	6923.55
191.7	6923.57	192.14	6923.58	192.71	6923.6	193.13	6923.61	195.73	6923.69
197.75	6923.75	198.09	6923.75	198.42	6923.76	198.76	6923.75	199.42	6923.75
199.76	6923.74	200.77	6923.74	201.07	6923.73	201.78	6923.73	202.06	6923.72
202.79	6923.72	203.06	6923.71	204.05	6923.71	204.42	6923.7	205.42	6923.7
205.81	6923.69	206.82	6923.69	207.03	6923.68	208.02	6923.68	208.42	6923.67
209.84	6923.67	210	6923.66	211.42	6923.66	211.86	6923.65	212.86	6923.65
212.98	6923.64	214.42	6923.64	214.88	6923.63	215.96	6923.63	216.42	6923.62
217.42	6923.62	217.9	6923.61	218.94	6923.61	219.42	6923.6	220.42	6923.6
220.92	6923.59	221.93	6923.59	222.42	6923.58	223.42	6923.58	223.9	6923.57
224.96	6923.57	225.42	6923.56	226.42	6923.56	226.88	6923.55	227.98	6923.55
228.42	6923.54	229.86	6923.54	229.99	6923.53	231.42	6923.53	231.84	6923.52
233.02	6923.52	233.42	6923.51	234.42	6923.51	234.82	6923.5	236.04	6923.5
236.42	6923.49	237.42	6923.49	237.8	6923.48	239.06	6923.48	239.42	6923.47
240.42	6923.47	240.77	6923.46	242.08	6923.46	242.42	6923.45	243.75	6923.45
244.1	6923.44	245.11	6923.44	245.42	6923.43	246.73	6923.43	247.12	6923.42
247.42	6923.42	248.42	6923.29	250.15	6922.98	250.42	6922.92	251.15	6922.79
252.16	6922.6	252.42	6922.56	253.17	6922.42	253.68	6922.32	254.42	6922.19
254.67	6922.14	255.18	6922.05	255.42	6922	255.66	6921.96	256.19	6921.86
257.2	6921.68	257.42	6921.63	258.21	6921.49	258.64	6921.41	259.21	6921.31
260.22	6921.14	261.23	6920.96	261.62	6920.9	262.24	6920.79	262.61	6920.72
263.42	6920.58	263.6	6920.59	264.25	6920.61	264.42	6920.62	265.26	6920.86
265.42	6920.91	266.58	6921.25	267.28	6921.45	267.57	6921.54	268.28	6921.75
269.43	6922.08	270.3	6922.34	270.55	6922.41	271.31	6922.64	271.54	6922.7
272.31	6922.93	272.53	6923	273.32	6923.23	274.33	6923.52	274.52	6923.58
275.51	6923.87	276.34	6924.11	277.35	6924.41	277.5	6924.45	278.36	6924.7
279.37	6925	279.48	6925.03	280.37	6925.3	281.38	6925.59	281.47	6925.61
282.39	6925.87	283.4	6926.16	284.41	6926.35	284.45	6926.36	285.41	6926.19
285.44	6926.19	286.42	6926.08	287.11	6926.04	287.42	6926.03	288.44	6925.97
290.4	6925.85	290.45	6925.85	291.39	6925.8	291.46	6925.79	292.39	6925.74
292.47	6925.73	293.38	6925.68	293.47	6925.68	294.37	6925.62	294.48	6925.62
295.36	6925.57	296.5	6925.49	298.34	6925.38	298.51	6925.36	300.33	6925.25
300.53	6925.23	301.32	6925.18	301.53	6925.17	302.31	6925.12	302.54	6925.1
303.43	6925.04	303.55	6925.04	304.3	6924.99	305.29	6924.92	305.43	6924.92
307.27	6924.79	307.43	6924.79	308.27	6924.73	309.43	6924.66	309.6	6924.64
311.43	6924.53	311.61	6924.51	312.43	6924.46	312.62	6924.46	313.23	6924.41
313.63	6924.41	314.22	6924.35	314.63	6924.36	315.21	6924.31	315.64	6924.32
316.21	6924.31	317.2	6924.33	317.66	6924.35	318.19	6924.36	319.18	6924.4
319.43	6924.4	320.18	6924.44	320.43	6924.44	320.68	6924.46	322.69	6924.54
323.15	6924.56	323.32	6924.56						

# Ex RAS Input Report.txt

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	48.02	.035	105.26	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	48.02	105.26		118.9	99.71	72.05	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
197.58	323.32	6923.76	F

## CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 2800

## INPUT

Description: Source: Corrected Effective Topo

Datum: NGVD29

Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 491							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6922.8	.77	6922.78	1	6922.78	1.62	6922.76	1.9	6922.76
2.75	6922.74	3	6922.73	3.71	6922.71	3.89	6922.71	4.61	6922.69
5.51	6922.67	5.8	6922.66	6.17	6922.66	6.81	6922.64	7.82	6922.62
8.82	6922.59	9.12	6922.59	9.58	6922.57	9.83	6922.57	10.03	6922.56
10.72	6922.55	10.93	6922.54	12.74	6922.5	12.99	6922.49	13.64	6922.48
13.85	6922.47	14.13	6922.47	15.27	6922.44	15.87	6922.43	16.35	6922.41
16.4	6922.4	16.87	6922.38	17.25	6922.37	17.54	6922.35	17.88	6922.34
18.15	6922.32	18.68	6922.3	19.05	6922.28	19.82	6922.25	19.96	6922.24
20.5	6922.22	21.76	6922.16	22.09	6922.14	22.91	6922.11	23.23	6922.09
23.57	6922.08	24.36	6922.04	24.47	6922.03	25.37	6921.99	25.5	6921.99
25.93	6921.97	26.64	6921.93	27.18	6921.91	27.95	6921.87	28.08	6921.87
28.91	6921.83	29.26	6921.81	29.89	6921.78	30.05	6921.78	30.97	6921.73
31.97	6921.69	32.33	6921.67	32.98	6921.64	33.99	6921.6	34.99	6921.55
35.74	6921.52	36	6921.5	36.88	6921.46	40.72	6921.29	41.03	6921.28
41.62	6921.25	42.04	6921.24	42.53	6921.21	43.05	6921.19	43.43	6921.17
44.33	6921.14	45.06	6921.1	45.23	6921.1	45.98	6921.06	46.14	6921.06
46.76	6921.03	47.07	6921.02	47.11	6921.01	47.94	6920.98	48.25	6920.96
49.09	6920.93	49.39	6920.91	49.75	6920.9	50.53	6920.86	50.65	6920.86
51.55	6920.82	51.66	6920.81	52.11	6920.8	52.8	6920.76	53.36	6920.74
53.94	6920.71	54.97	6920.67	55.07	6920.67	55.17	6920.66	55.51	6920.65
56.07	6920.62	56.21	6920.62	57.14	6920.57	57.35	6920.57	57.87	6920.54
58.49	6920.52	58.78	6920.5	59.15	6920.49	59.62	6920.47	59.68	6920.46
60.16	6920.44	60.58	6920.37	60.76	6920.32	61.16	6920.25	61.48	6920.16
62.17	6919.98	63.04	6919.75	64.17	6919.44	64.26	6919.41	65.1	6919.19
65.31	6919.13	66	6918.95	66.45	6918.82	67.2	6918.62	67.59	6918.52

Ex RAS Input Report.txt

67.8	6918.46	68.21	6918.36	68.71	6918.23	68.72	6918.22	69.22	6918.1
69.61	6918	69.86	6917.93	70.22	6917.84	70.51	6917.76	71	6917.64
71.41	6917.53	72.14	6917.34	72.32	6917.31	73.02	6917.25	73.27	6917.24
74.25	6917.25	74.41	6917.26	75.03	6917.27	75.26	6917.27	75.55	6917.28
75.93	6917.28	76.23	6917.29	76.69	6917.29	76.83	6917.3	77.27	6917.3
78.28	6917.32	78.64	6917.32	79.28	6917.34	79.54	6917.34	80.1	6917.35
80.44	6917.35	81.24	6917.37	81.77	6917.38	82.3	6917.38	82.37	6917.39
83.15	6917.4	83.51	6917.4	84.05	6917.41	84.32	6917.42	84.65	6917.42
84.96	6917.43	85.32	6917.43	86.33	6917.41	86.76	6917.43	86.92	6917.45
87.34	6917.46	87.66	6917.51	88.06	6917.58	89.2	6917.76	89.35	6917.78
90.52	6917.97	91.28	6918.1	91.47	6918.14	92.18	6918.26	93.08	6918.43
93.75	6918.54	93.98	6918.59	94.88	6918.75	96.02	6918.95	96.4	6919.02
97.16	6919.15	97.4	6919.2	97.59	6919.23	98.3	6919.36	98.5	6919.39
99.27	6919.53	100.57	6919.77	101.21	6919.88	102.11	6920.04	102.43	6920.1
102.85	6920.17	103.44	6920.28	103.91	6920.34	103.98	6920.34	104.45	6920.4
105.45	6920.43	105.72	6920.43	106.26	6920.44	107.4	6920.47	107.53	6920.47
108.02	6920.49	108.53	6920.5	109.67	6920.53	110.23	6920.54	110.49	6920.55
110.81	6920.55	111.49	6920.57	112.94	6920.6	113.08	6920.61	114.22	6920.64
114.51	6920.64	114.75	6920.65	115.36	6920.66	115.65	6920.67	116.49	6920.69
116.78	6920.7	117.46	6920.71	117.53	6920.72	118.36	6920.73	118.54	6920.74
118.77	6920.74	119.26	6920.76	119.55	6920.76	120.55	6920.79	121.97	6920.82
122.57	6920.84	122.87	6920.84	123.57	6920.86	123.77	6920.86	124.46	6920.88
124.68	6920.89	126.48	6920.93	126.73	6920.94	127.39	6920.95	127.6	6920.96
127.87	6920.96	129.01	6920.99	129.61	6921	130.09	6921.02	131	6921.04
131.28	6921.04	131.9	6921.06	132.42	6921.07	133.56	6921.1	133.71	6921.1
134.28	6921.12	134.61	6921.12	134.69	6921.13	135.51	6921.15	135.83	6921.15
136.41	6921.17	136.66	6921.17	137.67	6921.2	139.12	6921.23	139.24	6921.24
139.68	6921.25	140.02	6921.25	140.93	6921.28	141.69	6921.29	141.83	6921.3
143.03	6921.33	143.71	6921.34	143.79	6921.35	144.54	6921.36	144.71	6921.37
144.94	6921.37	145.42	6921.38	146.13	6921.4	146.3	6921.41	147.18	6921.43
147.32	6921.43	148.51	6921.46	148.76	6921.46	148.94	6921.47	149.7	6921.49
150.7	6921.51	150.89	6921.52	151.57	6921.53	151.79	6921.54	152.08	6921.54
152.8	6921.56	153.33	6921.57	153.81	6921.59	154.21	6921.59	155.09	6921.62
155.84	6921.63	155.97	6921.64	157.73	6921.68	158.04	6921.69	158.6	6921.7
158.87	6921.71	159.23	6921.71	159.88	6921.73	160.89	6921.75	161.9	6921.78
162.12	6921.78	162.8	6921.8	163	6921.8	163.54	6921.82	165.19	6921.86
165.63	6921.86	166.38	6921.88	166.51	6921.88	166.96	6921.9	167.39	6921.9
167.57	6921.91	167.97	6921.92	168.27	6921.92	168.76	6921.93	169.95	6921.96
170.24	6921.97	171.01	6921.98	171.14	6921.99	171.6	6922	172.01	6922
172.22	6922.01	173.81	6922.04	174.01	6922.04	174.22	6922.05	174.8	6922.06
175.01	6922.06	175.22	6922.07	175.8	6922.08	176.22	6922.08	176.8	6922.1
177.23	6922.1	177.8	6922.12	178.23	6922.12	178.8	6922.13	179.01	6922.14
179.23	6922.14	179.8	6922.15	180.01	6922.16	180.23	6922.16	180.79	6922.17
181.01	6922.18	181.23	6922.18	181.79	6922.19	182.01	6922.2	182.23	6922.2
182.79	6922.21	183.01	6922.22	183.24	6922.22	183.79	6922.23	184.01	6922.24
184.24	6922.24	184.79	6922.25	185.01	6922.26	185.24	6922.26	185.79	6922.27
186.01	6922.27	186.24	6922.28	186.78	6922.29	187.01	6922.29	187.24	6922.3
187.78	6922.31	188.01	6922.31	188.24	6922.32	189.78	6922.32	190.01	6922.31

Ex RAS Input Report.txt

191.25	6922.31	191.78	6922.3	192.77	6922.3	193.01	6922.29	194.25	6922.29
194.77	6922.28	196.01	6922.28	196.26	6922.27	197.26	6922.27	197.76	6922.26
199.01	6922.26	199.26	6922.25	200.26	6922.25	200.76	6922.24	206.27	6922.24
206.75	6922.23	221.72	6922.23	222.01	6922.22	237.01	6922.22	237.33	6922.21
245.01	6922.21	245.34	6922.19	245.68	6922.18	246.01	6922.16	246.34	6922.11
246.68	6922.05	247.34	6921.95	247.68	6921.89	248.01	6921.84	248.35	6921.78
248.68	6921.73	249.01	6921.67	249.68	6921.57	250.01	6921.51	250.35	6921.46
250.68	6921.4	251.01	6921.35	251.35	6921.29	251.67	6921.24	252.01	6921.18
252.35	6921.13	252.67	6921.07	253.01	6921.02	253.35	6920.96	253.67	6920.91
254.01	6920.85	254.67	6920.75	255.36	6920.63	256.01	6920.53	256.67	6920.42
257.01	6920.36	257.36	6920.31	259.01	6920.03	259.36	6920.12	259.66	6920.21
260.01	6920.29	260.37	6920.45	260.66	6920.57	261.01	6920.73	261.37	6920.88
261.66	6921.01	262.37	6921.31	264.01	6922.03	264.65	6922.3	265.01	6922.46
265.65	6922.73	266.65	6923.17	267.01	6923.32	267.38	6923.48	268.01	6923.76
268.38	6923.92	268.65	6924.03	269.01	6924.19	271.01	6925.05	271.38	6925.22
272.39	6925.65	273.01	6925.92	273.39	6926.08	273.64	6926.17	274.01	6926.33
274.39	6926.48	274.64	6926.56	275.01	6926.72	278.01	6927.83	278.4	6927.98
278.63	6928.06	279.01	6928.21	279.4	6928.35	279.63	6928.44	280.4	6928.72
280.63	6928.81	281.01	6928.95	282.01	6929.33	282.62	6929.55	283.01	6929.7
283.4	6929.84	283.62	6929.93	284.01	6930.07	284.62	6930.3	285.01	6930.44
286.01	6930.82	286.41	6930.96	287.01	6931.19	287.41	6931.3	287.61	6931.37
288.01	6931.48	288.41	6931.48	288.61	6931.47	289.01	6931.47	290.01	6931.45
290.61	6931.45	291.42	6931.43	292.01	6931.43	292.61	6931.42	293.01	6931.41
293.6	6931.41	294.42	6931.39	295.01	6931.39	296.01	6931.37	296.43	6931.37
296.6	6931.36	297.01	6931.36	297.43	6931.35	298.01	6931.35	298.43	6931.34
298.72	6931.34								

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	59.62	.035	103.91	.05

Bank	Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
	59.62	103.91	140.72	150.39	162.43		.1	.3

Ineffective Flow                      num=                      1

Sta L	Sta R	Elev	Permanent
187.97	298.72	6922.44	F

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 2650

INPUT

Description: Source: Corrected Effective Topo  
 Datum: NGVD29  
 Coordinate

System: NAVD88 Colorado State Planes Central, US Feet.

Ex RAS Input Report.txt

Station Elevation Data		num=		491					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-7.75	6919.63	-7.29	6919.63	-6.84	6919.61	-5.84	6919.59	-5.35	6919.57
-4.84	6919.56	-4.37	6919.54	-3.84	6919.53	-3.4	6919.51	-2.84	6919.5
-2.43	6919.48	-1.84	6919.47	-1.45	6919.45	-.84	6919.44	-.48	6919.42
-.19	6919.42	1.16	6919.38	1.87	6919.35	2.16	6919.35	2.9	6919.32
3.16	6919.32	3.93	6919.29	4.16	6919.29	5.35	6919.25	8.27	6919.16
9.08	6919.14	9.24	6919.13	10.11	6919.11	10.21	6919.1	12.15	6919.05
13.12	6919.02	13.21	6919.01	15.07	6918.95	15.27	6918.95	16.3	6918.91
17.33	6918.88	17.98	6918.85	18.95	6918.82	19.93	6918.77	20.9	6918.73
23.81	6918.64	25.17	6918.6	25.58	6918.58	26.17	6918.57	26.61	6918.55
27.17	6918.54	27.64	6918.52	28.17	6918.51	29.17	6918.47	29.71	6918.46
30.17	6918.44	30.74	6918.43	31.17	6918.41	31.77	6918.4	32.17	6918.38
36.93	6918.24	37.41	6918.22	37.96	6918.21	38.38	6918.19	38.99	6918.18
39.35	6918.16	41.05	6918.11	41.3	6918.11	42.08	6918.08	42.27	6918.08
47.13	6917.93	47.24	6917.92	48.18	6917.9	48.27	6917.89	49.07	6917.87
51.98	6917.78	53.18	6917.74	53.42	6917.74	54.18	6917.71	55.18	6917.54
55.87	6917.38	56.18	6917.32	57.18	6917.09	57.55	6917.01	58.78	6916.72
59.61	6916.54	60.19	6916.4	61.19	6916.18	62.7	6915.83	63.64	6915.62
64.19	6915.49	65.59	6915.18	66.56	6914.95	67.86	6914.66	69.19	6914.35
70.19	6914.18	71.19	6914.1	71.41	6914.09	72.39	6914.02	73.36	6913.94
74.19	6913.89	74.33	6913.89	76.11	6913.82	76.27	6913.82	77.14	6913.79
77.24	6913.78	78.21	6913.75	79.2	6913.71	80.16	6913.91	81.13	6914.15
81.27	6914.19	82.3	6914.45	83.33	6914.7	85.01	6915.12	85.39	6915.22
85.99	6915.36	86.96	6915.61	87.93	6915.85	88.2	6915.91	88.48	6915.99
89.2	6916.16	90.07	6916.38	91.58	6916.76	92.2	6916.91	92.61	6917.03
92.79	6917.06	93.2	6917.18	93.76	6917.33	94.2	6917.46	95.2	6917.74
95.7	6917.89	96.2	6918.03	96.67	6918.07	96.73	6918.06	97.2	6918.1
97.76	6918.1	98.2	6918.11	99.2	6918.11	99.59	6918.12	100.86	6918.12
101.2	6918.13	102.2	6918.13	102.5	6918.14	103.47	6918.14	103.95	6918.15
104.44	6918.15	104.98	6918.16	106.21	6918.17	106.39	6918.18	108.08	6918.2
109.21	6918.21	109.3	6918.22	111.24	6918.24	113.19	6918.27	115.13	6918.29
115.29	6918.3	117.07	6918.32	118.21	6918.33	118.39	6918.34	119.02	6918.34
119.21	6918.35	120.45	6918.36	121.93	6918.38	122.9	6918.4	123.54	6918.4
125.21	6918.43	125.82	6918.43	126.64	6918.45	127.22	6918.45	128.22	6918.47
128.73	6918.47	129.7	6918.49	130.22	6918.49	131.22	6918.51	131.79	6918.51
132.82	6918.53	133.22	6918.53	134.22	6918.55	134.89	6918.55	135.22	6918.56
136.95	6918.58	137.98	6918.6	138.45	6918.6	139.42	6918.61	140.39	6918.63
143.14	6918.66	143.3	6918.67	146.23	6918.7	147.19	6918.72	149.13	6918.74
149.32	6918.75	151.08	6918.77	152.23	6918.78	152.42	6918.79	153.02	6918.79
153.23	6918.8	153.99	6918.81	154.48	6918.81	155.93	6918.83	156.9	6918.85
157.57	6918.85	157.88	6918.86	158.6	6918.86	158.85	6918.85	159.64	6918.85
159.82	6918.84	160.79	6918.84	161.23	6918.83	161.76	6918.83	162.23	6918.82
162.73	6918.82	163.23	6918.81	164.23	6918.81	164.68	6918.8	165.23	6918.8
165.65	6918.79	166.62	6918.79	166.85	6918.78	167.59	6918.78	167.88	6918.77
168.92	6918.77	169.23	6918.76	169.95	6918.76	170.23	6918.75	170.98	6918.75
171.24	6918.74	172.24	6918.74	172.45	6918.73	173.42	6918.73	178.2	6918.68
179.25	6918.68	179.59	6918.67	180.26	6918.67	185.08	6918.62	186.05	6918.62

Ex RAS Input Report.txt

186.24	6918.61	187.24	6918.61	187.48	6918.6	188.24	6918.6	188.51	6918.59
189.54	6918.59	189.94	6918.58	190.57	6918.58	190.91	6918.57	191.88	6918.57
192.24	6918.56	192.85	6918.56	193.24	6918.55	193.82	6918.55	194.25	6918.54
195.25	6918.54	195.73	6918.53	196.25	6918.53	196.74	6918.52	197.25	6918.52
197.71	6918.51	198.82	6918.51	199.25	6918.5	199.85	6918.5	200.25	6918.49
200.88	6918.49	201.25	6918.48	202.25	6918.48	202.56	6918.47	203.25	6918.47
203.54	6918.46	204.51	6918.46	205.01	6918.45	205.48	6918.45	208.1	6918.42
209.13	6918.42	209.25	6918.41	210.25	6918.41	210.34	6918.4	211.31	6918.4
212.96	6918.38	216.09	6918.38	216.35	6918.39	219.6	6918.39	220.3	6918.3
222.94	6918	223.46	6917.95	225.04	6917.77	226.11	6917.66	226.98	6917.56
227.7	6917.49	228.2	6917.43	229.09	6917.34	229.28	6917.31	230.14	6917.22
231.2	6917.22	232.45	6917.35	232.94	6917.41	233.3	6917.44	233.73	6917.49
234.36	6917.55	235.31	6917.65	235.41	6917.67	236.47	6917.78	237.21	6917.87
237.52	6917.9	238.79	6918.06	239.26	6918.11	239.63	6918.16	240.84	6918.31
241.74	6918.41	242.42	6918.5	242.8	6918.54	244	6918.62	244.46	6918.64
245.58	6918.67	245.96	6918.69	246.71	6918.7	247.95	6918.73	248.3	6918.73
249.12	6918.75	249.53	6918.75	250.32	6918.77	250.76	6918.77	251.47	6918.79
251.9	6918.79	252.69	6918.81	253.05	6918.81	253.91	6918.83	254.39	6918.83
255.06	6918.85	255.45	6918.85	257.06	6918.89	257.43	6918.89	259.39	6918.94
259.8	6918.94	261.78	6918.99	262.17	6918.99	262.83	6919.01	263.75	6919.03
264.15	6919.03	266.13	6919.08	267.05	6919.09	268.1	6919.12	268.5	6919.12
270.48	6919.17	270.87	6919.17	272.07	6919.2	272.32	6919.2	272.82	6919.22
273.24	6919.22	275.24	6919.27	275.61	6919.27	276.82	6919.3	277.19	6919.3
277.98	6919.32	278.65	6919.33	279.12	6919.33	279.7	6919.34	280.35	6919.36
280.76	6919.36	281.58	6919.38	282.72	6919.39	283.51	6919.41	283.92	6919.41
284.75	6919.43	285.09	6919.43	285.88	6919.45	286.33	6919.45	287.08	6919.47
288.14	6919.48	289.5	6919.51	289.83	6919.51	290.62	6919.53	291.08	6919.53
291.73	6919.55	292.2	6919.55	292.36	6919.56	293.41	6919.57	294.25	6919.59
294.57	6919.59	295.36	6919.61	295.84	6919.61	296.57	6919.63	296.94	6919.63
297.73	6919.65	298.04	6919.65	300.1	6919.68	300.79	6919.7	301.19	6919.7
302.18	6919.72	302.47	6919.72	304.34	6919.76	304.84	6919.76	305.01	6919.77
306.06	6919.78	306.93	6919.8	308.17	6919.82	309.58	6919.86	310.28	6919.87
311.16	6919.89	311.69	6919.91	311.95	6919.91	312.74	6919.93	313.27	6919.95
314.85	6919.98	315.9	6920.01	316.44	6920.02	316.95	6920.04	317.66	6920.05
319.06	6920.09	320.1	6920.11	320.64	6920.13	321.43	6920.14	321.88	6920.16
322.22	6920.16	323.01	6920.18	323.8	6920.21	325.95	6920.26	326.4	6920.28
326.97	6920.29	328.21	6920.33	328.55	6920.33	329.34	6920.36	329.55	6920.36
331.37	6920.41	332.29	6920.44	334.08	6920.48	334.54	6920.5	334.87	6920.5
335.66	6920.53	337.04	6920.56	338.62	6920.61	340.4	6920.65	341.19	6920.68
341.79	6920.69	343.38	6920.74	344.03	6920.75	345.31	6920.79	345.93	6920.8
346.72	6920.83	348.13	6920.86	349.3	6920.9	350.35	6920.92	351.62	6920.96
352.25	6920.97	353.04	6921	353.83	6921.02	354.47	6921.03	355.62	6921.07
356.68	6921.09	358.57	6921.15	359.22	6921.16	360.81	6921.21	361.07	6921.21
361.95	6921.24	362.52	6921.25	363.01	6921.27	364.89	6921.33	365.68	6921.37
366.47	6921.4	370.53	6921.58	371.21	6921.6	371.9	6921.63	373.49	6921.68
375.16	6921.74	375.66	6921.75	376.66	6921.79	376.83	6921.79	377.53	6921.82
377.77	6921.82	379.11	6921.87	379.83	6921.89	382.27	6921.98	384.64	6922.06
385.15	6922.07	387.02	6922.14	387.26	6922.14	388.6	6922.19	389.33	6922.21

# Ex RAS Input Report.txt

389.44	6922.22	390.18	6922.24	391.76	6922.3	392.59	6922.32	393.59	6922.36
394.13	6922.37	395.67	6922.43	396.5	6922.45	398.08	6922.51	398.84	6922.53
398.89	6922.54	399.66	6922.56	400.97	6922.61	401.24	6922.61	403.08	6922.68
403.61	6922.69	405.18	6922.75	405.98	6922.77	407.56	6922.83	408.35	6922.85
408.97	6922.85								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-7.75	.05	48.18	.035	97.2	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	48.18	97.2		48.2 45.53	42.16		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
157.31	408.97	6918.88	F

## CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 2605

## INPUT

Description: Source: 2003 LOMR HEC-2 model  
 Datum: NGVD29  
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 17							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6920	90.01	6918	100.01	6916.2	108.01	6918	115.01	6918.2
127.01	6918	138.01	6917.5	150.01	6918	182.01	6918	190.01	6917.6
200.01	6918	222.01	6918.4	242.01	6918	258.01	6914	270.01	6916
305.01	6918	325	6919.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	90.01	.035	305.01	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	90.01	305.01		0 0	0		.1	.3

## SUMMARY OF MANNING'S N VALUES

River:UT\_BSC2

Reach	River Sta.	n1	n2	n3
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Ex RAS Input Report.txt

NCONFL-BGM	5100	.05	.035	.05
NCONFL-BGM	5000	.05	.035	.05
NCONFL-BGM	4900	.05	.035	.05
NCONFL-BGM	4850	.05	.035	.05
NCONFL-BGM	4750	.05	.035	.05
NCONFL-BGM	4650	.05	.035	.05
NCONFL-BGM	4600	.05	.035	.05
NCONFL-BGM	4550	.05	.035	.05
NCONFL-BGM	4500	.05	.035	.05
NCONFL-BGM	4400	.05	.035	.05
NCONFL-BGM	4300	.05	.035	.05
NCONFL-BGM	4250	.05	.035	.05
NCONFL-BGM	4150	.05	.035	.05
NCONFL-BGM	4000	.05	.035	.05
NCONFL-BGM	3900	.05	.035	.05
NCONFL-BGM	3850	.05	.035	.05
NCONFL-BGM	3800	.05	.035	.05
NCONFL-BGM	3694	.05	.035	.05
NCONFL-BGM	3600	.05	.035	.05
NCONFL-BGM	3500	.05	.035	.05
NCONFL-BGM	3450	.05	.035	.05
NCONFL-BGM	3350	.05	.035	.05
NCONFL-BGM	3300	.05	.035	.05
NCONFL-BGM	3250	.05	.035	.05
NCONFL-BGM	3200	.05	.035	.05
NCONFL-BGM	3150	.05	.035	.05
NCONFL-BGM	3100	.05	.035	.05
NCONFL-BGM	3050	.035	.035	.035
NCONFL-BGM	3000	.05	.035	.05
NCONFL-BGM	2900	.05	.035	.05
NCONFL-BGM	2800	.05	.035	.05
NCONFL-BGM	2650	.05	.035	.05
NCONFL-BGM	2605	.05	.035	.05

SUMMARY OF REACH LENGTHS

River: UT\_BSC2

Reach	River Sta.	Left	Channel	Right
NCONFL-BGM	5100	105.09	123.89	136.02
NCONFL-BGM	5000	101.57	100.09	91.93
NCONFL-BGM	4900	70.83	50.05	32.48
NCONFL-BGM	4850	109.19	100.34	86.55

Ex RAS Input Report.txt

NCONFL-BGM	4750	111.78	100.72	82.51
NCONFL-BGM	4650	17.98	49.31	85.86
NCONFL-BGM	4600	48.42	48.42	48.42
NCONFL-BGM	4550	60.05	60.05	60.05
NCONFL-BGM	4500	90.12	91.85	93.21
NCONFL-BGM	4400	126.25	112.69	105.25
NCONFL-BGM	4300	30.91	33.98	43.47
NCONFL-BGM	4250	91.84	91.84	91.84
NCONFL-BGM	4150	164.63	164.63	164.63
NCONFL-BGM	4000	93.31	85.66	98.56
NCONFL-BGM	3900	26.02	48.36	73.69
NCONFL-BGM	3850	46.06	51.61	64.96
NCONFL-BGM	3800	106.47	105.93	111.29
NCONFL-BGM	3694	95.37	93.53	91.5
NCONFL-BGM	3600	108.43	100.15	91.04
NCONFL-BGM	3500	40.72	50.26	59.45
NCONFL-BGM	3450	75.69	100.23	119
NCONFL-BGM	3350	63.32	50.1	22.83
NCONFL-BGM	3300	64.11	49.63	23.06
NCONFL-BGM	3250	50.23	50.23	50.23
NCONFL-BGM	3200	50.08	50.08	50.08
NCONFL-BGM	3150	39.96	50.14	58.01
NCONFL-BGM	3100	33.13	33.13	33.13
NCONFL-BGM	3050	75.27	75.27	75.27
NCONFL-BGM	3000	92.31	92.31	92.31
NCONFL-BGM	2900	118.9	99.71	72.05
NCONFL-BGM	2800	140.72	150.39	162.43
NCONFL-BGM	2650	48.2	45.53	42.16
NCONFL-BGM	2605	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: UT\_BSC2

Reach	River Sta.	Contr.	Expan.
NCONFL-BGM	5100	.1	.3
NCONFL-BGM	5000	.1	.3
NCONFL-BGM	4900	.1	.3
NCONFL-BGM	4850	.1	.3
NCONFL-BGM	4750	.1	.3
NCONFL-BGM	4650	.1	.3
NCONFL-BGM	4600	.1	.3
NCONFL-BGM	4550	.1	.3
NCONFL-BGM	4500	.1	.3

Ex RAS Input Report.txt

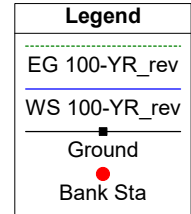
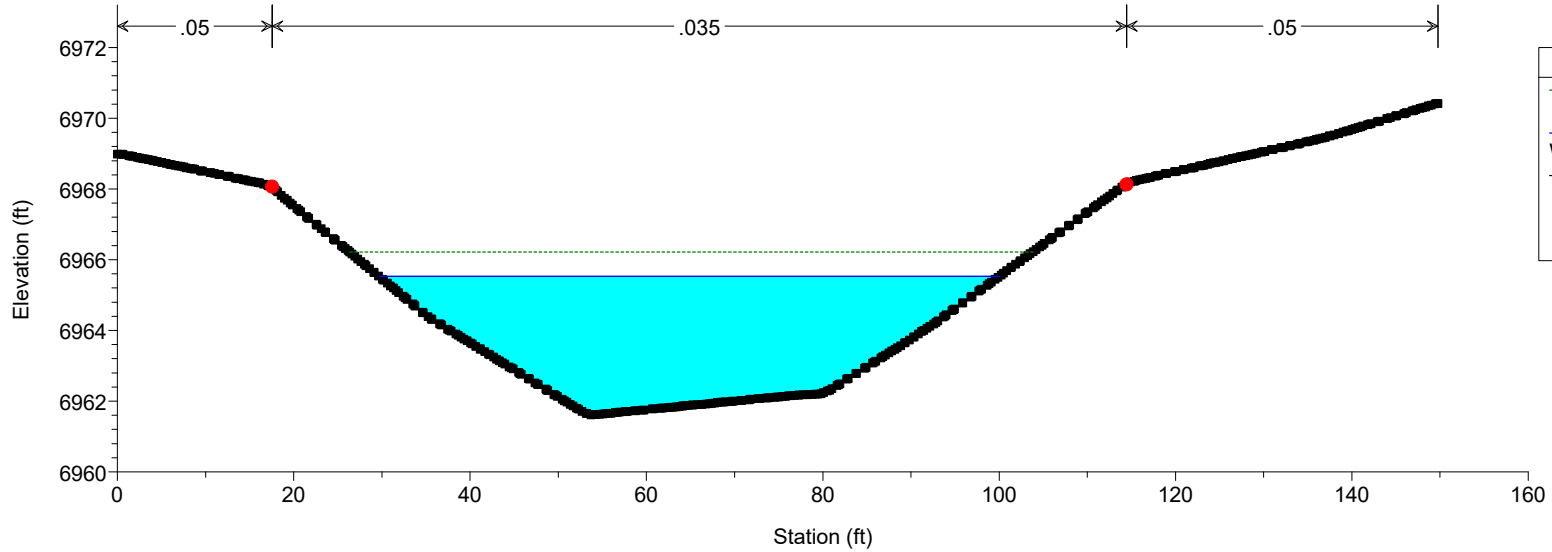
NCONFL-BGM	4400	.1	.3
NCONFL-BGM	4300	.1	.3
NCONFL-BGM	4250	.1	.3
NCONFL-BGM	4150	.3	.5
NCONFL-BGM	4000	.1	.3
NCONFL-BGM	3900	.1	.3
NCONFL-BGM	3850	.1	.3
NCONFL-BGM	3800	.1	.3
NCONFL-BGM	3694	.1	.3
NCONFL-BGM	3600	.1	.3
NCONFL-BGM	3500	.1	.3
NCONFL-BGM	3450	.1	.3
NCONFL-BGM	3350	.1	.3
NCONFL-BGM	3300	.1	.3
NCONFL-BGM	3250	.1	.3
NCONFL-BGM	3200	.1	.3
NCONFL-BGM	3150	.1	.3
NCONFL-BGM	3100	.1	.3
NCONFL-BGM	3050	.1	.3
NCONFL-BGM	3000	.1	.3
NCONFL-BGM	2900	.1	.3
NCONFL-BGM	2800	.1	.3
NCONFL-BGM	2650	.1	.3
NCONFL-BGM	2605	.1	.3

## Corrected Effective

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Shear Chan	Shear Total	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(lb/sq ft)	(lb/sq ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NCONFL-BGM	5100	100-YR-REV	1450	6961.61	6965.81	1.31	1.31		6966.63	0.007753	7.26	199.82	73.21	0.77
NCONFL-BGM	5000	100-YR-REV	1450	6959.87	6964.45	1.82	1.1	6964.45	6965.52	0.009873	8.67	203.55	112.98	0.89
NCONFL-BGM	4900	100-YR-REV	1450	6956.13	6960.76	2.05	1.81	6960.76	6962.01	0.012791	9	164.53	71.91	0.99
NCONFL-BGM	4850	100-YR-REV	1450	6954.51	6959.69	2.11	1.38	6959.69	6961.05	0.0103	9.51	168.73	77.99	0.92
NCONFL-BGM	4750	100-YR-REV	1450	6952.35	6957.64	1.78	1.16	6957.64	6958.72	0.010065	8.54	193.64	104.05	0.89
NCONFL-BGM	4650	100-YR-REV	1450	6950.66	6955.77	2.05	1.26	6955.77	6957.08	0.009681	9.42	178.26	85.08	0.9
NCONFL-BGM	4600	100-YR-REV	1450	6949.29	6954.25	2.11	1.53	6954.25	6955.6	0.011157	9.39	163.18	73.41	0.94
NCONFL-BGM	4550	100-YR-REV	1450	6947.92	6953.98	0.79	0.62		6954.43	0.003662	5.86	299.03	108.8	0.55
NCONFL-BGM	4500	100-YR-REV	1450	6947.76	6952.64	2.15	1.96	6952.64	6953.97	0.013043	9.25	157.24	64.3	1
NCONFL-BGM	4400	100-YR-REV	1450	6945.04	6950.89	2.38	2.38	6950.89	6952.42	0.01294	9.93	146.07	48.1	1
NCONFL-BGM	4300	100-YR-REV	1450	6943.59	6948.68	2.29	2.29	6948.68	6950.12	0.013214	9.64	150.44	53.15	1.01
NCONFL-BGM	4250	100-YR-REV	1450	6942.87	6948.01	2.22	2.22	6948.01	6949.4	0.013073	9.46	153.33	55.34	1
NCONFL-BGM	4150	100-YR-REV	1450	6941.91	6946.13	2.08	2.08	6946.13	6947.39	0.013663	9	161.07	65.24	1.01
NCONFL-BGM	4000	100-YR-REV	1450	6938.32	6942.61	1.1	1.07	6942.61	6943.15	0.007928	6.46	256.76	117.49	0.76
NCONFL-BGM	3900	100-YR-REV	1450	6937.27	6940.25	0.8	0.8		6940.7	0.006366	5.38	269.27	133.82	0.67
NCONFL-BGM	3850	100-YR-REV	1450	6935.39	6939.44	1.45	1.45	6939.3	6940.25	0.012222	7.21	201.06	104.8	0.92
NCONFL-BGM	3800	100-YR-REV	1450	6934.46	6938.47	2.08	2.06	6938.47	6939.46	0.017113	8.67	189.62	96.99	1.09
NCONFL-BGM	3694	100-YR-REV	1482	6931.87	6935.66	1.12	1.12		6936.29	0.009046	6.36	232.84	117.04	0.8
NCONFL-BGM	3600	100-YR-REV	1482	6930.63	6934.23	1.93	1.87	6934.23	6935.13	0.016954	8.24	203.11	113.96	1.07
NCONFL-BGM	3500	100-YR-REV	1482	6928.81	6933.1	0.73	0.73		6933.55	0.004315	5.43	273.15	99.76	0.58
NCONFL-BGM	3450	100-YR-REV	1482	6928.02	6931.98	1.94	1.94	6931.98	6933.13	0.013747	8.58	172.65	75.55	1
NCONFL-BGM	3350	100-YR-REV	1482	6926.41	6930.19	1.82	1.47	6930.19	6931.26	0.012797	8.33	183.79	99.51	0.97
NCONFL-BGM	3300	100-YR-REV	1482	6924.89	6929.53	1.42	1.26	6929.18	6930.39	0.009098	7.44	200.07	89.6	0.83
NCONFL-BGM	3250	100-YR-REV	1482	6923.87	6928.77	1.79	1.57	6928.6	6929.86	0.011382	8.39	177.72	79.38	0.93
NCONFL-BGM	3200	100-YR-REV	1482	6923.23	6927.95	2.08	1.9	6927.95	6929.23	0.013067	9.07	164.36	69.72	0.99
NCONFL-BGM	3150	100-YR-REV	1482	6923.17	6926.87	1.99	1.43	6926.87	6928.1	0.011803	8.93	172.45	88.08	0.95
NCONFL-BGM	3100	100-YR-REV	1482	6922.12	6925.7	1.99	1.72	6925.69	6926.9	0.013055	8.78	170.13	80	0.99
NCONFL-BGM	3050	100-YR-REV	1482	6921.42	6926	0.72	0.52		6926.48	0.003291	5.64	276.02	108.1	0.53
NCONFL-BGM	3000	100-YR-REV	1482	6920.33	6925.06	1.63	0.89	6925.06	6926.04	0.009052	8.18	214.31	212.08	0.85
NCONFL-BGM	2900	100-YR-REV	1482	6919.33	6923.12	1.78	1.08	6923.12	6924.15	0.01008	8.53	213.3	147.71	0.89
NCONFL-BGM	2800	100-YR-REV	1482	6917.24	6921.9	1.67	0.78	6921.9	6922.92	0.007745	8.55	226.31	155.5	0.8
NCONFL-BGM	2650	100-YR-REV	1482	6913.71	6919.2	1.23	0.44	6919.2	6919.88	0.00589	7.28	316.68	264.82	0.7
NCONFL-BGM	2605	100-YR-REV	1482	6914	6918.85	0.72	0.63	6918.57	6919.21	0.008288	4.82	321.29	262.7	0.72

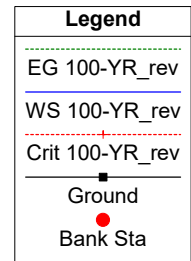
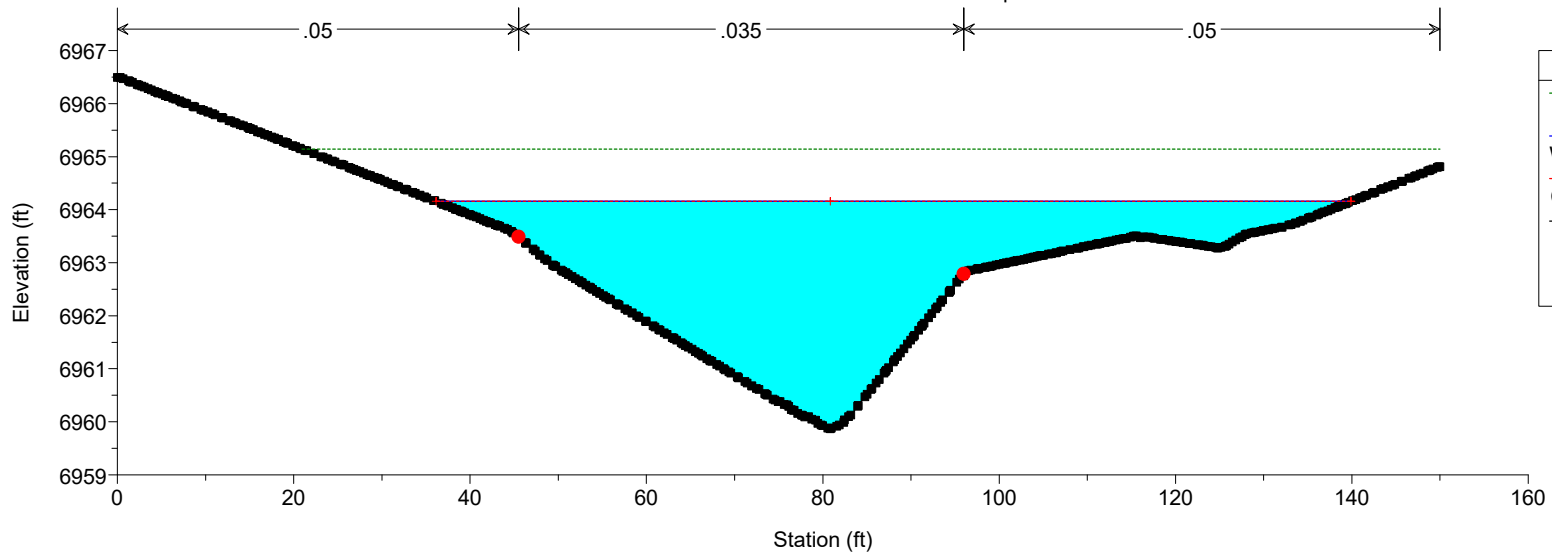
# HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



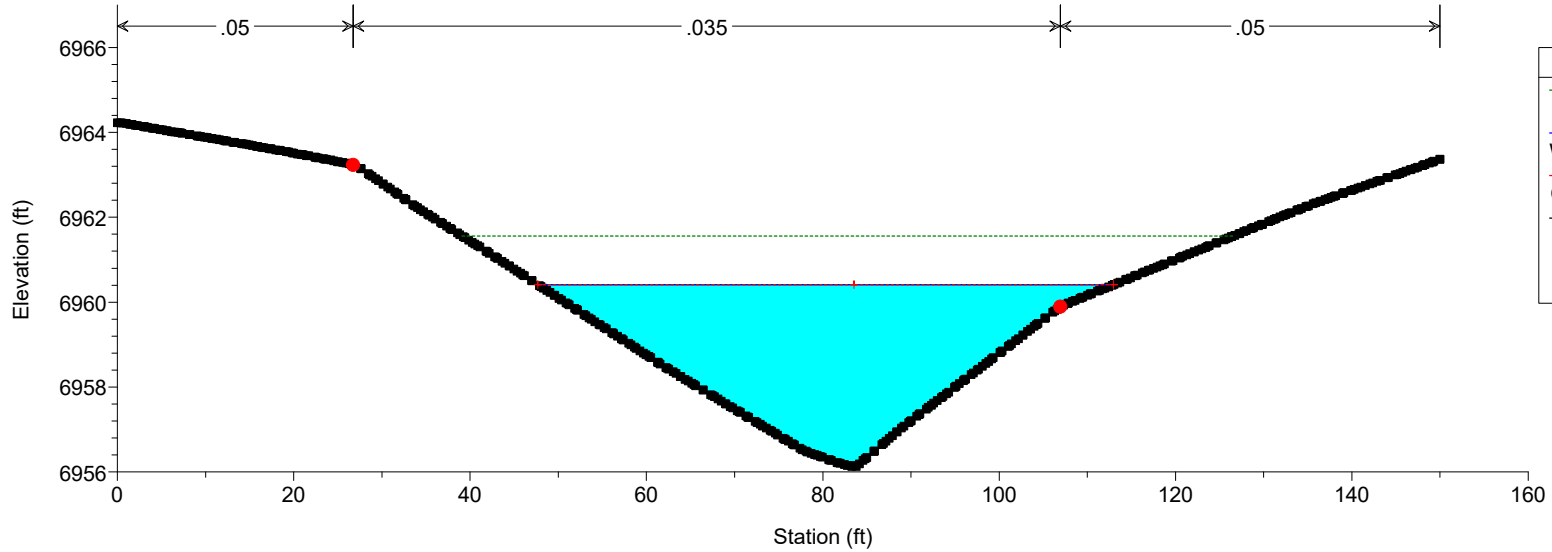
# HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



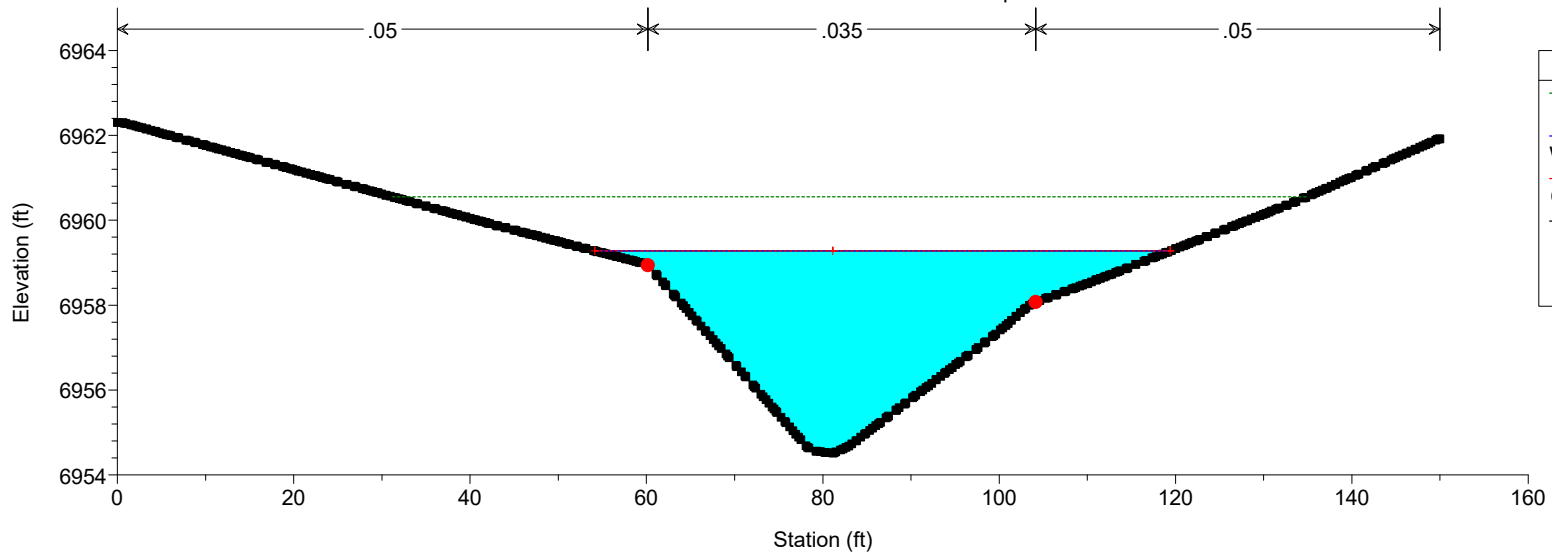
# HEC-RAS Model Plan: CE 2/4/2020

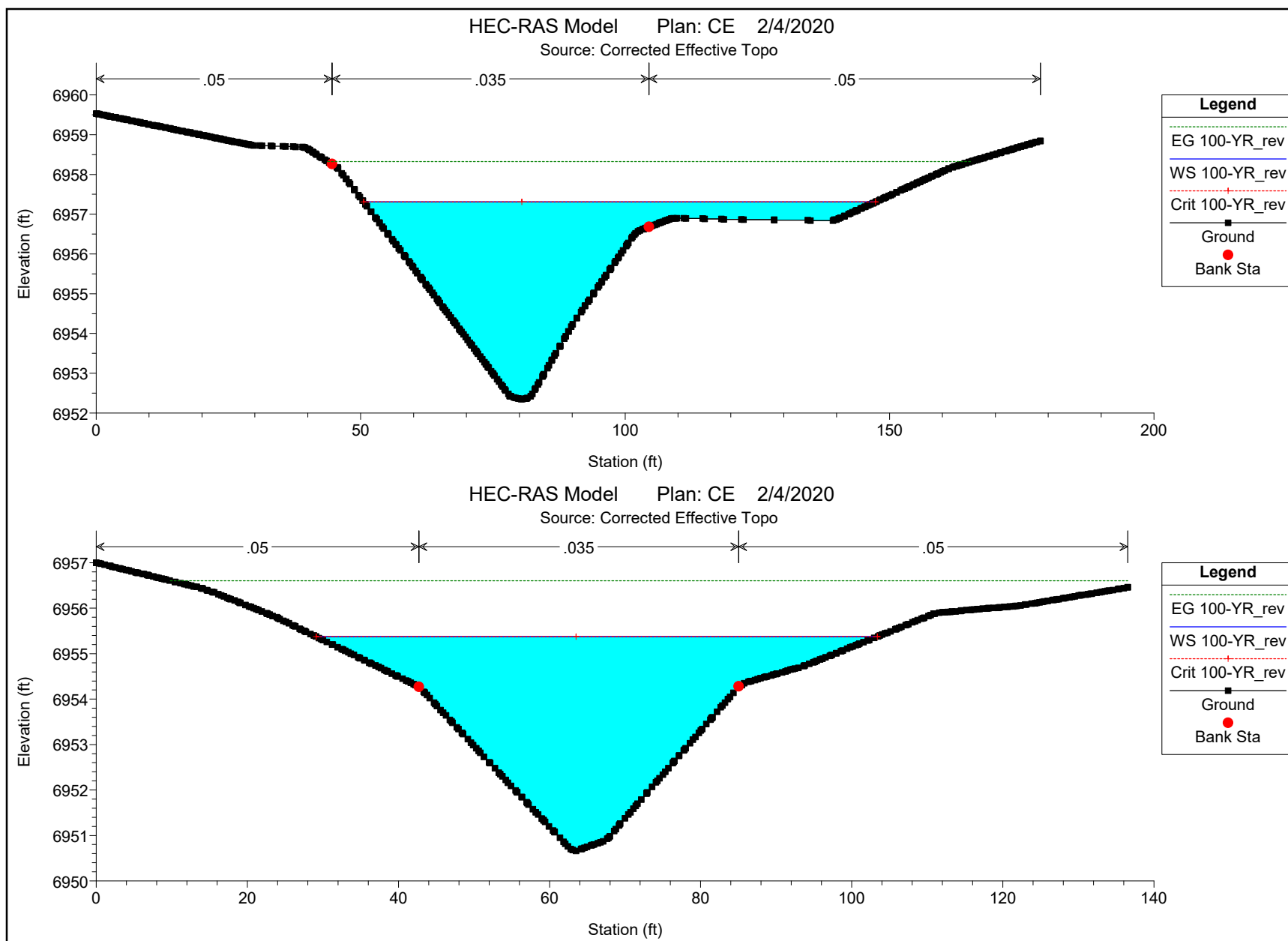
Source: Corrected Effective Topo

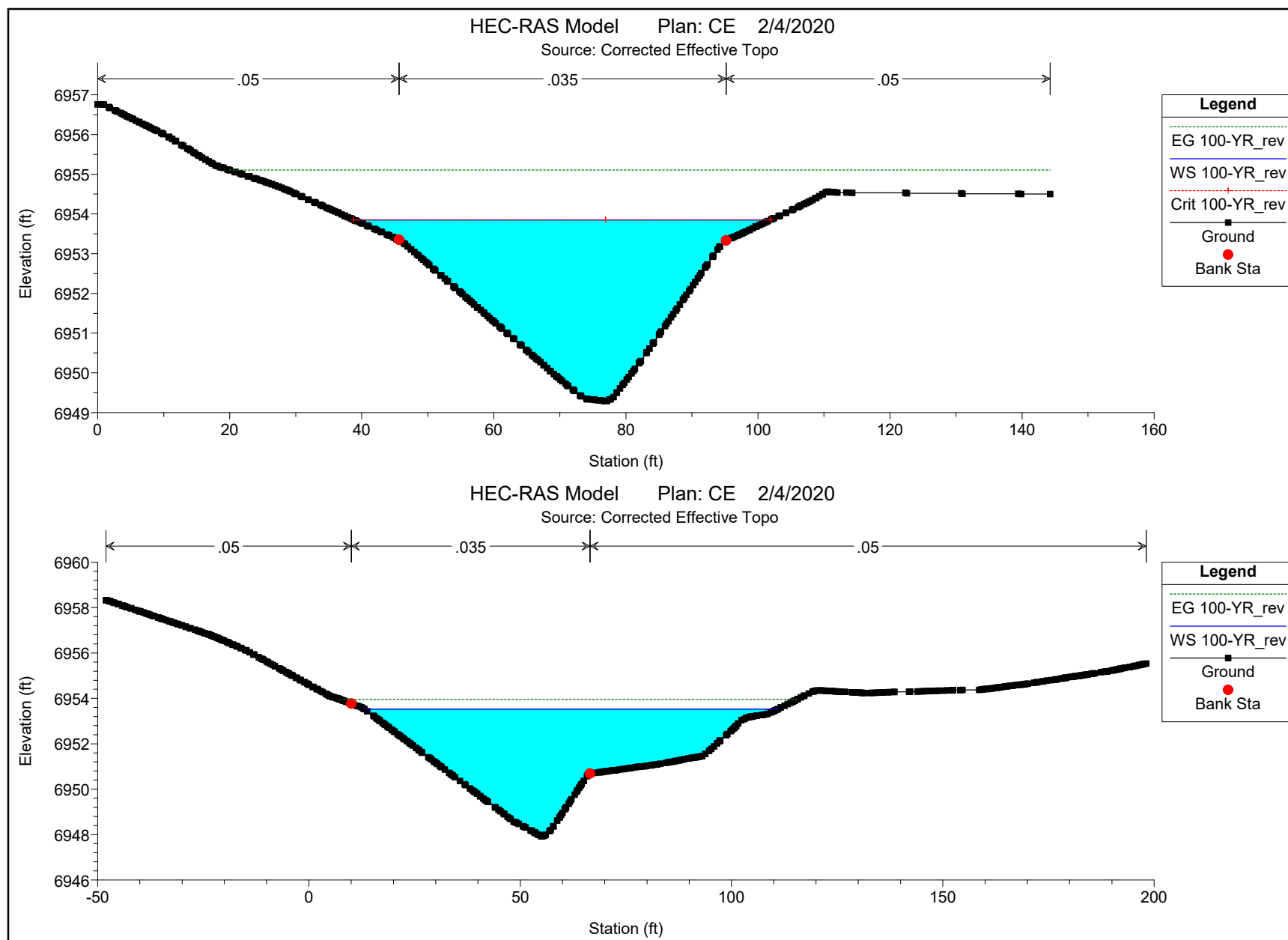


# HEC-RAS Model Plan: CE 2/4/2020

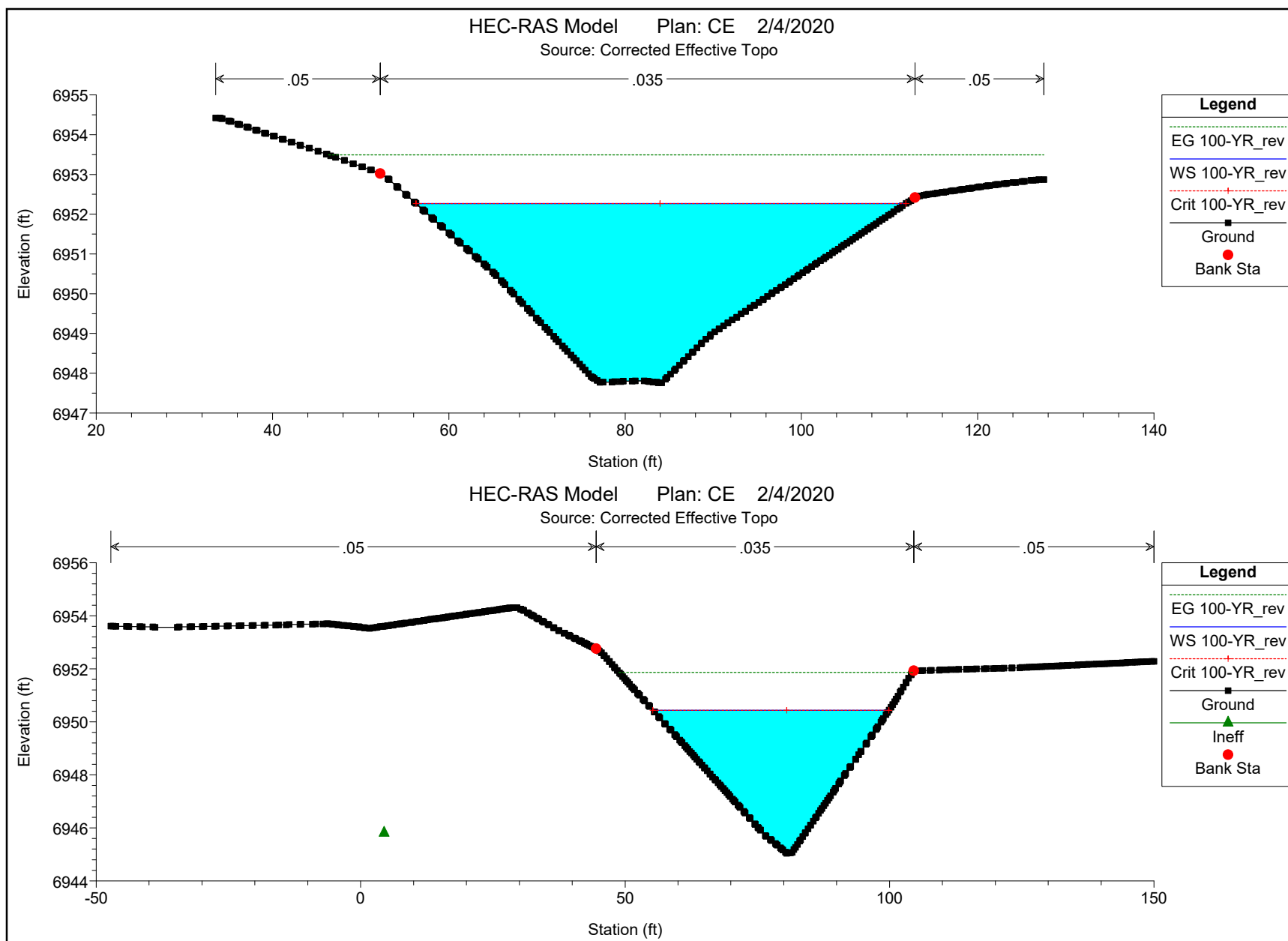
Source: Corrected Effective Topo

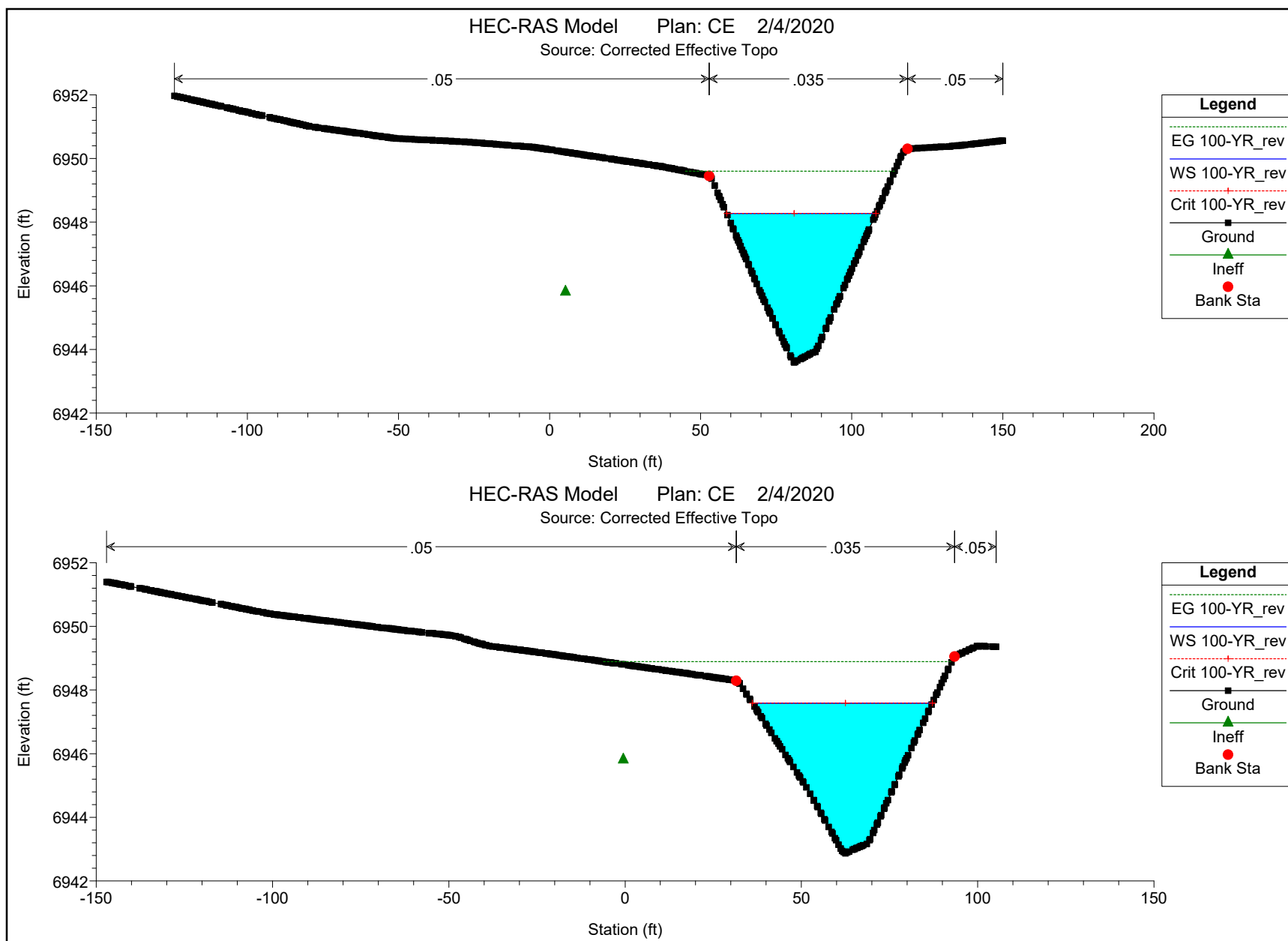


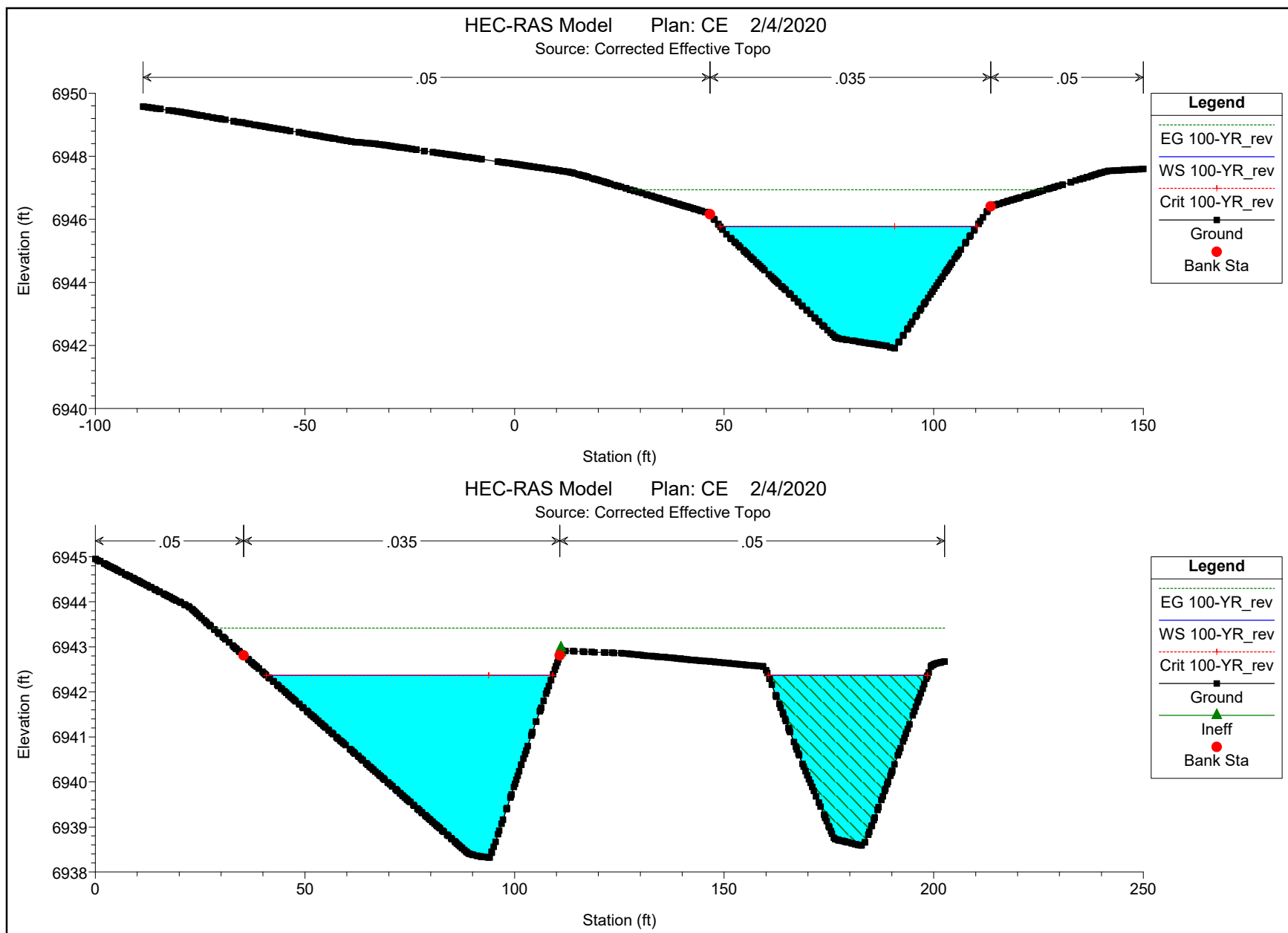






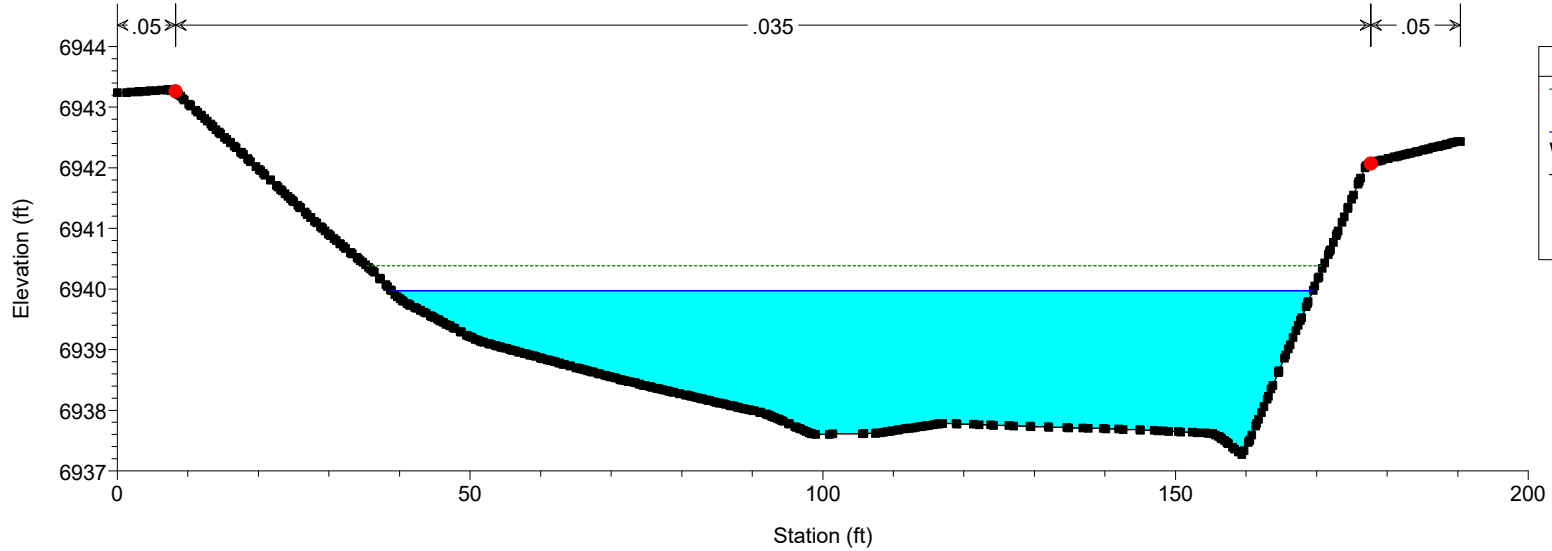






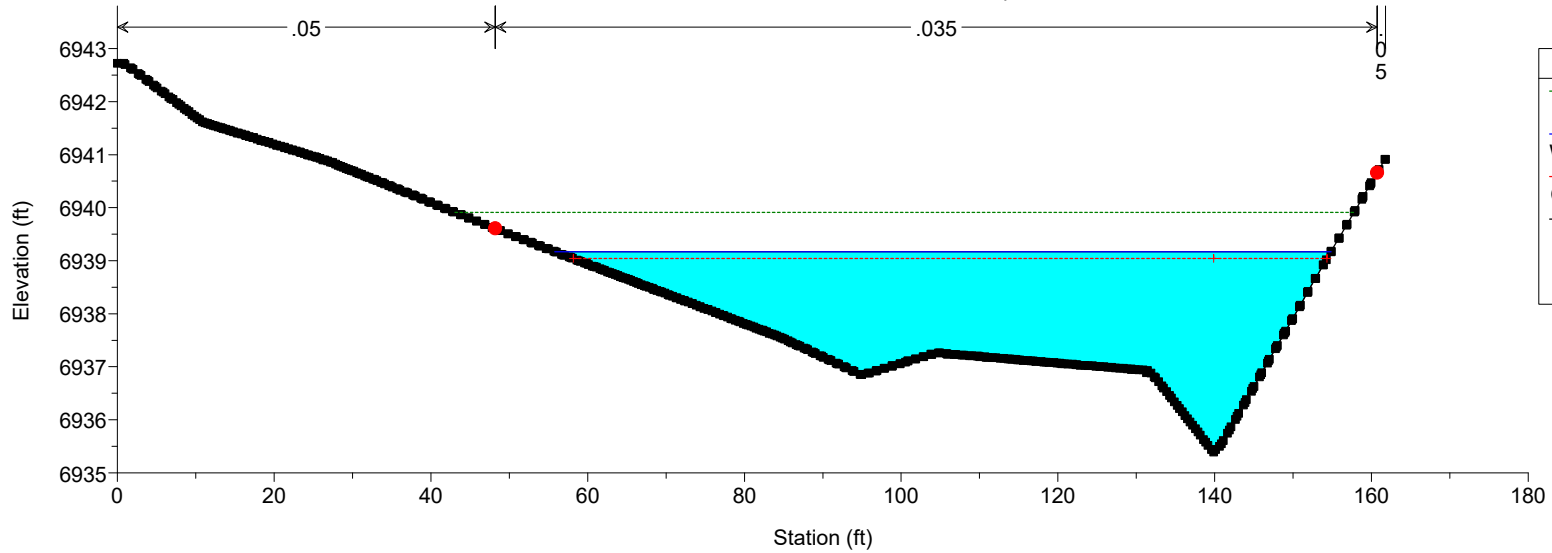
# HEC-RAS Model Plan: CE 2/4/2020

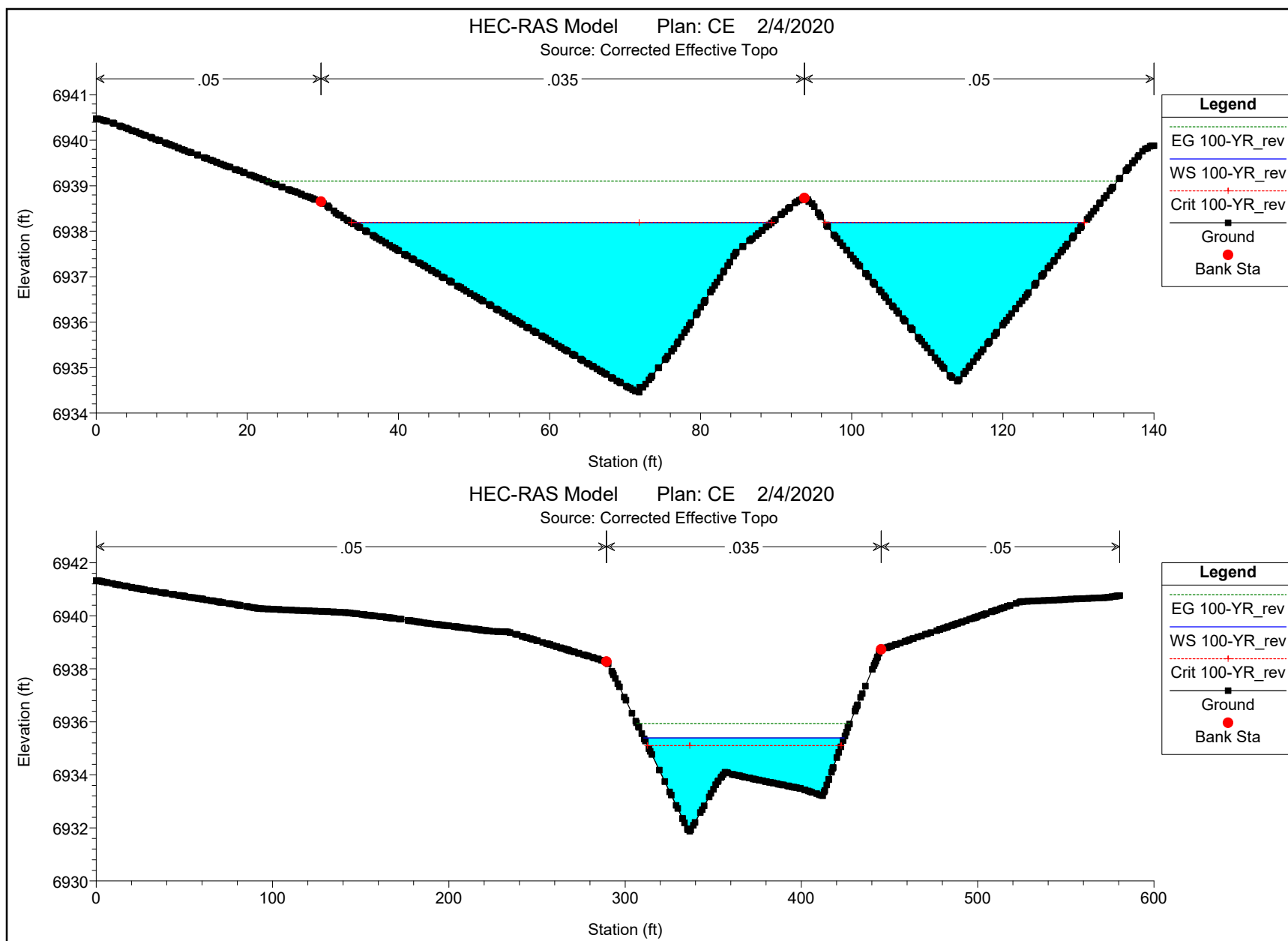
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# HEC-RAS Model Plan: CE 2/4/2020

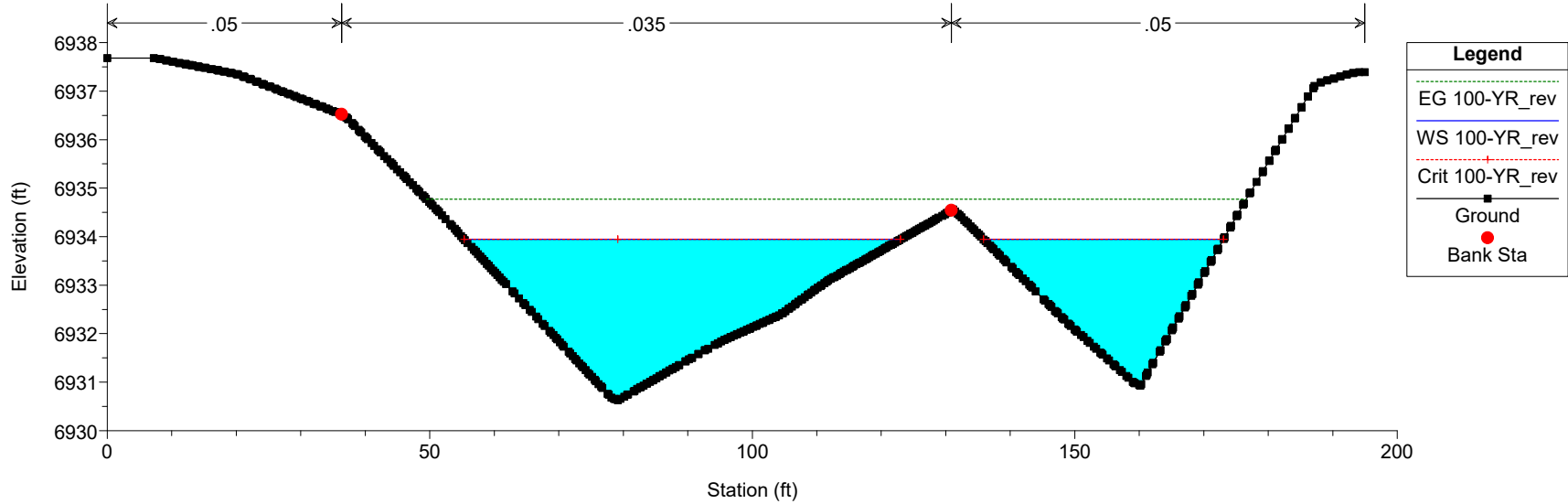
Source: Corrected Effective Topo





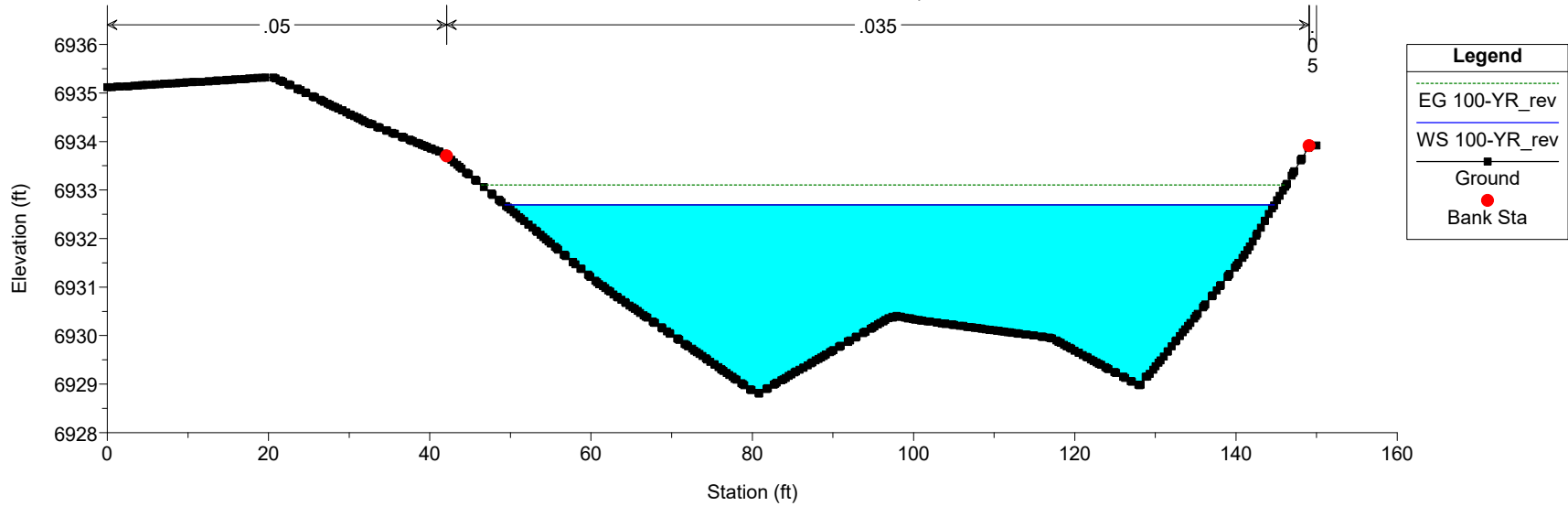
# HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



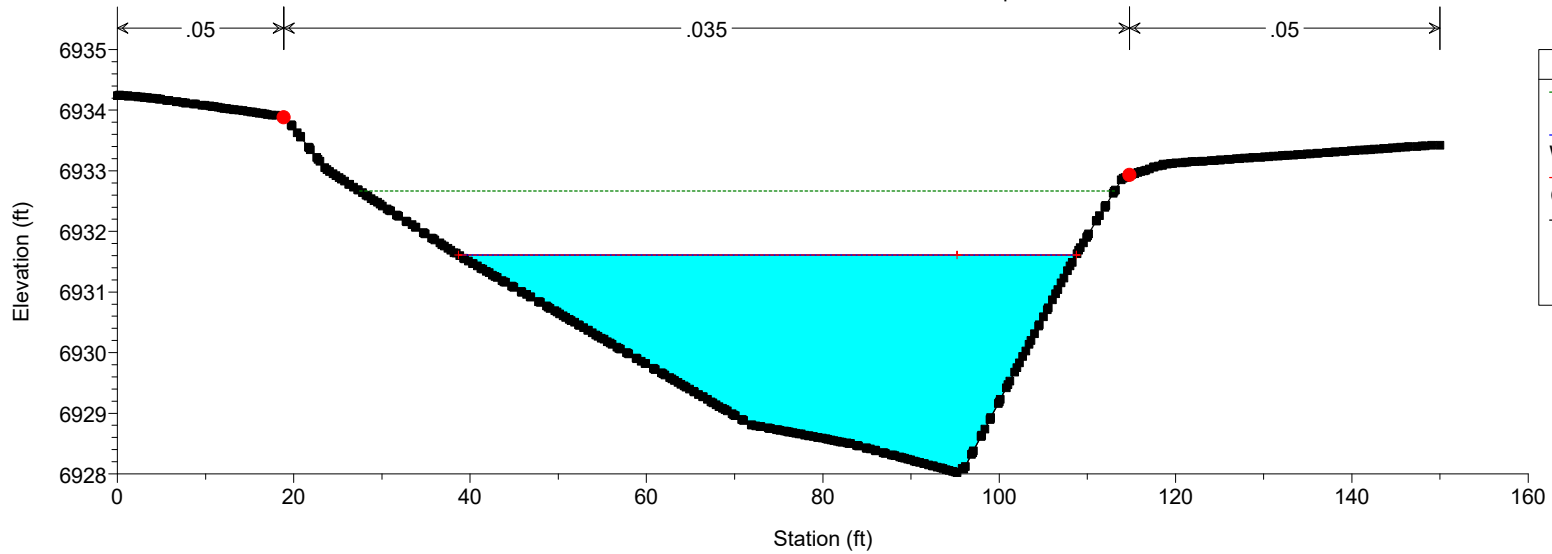
# HEC-RAS Model Plan: CE 2/4/2020

Source: Corrected Effective Topo



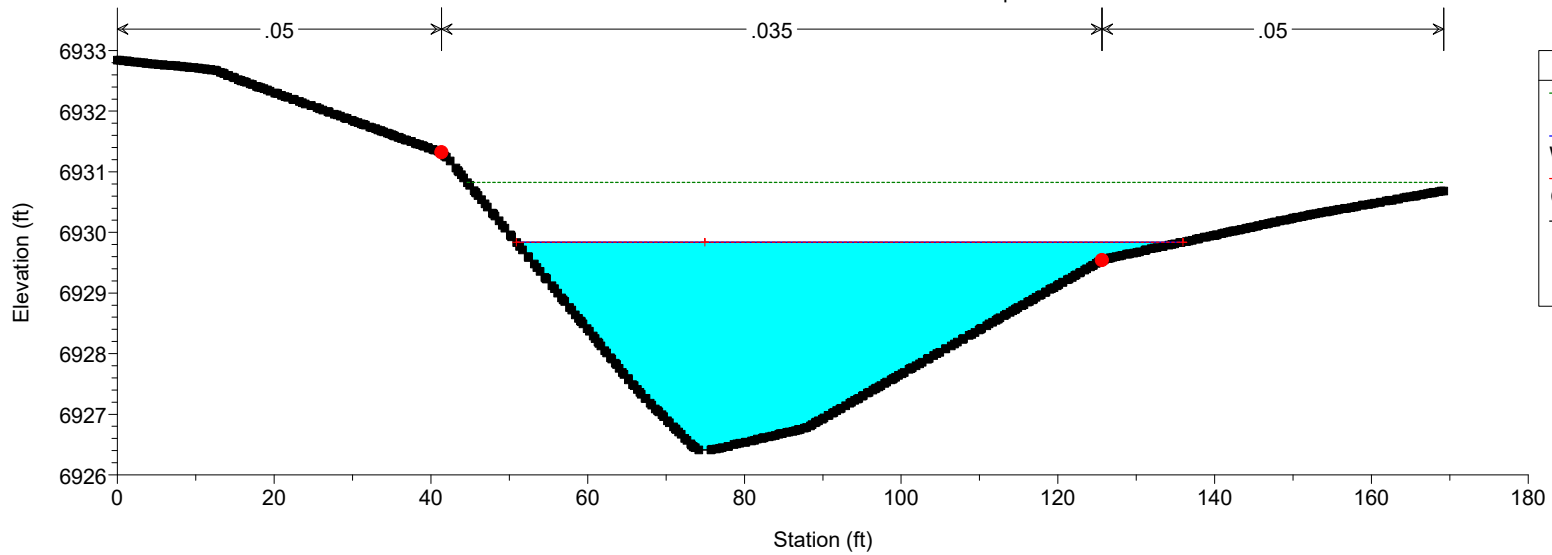
# HEC-RAS Model Plan: CE 2/4/2020

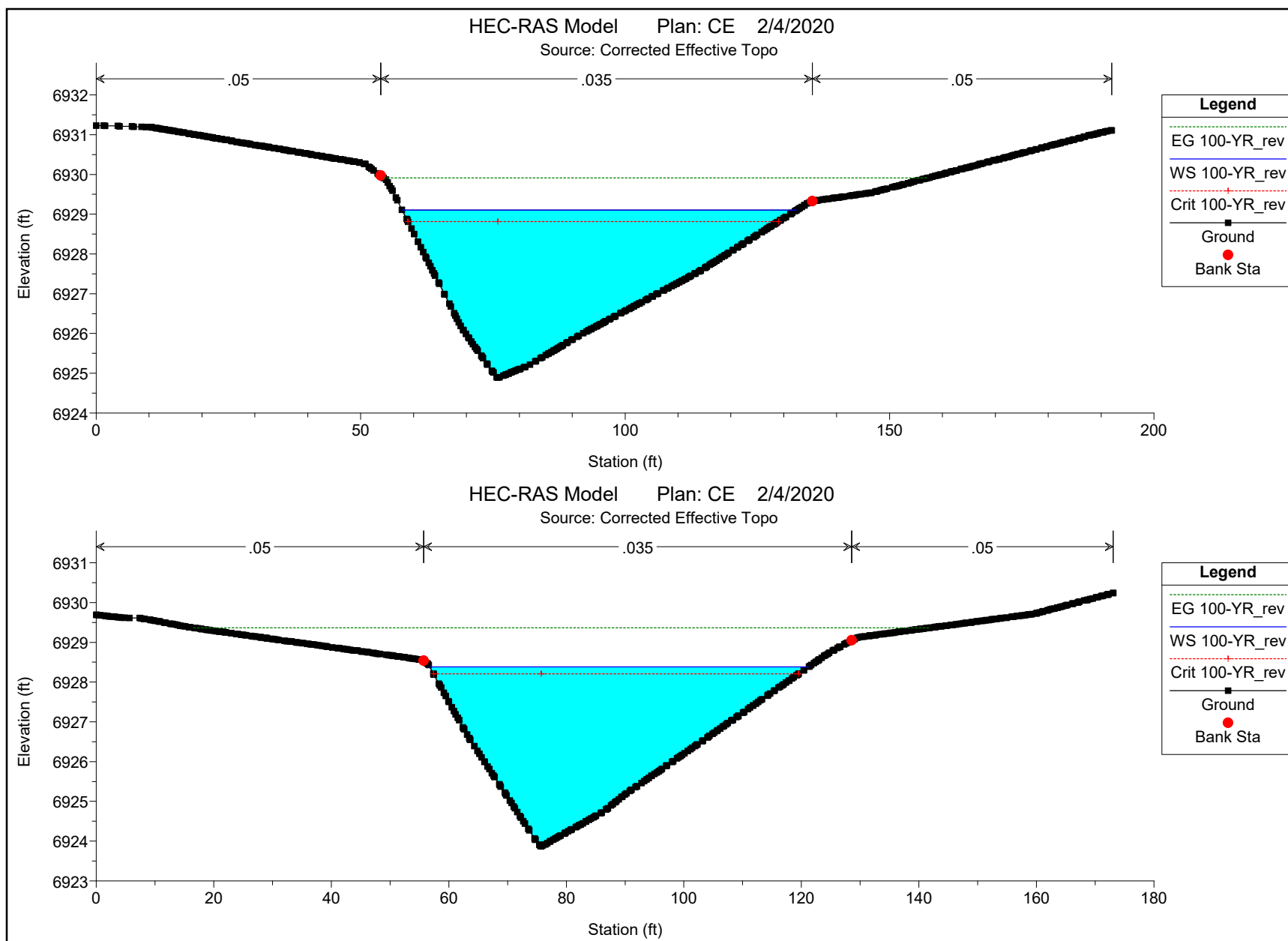
Source: Corrected Effective Topo



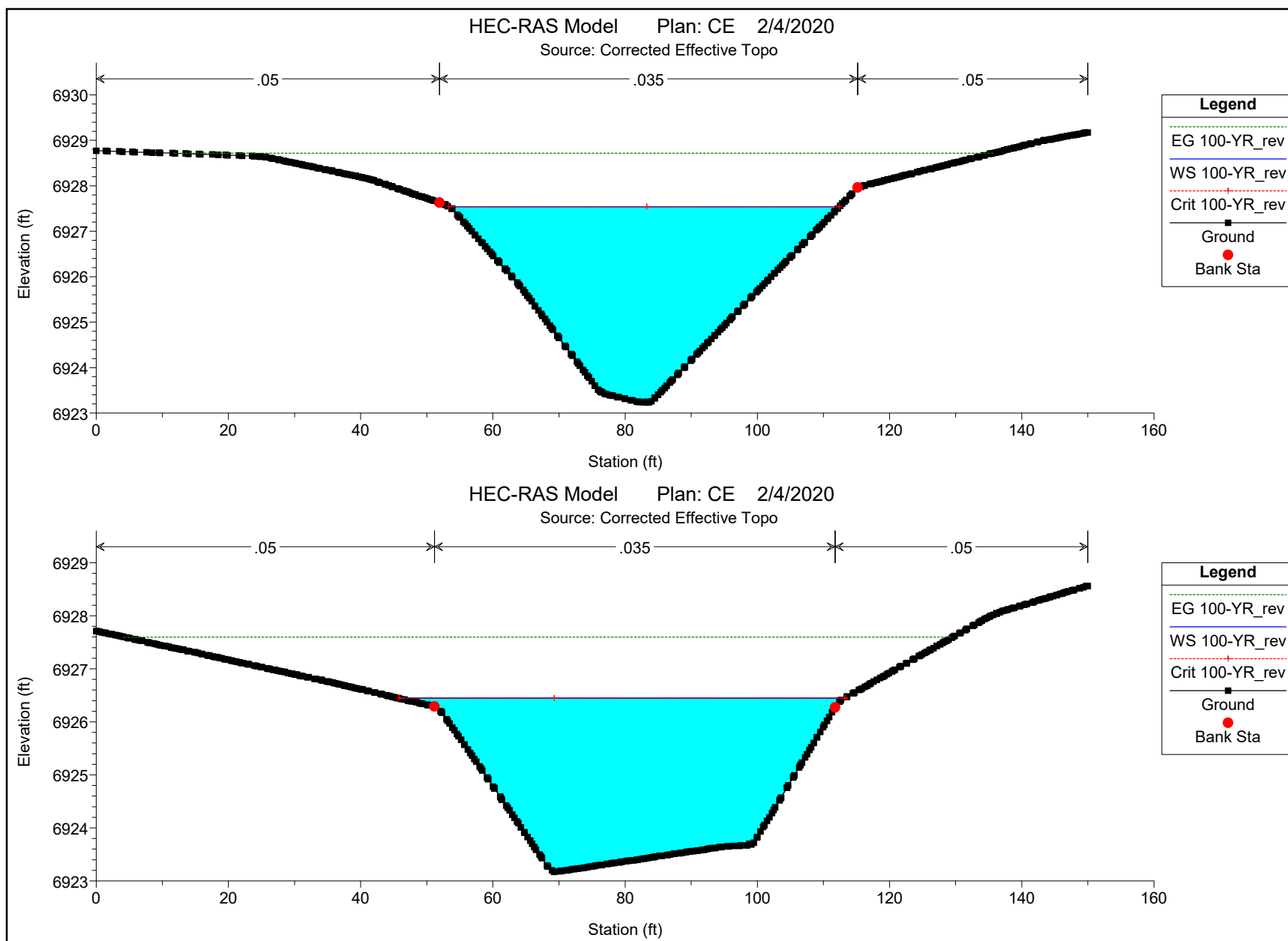
# HEC-RAS Model Plan: CE 2/4/2020

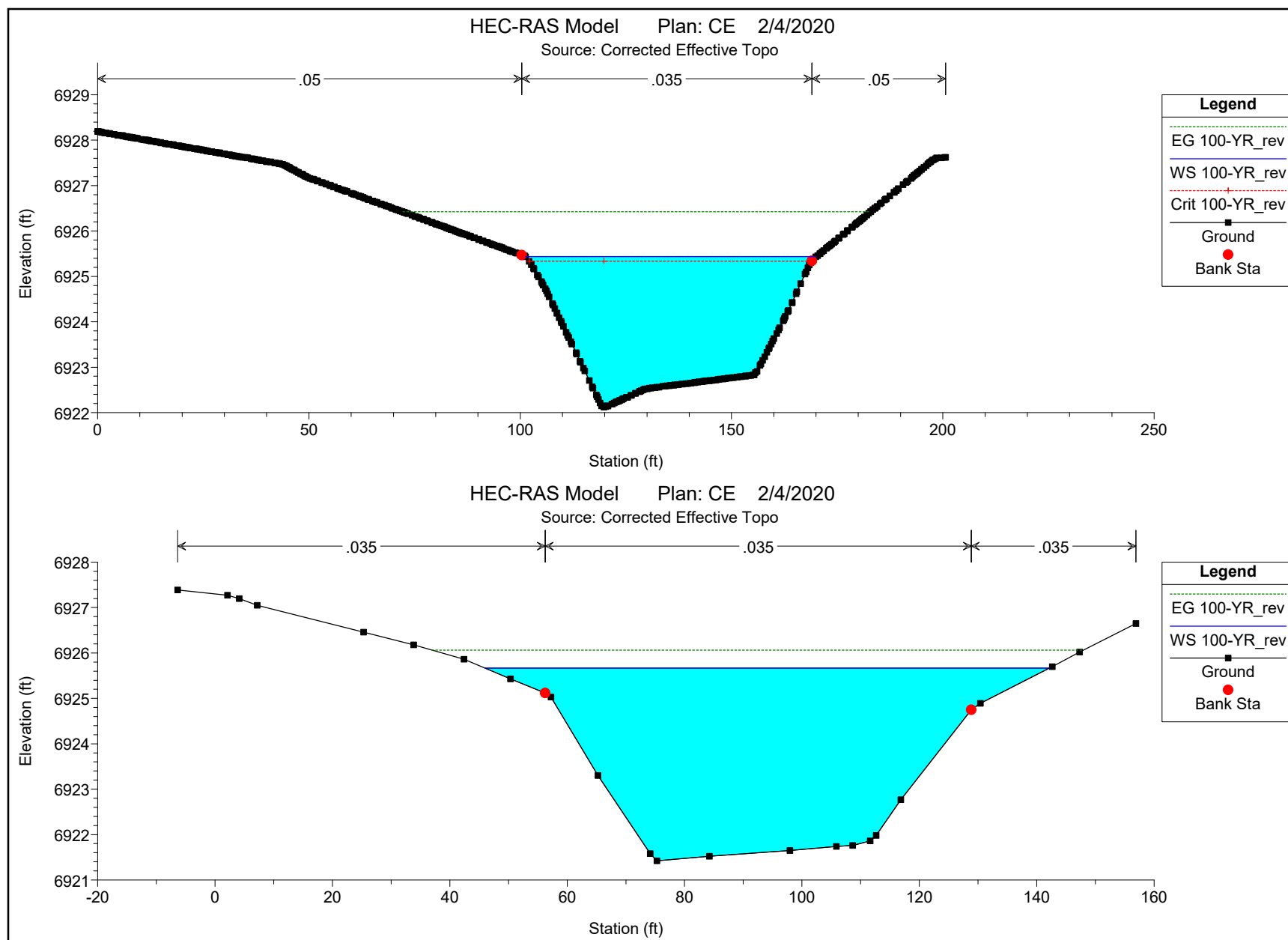
Source: Corrected Effective Topo

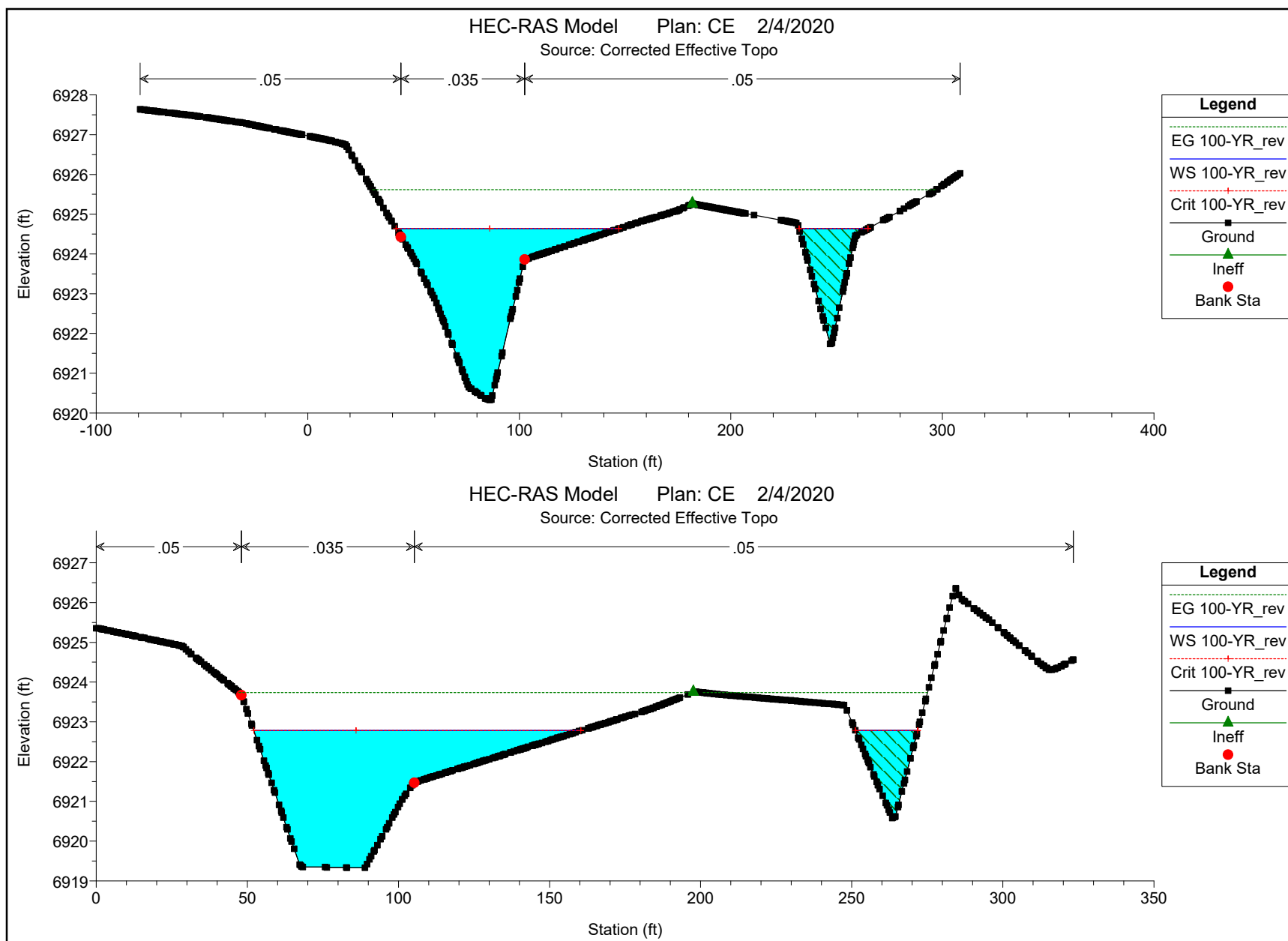


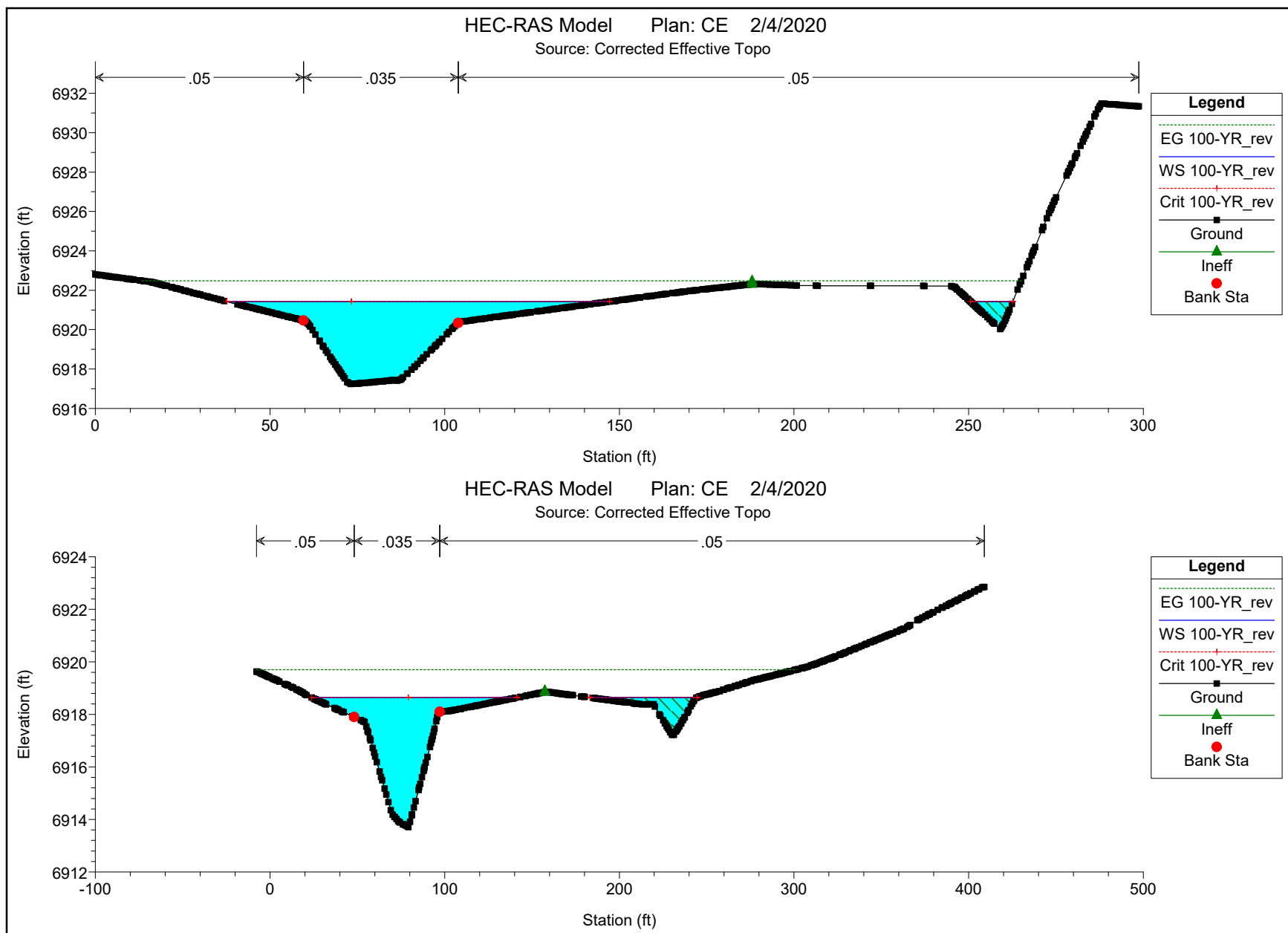






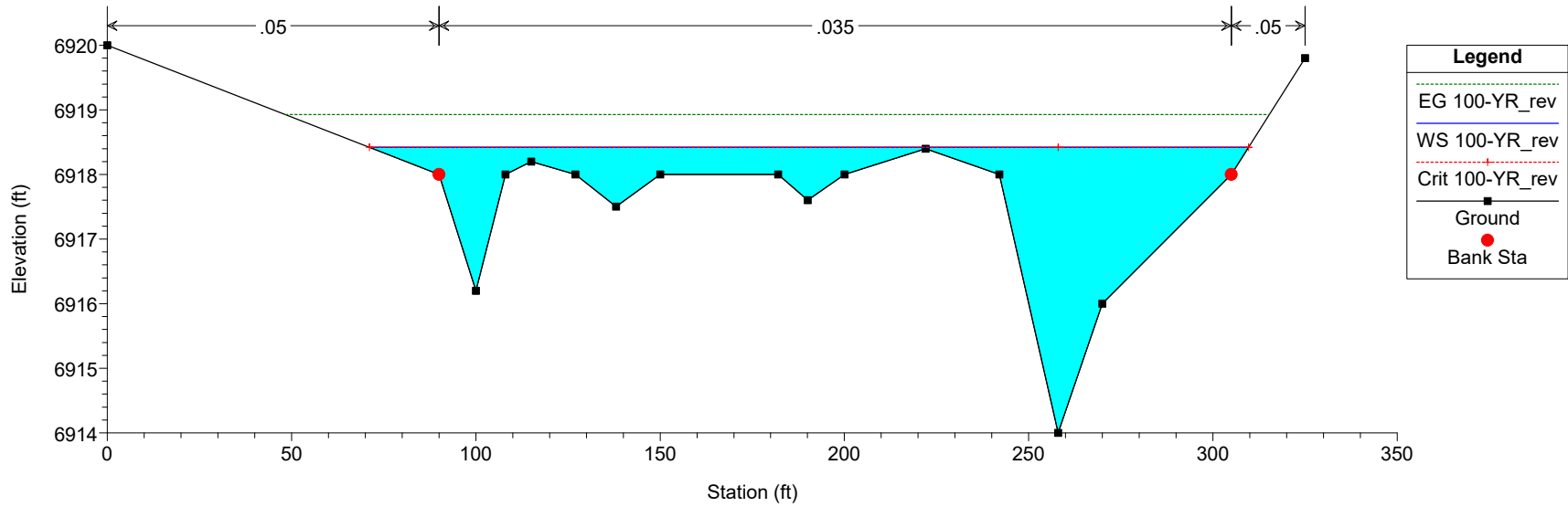






# HEC-RAS Model Plan: CE 2/4/2020

Source: 2003 LOMR HEC-2 model



## Proposed Conditions Model

Pr RAS Input Report.txt

HEC-RAS HEC-RAS 5.0.7 March 2019

U.S. Army Corps of Engineers  
Hydrologic Engineering Center  
609 Second Street  
Davis, California

```
X      X  XXXXXX   XXXX      XXXX      XX      XXXX
X      X  X        X      X      X  X      X  X      X
X      X  X        X        X  X      X  X      X
XXXXXXXX XXXX      X        XXX XXXX      XXXXXX   XXXX
X      X  X        X        X  X      X  X      X
X      X  X        X      X      X  X      X  X      X
X      X  XXXXXX   XXXX      X      X  X  X      XXXXX
```

PROJECT DATA

Project Title: HEC-RAS Model  
Project File : CLH14\_Final.prj  
Run Date and Time:

Project in English units

Project Description:

CRS Info=<SpatialReference> <CoordinateSystem Code="3502"  
Unit="US\_survey\_Foot" AcadCode="" /> <Registration OffsetX="0" OffsetY="0"  
OffsetZ="0" ScaleX="1" ScaleY="1" ScaleZ="1" /></SpatialReference>

PLAN DATA

Plan Title:

Plan File :

Geometry Title: RC\_Reduced

Geometry File : h:\Challenger Homes Inc\CO, El Paso

County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras  
1\_24\_2020 Final\CLH14\_Final.g06

Flow Title : Existing

Flow File : h:\Challenger Homes Inc\CO, El Paso

County-CLH0000014.20-Bent Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras  
1\_24\_2020 Final\CLH14\_Final.f01

Pr RAS Input Report.txt

Plan Description:

Corrected effective condition model for the Bent Grass Subdivision Project.  
Effective Hydrologic information was incorporated into a corrected effective  
condition with resurveyed topography as of 2019

Calculated using Hec-Ras v.

5.0.3

Plan Summary Information:

Number of: Cross Sections	=	39	Multiple Openings	=	0
Culverts	=	1	Inline Structures	=	0
Bridges	=	0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.33
Flow tolerance factor	=	0.001

Computation Options

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

FLOW DATA

Flow Title: Existing

Flow File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent Grass\2.  
P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1\_24\_2020 Final\CLH14\_Final.f01

Flow Data (cfs)

River	Reach	RS	100-YR_rev	5-YR
100-YR				
Existing Channel	East	5100	43	4
1450				
Existing Channel	East	5000	43	4
1450				
Existing Channel	East	3900	880	14
1482				
UT_BSC2	NCONFL-BGM	5100	1200	110



# Pr RAS Input Report.txt

1450  
UT\_BSC2 NCONFL-BGM 3694 1200 110  
1482

## Boundary Conditions

River Downstream	Reach	Profile	Upstream
UT_BSC2	NCONFL-BGM	100-YR_rev	Normal S = 0.024735
Normal S = 0.019178			
UT_BSC2	NCONFL-BGM	5-YR	Normal S = 0.024735
Normal S = 0.019178			
UT_BSC2	NCONFL-BGM	100-YR	Normal S = 0.024735
Known WS = 6918.85			

## GEOMETRY DATA

Geometry Title: RC\_Reduced  
Geometry File : h:\Challenger Homes Inc\CO, El Paso County-CLH0000014.20-Bent  
Grass\2. P&Z\2.05 Floodplain Analysis\Hydra\Hec Ras 1\_24\_2020 Final\CLH14\_Final.g06

## CROSS SECTION

RIVER: UT\_BSC2  
REACH: NCONFL-BGM RS: 5100

## INPUT

Description: Source: Revised Condition Topo  
Datum: NGVD29  
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		403					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6967.89	.23	6967.89	.61	6967.86	.87	6967.85	1.23	6967.83
1.53	6967.81	1.97	6967.78	2.23	6967.77	2.46	6967.75	3.06	6967.72
3.24	6967.71	3.39	6967.7	4.15	6967.65	4.24	6967.65	4.31	6967.64
5.2	6967.59	5.25	6967.59	6.17	6967.54	6.25	6967.53	6.34	6967.53
7.09	6967.48	7.25	6967.47	7.44	6967.46	8.02	6967.43	8.25	6967.41

Pr RAS Input Report.txt

8.53	6967.4	8.95	6967.37	9.26	6967.35	9.62	6967.33	9.87	6967.32
10.26	6967.29	10.72	6967.27	10.8	6967.26	11.26	6967.23	11.73	6967.21
11.81	6967.2	12.27	6967.18	12.65	6967.14	12.9	6967.11	13.27	6967.08
13.58	6967.04	14	6966.99	14.27	6966.95	14.51	6966.94	15.09	6966.88
15.28	6966.87	15.43	6966.85	16.19	6966.81	16.28	6966.8	16.36	6966.79
17.28	6966.59	17.32	6966.58	18.21	6966.39	18.29	6966.38	18.37	6966.36
19.14	6966.2	19.29	6966.17	19.47	6966.13	20.07	6966	20.29	6965.96
20.56	6965.9	20.99	6965.8	21.3	6965.74	21.66	6965.66	21.92	6965.6
22.3	6965.52	22.75	6965.41	22.85	6965.39	23.3	6965.29	23.77	6965.18
23.84	6965.16	24.31	6965.06	24.7	6964.97	24.94	6964.91	25.31	6964.83
25.63	6964.76	26.03	6964.66	26.16	6964.63	26.31	6964.6	26.55	6964.54
27.13	6964.41	27.32	6964.37	27.48	6964.33	28.22	6964.16	28.32	6964.14
28.41	6964.12	29.31	6963.91	29.33	6963.91	29.45	6963.88	30.26	6963.69
30.33	6963.68	30.41	6963.66	31.19	6963.5	31.33	6963.47	31.5	6963.44
32.11	6963.32	32.33	6963.28	32.59	6963.22	33.04	6963.14	33.34	6963.08
33.69	6963.01	33.97	6962.96	34.34	6962.89	34.78	6962.8	34.89	6962.78
35.34	6962.69	35.82	6962.58	35.88	6962.58	36.35	6962.47	36.75	6962.38
36.97	6962.33	37.35	6962.24	37.67	6962.18	38.06	6962.1	38.35	6962.05
38.6	6962.01	39.16	6961.91	39.36	6961.88	39.53	6961.85	40.25	6961.73
40.36	6961.71	40.45	6961.69	41.35	6961.69	41.36	6961.68	41.38	6961.68
41.57	6961.69	42.31	6961.74	42.37	6961.74	42.44	6961.75	43.23	6961.79
43.37	6961.8	43.53	6961.82	44.16	6961.93	44.37	6961.94	44.63	6961.98
45.09	6962.06	45.38	6962.1	45.72	6962.16	46.01	6962.2	46.38	6962.26
46.81	6962.3	46.94	6962.31	47.38	6962.34	49	6962.34	49.39	6962.33
50.65	6962.33	51.19	6962.32	52.5	6962.32	53.38	6962.31	54.47	6962.31
55.28	6962.3	57.13	6962.3	57.42	6962.29	58.99	6962.29	59.42	6962.28
61.04	6962.28	61.43	6962.27	63.22	6962.27	63.44	6962.26	64.55	6962.26
65.41	6962.25	67.33	6962.25	67.45	6962.24	68.69	6962.24	69.18	6962.23
69.79	6962.23	70.11	6962.22	71.03	6962.22	71.46	6962.21	72.47	6962.21
72.89	6962.2	73.07	6962.21	73.47	6962.21	73.81	6962.26	74.16	6962.32
74.47	6962.36	74.74	6962.4	75.26	6962.48	75.48	6962.52	75.67	6962.55
76.35	6962.66	76.48	6962.68	76.59	6962.69	77.44	6962.83	77.48	6962.83
77.52	6962.84	77.94	6962.91	78.45	6962.99	78.49	6962.99	78.54	6963
79.37	6963.13	79.49	6963.15	79.63	6963.17	80.3	6963.28	80.49	6963.31
80.72	6963.34	81.23	6963.42	81.5	6963.47	81.82	6963.52	82.15	6963.57
82.5	6963.63	82.91	6963.69	83.08	6963.72	83.5	6963.79	84.01	6963.87
84.51	6963.95	84.93	6964.02	85.1	6964.05	85.51	6964.12	85.86	6964.17
86.19	6964.23	86.51	6964.28	86.79	6964.32	87.29	6964.4	87.52	6964.44
87.71	6964.47	88.38	6964.58	88.52	6964.61	88.64	6964.63	89.48	6964.76
89.52	6964.77	89.57	6964.78	90.07	6964.86	90.49	6964.93	90.53	6964.93
90.57	6964.94	91.42	6965.08	91.53	6965.1	91.66	6965.12	92.35	6965.25
92.53	6965.28	92.76	6965.31	93.27	6965.41	93.54	6965.46	93.85	6965.51
94.2	6965.58	94.54	6965.63	94.64	6965.65	94.95	6965.71	95.13	6965.74
95.54	6965.82	96.04	6965.91	96.05	6965.91	96.55	6966	96.98	6966.08
97.13	6966.1	97.55	6966.18	97.91	6966.24	98.23	6966.3	98.56	6966.36
98.83	6966.41	99.32	6966.5	99.56	6966.54	99.76	6966.58	100.41	6966.7
100.56	6966.73	100.69	6966.75	101.51	6966.9	101.57	6966.91	101.61	6966.92
102.19	6967.02	102.54	6967.09	102.57	6967.09	102.6	6967.1	103.47	6967.25

Pr RAS Input Report.txt

103.57	6967.27	103.7	6967.29	104.39	6967.39	104.58	6967.41	104.79	6967.44
105.32	6967.5	105.58	6967.53	105.88	6967.55	106.25	6967.61	106.58	6967.63
106.98	6967.6	107.17	6967.7	107.59	6967.66	108.07	6967.61	108.1	6967.6
108.59	6967.56	109.03	6967.51	109.17	6967.5	109.59	6967.45	109.95	6967.42
110.26	6967.38	110.6	6967.35	110.88	6967.32	111.35	6967.27	111.6	6967.25
111.81	6967.23	112.45	6967.17	112.6	6967.16	112.73	6967.15	113.54	6967.08
113.61	6967.07	113.66	6967.07	114.32	6967.01	114.59	6966.99	114.64	6966.99
115.51	6966.91	115.61	6966.9	115.73	6966.89	116.44	6966.83	116.62	6966.82
116.82	6966.8	117.37	6966.75	117.62	6966.73	117.92	6966.71	118.29	6966.68
118.62	6966.65	119.01	6966.62	119.22	6966.6	119.63	6966.56	120.1	6966.52
120.15	6966.52	120.63	6966.48	121.07	6966.44	121.2	6966.43	121.63	6966.4
122	6966.37	122.29	6966.35	122.64	6966.33	122.93	6966.31	123.39	6966.28
123.64	6966.26	123.85	6966.25	124.48	6966.21	124.64	6966.19	124.78	6966.19
125.57	6966.13	125.65	6966.13	125.71	6966.12	126.44	6966.07	126.63	6966.06
126.67	6966.06	127.56	6966.01	127.65	6966	127.76	6966	128.49	6965.96
128.66	6965.95	128.86	6965.94	129.41	6965.92	129.66	6965.9	129.95	6965.89
130.34	6965.87	130.66	6965.85	131.04	6965.84	131.27	6965.83	131.67	6965.82
132.14	6965.8	132.19	6965.8	132.67	6965.78	133.12	6965.77	133.23	6965.76
133.67	6965.75	134.05	6965.73	134.32	6965.72	134.68	6965.71	134.97	6965.7
135.42	6965.68	135.68	6965.67	135.9	6965.66	136.51	6965.64	136.68	6965.64
136.83	6965.63	137.61	6965.6	137.75	6965.6	138.56	6965.57	138.68	6965.56
138.7	6965.56	139.61	6965.53	139.69	6965.53	139.79	6965.52	140.53	6965.51
140.7	6965.5	140.89	6965.5	141.46	6965.48	141.7	6965.48	141.98	6965.47
142.39	6965.46	142.7	6965.46	143.08	6965.45	143.31	6965.44	143.71	6965.43
144.17	6965.42	144.24	6965.42	144.71	6965.41	145.17	6965.4	145.26	6965.39
145.71	6965.38	146.09	6965.37	146.36	6965.37	146.72	6965.36	147.02	6965.35
147.45	6965.34	147.72	6965.34	147.95	6965.33	148.55	6965.32	148.72	6965.32
148.87	6965.33	149.64	6965.39	149.76	6965.39				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	16.19	.035	103.7	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	16.19	103.7		123.64	123.64		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 5000

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 22

Pr RAS Input Report.txt

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6966.08	38.49	6963.58	54	6961.82	54.36	6961.8	54.81	6961.69
63.38	6959.57	71.3	6959.57	74.14	6959.57	75.86	6959.57	80.43	6959.57
89.06	6959.58	89.61	6959.58	89.7	6959.6	89.83	6959.63	90.38	6959.77
99.95	6962.13	104.34	6963.22	111.19	6963.43	118.77	6963.24	121.11	6963.48
125.8	6963.63	150	6965.22						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	38.49	.035	104.34	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	38.49	104.34		106.14	100.12	95.6	.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4900

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6963.99	12.58	6963.53	20.95	6963.2	27.05	6962.33	36.46	6961.09
59.75	6957.96	71.58	6956.48	75.25	6956.2	76.29	6956.13	77.28	6956.08
80.6	6956.68	100.6	6959.86	126.33	6962.03	150	6963.76		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	20.95	.035	126.33	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	20.95	126.33		67.95	50.29	29.23	.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4850

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

Pr RAS Input Report.txt

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6961.95	34.39	6959.99	54.42	6958.91	58.9	6957.85	72.94	6954.52
73.41	6954.5	76.05	6954.44	77.22	6954.55	88.32	6956.31	97.52	6957.97
111.09	6958.96	131.03	6960.59	146.87	6962.04	150	6962.13		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	54.42	.035	111.09	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	54.42	111.09		100.34	100.34	100.34	.1 .3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4750

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 461

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6959.29	.15	6959.29	.34	6959.28	.93	6959.27	1.13	6959.26
1.33	6959.26	1.93	6959.24	2.25	6959.23	2.72	6959.22	2.89	6959.21
3.3	6959.2	3.52	6959.2	4.17	6959.18	4.31	6959.18	4.36	6959.17
4.45	6959.17	5.1	6959.15	5.41	6959.15	5.9	6959.13	6	6959.13
6.46	6959.12	6.69	6959.11	7.41	6959.09	7.56	6959.09	8.28	6959.07
8.56	6959.06	9.07	6959.05	9.11	6959.05	9.61	6959.03	9.87	6959.02
10.65	6959	10.66	6959	11.45	6958.98	11.71	6958.97	12.23	6958.96
12.25	6958.96	12.77	6958.95	13.04	6958.94	13.78	6958.92	13.89	6958.92
14.63	6958.89	14.87	6958.89	15.34	6958.88	15.42	6958.87	15.92	6958.86
16.22	6958.85	16.89	6958.83	17.13	6958.83	17.8	6958.81	18.02	6958.8
18.45	6958.79	18.6	6958.79	19.07	6958.77	19.39	6958.77	20.01	6958.75
20.12	6958.75	20.18	6958.74	20.37	6958.74	20.98	6958.72	21.18	6958.72
21.56	6958.71	21.77	6958.7	22.23	6958.69	22.57	6958.68	23.12	6958.66
23.36	6958.66	23.61	6958.65	24.15	6958.64	24.33	6958.63	24.67	6958.62
24.95	6958.61	25.38	6958.6	25.74	6958.59	26.23	6958.58	26.43	6958.57
26.53	6958.57	26.85	6958.56	27.33	6958.55	27.48	6958.55	27.79	6958.54
28.12	6958.53	28.53	6958.52	28.92	6958.51	29.34	6958.5	29.59	6958.49
29.71	6958.49	30.09	6958.48	30.5	6958.46	30.64	6958.46	30.9	6958.45
31.3	6958.44	31.69	6958.43	32.09	6958.42	32.45	6958.41	32.74	6958.4
32.88	6958.4	33.33	6958.39	33.68	6958.38	34.01	6958.38	34.47	6958.37
35.27	6958.37	35.57	6958.36	36.85	6958.36	36.94	6958.35	37.12	6958.34

Pr RAS Input Report.txt

37.65	6958.34	38	6958.31	38.44	6958.27	38.68	6958.25	39.05	6958.22
39.23	6958.2	39.81	6958.13	40.03	6958.1	40.1	6958.09	40.23	6958.07
40.25	6958.07	40.82	6957.97	41.15	6957.91	41.62	6957.83	41.79	6957.8
42.2	6957.73	42.41	6957.69	43.05	6957.58	43.2	6957.55	43.25	6957.54
43.35	6957.52	44	6957.41	44.3	6957.36	44.79	6957.27	44.9	6957.25
45.35	6957.17	45.58	6957.13	46.29	6957	46.38	6956.99	46.4	6956.98
46.46	6956.97	47.17	6956.85	47.46	6956.8	47.96	6956.71	48.01	6956.7
48.51	6956.61	48.76	6956.57	49.53	6956.43	49.55	6956.43	49.57	6956.42
50.35	6956.29	50.61	6956.24	51.13	6956.15	51.14	6956.15	51.66	6956.05
51.93	6956.01	52.68	6955.87	52.73	6955.87	52.77	6955.86	53.52	6955.72
53.76	6955.68	54.24	6955.6	54.31	6955.58	54.81	6955.5	55.11	6955.44
55.79	6955.32	55.87	6955.31	55.9	6955.3	56.01	6955.28	56.7	6955.16
56.92	6955.12	57.35	6955.05	57.49	6955.02	57.97	6954.94	58.28	6954.88
58.91	6954.77	59.02	6954.75	59.08	6954.74	59.26	6954.71	59.87	6954.6
60.07	6954.56	60.46	6954.5	60.66	6954.46	61.12	6954.38	61.46	6954.32
62.02	6954.22	62.17	6954.19	62.25	6954.18	62.5	6954.14	63.05	6954.04
63.22	6954.01	63.57	6953.94	63.84	6953.9	64.28	6953.82	64.63	6953.76
65.13	6953.67	65.33	6953.63	65.43	6953.62	65.74	6953.56	66.22	6953.48
66.38	6953.45	66.69	6953.39	67.01	6953.34	67.43	6953.26	67.81	6953.19
68.24	6953.12	68.48	6953.08	68.6	6953.05	68.98	6952.99	69.4	6952.91
69.53	6952.89	69.8	6952.84	70.19	6952.77	70.58	6952.7	70.98	6952.63
71.35	6952.57	71.63	6952.52	71.78	6952.49	72.22	6952.41	72.57	6952.35
72.69	6952.33	72.91	6952.33	73.36	6952.29	73.69	6952.28	73.74	6952.28
74.16	6952.27	74.47	6952.26	74.79	6952.25	74.95	6952.26	75.46	6952.28
75.75	6952.29	75.84	6952.3	76.02	6952.32	76.54	6952.33	76.89	6952.38
77.33	6952.48	77.58	6952.54	77.94	6952.62	78.13	6952.66	78.7	6952.8
78.92	6952.85	78.99	6952.86	79.13	6952.9	79.71	6953.03	80.04	6953.11
80.51	6953.21	80.69	6953.25	81.1	6953.35	81.3	6953.4	81.94	6953.54
82.1	6953.58	82.15	6953.59	82.25	6953.61	82.89	6953.76	83.2	6953.83
83.68	6953.94	83.8	6953.97	84.25	6954.07	84.48	6954.13	85.18	6954.29
85.27	6954.31	85.3	6954.32	85.36	6954.33	86.06	6954.49	86.35	6954.56
86.86	6954.67	86.91	6954.69	87.4	6954.8	87.65	6954.86	88.42	6955.03
88.45	6955.04	88.47	6955.04	89.24	6955.19	89.51	6955.24	90.03	6955.34
90.56	6955.44	90.83	6955.5	91.58	6955.64	91.61	6955.65	91.62	6955.65
91.66	6955.66	92.41	6955.81	92.66	6955.85	93.14	6955.95	93.21	6955.96
93.71	6956.06	94	6956.11	94.69	6956.25	94.76	6956.26	94.8	6956.27
94.9	6956.29	95.59	6956.42	95.81	6956.46	96.25	6956.48	96.38	6956.49
96.86	6956.52	97.18	6956.53	97.81	6956.56	97.92	6956.57	97.97	6956.57
98.14	6956.58	98.76	6956.61	98.97	6956.62	99.36	6956.64	99.56	6956.65
100.02	6956.68	100.35	6956.69	100.92	6956.72	101.07	6956.73	101.15	6956.73
101.38	6956.75	101.94	6956.77	102.12	6956.78	102.47	6956.8	102.73	6956.81
103.17	6956.84	103.53	6956.85	104.03	6956.88	104.22	6956.89	104.62	6956.89
105.11	6956.9	105.27	6956.9	105.59	6956.89	109.08	6956.89	109.48	6956.88
112.63	6956.88	113.05	6956.87	116.48	6956.87	116.84	6956.86	120.2	6956.86
120.83	6956.85	125.25	6956.85	125.75	6956.84	132.1	6956.84	132.61	6956.83
136.07	6956.83	136.71	6956.84	136.81	6956.85	136.86	6956.85	137.03	6956.86
137.41	6956.88	137.65	6956.89	137.88	6956.91	138.4	6956.94	138.48	6956.94
138.97	6956.97	139.16	6956.98	139.59	6957.01	139.92	6957.03	140.07	6957.04

Pr RAS Input Report.txt

140.45	6957.06	140.68	6957.07	141.16	6957.1	141.44	6957.12	142.06	6957.16
142.19	6957.17	142.25	6957.17	142.41	6957.18	142.95	6957.21	143.35	6957.24
143.71	6957.26	144.37	6957.3	144.47	6957.3	144.53	6957.31	145.23	6957.35
145.54	6957.37	145.98	6957.4	146.34	6957.42	146.63	6957.43	146.74	6957.44
147	6957.46	147.5	6957.49	147.72	6957.5	148.26	6957.53	148.3	6957.53
148.82	6957.57	149.02	6957.58	149.47	6957.61	149.77	6957.62	149.91	6957.63
150.26	6957.65	150.53	6957.67	151	6957.7	151.29	6957.72	151.94	6957.75
152.05	6957.76	152.1	6957.76	152.22	6957.77	152.81	6957.81	153.19	6957.83
153.56	6957.85	154.19	6957.89	154.28	6957.9	154.41	6957.9	155.08	6957.94
155.38	6957.96	155.84	6957.98	156.15	6957.99	156.47	6958.01	156.6	6958.01
156.88	6958.02	157.35	6958.04	157.56	6958.05	158.11	6958.07	158.66	6958.09
158.87	6958.1	159.35	6958.12	159.63	6958.13	159.75	6958.14	160.07	6958.15
160.39	6958.16	160.85	6958.18	161.14	6958.19	161.82	6958.22	161.9	6958.22
161.94	6958.23	162.04	6958.23	162.66	6958.25	163.03	6958.27	163.42	6958.28
164	6958.31	164.17	6958.31	164.29	6958.32	164.93	6958.34	165.22	6958.36
165.69	6958.37	165.96	6958.39	166.31	6958.4	166.45	6958.4	166.75	6958.42
167.21	6958.43	167.41	6958.44	167.92	6958.46	167.96	6958.46	168.5	6958.49
168.72	6958.5	169.22	6958.52	169.48	6958.53	169.59	6958.53	169.89	6958.54
170.24	6958.56	170.69	6958.57	171	6958.59	171.69	6958.61	171.75	6958.62
171.85	6958.62	172.51	6958.65	172.87	6958.66	173.27	6958.68	173.81	6958.7
173.97	6958.7	174.03	6958.71	174.16	6958.71	174.79	6958.74	175.06	6958.75
175.54	6958.76	175.78	6958.77	176.16	6958.79	176.3	6958.79	176.63	6958.81
177.06	6958.82	177.25	6958.83	177.74	6958.85	177.82	6958.85	178.34	6958.87
178.53	6958.87								

Manning's n Values      num=      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	40.25	.035	96.38	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	40.25	96.38		100.72	100.72		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4650

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		22					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6956.44	5.23	6956.23	9.7	6956.05	11.8	6955.97	13.75	6955.88
15.98	6955.77	17.47	6955.75	19.19	6955.69	39.69	6954.03	39.7	6954.03
40.7	6953.88	57.45	6950.92	59.62	6950.54	62.99	6950.73	63.73	6950.75

Pr RAS Input Report.txt

68.59 6951.79 81.56 6954.29 100.82 6955.21 110.86 6955.88 117.25 6955.97  
128.49 6956.29 136.54 6956.52

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
0 .05 39.7 .035 81.56 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
39.7 81.56 17.95 48.25 87.43 .1 .3

CROSS SECTION

RIVER: UT\_BSC2  
REACH: NCONFL-BGM RS: 4600

INPUT

Description: Source: Revised Condition Topo  
Datum: NGVD29  
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 18  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
0 6956.26 1.83 6956.11 4.72 6955.85 11.44 6955.16 22.53 6954.54  
39.04 6953.33 39.05 6953.33 60.56 6950.2 67.66 6949.26 68.1 6949.28  
68.33 6949.29 71.51 6949.23 78.98 6950.86 88.89 6953.25 99.86 6954.11  
104.06 6954.54 107.26 6954.49 144.24 6954.44

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
0 .05 39.05 .035 88.89 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
39.05 88.89 48.37 48.37 48.37 .1 .3

CROSS SECTION

RIVER: UT\_BSC2  
REACH: NCONFL-BGM RS: 4550

INPUT

Description: Source: Revised Condition Topo  
Datum: NGVD29  
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev



Pr RAS Input Report.txt

-48.02	6961.13	-47.51	6961.13	-47.35	6961.14	-46.43	6961.17	-46.28	6961.17
-45.47	6961.2	-45.35	6961.2	-44.54	6961.11	-44.41	6961.12	-43.6	6960.94
-43.41	6960.89	-43.2	6960.85	-42.66	6960.73	-42.41	6960.67	-42.12	6960.61
-41.41	6960.45	-41.04	6960.37	-40.79	6960.31	-40.41	6960.23	-39.85	6960.1
-39.4	6960	-38.91	6959.9	-38.89	6959.89	-38.4	6959.78	-37.98	6959.69
-36.73	6959.41	-36.4	6959.34	-35.66	6959.17	-35.39	6959.12	-34.23	6958.86
-33.5	6958.7	-33.29	6958.66	-32.42	6958.46	-32.35	6958.44	-31.89	6958.34
-31.42	6958.23	-31.35	6958.22	-30.48	6958.02	-29.19	6957.72	-28.61	6957.58
-28.38	6957.53	-28.11	6957.46	-27.37	6957.29	-26.73	6957.14	-25.96	6956.95
-25.37	6956.81	-24.88	6956.69	-24.86	6956.69	-23.8	6956.43	-23.37	6956.33
-22.98	6956.27	-22.73	6956.17	-22.36	6956.12	-22.05	6956.09	-21.65	6956.04
-21.36	6956.02	-21.11	6955.99	-20.57	6955.95	-20.17	6955.91	-19.36	6955.84
-19.24	6955.82	-18.42	6955.75	-18.3	6955.73	-17.5	6955.65	-17.34	6955.64
-16.42	6955.54	-16.35	6955.54	-15.49	6955.45	-15.35	6955.43	-15.18	6955.42
-14.55	6955.35	-14.11	6955.31	-13.03	6955.2	-12.68	6955.16	-12.34	6955.13
-11.34	6955.03	-10.33	6954.92	-9.86	6954.88	-9.33	6954.82	-8.33	6954.72
-7.99	6954.69	-7.64	6954.65	-7.33	6954.62	-6.57	6954.54	-6.12	6954.5
-5.49	6954.43	-5.32	6954.42	-5.18	6954.4	-4.32	6954.31	-4.24	6954.31
-3.33	6954.21	-3.3	6954.21	-2.37	6954.11	-1.18	6954.01	-.31	6953.96
.44	6953.92	.69	6953.91	.98	6953.89	1.38	6953.87	1.69	6953.86
2.05	6953.84	2.32	6953.82	3.13	6953.78	3.25	6953.77	3.7	6953.75
4.7	6953.69	6.07	6953.62	6.36	6953.6	6.71	6953.59	7.31	6953.53
8.39	6953.38	8.99	6953.29	9.83	6953.18	10.07	6953.14	10.28	6953.11
10.55	6953.08	10.96	6953.02	11.28	6952.98	12	6952.87	12.68	6952.78
12.72	6952.77	13.87	6952.61	14.62	6952.51	15.07	6952.44	15.92	6952.33
16.44	6952.25	17.05	6952.17	17.46	6952.11	17.78	6952.07	18.27	6952
18.5	6951.96	19.22	6951.86	19.85	6951.78	19.94	6951.76	21.04	6951.61
21.39	6951.56	21.92	6951.49	22.24	6951.44	23.43	6951.28	23.74	6951.23
24.28	6951.16	25.57	6950.98	25.82	6950.94	26.44	6950.85	27.89	6950.65
28.21	6950.61	28.61	6950.55	29.22	6950.47	29.41	6950.44	30.06	6950.35
30.6	6950.27	30.78	6950.25	31.04	6950.21	31.5	6950.15	31.8	6950.1
32.22	6950.05	32.87	6949.96	33.24	6949.9	34.19	6949.77	35.39	6949.6
35.83	6949.54	36.52	6949.44	36.58	6949.44	37.28	6949.33	38	6949.23
38.72	6949.12	38.97	6949.09	39.45	6949.02	40.16	6948.91	40.89	6948.81
41.36	6948.74	41.99	6948.64	42.33	6948.59	42.56	6948.57	43.06	6948.51
43.82	6948.44	44.95	6948.34	45.22	6948.32	46.14	6948.23	46.67	6948.19
47.34	6948.13	47.47	6948.11	48.11	6948.05	48.53	6948.02	48.83	6947.99
49.3	6947.95	49.56	6947.92	50.28	6948	50.55	6948.11	50.92	6948.18
51.12	6948.23	51.72	6948.4	52.45	6948.6	53.89	6949	54.01	6949.04
54.51	6949.18	54.61	6949.2	54.77	6949.25	55.34	6949.41	56.78	6949.81
56.9	6949.84	57.48	6950	57.5	6950.01	58.42	6950.27	58.95	6950.41
59.67	6950.62	60.39	6950.82	60.49	6950.84	61.11	6951.02	61.68	6951.18
61.84	6951.22	62.07	6951.29	62.47	6951.4	62.56	6951.42	63.28	6951.62
63.6	6951.67	64.16	6951.7	64.47	6951.72	65.5	6951.78	65.96	6951.8
66.43	6951.83	66.85	6951.85	67.45	6951.89	68.55	6951.95	68.95	6951.97
69.18	6951.99	69.57	6952	70.37	6952.04	70.98	6952.06	71.78	6952.1
72.4	6952.12	73.19	6952.16	73.5	6952.18	73.78	6952.19	74.69	6952.25
75.13	6952.27	76.19	6952.33	76.47	6952.35	77.04	6952.38	77.81	6952.43

Pr RAS Input Report.txt

78.46	6952.46	79.16	6952.5	79.17	6952.51	79.47	6952.52	80.47	6952.59
81.3	6952.65	81.78	6952.68	82.01	6952.69	82.72	6952.74	83.08	6952.77
83.43	6952.79	84.14	6952.84	84.71	6952.87	84.85	6952.87	86.28	6952.97
86.9	6953.05	86.99	6953.04	87.12	6953.05	87.71	6953.05	88.14	6953.13
89.13	6953.16	89.85	6953.19	90.47	6953.21	90.64	6953.21	91.13	6953.23
91.52	6953.25	92	6953.26	92.72	6953.29	93.05	6953.3	93.45	6953.32
94.09	6953.34	94.23	6953.35	94.46	6953.35	95.62	6953.4	96.35	6953.42
97.38	6953.46	98.02	6953.5	98.56	6953.55	98.86	6953.57	99.83	6953.66
100.13	6953.68	101.13	6953.77	101.52	6953.81	102.99	6953.94	103.4	6953.97
104.47	6954.07	104.73	6954.09	105.67	6954.17	105.95	6954.18	106.48	6954.21
106.8	6954.24	107.17	6954.23	108.6	6954.23	108.91	6954.22	110.39	6954.22
110.74	6954.21	111.89	6954.21	112.42	6954.2	113.5	6954.2	113.72	6954.19
114.94	6954.19	115.55	6954.18	115.82	6954.18	116.47	6954.17	117.36	6954.17
117.81	6954.16	118.03	6954.16	118.72	6954.15	119.62	6954.15	119.91	6954.14
120.49	6954.14	120.96	6954.13	122	6954.13	122.01	6954.12	123.07	6954.12
123.19	6954.11	124.12	6954.11	124.37	6954.1	125.06	6954.11	125.25	6954.11
125.94	6954.12	126.24	6954.12	126.72	6954.13	127.51	6954.13	128.12	6954.14
128.47	6954.14	129.11	6954.15	129.39	6954.15	129.9	6954.16	130.73	6954.16
131.33	6954.17	131.85	6954.17	132.36	6954.18	132.75	6954.18	133.18	6954.19
133.99	6954.19	134.18	6954.2	134.81	6954.2	135.47	6954.21	136.47	6954.21
136.63	6954.22	137.66	6954.22	138.15	6954.23	139	6954.23	139.49	6954.24
139.84	6954.24	141.52	6954.25	141.75	6954.25	142.05	6954.26	143.27	6954.26
143.77	6954.27	145.02	6954.27	145.64	6954.28	145.9	6954.28	147.65	6954.29
148.52	6954.29	148.83	6954.3	150.24	6954.3	150.51	6954.31	151.75	6954.31
151.88	6954.32	153.96	6954.32	154.77	6954.33	157.16	6954.33	157.6	6954.34
158.1	6954.34	158.81	6954.36	159.26	6954.37	159.86	6954.39	160.05	6954.39
160.6	6954.41	160.92	6954.41	161.08	6954.42	161.63	6954.43	161.97	6954.44
162.42	6954.46	162.66	6954.46	163.03	6954.47	163.21	6954.48	163.74	6954.49
164.25	6954.51	164.79	6954.52	165.58	6954.54	166.19	6954.56	166.37	6954.56
167.16	6954.59	167.43	6954.59	167.94	6954.61	168.73	6954.63	169.36	6954.65
169.52	6954.65	170.41	6954.67	170.61	6954.68	171.47	6954.7	171.89	6954.72
172.2	6954.72	172.68	6954.74	173.47	6954.76	173.58	6954.77	173.78	6954.77
174.26	6954.79	175.05	6954.81	175.69	6954.83	175.84	6954.83	176.3	6954.85
176.74	6954.86	177.42	6954.89	178.21	6954.91	178.55	6954.93	179	6954.94
179.44	6954.96	179.79	6954.97	179.9	6954.98	180.14	6954.98	180.58	6955
180.96	6955.01	181.37	6955.03	182.01	6955.05	182.16	6955.06	182.58	6955.07
182.95	6955.09	183.07	6955.09	183.74	6955.12	184.12	6955.13	184.53	6955.15
185.18	6955.17	185.32	6955.18	186.11	6955.2	186.49	6955.22	186.9	6955.23
187.29	6955.25	187.68	6955.26	188.34	6955.29	188.47	6955.29	188.86	6955.31
189.26	6955.32	189.4	6955.33	190.05	6955.35	190.45	6955.37	191.26	6955.39
191.63	6955.41	192	6955.42	192.42	6955.44	192.85	6955.45	193.21	6955.47
193.62	6955.48	194	6955.5	194.44	6955.51	194.79	6955.53	195.58	6955.55
195.73	6955.56	196.37	6955.58	196.78	6955.6	197.16	6955.61	197.84	6955.64
198.28	6955.65	198.89	6955.68	199.53	6955.7	199.95	6955.72	200.32	6955.73
200.79	6955.75	201	6955.75	201.11	6955.76	201.9	6955.79	202.06	6955.79
202.38	6955.81	203.11	6955.83	203.48	6955.85	203.97	6955.86	204.27	6955.88
204.56	6955.89	205.06	6955.9	205.22	6955.91	205.85	6955.93	206.28	6955.95
206.64	6955.96	208.21	6956.02	208.39	6956.03	209	6956.05	209.44	6956.07

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209.79	6956.08	211.37	6956.14	211.55	6956.14	212.16	6956.17	212.61	6956.18
212.95	6956.2	213.5	6956.22	213.74	6956.22	214.53	6956.25	214.72	6956.26
215.09	6956.27	215.27	6956.27						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48.02	.05	10.07	.035	62.47	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10.07	62.47		60.1	60.1		.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4500

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
33.56	6958.43	46.11	6955.1	55.02	6952.74	69.08	6947.9	75.54	6947.96
76.98	6947.94	77.38	6948	83.71	6948.98	107.55	6952.53	110.42	6952.62
126.61	6953.03	127.51	6953.05						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
33.56	.05	46.11	.035	107.55	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	46.11	107.55		88.02	91.85		.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4400

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 489

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
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Pr RAS Input Report.txt

-47.22	6953.53	-46.37	6953.53	-45.81	6953.52	-45.37	6953.52	-44.8	6953.51
-44.38	6953.51	-43.79	6953.5	-42.4	6953.5	-41.78	6953.46	-41.59	6953.45
-41.41	6953.44	-40.77	6953.41	-40.59	6953.4	-40.41	6953.4	-39.76	6953.36
-39.59	6953.35	-39.42	6953.35	-38.76	6953.31	-38.59	6953.3	-38.43	6953.3
-37.75	6953.26	-37.59	6953.25	-37.44	6953.23	-36.74	6953.13	-36.59	6953.1
-36.44	6953.07	-35.73	6952.89	-35.59	6952.85	-35.45	6952.82	-34.72	6952.64
-34.59	6952.6	-34.46	6952.57	-33.72	6952.38	-33.59	6952.35	-33.47	6952.32
-32.71	6952.13	-32.59	6952.1	-32.48	6952.07	-31.7	6951.88	-31.59	6951.85
-31.48	6951.83	-30.69	6951.63	-30.59	6951.6	-30.49	6951.58	-29.68	6951.38
-29.59	6951.35	-29.5	6951.33	-28.68	6951.13	-28.59	6951.1	-28.51	6951.08
-27.67	6950.87	-27.59	6950.85	-27.51	6950.83	-26.66	6950.62	-26.59	6950.6
-26.52	6950.59	-25.65	6950.37	-25.59	6950.35	-25.53	6950.34	-24.65	6950.12
-24.59	6950.1	-24.54	6950.09	-23.64	6949.87	-23.59	6949.85	-23.55	6949.84
-22.63	6949.61	-22.59	6949.6	-22.55	6949.59	-21.62	6949.36	-21.59	6949.35
-21.56	6949.35	-20.61	6949.11	-20.59	6949.1	-20.57	6949.1	-19.61	6948.86
-19.59	6948.85	-19.58	6948.85	-18.6	6948.61	-18.59	6948.6	-17.71	6948.38
-17.59	6948.35	-16.6	6948.23	-12.59	6948.23	-12.55	6948.24	-11.64	6948.35
-11.59	6948.36	-11.54	6948.37	-10.65	6948.59	-10.59	6948.61	-10.54	6948.62
-9.65	6948.84	-9.59	6948.86	-9.53	6948.87	-8.66	6949.09	-8.59	6949.11
-8.52	6949.12	-7.67	6949.34	-7.59	6949.36	-7.51	6949.38	-6.68	6949.59
-6.59	6949.61	-6.5	6949.63	-5.69	6949.83	-5.59	6949.86	-5.5	6949.88
-4.69	6950.08	-4.59	6950.11	-4.49	6950.13	-3.7	6950.33	-3.59	6950.36
-3.48	6950.38	-2.71	6950.58	-2.59	6950.61	-2.47	6950.64	-1.72	6950.83
-1.59	6950.86	-1.47	6950.89	-.72	6951.07	-.59	6951.11	-.46	6951.14
.27	6951.32	.41	6951.36	.55	6951.39	1.26	6951.57	1.41	6951.61
1.56	6951.64	1.76	6951.69	1.93	6951.72	2.35	6951.79	3.07	6951.9
3.08	6951.91	3.09	6951.91	3.82	6952.02	4.22	6952.09	4.55	6952.14
5.14	6952.23	5.29	6952.26	5.37	6952.27	5.67	6952.32	6.02	6952.37
6.52	6952.45	6.76	6952.49	7.18	6952.56	7.49	6952.61	7.66	6952.63
8.23	6952.72	8.27	6952.73	8.81	6952.82	8.96	6952.84	9.23	6952.88
9.69	6952.96	9.95	6953	10.43	6953.08	10.87	6953.14	11.1	6953.18
11.16	6953.19	11.28	6953.21	11.9	6953.31	12.24	6953.36	12.63	6953.43
13.33	6953.54	13.39	6953.54	13.47	6953.55	14.1	6953.63	14.54	6953.68
14.84	6953.72	15.38	6953.78	15.57	6953.8	15.68	6953.8	16.07	6953.83
16.31	6953.84	16.83	6953.87	17.04	6953.89	17.43	6953.91	17.78	6953.93
17.97	6953.95	18.51	6953.98	18.67	6953.99	19.12	6954.02	19.25	6954.03
19.47	6954.04	19.98	6954.07	20.27	6954.09	20.72	6954.12	21.27	6954.15
21.41	6954.16	21.45	6954.17	21.52	6954.17	22.19	6954.18	22.56	6954.24
22.92	6954.26	23.57	6954.21	23.65	6954.2	23.7	6954.19	23.87	6954.2
24.39	6954.18	24.85	6954.21	25.12	6954.15	25.62	6954.1	25.86	6954.03
25.99	6954.01	26.47	6953.95	26.59	6954.03	27.14	6953.91	27.33	6953.84
27.67	6953.81	28.06	6953.78	28.29	6953.75	28.8	6953.71	29.07	6953.64
29.43	6953.6	29.53	6953.58	29.71	6953.56	30.27	6953.51	30.58	6953.47
30.69	6953.45	31.14	6953.32	31.22	6953.29	31.28	6953.27	32.2	6953
32.22	6953	32.23	6952.99	32.58	6952.9	33.19	6952.75	33.25	6952.73
34.14	6952.5	34.22	6952.48	34.31	6952.46	35.09	6952.26	35.22	6952.23
35.37	6952.19	36.04	6952.02	36.22	6951.97	36.43	6951.92	36.99	6951.77
37.22	6951.71	37.48	6951.64	37.94	6951.53	38.22	6951.45	38.54	6951.37

Pr RAS Input Report.txt

38.89	6951.28	39.23	6951.2	39.33	6951.17	39.6	6951.1	39.84	6951.04
40.23	6950.94	40.65	6950.83	40.79	6950.79	41.23	6950.68	41.71	6950.56
41.74	6950.55	42.23	6950.43	42.7	6950.31	42.77	6950.29	43.23	6950.17
43.65	6950.06	43.83	6950.02	44.23	6949.91	44.6	6949.82	44.88	6949.74
45.23	6949.66	45.55	6949.57	45.94	6949.47	46.24	6949.4	46.5	6949.33
47	6949.2	47.24	6949.14	47.45	6949.09	48.06	6948.93	48.24	6948.88
48.4	6948.84	49.11	6948.66	49.24	6948.63	49.35	6948.6	50.17	6948.39
50.24	6948.37	50.3	6948.35	51.23	6948.12	51.24	6948.11	51.25	6948.11
51.49	6948.05	52.21	6947.87	52.24	6947.86	52.29	6947.84	53.16	6947.62
53.24	6947.6	53.34	6947.57	54.11	6947.38	54.25	6947.34	54.4	6947.3
55.06	6947.13	55.25	6947.08	55.46	6947.03	56.01	6946.89	56.25	6946.83
56.51	6946.76	56.96	6946.64	57.25	6946.57	57.57	6946.49	57.91	6946.4
58.25	6946.31	58.63	6946.22	58.86	6946.16	59.25	6946.06	59.69	6945.94
59.81	6945.91	60.25	6945.8	60.74	6945.67	60.76	6945.67	61.26	6945.54
61.72	6945.48	61.8	6945.48	62.26	6945.42	62.67	6945.38	62.86	6945.36
63.26	6945.32	63.62	6945.29	63.92	6945.26	64.26	6945.23	64.57	6945.2
64.97	6945.16	65.26	6945.13	65.52	6945.1	66.03	6945.05	66.26	6945.03
66.47	6945.02	67.09	6945.01	67.26	6945	84.29	6945	84.54	6945.03
85.06	6945.01	85.29	6945.04	85.49	6945.09	86.12	6945.23	86.29	6945.26
86.44	6945.3	87.18	6945.46	87.29	6945.49	87.39	6945.51	88.23	6945.7
88.29	6945.71	88.34	6945.72	89.29	6945.93	89.32	6945.94	90.24	6946.14
90.29	6946.15	90.35	6946.16	91.2	6946.35	91.29	6946.37	91.41	6946.4
92.15	6946.56	92.3	6946.6	92.46	6946.63	93.1	6946.77	93.3	6946.82
93.52	6946.87	94.05	6946.98	94.3	6947.04	94.58	6947.1	95	6947.19
95.3	6947.26	95.63	6947.34	95.95	6947.4	96.3	6947.48	96.69	6947.57
96.9	6947.62	97.3	6947.7	97.75	6947.8	97.85	6947.83	98.3	6947.93
98.65	6948.01	98.8	6948.04	99.31	6948.15	99.75	6948.25	99.86	6948.27
100.31	6948.37	100.71	6948.46	100.92	6948.51	101.31	6948.59	101.66	6948.67
101.98	6948.74	102.31	6948.81	102.61	6948.88	103.04	6948.97	103.31	6949.04
103.56	6949.09	104.09	6949.21	104.31	6949.26	104.51	6949.3	105.15	6949.44
105.31	6949.48	105.46	6949.51	106.21	6949.68	106.31	6949.7	106.41	6949.72
107.27	6949.91	107.32	6949.92	107.36	6949.93	108.23	6950.13	108.31	6950.14
108.32	6950.15	109.26	6950.35	109.32	6950.37	109.38	6950.38	110.22	6950.57
110.32	6950.59	110.44	6950.61	111.17	6950.78	111.32	6950.81	111.49	6950.85
112.12	6950.99	112.32	6951.03	112.55	6951.08	113.07	6951.2	113.32	6951.25
113.61	6951.32	114.02	6951.41	114.33	6951.48	114.67	6951.55	114.97	6951.62
115.33	6951.7	115.72	6951.78	115.92	6951.83	116.33	6951.92	116.78	6952.01
116.87	6951.98	117.33	6952.08	117.84	6952.08	118.33	6952.09	118.77	6952.08
118.9	6952.09	119.33	6952.08	119.72	6952.08	119.95	6952.09	120.33	6952.08
120.68	6952.09	121.33	6952.09	121.63	6952.1	122.58	6952.1	123.12	6952.11
123.53	6952.11	124.18	6952.12	124.48	6952.12	125.24	6952.13	125.43	6952.13
126.3	6952.14	126.38	6952.14	127.14	6952.15	127.35	6952.15	128.28	6952.16
128.41	6952.16	129.23	6952.17	130.19	6952.17	130.35	6952.18	131.35	6952.18
131.58	6952.19	132.35	6952.19	132.64	6952.2	133.35	6952.2	133.7	6952.21
134.35	6952.21	134.76	6952.22	135.35	6952.22	135.81	6952.23	136.87	6952.23
137.36	6952.24	137.93	6952.24	138.36	6952.25	138.98	6952.25	139.36	6952.26
140.04	6952.26	140.36	6952.27	141.1	6952.27	141.36	6952.28	142.36	6952.28
142.55	6952.29	143.36	6952.29	143.5	6952.3	144.45	6952.3	145.33	6952.31

Pr RAS Input Report.txt

145.4	6952.31	146.06	6952.32	146.39	6952.32	147.3	6952.33	147.44	6952.33
148.25	6952.34	148.5	6952.34	149.21	6952.35	149.99	6952.35		

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
-47.22	.035	39.33	.035	98.65	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	39.33	98.65		117.95	112.69		.1	.3

Ineffective Flow                      num=                      1

Sta L	Sta R	Elev	Permanent
-47.22	22.09	6954.31	T

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 4300

INPUT  
 Description: Source: Revised Condition Topo  
 Datum: NGVD29  
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data                      num=                      492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-124.14	6947.84	-123.93	6947.84	-123.72	6947.81	-123.12	6947.76	-122.75	6947.72
-122.08	6947.66	-121.93	6947.64	-121.78	6947.63	-121.05	6947.56	-120.81	6947.54
-120.02	6947.46	-119.84	6947.44	-118.87	6947.35	-117.95	6947.26	-117.9	6947.26
-116.92	6947.17	-115.96	6947.07	-115.88	6947.07	-114.99	6946.98	-114.85	6946.97
-113.82	6946.87	-113.05	6946.8	-112.78	6946.77	-112.08	6946.7	-111.92	6946.69
-111.75	6946.67	-111.11	6946.61	-110.72	6946.57	-109.69	6946.48	-109.17	6946.43
-108.92	6946.4	-108.65	6946.38	-108.2	6946.33	-107.92	6946.31	-106.92	6946.21
-105.92	6946.12	-105.55	6946.08	-105.29	6946.06	-104.92	6946.02	-104.32	6945.96
-103.92	6945.93	-103.49	6945.88	-103.35	6945.87	-102.92	6945.83	-102.45	6945.79
-102.38	6945.78	-101.92	6945.74	-100.92	6945.64	-100.45	6945.59	-100.39	6945.59
-99.92	6945.54	-99.35	6945.49	-98.51	6945.41	-97.92	6945.35	-97.54	6945.32
-97.29	6945.29	-96.92	6945.26	-96.57	6945.22	-96.26	6945.2	-95.92	6945.16
-95.6	6945.13	-95.22	6945.1	-94.63	6945.04	-94.19	6945	-93.91	6944.97
-93.66	6944.95	-93.16	6944.9	-92.91	6944.88	-92.69	6944.85	-92.12	6944.8
-91.09	6944.7	-90.91	6944.69	-90.75	6944.67	-90.06	6944.6	-89.78	6944.58
-89.02	6944.51	-88.81	6944.48	-87.99	6944.41	-87.84	6944.39	-86.96	6944.31
-86.87	6944.3	-85.5	6944.17	-84.93	6944.11	-84.89	6944.11	-83.86	6944.01
-82.99	6943.93	-82.83	6943.91	-81.79	6943.82	-81.05	6943.74	-80.76	6943.72
-80.08	6943.65	-79.91	6943.64	-79.73	6943.62	-78.91	6943.54	-78.14	6943.47
-77.91	6943.44	-77.66	6943.42	-77.17	6943.37	-76.91	6943.35	-76.63	6943.32
-76.2	6943.28	-75.91	6943.25	-74.56	6943.21	-74.26	6943.21	-73.53	6943.19
-73.29	6943.19	-72.49	6943.15	-72.32	6943.15	-71.46	6943.11	-71.35	6943.08

Pr RAS Input Report.txt

-70.9	6943.06	-70.43	6943.03	-70.38	6943.03	-69.9	6942.99	-69.41	6942.96
-69.39	6942.95	-68.9	6942.91	-68.44	6942.88	-68.36	6942.87	-67.9	6942.84
-67.33	6942.8	-66.9	6942.78	-66.5	6942.75	-66.3	6942.74	-65.9	6942.71
-65.53	6942.69	-65.26	6942.67	-64.56	6942.63	-64.23	6942.6	-63.59	6942.56
-63.2	6942.54	-62.9	6942.52	-62.62	6942.49	-62.16	6942.47	-61.65	6942.41
-61.13	6942.37	-60.68	6942.31	-60.1	6942.24	-59.71	6942.2	-59.06	6942.12
-58.9	6942.11	-58.03	6942	-57.78	6941.98	-56.9	6941.89	-56.81	6941.89
-55.96	6941.81	-54.93	6941.72	-54.87	6941.71	-53.9	6941.6	-53.86	6941.6
-52.93	6941.48	-52.87	6941.48	-51.96	6941.37	-51.83	6941.35	-50.99	6941.25
-50.8	6941.23	-50.02	6941.13	-49.77	6941.1	-49.05	6941.04	-48.73	6941
-48.08	6940.94	-47.11	6940.84	-46.89	6940.81	-46.67	6940.79	-45.89	6940.7
-45.63	6940.68	-44.89	6940.6	-44.6	6940.56	-43.89	6940.49	-43.57	6940.45
-43.23	6940.48	-42.89	6940.44	-42.53	6940.42	-42.26	6940.49	-41.89	6940.46
-41.29	6940.49	-40.89	6940.52	-40.47	6940.56	-40.32	6940.57	-39.89	6940.61
-39.44	6940.67	-38.89	6940.74	-38.4	6940.8	-38.38	6940.8	-37.41	6940.92
-37.37	6940.92	-36.89	6940.98	-36.44	6941.04	-36.34	6941.05	-35.89	6941.11
-34.89	6941.23	-33.89	6941.36	-33.53	6941.4	-33.24	6941.44	-32.56	6941.52
-31.89	6941.61	-31.17	6941.68	-30.89	6941.71	-30.14	6941.85	-29.89	6941.89
-29.65	6941.98	-28.89	6942.27	-28.68	6942.33	-28.07	6942.49	-27.89	6942.54
-27.71	6942.53	-23.83	6942.53	-22.91	6942.58	-22.86	6942.58	-22.22	6942.69
-21.89	6942.75	-21.87	6942.76	-20.92	6942.92	-19.95	6943.16	-19.81	6943.19
-18.98	6943.38	-18.77	6943.42	-18.01	6943.55	-17.74	6943.59	-16.88	6943.74
-16.08	6943.93	-15.88	6943.98	-15.67	6944.02	-15.11	6944.15	-14.88	6944.2
-14.14	6944.32	-13.88	6944.37	-13.61	6944.41	-13.17	6944.48	-12.88	6944.53
-12.57	6944.6	-12.2	6944.69	-11.88	6944.76	-11.54	6944.84	-10.88	6944.99
-9.88	6945.15	-9.48	6945.22	-8.88	6945.32	-8.32	6945.45	-7.88	6945.54
-7.41	6945.65	-7.35	6945.67	-6.88	6945.78	-6.38	6945.87	-5.88	6945.97
-5.41	6946.06	-5.34	6946.07	-4.88	6946.16	-3.88	6946.39	-3.47	6946.45
-2.88	6946.54	-2.5	6946.52	-2.24	6946.51	-1.53	6946.47	-.56	6946.41
-.18	6946.39	.13	6946.38	.41	6946.38	.86	6946.37	1.13	6946.37
1.89	6946.4	2.35	6946.42	3.32	6946.47	3.95	6946.5	4.29	6946.52
4.99	6946.55	5.13	6946.56	5.26	6946.56	6.02	6946.6	7.05	6946.65
7.2	6946.65	8.09	6946.7	8.17	6946.7	9.12	6946.78	9.42	6946.8
10.11	6946.87	10.15	6946.87	11.08	6946.95	12.05	6947.04	12.22	6947.05
13.02	6947.13	13.25	6947.15	13.99	6947.22	14.13	6947.23	14.29	6947.25
14.96	6947.31	15.32	6947.35	16.13	6947.43	16.35	6947.46	16.9	6947.51
17.38	6947.57	17.87	6947.62	18.13	6947.65	18.42	6947.69	18.84	6947.74
19.13	6947.77	19.45	6947.81	19.81	6947.85	20.13	6947.89	20.48	6947.93
20.78	6947.96	21.13	6948.01	21.52	6948.05	22.14	6948.13	23.14	6948.25
23.58	6948.3	23.68	6948.32	24.14	6948.37	24.62	6948.43	24.65	6948.43
25.62	6948.55	25.65	6948.56	26.14	6948.62	26.68	6948.68	27.14	6948.74
28.14	6948.86	29.14	6948.99	29.5	6949.04	29.78	6949.07	30.14	6949.12
30.82	6949.2	31.44	6949.28	31.85	6949.33	32.14	6949.37	32.41	6949.4
32.88	6949.46	33.14	6949.49	33.38	6949.51	33.91	6949.59	34.14	6949.61
34.35	6949.56	34.91	6949.42	35.14	6949.37	36.15	6949.11	36.63	6949
36.68	6948.98	37.11	6948.87	37.16	6948.86	37.57	6948.76	38.45	6948.54
39.34	6948.32	40.16	6948.12	40.22	6948.1	40.41	6948.06	41.11	6947.88
41.34	6947.83	41.99	6947.66	42.51	6947.54	42.87	6947.44	43.22	6947.36

Pr RAS Input Report.txt

43.69	6947.24	43.76	6947.23	44.23	6947.11	44.64	6947.01	44.87	6946.95
45.53	6946.79	46.04	6946.66	47.22	6946.37	48.18	6946.13	48.39	6946.07
49.07	6945.91	49.28	6945.85	49.95	6945.69	50.29	6945.6	50.84	6945.47
51.3	6945.35	51.72	6945.25	52.31	6945.1	52.61	6945.03	53.1	6944.9
53.32	6944.85	53.49	6944.82	54.28	6944.71	87.11	6944.71	87.22	6944.72
91.7	6944.72	91.92	6944.75	92.71	6944.88	93.1	6944.97	93.72	6945.13
94.18	6945.24	94.28	6945.27	94.73	6945.38	95.07	6945.46	95.45	6945.56
95.95	6945.68	96.75	6945.88	96.84	6945.9	97.47	6946.06	97.76	6946.13
97.81	6946.15	98.77	6946.39	98.98	6946.44	99.49	6946.57	100.16	6946.73
100.38	6946.79	100.79	6946.89	101.34	6947.03	101.8	6947.14	102.48	6947.31
102.51	6947.32	102.81	6947.4	103.03	6947.45	103.69	6947.62	103.92	6947.67
104.8	6947.89	104.87	6947.91	106.85	6948.4	107.45	6948.56	107.86	6948.66
108.34	6948.78	108.4	6948.79	109.57	6949.09	109.88	6949.16	110.11	6949.22
110.75	6949.38	110.99	6949.44	111.73	6949.63	111.88	6949.66	112.76	6949.88
113.1	6949.97	113.65	6950.1	113.92	6950.17	114.28	6950.19	114.53	6950.19
114.93	6950.21	115.94	6950.21	116.3	6950.22	117.81	6950.22	117.96	6950.23
118.98	6950.23	119.84	6950.24	120.16	6950.24	120.72	6950.25	121.34	6950.25
121.61	6950.26	122.51	6950.26	123.01	6950.27	123.69	6950.27	124.02	6950.28
124.26	6950.28	124.87	6950.29	125.15	6950.29	126.92	6950.31	127.22	6950.31
127.8	6950.32	128.4	6950.32	128.69	6950.33	129.07	6950.33	129.57	6950.34
130.08	6950.34	130.45	6950.35	131.09	6950.35	131.34	6950.36	132.1	6950.36
132.22	6950.37	133.11	6950.37	133.13	6950.38	133.99	6950.38	134.12	6950.39
134.88	6950.39	135.13	6950.4	135.76	6950.4	136.14	6950.41	136.65	6950.41
137.15	6950.42	137.81	6950.42	138.15	6950.43	138.42	6950.43	138.98	6950.44
139.3	6950.44	140.26	6950.45	141.07	6950.46	141.34	6950.46	141.96	6950.47
142.51	6950.47	142.84	6950.48	143.2	6950.48	143.69	6950.49	144.21	6950.49
144.61	6950.5	145.22	6950.5	145.49	6950.51	146.23	6950.51	146.38	6950.52
147.22	6950.52	147.24	6950.53	148.15	6950.53	148.25	6950.54	149.03	6950.54
149.26	6950.55	150.01	6950.55						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-124.14	.035	37.11	.035	102.48	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	37.11	102.48		6.2	14.98		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-124.14	33.44	6949.62	T

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 4280

INPUT  
 Description: Source: Revised Condition Topo



# Pr RAS Input Report.txt

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-154.13	6948.39	-154.06	6948.39	-153.33	6948.33	-153.02	6948.31	-152.36	6948.25
-151.99	6948.23	-151.68	6948.2	-151.4	6948.18	-150.95	6948.14	-149.92	6948.06
-149.46	6948.02	-148.88	6947.98	-148.68	6947.96	-148.49	6947.95	-147.84	6947.9
-147.68	6947.88	-147.53	6947.87	-146.56	6947.79	-145.77	6947.73	-145.59	6947.71
-144.62	6947.63	-143.7	6947.56	-143.65	6947.55	-142.67	6947.48	-141.72	6947.4
-141.63	6947.39	-140.75	6947.32	-140.6	6947.31	-139.56	6947.22	-138.81	6947.16
-138.53	6947.14	-137.85	6947.08	-137.67	6947.07	-137.49	6947.05	-136.88	6947.01
-136.45	6946.97	-135.91	6946.93	-134.94	6946.85	-134.67	6946.83	-134.38	6946.8
-133.98	6946.77	-133.67	6946.74	-133.35	6946.72	-132.67	6946.66	-131.28	6946.55
-131.07	6946.53	-130.67	6946.5	-130.1	6946.46	-129.67	6946.42	-129.21	6946.38
-129.14	6946.38	-128.67	6946.34	-127.67	6946.26	-127.2	6946.22	-127.14	6946.21
-126.67	6946.18	-126.23	6946.14	-125.67	6946.1	-125.26	6946.06	-125.07	6946.05
-124.67	6946.01	-124.03	6945.96	-123.67	6945.93	-123.33	6945.91	-122.67	6945.85
-122.36	6945.83	-121.96	6945.79	-121.39	6945.75	-120.43	6945.67	-119.89	6945.63
-119.46	6945.59	-118.85	6945.54	-118.67	6945.53	-118.49	6945.51	-117.82	6945.46
-117.66	6945.45	-117.52	6945.43	-116.66	6945.36	-116.55	6945.36	-115.75	6945.29
-115.59	6945.28	-114.71	6945.21	-114.62	6945.2	-113.68	6945.12	-113.65	6945.12
-112.68	6945.04	-112.64	6945.04	-111.6	6944.95	-110.75	6944.88	-110.57	6944.87
-109.78	6944.81	-108.81	6944.73	-108.66	6944.71	-108.5	6944.7	-107.84	6944.65
-107.66	6944.63	-107.46	6944.62	-106.66	6944.55	-105.91	6944.55	-105.66	6944.54
-104.94	6944.54	-104.66	6944.55	-104.36	6944.55	-103.97	6944.52	-103.32	6944.52
-103	6944.49	-102.29	6944.49	-102.04	6944.45	-101.66	6944.46	-101.25	6944.46
-101.07	6944.43	-100.66	6944.43	-100.22	6944.4	-100.1	6944.4	-99.66	6944.37
-99.13	6944.35	-98.66	6944.32	-98.14	6944.3	-97.65	6944.27	-97.2	6944.25
-97.11	6944.24	-96.23	6944.2	-96.07	6944.19	-95.04	6944.14	-94.29	6944.1
-94	6944.09	-93.65	6944.06	-93.33	6944.01	-92.97	6943.97	-92.65	6943.92
-92.36	6943.87	-91.93	6943.8	-91.65	6943.75	-91.39	6943.73	-90.9	6943.63
-90.65	6943.6	-90.42	6943.58	-89.86	6943.5	-89.45	6943.46	-88.65	6943.37
-88.49	6943.35	-87.79	6943.28	-87.65	6943.26	-87.52	6943.25	-86.75	6943.17
-86.65	6943.15	-85.72	6943.05	-85.58	6943.03	-84.68	6942.87	-84.61	6942.85
-83.65	6942.66	-83.63	6942.66	-82.68	6942.53	-81.71	6942.39	-81.58	6942.37
-80.74	6942.26	-80.65	6942.24	-80.54	6942.23	-79.65	6942.1	-79.51	6942.07
-78.81	6941.93	-78.47	6941.86	-77.84	6941.75	-77.64	6941.7	-76.87	6941.58
-76.4	6941.5	-75.64	6941.38	-74.94	6941.25	-74.64	6941.2	-73.97	6941.07
-73.64	6941.01	-73.29	6940.94	-73	6940.91	-72.64	6940.84	-72.26	6940.79
-72.03	6940.78	-71.64	6940.72	-71.22	6940.68	-71.06	6940.67	-70.64	6940.62
-70.19	6940.58	-69.64	6940.52	-69.15	6940.46	-69.13	6940.46	-68.64	6940.4
-68.16	6940.39	-68.12	6940.34	-67.64	6940.32	-67.19	6940.38	-67.08	6940.36
-66.64	6940.41	-66.23	6940.46	-66.05	6940.49	-65.64	6940.54	-65.26	6940.58
-65.01	6940.62	-64.29	6940.7	-63.98	6940.74	-63.64	6940.79	-63.32	6940.82
-62.64	6940.91	-62.35	6940.94	-61.64	6941.02	-61.39	6941.09	-60.87	6941.24
-60.64	6941.31	-60.42	6941.39	-59.83	6941.62	-59.64	6941.69	-59.45	6941.74
-58.8	6941.89	-58.64	6941.93	-56.55	6941.93	-55.69	6941.92	-54.61	6941.92

Pr RAS Input Report.txt

-53.96	6941.96	-53.62	6941.99	-52.68	6942.15	-52.59	6942.17	-51.71	6942.32
-51.55	6942.35	-50.74	6942.53	-50.63	6942.56	-50.52	6942.58	-49.77	6942.75
-49.63	6942.78	-49.48	6942.8	-48.63	6942.95	-48.44	6942.98	-47.84	6943.08
-47.41	6943.16	-46.87	6943.28	-46.63	6943.33	-46.37	6943.39	-45.9	6943.49
-45.63	6943.55	-45.34	6943.6	-44.93	6943.66	-44.63	6943.71	-44.3	6943.77
-43.96	6943.82	-43.63	6943.88	-43.27	6943.95	-43	6944.01	-42.63	6944.08
-42.23	6944.17	-42.03	6944.21	-41.63	6944.3	-41.2	6944.37	-41.06	6944.4
-40.09	6944.56	-39.63	6944.64	-39.13	6944.74	-38.63	6944.83	-38.16	6944.94
-38.09	6944.96	-37.19	6945.15	-37.05	6945.17	-36.62	6945.26	-36.22	6945.33
-35.62	6945.45	-35.25	6945.53	-34.98	6945.58	-34.62	6945.66	-34.29	6945.7
-33.95	6945.75	-33.62	6945.79	-33.32	6945.77	-32.91	6945.75	-32.62	6945.73
-32.35	6945.72	-31.88	6945.69	-31.62	6945.68	-31.38	6945.66	-30.84	6945.63
-30.41	6945.61	-29.62	6945.57	-29.45	6945.57	-28.77	6945.6	-28.62	6945.61
-28.48	6945.61	-27.74	6945.65	-27.62	6945.65	-27.51	6945.66	-26.7	6945.7
-26.54	6945.7	-25.67	6945.76	-25.58	6945.76	-24.63	6945.85	-23.64	6945.94
-23.59	6945.94	-22.56	6946.04	-21.7	6946.13	-20.74	6946.24	-20.62	6946.25
-20.49	6946.27	-19.77	6946.35	-18.8	6946.47	-18.62	6946.49	-18.42	6946.52
-17.83	6946.59	-17.61	6946.62	-17.38	6946.64	-16.87	6946.71	-16.35	6946.77
-15.9	6946.83	-15.61	6946.86	-14.93	6946.95	-13.96	6947.07	-13.24	6947.15
-12.99	6947.19	-12.61	6947.23	-12.2	6947.27	-12.03	6947.3	-11.61	6947.34
-11.17	6947.39	-11.06	6947.4	-10.61	6947.45	-10.13	6947.5	-10.09	6947.5
-9.12	6947.6	-9.1	6947.6	-8.61	6947.66	-8.15	6947.7	-7.61	6947.76
-7.19	6947.8	-7.03	6947.82	-6.61	6947.86	-6.22	6947.91	-5.99	6947.93
-5.25	6948.01	-4.96	6948.04	-4.61	6948.07	-4.28	6948.11	-3.92	6948.15
-3.32	6948.21	-2.89	6948.25	-2.35	6948.31	-1.85	6948.36	-1.61	6948.39
-1.38	6948.41	-.81	6948.47	-.41	6948.51	.22	6948.58	.56	6948.62
1.26	6948.69	1.39	6948.7	1.52	6948.72	2.29	6948.82	2.4	6948.83
2.49	6948.85	3.46	6949.08	4.4	6949.31	4.43	6949.3	5.37	6949.08
5.4	6949.07	6.4	6948.82	6.85	6948.7	6.86	6948.7	7.32	6948.59
8.55	6948.28	9.21	6948.11	9.4	6948.07	9.61	6948.01	10.16	6947.88
10.68	6947.75	11.11	6947.64	11.4	6947.57	12.05	6947.4	12.41	6947.32
13	6947.17	13.41	6947.07	14.41	6946.81	15.41	6946.56	15.84	6946.46
16.41	6946.31	16.79	6946.22	17.41	6946.06	17.73	6945.98	18.12	6945.89
18.42	6945.81	18.68	6945.75	19.18	6945.62	19.42	6945.56	20.25	6945.36
20.57	6945.27	21.52	6945.04	22.37	6944.82	22.47	6944.8	23.21	6944.7
23.41	6944.67	23.42	6944.66	28.43	6944.66	28.75	6944.67	29.09	6944.66
29.43	6944.66	29.82	6944.67	31.94	6944.67	32.44	6944.66	32.88	6944.66
33.01	6944.67	33.44	6944.67	33.82	6944.66	34.44	6944.66	34.77	6944.67
35.14	6944.66	36.66	6944.66	37.26	6944.67	37.45	6944.66	41.52	6944.66
42.34	6944.65	42.45	6944.65	42.58	6944.66	43.29	6944.65	46.46	6944.65
46.83	6944.66	47.08	6944.65	47.46	6944.65	47.9	6944.66	48.02	6944.65
48.46	6944.66	58.53	6944.66	59.38	6944.65	59.6	6944.65	60.33	6944.64
60.66	6944.66	61.27	6944.7	61.49	6944.72	61.72	6944.78	62.22	6944.9
62.49	6944.96	62.79	6945.04	63.17	6945.12	63.49	6945.2	64.11	6945.34
64.91	6945.53	65.06	6945.56	65.49	6945.66	65.98	6945.77	66.01	6945.77
66.49	6945.89	67.5	6946.11	67.9	6946.2	68.1	6946.25	68.85	6946.42
69.17	6946.49	69.79	6946.64	70.23	6946.73	70.5	6946.8	70.74	6946.85
71.29	6946.98	71.5	6947.02	71.69	6947.07	72.5	6947.25	73.42	6947.46

Pr RAS Input Report.txt

73.58	6947.5	74.53	6947.71	75.47	6947.93	75.55	6947.94	76.42	6948.14
76.61	6948.18	77.67	6948.43	78.31	6948.57	78.51	6948.62	79.26	6948.78
79.51	6948.83	79.8	6948.9	80.14	6948.97	80.52	6949.04	80.86	6949.12
81.15	6949.18	81.52	6949.25	81.93	6949.34	82.1	6949.38	82.52	6949.46
82.99	6949.48	83.05	6949.48	83.52	6949.5	84.52	6949.5	84.94	6949.51
86.18	6949.51	86.53	6949.52	87.53	6949.52	87.78	6949.53	88.73	6949.53
89.37	6949.54	89.67	6949.54	90.44	6949.55	90.62	6949.55	91.5	6949.56
92.09	6949.57	92.49	6949.57						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-154.13	.035	6.85	.035	80.14	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	6.85	80.14		19	19	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-154.13	3.47	6949.25	T

## CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4250

## INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-147.06	6947.35	-146.97	6947.35	-146.38	6947.28	-145.96	6947.24	-145.42	6947.18
-144.96	6947.12	-144.46	6947.07	-143.96	6947.01	-142.96	6946.9	-141.96	6946.78
-140.96	6946.67	-140.63	6946.64	-140.28	6946.59	-139.96	6946.56	-139.67	6946.53
-139.23	6946.49	-138.96	6946.46	-138.18	6946.4	-137.75	6946.36	-137.14	6946.3
-136.96	6946.29	-136.79	6946.27	-136.09	6946.21	-135.83	6946.19	-135.04	6946.12
-134.87	6946.1	-134	6946.03	-133.91	6946.02	-132.99	6945.94	-132.95	6945.93
-132	6945.85	-131.04	6945.76	-130.95	6945.76	-130.86	6945.75	-130.08	6945.68
-129.81	6945.66	-129.12	6945.59	-128.95	6945.58	-128.76	6945.56	-128.16	6945.51
-127.72	6945.47	-127.2	6945.42	-126.67	6945.38	-126.24	6945.34	-125.95	6945.31
-125.63	6945.29	-124.95	6945.23	-124.58	6945.19	-124.32	6945.18	-123.94	6945.14
-123.53	6945.11	-123.36	6945.1	-122.94	6945.06	-122.49	6945.02	-122.41	6945.02
-121.94	6944.98	-120.94	6944.9	-120.39	6944.85	-119.94	6944.82	-119.53	6944.78
-119.35	6944.77	-118.94	6944.74	-118.3	6944.69	-117.94	6944.66	-117.61	6944.63
-117.25	6944.6	-116.94	6944.58	-116.65	6944.55	-116.21	6944.52	-115.69	6944.48
-115.16	6944.43	-114.94	6944.42	-114.73	6944.4	-114.11	6944.35	-113.94	6944.34
-113.77	6944.32	-113.07	6944.28	-112.94	6944.27	-112.02	6944.27	-111.93	6944.26

Pr RAS Input Report.txt

-108.98	6944.26	-108.93	6944.25	-108.02	6944.25	-107.83	6944.23	-107.06	6944.24
-106.93	6944.22	-106.79	6944.21	-106.1	6944.18	-105.93	6944.16	-105.74	6944.15
-105.14	6944.1	-104.93	6944.09	-104.69	6944.09	-104.18	6944.08	-103.93	6944.08
-103.65	6944.07	-102.93	6944.07	-102.6	6944.06	-101.93	6944.06	-101.55	6944.05
-100.92	6944.05	-100.51	6944.04	-100.35	6944.04	-99.92	6944.03	-99.39	6944.03
-98.92	6944.02	-98.41	6944.02	-97.92	6944.01	-97.37	6944.01	-96.92	6944
-96.51	6944	-96.32	6943.99	-95.55	6943.99	-95.27	6943.98	-94.59	6943.98
-94.23	6943.97	-93.64	6943.97	-93.18	6943.96	-92.68	6943.96	-92.13	6943.95
-91.92	6943.95	-91.72	6943.94	-90.92	6943.94	-90.76	6943.93	-89.91	6943.93
-89.8	6943.92	-88.99	6943.91	-88.84	6943.91	-87.95	6943.9	-87.17	6943.9
-86.9	6943.89	-85.96	6943.88	-85.85	6943.88	-85.01	6943.87	-84.81	6943.87
-84.05	6943.86	-83.76	6943.86	-83.09	6943.85	-82.71	6943.85	-82.13	6943.84
-81.67	6943.84	-81.17	6943.83	-80.91	6943.83	-80.62	6943.82	-79.91	6943.82
-79.57	6943.81	-79.25	6943.81	-78.91	6943.8	-78.29	6943.8	-77.9	6943.79
-77.33	6943.79	-76.9	6943.78	-76.37	6943.78	-75.9	6943.77	-75.39	6943.77
-74.9	6943.76	-74.46	6943.71	-74.34	6943.76	-73.9	6943.71	-73.5	6943.59
-73.29	6943.69	-72.9	6943.58	-72.54	6943.49	-72.25	6943.4	-71.9	6943.31
-71.58	6943.25	-71.2	6943.17	-70.9	6943.11	-70.16	6942.9	-69.9	6942.83
-69.66	6942.77	-68.9	6942.55	-68.7	6942.51	-68.06	6942.33	-67.9	6942.29
-67.02	6942.12	-66.89	6942.1	-66.78	6942.07	-65.97	6941.89	-65.83	6941.85
-64.92	6941.62	-64.87	6941.61	-64.26	6941.45	-63.91	6941.37	-63.88	6941.36
-62.95	6941.16	-62.83	6941.13	-61.99	6940.94	-61.78	6940.9	-61.03	6940.72
-60.89	6940.69	-60.74	6940.65	-60.07	6940.51	-59.89	6940.47	-59.69	6940.45
-59.11	6940.4	-58.89	6940.37	-58.64	6940.35	-58.15	6940.3	-57.89	6940.27
-57.6	6940.25	-57.19	6940.21	-56.89	6940.19	-56.55	6940.16	-56.24	6940.13
-55.88	6940.1	-55.5	6940.18	-55.28	6940.27	-54.88	6940.35	-54.46	6940.42
-54.32	6940.45	-53.88	6940.52	-51.32	6940.52	-50.88	6940.51	-49.88	6940.51
-49.52	6940.54	-49.22	6940.57	-48.88	6940.6	-48.56	6940.66	-48.18	6940.72
-47.88	6940.78	-47.6	6940.82	-47.13	6940.9	-46.88	6940.95	-46.08	6941.09
-45.69	6941.17	-45.04	6941.3	-44.73	6941.36	-43.99	6941.48	-43.77	6941.52
-42.94	6941.66	-42.81	6941.68	-41.9	6941.83	-41.34	6941.94	-40.89	6942.03
-40.85	6942.04	-39.93	6942.19	-38.97	6942.34	-38.76	6942.38	-38.01	6942.5
-37.87	6942.53	-37.71	6942.55	-37.06	6942.68	-36.66	6942.74	-35.87	6942.88
-35.14	6943	-34.87	6943.04	-34.57	6943.09	-34.18	6943.16	-33.87	6943.21
-33.52	6943.26	-33.22	6943.33	-32.86	6943.38	-32.48	6943.42	-32.26	6943.47
-31.86	6943.52	-31.43	6943.58	-31.3	6943.59	-30.86	6943.65	-30.38	6943.71
-30.34	6943.71	-29.38	6943.83	-29.34	6943.84	-28.86	6943.9	-28.42	6943.97
-28.29	6943.97	-27.86	6944.05	-27.47	6944.1	-27.24	6944.17	-26.86	6944.22
-26.51	6944.23	-26.2	6944.31	-25.55	6944.33	-25.15	6944.34	-24.59	6944.36
-23.63	6944.4	-23.06	6944.42	-22.86	6944.42	-22.67	6944.43	-22.01	6944.45
-21.85	6944.46	-21.71	6944.46	-20.96	6944.49	-20.85	6944.49	-20.75	6944.5
-19.92	6944.53	-19.79	6944.53	-18.87	6944.56	-18.43	6944.58	-17.88	6944.6
-17.82	6944.6	-16.92	6944.63	-16.78	6944.64	-15.96	6944.66	-15.73	6944.68
-15	6944.71	-14.85	6944.72	-14.69	6944.72	-14.04	6944.76	-13.08	6944.81
-12.85	6944.82	-12.59	6944.81	-12.12	6944.72	-11.85	6944.71	-11.55	6944.67
-11.16	6944.61	-10.85	6944.56	-10.5	6944.51	-9.84	6944.42	-9.45	6944.36
-8.84	6944.27	-8.29	6944.18	-7.84	6944.12	-7.36	6944.03	-7.33	6944.09
-6.84	6944	-6.37	6944.05	-6.31	6943.99	-5.84	6944.04	-5.41	6944.08

Pr RAS Input Report.txt

-5.27	6944.1	-4.84	6944.14	-4.45	6944.18	-4.22	6944.2	-3.84	6944.24
-3.49	6944.28	-2.84	6944.34	-2.53	6944.37	-1.84	6944.44	-1.57	6944.47
-1.08	6944.52	-.84	6944.54	-.61	6944.57	.16	6944.65	.35	6944.66
1.01	6944.73	1.17	6944.75	1.3	6944.76	2.26	6944.86	3.11	6944.94
3.22	6944.96	4.15	6945.05	4.18	6945.05	4.48	6945.08	5.14	6945.15
5.2	6945.16	6.1	6945.25	6.25	6945.25	7.06	6945.16	7.17	6945.15
7.29	6945.11	8.02	6944.9	8.17	6944.86	8.98	6944.62	9.17	6944.56
9.39	6944.5	10.17	6944.27	10.43	6944.2	10.89	6944.07	11.17	6943.98
11.48	6943.89	11.85	6943.79	12.18	6943.69	12.81	6943.51	13.18	6943.4
13.57	6943.29	13.77	6943.23	14.62	6942.98	14.73	6942.95	15.67	6942.68
15.69	6942.67	16.18	6942.53	16.65	6942.39	16.71	6942.38	17.18	6942.24
17.61	6942.12	17.76	6942.07	18.18	6941.95	18.57	6941.87	18.81	6941.78
19.18	6941.7	19.57	6941.62	20.18	6941.49	20.48	6941.43	20.91	6941.34
21.18	6941.28	21.44	6941.23	21.96	6941.12	22.18	6941.07	22.39	6941.03
23.01	6940.9	23.35	6940.82	24.06	6940.67	24.19	6940.65	24.3	6940.62
25.11	6940.45	25.19	6940.44	25.26	6940.42	26.21	6940.22	26.72	6940.15
27.17	6940.09	27.19	6940.08	29.32	6940.08	30.03	6940.09	64.23	6940.09
65.06	6940.17	65.23	6940.19	65.38	6940.22	66.11	6940.41	66.23	6940.44
66.34	6940.46	67.16	6940.67	67.3	6940.7	68.21	6940.93	69.21	6941.18
69.23	6941.19	70.16	6941.42	71.24	6941.69	71.37	6941.72	72.07	6941.9
72.42	6941.98	73.03	6942.14	73.24	6942.19	73.43	6942.24	73.98	6942.38
74.24	6942.44	74.52	6942.51	74.94	6942.61	75.24	6942.69	75.89	6942.85
76.63	6943.04	76.85	6943.09	77.24	6943.19	78.24	6943.44	78.73	6943.56
78.76	6943.57	79.25	6943.69	79.72	6943.81	79.78	6943.83	80.25	6943.94
80.67	6944.05	81.25	6944.19	81.63	6944.29	82.25	6944.44	82.58	6944.53
82.93	6944.61	83.25	6944.69	83.54	6944.77	83.98	6944.88	84.25	6944.94
85.04	6945.14	85.25	6945.19	86.09	6945.4	86.25	6945.45	86.4	6945.48
87.14	6945.67	87.25	6945.7	87.36	6945.72	88.19	6945.93	89.24	6946.19
89.27	6946.2	90.26	6946.45	90.29	6946.46	91.18	6946.68	92.26	6946.95
92.4	6946.98	93.09	6947.16	93.45	6947.24	94.05	6947.39	94.26	6947.45
94.5	6947.51	95	6947.63	95.26	6947.7	95.96	6947.87	96.26	6947.95
96.6	6948.03	97.65	6948.3	97.87	6948.35	98.27	6948.45	98.7	6948.56
99.27	6948.7	99.75	6948.82	99.78	6948.83	100.27	6948.95	100.81	6949.09
101.27	6949.2	101.69	6949.21	101.86	6949.35	104.27	6949.35	104.56	6949.34
105.22	6949.34								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-147.06	.035	17.61	.035	73.43	.035

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	17.61	73.43		15.35	15.35	15.35		.1	.3
Ineffective Flow	num=		1						
Sta L	Sta R	Elev	Permanent						
-147.06	-12.62	6944.87	T						

CROSS SECTION

# Pr RAS Input Report.txt

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM

RS: 4240

## INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 491

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-125.51	6947.39	-125.37	6947.37	-124.53	6947.28	-124.32	6947.26	-123.57	6947.17
-123.43	6947.16	-123.28	6947.14	-122.62	6947.06	-121.66	6946.96	-121.18	6946.9
-120.14	6946.79	-119.74	6946.74	-119.43	6946.71	-119.09	6946.67	-118.78	6946.63
-118.43	6946.59	-118.04	6946.55	-117.82	6946.53	-117.43	6946.48	-117	6946.43
-116.86	6946.42	-116.43	6946.37	-115.95	6946.32	-115.9	6946.31	-115.42	6946.26
-114.94	6946.2	-114.9	6946.2	-114.42	6946.15	-113.99	6946.1	-113.86	6946.08
-113.42	6946.03	-113.03	6945.99	-112.81	6945.96	-112.42	6945.92	-112.07	6945.88
-111.76	6945.85	-111.42	6945.81	-111.11	6945.77	-110.42	6945.7	-110.15	6945.67
-109.42	6945.58	-109.19	6945.56	-108.62	6945.49	-108.23	6945.45	-107.58	6945.38
-107.27	6945.34	-106.53	6945.26	-106.31	6945.24	-105.48	6945.14	-105.35	6945.13
-104.44	6945.03	-104.4	6945.02	-103.95	6944.97	-103.44	6944.91	-103.39	6944.91
-102.48	6944.81	-102.34	6944.79	-101.52	6944.7	-101.41	6944.69	-101.3	6944.67
-100.56	6944.59	-100.41	6944.57	-100.25	6944.56	-99.6	6944.48	-99.2	6944.44
-98.16	6944.31	-97.41	6944.2	-97.11	6944.12	-96.72	6944.03	-96.06	6943.86
-95.76	6943.79	-95.02	6943.6	-94.81	6943.58	-94.41	6943.48	-93.97	6943.38
-93.85	6943.36	-93.41	6943.26	-92.92	6943.13	-92.4	6942.98	-91.93	6942.83
-91.88	6942.84	-91.4	6942.69	-90.97	6942.58	-90.83	6942.55	-90.01	6942.34
-89.78	6942.28	-89.4	6942.19	-88.74	6942.02	-88.4	6941.93	-88.09	6941.86
-87.69	6941.76	-87.4	6941.68	-87.13	6941.62	-86.64	6941.49	-86.4	6941.43
-86.17	6941.38	-85.4	6941.19	-85.22	6941.14	-84.55	6940.97	-84.4	6940.94
-84.26	6940.9	-83.5	6940.71	-83.4	6940.69	-83.3	6940.66	-82.46	6940.45
-82.34	6940.43	-81.41	6940.24	-81.38	6940.24	-81.05	6940.19	-80.42	6940.1
-80.36	6940.09	-79.46	6940.05	-79.39	6940.04	-78.5	6940.03	-78.27	6940.03
-77.54	6940.02	-77.22	6940.02	-76.58	6940.01	-76.18	6940.01	-75.63	6940
-75.13	6940	-74.67	6939.99	-74.39	6939.99	-74.08	6939.98	-73.39	6939.98
-73.04	6939.97	-72.75	6939.97	-72.39	6939.96	-71.79	6939.96	-71.39	6939.95
-70.83	6939.95	-70.38	6939.94	-69.87	6939.94	-69.38	6939.93	-68.91	6939.93
-68.85	6939.92	-68.38	6939.92	-67.95	6939.91	-67.38	6939.91	-67	6939.9
-66.38	6939.9	-66.04	6939.89	-65.38	6939.89	-65.08	6939.88	-64.66	6939.88
-64.38	6939.87	-63.62	6939.87	-63.38	6939.86	-63.16	6939.86	-62.57	6939.85
-62.2	6939.85	-61.52	6939.84	-61.24	6939.84	-60.48	6939.83	-60.28	6939.83
-59.43	6939.82	-59.32	6939.82	-58.36	6939.81	-58.14	6939.8	-57.41	6939.79
-56.45	6939.78	-56.29	6939.78	-55.49	6939.77	-55.24	6939.77	-54.53	6939.76
-54.2	6939.76	-53.57	6939.75	-53.15	6939.75	-52.61	6939.74	-52.37	6939.74
-52.1	6939.73	-51.37	6939.73	-51.06	6939.72	-50.69	6939.72	-50.37	6939.71
-49.73	6939.71	-49.37	6939.7	-48.77	6939.7	-48.37	6939.69	-47.82	6939.69
-46.87	6939.67	-46.36	6939.67	-45.9	6939.66	-45.36	6939.66	-44.94	6939.65

Pr RAS Input Report.txt

-44.36	6939.65	-43.98	6939.64	-43.73	6939.64	-43.36	6939.63	-42.69	6939.63
-42.36	6939.62	-42.06	6939.62	-41.64	6939.61	-41.1	6939.61	-40.59	6939.6
-39.55	6939.6	-39.36	6939.59	-38.36	6939.59	-38.23	6939.58	-37.27	6939.58
-36.41	6939.57	-36.31	6939.57	-35.36	6939.56	-35.24	6939.56	-34.39	6939.55
-33.43	6939.54	-33.27	6939.54	-32.47	6939.53	-31.51	6939.53	-31.35	6939.52
-31.17	6939.52	-30.55	6939.38	-30.35	6939.38	-30.13	6939.37	-29.6	6939.34
-29.35	6939.33	-28.64	6939.33	-28.35	6939.32	-25.34	6939.32	-24.89	6939.34
-24.8	6939.38	-24.34	6939.4	-23.85	6939.4	-23.84	6939.46	-23.34	6939.45
-22.34	6939.45	-21.92	6939.44	-21.34	6939.44	-20.96	6939.43	-20.01	6939.43
-19.66	6939.42	-19.05	6939.42	-18.61	6939.41	-18.09	6939.41	-17.57	6939.4
-16.52	6939.4	-16.34	6939.39	-15.34	6939.39	-15.21	6939.38	-14.43	6939.41
-14.34	6939.41	-14.25	6939.42	-13.38	6939.64	-13.29	6939.65	-12.34	6939.89
-11.33	6940.14	-11.29	6940.16	-10.42	6940.37	-10.33	6940.39	-10.24	6940.42
-9.46	6940.61	-9.33	6940.64	-9.19	6940.68	-8.5	6940.85	-8.33	6940.89
-8.15	6940.94	-7.54	6941.09	-7.33	6941.14	-7.1	6941.2	-6.58	6941.33
-6.05	6941.46	-5.62	6941.57	-5.01	6941.72	-4.66	6941.81	-4.33	6941.89
-3.96	6941.99	-3.7	6942.05	-3.33	6942.14	-2.91	6942.22	-2.74	6942.29
-2.32	6942.36	-1.87	6942.36	-1.78	6942.46	-1.32	6942.46	-.83	6942.45
-.32	6942.45	.13	6942.44	1.09	6942.44	1.27	6942.43	2.32	6942.43
2.68	6942.42	3.37	6942.42	3.68	6942.41	4.68	6942.41	4.93	6942.4
5.68	6942.4	5.89	6942.39	6.85	6942.39	7.55	6942.38	7.8	6942.38
8.6	6942.37	8.76	6942.37	10.57	6942.35	10.69	6942.35	11.64	6942.34
12.69	6942.34	12.79	6942.33	13.83	6942.33	14.52	6942.32	14.88	6942.32
15.48	6942.31	15.93	6942.31	16.44	6942.3	16.97	6942.3	17.39	6942.29
18.35	6942.29	18.69	6942.28	19.31	6942.28	19.69	6942.27	20.7	6942.27
21.16	6942.26	21.7	6942.26	22.19	6942.25	22.7	6942.25	23.15	6942.24
24.11	6942.24	24.3	6942.23	25.34	6942.23	25.7	6942.22	26.39	6942.22
26.7	6942.21	27.7	6942.21	27.94	6942.2	28.7	6942.2	28.9	6942.17
29.53	6942.19	29.7	6942.17	29.86	6942.16	30.53	6942.14	30.58	6942.13
30.82	6942.13	31.61	6942.06	31.7	6942.06	31.79	6942.03	32.65	6941.78
32.76	6941.75	33.69	6941.48	34.21	6941.31	34.72	6941.16	35.66	6940.91
35.76	6940.88	36.62	6940.66	36.8	6940.61	37.59	6940.4	37.83	6940.34
38.87	6940.07	39.71	6939.85	39.91	6939.8	40.49	6939.65	40.94	6939.53
41.46	6939.4	41.71	6939.33	41.98	6939.26	42.42	6939.14	42.71	6939.07
43.02	6938.99	43.39	6938.89	43.71	6938.81	44.05	6938.72	44.71	6938.55
45.32	6938.39	46.29	6938.14	47.17	6937.91	47.26	6937.89	48.2	6937.64
48.23	6937.63	48.71	6937.51	49.19	6937.38	49.24	6937.37	49.71	6937.24
50.16	6937.14	50.28	6937.11	50.72	6937.01	87.86	6937.01	88.63	6937.03
88.74	6937.04	88.83	6937.06	89.67	6937.28	89.8	6937.32	90.71	6937.56
90.76	6937.57	91.74	6937.83	92.78	6938.1	93.66	6938.34	93.82	6938.38
94.63	6938.59	94.85	6938.65	95.6	6938.85	95.74	6938.88	96.56	6939.1
96.74	6939.15	97.53	6939.36	97.74	6939.41	97.96	6939.47	98.5	6939.61
98.74	6939.68	99	6939.74	99.47	6939.87	100.04	6940.02	100.74	6940.2
101.4	6940.38	101.74	6940.47	102.11	6940.56	103.15	6940.84	103.33	6940.89
103.74	6940.99	104.18	6941.11	104.3	6941.14	104.74	6941.26	105.22	6941.38
105.27	6941.4	105.74	6941.52	106.23	6941.65	106.26	6941.66	107.2	6941.91
107.29	6941.93	108.17	6942.16	108.75	6942.31	109.13	6942.42	109.37	6942.48
110.1	6942.67	110.4	6942.75	110.75	6942.84	111.07	6942.93	111.44	6943.02

Pr RAS Input Report.txt

111.75	6943.11	112.03	6943.18	112.48	6943.3	112.75	6943.37	113	6943.44
113.52	6943.57	113.97	6943.69	114.55	6943.84	114.93	6943.95	115.9	6944.2
116.63	6944.39	116.87	6944.45	117.66	6944.66	117.83	6944.71	118.7	6944.94
118.8	6944.97	119.74	6945.21	119.77	6945.22	120.22	6945.34	120.77	6945.48
121.81	6945.76	122.67	6945.98	122.75	6946.01	122.85	6946.03	123.64	6946.24
123.88	6946.3	124.75	6946.53	124.92	6946.58	125.68	6946.78	125.76	6946.8
125.96	6946.85	126.54	6947	126.76	6947.06	126.99	6947.11	127.5	6947.24
127.76	6947.31	128.03	6947.37	128.47	6947.48	128.76	6947.56	129.07	6947.63
129.44	6947.73	129.76	6947.81	130.1	6947.89	130.4	6947.97	130.76	6948.06
131.14	6948.15	131.76	6948.31	132.34	6948.45	132.76	6948.56	133.21	6948.67
133.3	6948.69	133.76	6948.81	134.25	6948.93	134.27	6948.94	134.76	6949.06
135.29	6949.18	135.76	6949.29	136.32	6949.29	136.76	6949.3	141.04	6949.3
141.51	6949.29	144.9	6949.29	145.65	6949.28	147.81	6949.28	148.76	6949.27
150	6949.27								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-125.51	.035	31.61	.035	108.17	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	31.61	108.17		46.77	46.77		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-125.51	-2.53	6942.48	T

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4200

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 377							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-82.45	6943.36	-82.13	6943.36	-81.93	6943.31	-81.72	6943.26	-81.16	6943.12
-80.93	6943.06	-80.69	6943	-80.18	6942.88	-79.93	6942.81	-79.66	6942.75
-79.21	6942.63	-78.93	6942.56	-78.63	6942.49	-78.24	6942.39	-77.93	6942.31
-77.6	6942.23	-77.27	6942.15	-76.93	6942.06	-76.57	6941.97	-76.29	6941.9
-75.93	6941.81	-75.54	6941.72	-75.32	6941.66	-74.93	6941.56	-74.51	6941.46
-74.35	6941.42	-73.93	6941.31	-73.48	6941.2	-73.37	6941.18	-72.93	6941.06
-72.45	6940.95	-72.4	6940.93	-71.93	6940.81	-71.43	6940.69	-70.93	6940.56
-70.46	6940.45	-70.4	6940.43	-69.93	6940.31	-69.48	6940.2	-69.37	6940.17
-68.93	6940.06	-68.51	6939.96	-68.34	6939.92	-67.93	6939.81	-67.54	6939.72
-67.31	6939.66	-66.93	6939.56	-66.56	6939.47	-66.28	6939.4	-65.93	6939.31



Pr RAS Input Report.txt

-65.59	6939.29	-65.25	6939.27	-64.92	6939.25	-50.92	6939.25	-50.84	6939.26
-50.03	6939.28	-49.81	6939.28	-49.05	6939.29	-41.57	6939.29	-41.27	6939.3
-39.92	6939.3	-39.51	6939.27	-39.33	6939.28	-38.92	6939.26	-38.48	6939.25
-38.35	6939.26	-37.92	6939.25	-37.38	6939.25	-36.92	6939.24	-32.31	6939.24
-31.91	6939.23	-26.91	6939.23	-26.68	6939.22	-21.81	6939.22	-17.92	6939.21
-15.98	6939.21	-15.91	6939.2	-12.91	6939.2	-12.75	6939.12	-12.09	6938.79
-11.91	6938.7	-10.91	6938.7	-10.69	6938.77	-10.14	6938.94	-9.91	6939.02
-9.66	6939.06	-9.17	6939.15	-8.91	6939.2	-8.63	6939.2	-8.2	6939.21
-7.91	6939.21	-7.6	6939.22	-7.22	6939.22	-6.91	6939.23	-6.57	6939.23
-6.25	6939.24	-5.54	6939.24	-5.28	6939.25	-2.9	6939.25	-2.45	6939.36
-2.36	6939.39	-1.9	6939.5	-1.42	6939.62	-1.39	6939.63	-.9	6939.75
-.41	6939.87	-.39	6939.88	.1	6940	.56	6940.12	.64	6940.13
1.1	6940.25	1.53	6940.36	1.66	6940.39	2.1	6940.5	2.51	6940.6
2.69	6940.65	3.1	6940.75	3.48	6940.85	3.72	6940.91	4.1	6941
4.45	6941.09	4.75	6941.16	5.1	6941.25	5.42	6941.33	5.78	6941.42
6.1	6941.5	6.4	6941.57	6.81	6941.68	7.1	6941.75	7.37	6941.82
7.84	6941.94	8.1	6942	8.34	6942.06	8.87	6942.19	9.1	6942.25
9.32	6942.3	9.9	6942.45	10.1	6942.5	10.29	6942.55	10.93	6942.71
11.1	6942.75	11.26	6942.79	17.1	6943.41	19.04	6943.41	19.1	6943.42
21.22	6943.42	21.96	6943.43	23.28	6943.43	23.91	6943.44	26.11	6943.44
26.37	6943.45	28.11	6943.45	28.44	6943.46	30.11	6943.46	30.5	6943.47
31.68	6943.47	32.11	6943.48	32.57	6943.43	32.65	6943.48	33.11	6943.43
33.6	6943.33	33.62	6943.41	34.11	6943.3	34.59	6943.2	34.63	6943.19
35.11	6943.08	35.56	6942.98	35.66	6942.96	36.11	6942.86	36.53	6942.77
36.7	6942.73	36.8	6942.71	37.11	6942.64	37.5	6942.55	37.73	6942.5
38.11	6942.42	38.47	6942.34	38.76	6942.27	39.11	6942.19	39.44	6942.12
39.79	6942.04	40.11	6941.97	40.41	6941.91	40.83	6941.81	41.11	6941.75
41.38	6941.69	41.86	6941.58	42.11	6941.53	42.35	6941.47	42.89	6941.33
43.11	6941.28	43.32	6941.22	43.92	6941.07	44.11	6941.03	44.29	6940.98
44.96	6940.81	45.11	6940.78	45.26	6940.74	50.11	6939.53	50.12	6939.52
51.08	6939.28	51.12	6939.28	51.15	6939.27	52.05	6939.04	52.12	6939.03
52.19	6939.01	53.02	6938.8	53.12	6938.78	53.22	6938.75	53.99	6938.56
54.12	6938.53	54.25	6938.49	54.96	6938.31	55.12	6938.28	55.28	6938.23
55.93	6938.07	56.12	6938.03	56.32	6937.98	56.9	6937.83	57.12	6937.78
57.35	6937.72	57.87	6937.59	58.12	6937.53	58.38	6937.46	58.84	6937.35
59.12	6937.28	59.41	6937.2	59.81	6937.1	60.12	6937.03	60.45	6936.98
60.78	6936.92	61.12	6936.87	98.13	6936.87	98.62	6936.91	98.65	6936.92
99.14	6936.96	99.59	6937.07	99.68	6937.1	100.14	6937.21	100.56	6937.32
100.72	6937.36	101.14	6937.46	101.53	6937.56	101.75	6937.61	102.14	6937.71
102.5	6937.8	102.78	6937.87	103.14	6937.96	103.47	6938.04	103.81	6938.13
104.14	6938.21	104.44	6938.29	104.85	6938.39	105.14	6938.46	105.41	6938.53
105.88	6938.65	106.14	6938.71	106.38	6938.77	106.91	6938.91	107.14	6938.96
107.35	6939.02	107.95	6939.16	108.14	6939.21	108.32	6939.26	108.98	6939.42
109.14	6939.46	109.29	6939.5	110.01	6939.68	110.14	6939.71	110.26	6939.74
111.04	6939.94	111.14	6939.96	111.23	6939.99	112.08	6940.2	112.14	6940.21
112.2	6940.23	114.14	6940.71	115.11	6940.96	115.14	6940.96	115.17	6940.97
116.08	6941.2	116.14	6941.21	116.21	6941.23	117.05	6941.44	117.14	6941.46
117.24	6941.49	118.02	6941.68	118.14	6941.71	118.27	6941.75	118.99	6941.93

Pr RAS Input Report.txt

119.14	6941.96	119.3	6942	119.96	6942.17	120.14	6942.21	120.34	6942.26
120.93	6942.41	121.14	6942.46	121.37	6942.52	121.9	6942.65	122.14	6942.71
122.4	6942.78	122.87	6942.9	123.15	6942.96	123.43	6943.04	123.84	6943.14
124.15	6943.21	124.47	6943.29	124.81	6943.38	125.15	6943.46	125.5	6943.55
125.78	6943.62	126.15	6943.71	126.53	6943.81	126.75	6943.87	127.15	6943.96
127.56	6944.07	127.72	6944.11	128.15	6944.21	128.6	6944.33	128.69	6944.35
129.15	6944.46	129.63	6944.59	129.66	6944.59	130.15	6944.71	130.64	6944.84
130.66	6944.84	131.15	6944.97	131.61	6945.08	131.69	6945.1	132.15	6945.21
132.58	6945.32	132.73	6945.36	133.15	6945.47	133.55	6945.56	133.76	6945.62
134.15	6945.72	134.52	6945.81	134.79	6945.88	135.15	6945.97	135.49	6946.05
135.83	6946.13	136.15	6946.22	136.46	6946.29	136.86	6946.39	137.15	6946.47
137.43	6946.53	137.89	6946.65	138.15	6946.72	138.4	6946.78	138.92	6946.91
139.15	6946.97	139.37	6947.02	139.96	6947.17	140.15	6947.22	140.34	6947.26
140.99	6947.43	141.15	6947.47	141.31	6947.5	142.02	6947.68	142.15	6947.72
142.28	6947.75	142.76	6947.87	143.05	6947.95	143.15	6947.97	143.25	6948
144.09	6948.32	144.15	6948.34	144.22	6948.36	145.12	6948.41	145.15	6948.41
145.19	6948.42	147.13	6948.43	147.18	6948.43	148.1	6948.44	148.22	6948.44
149.07	6948.45	150.14	6948.45						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-82.45	.035	36.8	.035	142.76	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

36.8	142.76	13.79	13.79	13.79	.1	.3
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Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-82.45	44	6945.81	T
114	150.14	6945.81	T

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4175

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 487

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-114.99	6944.58	-114.85	6944.58	-114.38	6944.53	-114.32	6944.53	-113.85	6944.48
-113.41	6944.43	-113.28	6944.42	-112.85	6944.37	-112.44	6944.33	-112.25	6944.31
-111.85	6944.27	-111.47	6944.18	-111.21	6944.12	-110.85	6944.04	-110.51	6943.95
-110.18	6943.87	-109.85	6943.79	-109.54	6943.71	-109.14	6943.61	-108.85	6943.54
-108.57	6943.47	-108.11	6943.35	-107.85	6943.29	-107.6	6943.23	-107.07	6943.09

Pr RAS Input Report.txt

-106.85	6943.04	-106.63	6942.98	-106.04	6942.83	-105.84	6942.79	-105.66	6942.74
-105	6942.58	-104.84	6942.54	-104.7	6942.5	-103.97	6942.32	-103.84	6942.29
-103.73	6942.26	-102.93	6942.06	-102.84	6942.04	-102.76	6942.02	-101.9	6941.8
-101.84	6941.79	-101.79	6941.77	-100.86	6941.54	-100.84	6941.54	-100.82	6941.53
-100.27	6941.39	-99.86	6941.29	-99.84	6941.29	-99.83	6941.28	-98.89	6941.05
-98.84	6941.04	-98.79	6941.02	-97.92	6940.81	-97.84	6940.79	-97.76	6940.76
-96.95	6940.56	-96.84	6940.54	-96.72	6940.51	-95.98	6940.32	-95.84	6940.29
-95.69	6940.25	-95.01	6940.08	-94.84	6940.04	-94.65	6939.99	-94.05	6939.84
-93.84	6939.79	-93.62	6939.73	-93.08	6939.6	-92.84	6939.54	-92.58	6939.47
-92.11	6939.35	-91.84	6939.29	-91.55	6939.28	-91.14	6939.26	-90.84	6939.25
-83.83	6939.25	-83.4	6939.28	-83.27	6939.37	-82.83	6939.4	-82.43	6939.51
-82.23	6939.56	-81.83	6939.66	-81.46	6939.75	-81.2	6939.82	-80.83	6939.91
-80.49	6940	-80.16	6940.08	-79.83	6940.17	-79.52	6940.24	-79.13	6940.34
-78.83	6940.42	-78.56	6940.49	-78.09	6940.61	-77.83	6940.67	-77.59	6940.73
-77.06	6940.87	-76.83	6940.93	-76.62	6940.96	-76.02	6941.07	-75.83	6941.1
-73.95	6941.1	-73.83	6941.11	-71.78	6941.11	-70.85	6941.12	-68.78	6941.12
-67.91	6941.13	-65.83	6941.13	-65.67	6941.12	-65	6941.07	-64.82	6941.06
-64.64	6941.01	-64.03	6940.86	-63.82	6940.81	-63.6	6940.75	-63.07	6940.62
-62.82	6940.56	-62.57	6940.5	-62.1	6940.38	-61.82	6940.32	-61.53	6940.24
-61.13	6940.14	-60.82	6940.07	-60.5	6939.99	-60.16	6939.91	-59.82	6939.82
-59.46	6939.73	-59.19	6939.67	-58.82	6939.58	-58.43	6939.48	-58.22	6939.43
-57.82	6939.33	-57.39	6939.26	-57.26	6939.32	-56.82	6939.25	-43.7	6939.25
-42.9	6938.84	-42.81	6938.84	-42.73	6938.81	-41.86	6938.78	-41.81	6938.75
-31.81	6938.75	-31.51	6939.12	-31.12	6939.1	-30.81	6939.49	-30.48	6939.29
-30.15	6939.51	-29.81	6939.3	-29.44	6939.3	-29.18	6939.32	-28.81	6939.32
-28.41	6939.38	-28.21	6939.47	-27.81	6939.53	-27.37	6939.64	-27.24	6939.67
-26.81	6939.78	-26.34	6939.9	-26.27	6939.91	-25.81	6940.03	-25.31	6940.15
-25.3	6940.15	-24.81	6940.28	-24.34	6940.4	-24.27	6940.41	-23.8	6940.53
-23.37	6940.64	-23.23	6940.67	-22.8	6940.78	-22.2	6940.93	-21.8	6941.03
-21.43	6941.12	-21.16	6941.19	-20.8	6941.28	-20.47	6941.36	-20.13	6941.45
-19.8	6941.53	-19.5	6941.61	-19.09	6941.71	-18.8	6941.78	-18.53	6941.85
-18.06	6941.96	-17.8	6942.03	-17.56	6942.09	-17.02	6942.22	-16.8	6942.28
-16.59	6942.33	-15.99	6942.48	-15.8	6942.53	-15.63	6942.57	-14.95	6942.74
-14.8	6942.78	-14.66	6942.82	-13.92	6943	-13.8	6943.03	-13.69	6943.06
-12.88	6943.26	-12.8	6943.28	-12.72	6943.3	-11.85	6943.52	-11.8	6943.53
-11.75	6943.54	-10.81	6943.78	-10.78	6943.78	-10.36	6943.89	-9.82	6944.02
-9.8	6944.03	-9.78	6944.03	-8.85	6944.24	-8.8	6944.26	-8.74	6944.26
-7.88	6944.3	-7.8	6944.31	-7.71	6944.31	-6.91	6944.35	-6.8	6944.36
-6.67	6944.36	-5.94	6944.4	-5.8	6944.41	-5.64	6944.41	-4.98	6944.45
-4.8	6944.46	-4.6	6944.47	-4.01	6944.5	-3.79	6944.51	-3.57	6944.52
-3.04	6944.54	-2.79	6944.56	-2.53	6944.57	-2.07	6944.59	-1.79	6944.61
-1.5	6944.62	-1.1	6944.64	-.79	6944.66	-.46	6944.67	-.13	6944.69
.21	6944.71	.57	6944.71	.83	6944.72	1.21	6944.72	1.61	6944.63
1.8	6944.58	2.21	6944.49	2.64	6944.38	2.77	6944.35	3.21	6944.25
3.68	6944.14	3.74	6944.13	4.21	6944.02	4.71	6943.9	5.21	6943.78
5.67	6943.67	5.75	6943.65	6.21	6943.55	6.64	6943.44	6.78	6943.41
7.21	6943.31	7.61	6943.22	7.82	6943.17	8.21	6943.07	8.58	6942.99
8.85	6942.92	9.21	6942.84	9.89	6942.68	10.21	6942.6	10.52	6942.53

## Pr RAS Input Report.txt

10.92	6942.44	11.21	6942.37	11.48	6942.31	11.96	6942.19	12.21	6942.14
12.45	6942.08	12.99	6941.95	13.21	6941.9	13.42	6941.86	14	6941.73
14.03	6941.72	14.21	6941.68	14.38	6941.65	15.08	6941.49	15.22	6941.46
15.34	6941.43	16.13	6941.26	16.22	6941.24	16.29	6941.22	17.18	6941.02
17.22	6941.02	17.25	6941.01	17.86	6940.87	18.2	6940.8	18.22	6940.8
18.24	6940.79	19.16	6940.59	19.22	6940.57	19.29	6940.55	20.11	6940.35
20.22	6940.32	20.34	6940.29	21.07	6940.11	21.22	6940.07	21.39	6940.03
22.02	6939.87	22.22	6939.82	22.44	6939.77	22.98	6939.63	23.22	6939.57
23.5	6939.5	23.93	6939.39	24.22	6939.32	24.55	6939.24	24.89	6939.16
25.23	6939.07	25.6	6938.98	25.84	6938.92	26.23	6938.82	26.65	6938.72
26.8	6938.68	27.23	6938.57	27.71	6938.45	27.75	6938.44	28.23	6938.32
28.7	6938.2	28.76	6938.19	29.23	6938.07	29.66	6937.96	29.81	6937.93
30.23	6937.82	30.61	6937.73	30.86	6937.66	31.23	6937.57	31.57	6937.49
31.91	6937.4	32.23	6937.32	32.52	6937.25	32.97	6937.14	33.23	6937.07
33.48	6937.01	34.02	6936.88	34.24	6936.83	71.67	6936.83	71.89	6936.84
72.28	6936.84	72.63	6936.93	72.95	6937.01	73.28	6937.09	73.58	6937.17
74	6937.27	74.28	6937.34	74.54	6937.4	75.05	6937.53	75.28	6937.59
75.49	6937.64	76.1	6937.79	76.28	6937.84	76.45	6937.88	77.15	6938.06
77.28	6938.09	77.4	6938.12	78.21	6938.32	78.28	6938.34	78.36	6938.36
79.26	6938.58	79.29	6938.59	79.31	6938.6	79.83	6938.72	80.27	6938.83
80.29	6938.84	80.31	6938.84	81.22	6939.07	81.29	6939.09	81.36	6939.11
82.18	6939.31	82.29	6939.34	82.41	6939.37	83.13	6939.55	83.29	6939.59
83.47	6939.63	84.08	6939.79	84.29	6939.84	84.52	6939.9	85.04	6940.03
85.29	6940.09	85.57	6940.16	85.99	6940.26	86.29	6940.34	86.95	6940.5
87.29	6940.59	87.67	6940.68	87.9	6940.74	88.3	6940.84	88.73	6940.95
88.86	6940.98	89.3	6941.09	89.78	6941.21	89.81	6941.22	90.3	6941.34
90.77	6941.46	90.83	6941.47	91.3	6941.59	91.72	6941.7	91.88	6941.74
92.3	6941.84	92.5	6941.89	92.68	6941.94	92.94	6941.99	93.3	6942.08
93.63	6942.16	93.99	6942.19	94.3	6942.27	94.59	6942.33	95.04	6942.52
95.3	6942.57	95.54	6942.62	96.09	6942.9	96.3	6942.94	96.5	6943.02
97.14	6943.3	97.31	6943.37	97.45	6943.43	98.2	6943.75	98.31	6943.79
98.41	6943.84	99.25	6944.19	99.31	6944.22	99.36	6944.24	100.3	6944.64
100.31	6944.64	100.32	6944.65	100.48	6944.72	101.27	6945.05	101.31	6945.07
101.35	6945.09	102.23	6945.46	102.31	6945.49	102.4	6945.53	103.18	6945.86
103.31	6945.92	103.46	6945.98	104.14	6946.27	104.31	6946.34	104.51	6946.43
105.09	6946.67	105.31	6946.77	105.56	6946.87	106.05	6947.08	106.32	6947.19
106.61									

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val

Pr RAS Input Report.txt

-114.99 .035 14 .035 92.5 .035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	14	92.5		15.93 15.93	15.93		.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
-114.99	30	6945.81	T					
76	126.86	6945.81	T					

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4150

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 475

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-88.61	6944.46	-87.88	6944.46	-87.76	6944.45	-87.63	6944.45	-86.91	6944.41
-86.76	6944.4	-86.6	6944.39	-85.94	6944.36	-85.76	6944.35	-85.56	6944.34
-84.98	6944.3	-84.76	6944.29	-84.53	6944.28	-84.01	6944.21	-83.76	6944.2
-83.5	6944.17	-83.04	6944.04	-82.76	6944.02	-82.46	6943.98	-82.07	6943.9
-81.76	6943.86	-81.43	6943.81	-81.1	6943.76	-80.76	6943.71	-80.39	6943.66
-80.13	6943.62	-79.76	6943.57	-79.36	6943.51	-79.16	6943.5	-78.76	6943.44
-78.33	6943.4	-78.19	6943.4	-77.76	6943.35	-77.29	6943.32	-77.22	6943.29
-76.76	6943.26	-76.26	6943.22	-76.25	6943.2	-75.76	6943.16	-75.28	6943.1
-75.22	6943.11	-74.76	6943.05	-74.32	6943	-74.19	6942.99	-73.75	6942.94
-73.35	6942.89	-73.16	6942.86	-72.75	6942.82	-72.38	6942.79	-72.12	6942.74
-71.75	6942.72	-71.41	6942.71	-71.09	6942.7	-70.75	6942.69	-70.44	6942.69
-70.06	6942.7	-68.75	6942.7	-68.5	6942.71	-66.95	6942.71	-66.75	6942.72
-65.59	6942.72	-64.89	6942.73	-63.66	6942.73	-62.82	6942.74	-61.78	6942.74
-61.75	6942.75	-60.72	6942.75	-59.78	6942.76	-58.68	6942.76	-57.84	6942.77
-56.75	6942.77	-56.61	6942.78	-54.93	6942.78	-54.75	6942.79	-54.55	6942.81
-53.96	6942.97	-53.75	6943	-53.51	6943.06	-53	6943.19	-52.75	6943.25
-52.48	6943.29	-52.03	6943.35	-51.74	6943.39	-51.06	6943.39	-50.74	6943.4
-48.15	6943.4	-47.74	6943.41	-45.24	6943.41	-44.74	6943.42	-42.33	6943.42
-42.14	6943.43	-41.74	6943.43	-41.37	6943.39	-41.11	6943.35	-40.74	6943.31
-40.4	6943.23	-39.74	6943.07	-39.43	6942.99	-39.04	6942.96	-38.74	6942.88
-38.46	6942.88	-38	6942.89	-36.52	6942.89	-35.94	6942.9	-34.58	6942.9
-33.87	6942.91	-32.84	6942.91	-32.74	6942.92	-31.67	6942.92	-30.77	6942.93
-29.74	6942.93	-28.77	6942.94	-27.73	6942.94	-27.67	6942.95	-26.63	6942.95
-25.86	6942.96	-24.56	6942.96	-23.92	6942.97	-22.73	6942.97	-22.5	6942.98
-21.01	6942.98	-20.73	6942.99	-19.39	6942.99	-19.08	6943	-17.73	6943
-17.33	6943.01	-17.14	6941.17	-16.73	6941.21	-16.29	6940.7	-16.17	6940.69

Pr RAS Input Report.txt

-15.73	6940.17	-15.26	6940.82	-15.2	6940.22	-14.73	6940.89	-14.23	6940.96
-14.23	6940.5	-13.73	6940.56	-13.26	6940.61	-13.19	6940.98	-12.73	6941.04
-12.29	6941.1	-12.16	6941.25	-11.73	6941.31	-11.32	6941.37	-11.12	6941.17
-10.73	6941.22	-10.35	6941.35	-10.09	6941.54	-9.73	6941.67	-9.39	6943.05
-9.06	6941.76	-8.73	6943.06	-7.45	6943.06	-6.99	6943.07	-5.72	6943.07
-5.51	6943.08	-4.54	6943.08	-3.89	6943.09	-2.72	6943.09	-2.6	6943.1
-1.82	6943.12	-1.72	6943.12	-1.63	6943.13	-.78	6943.23	-.72	6943.23
-.66	6943.24	.25	6943.32	.31	6943.32	1.16	6943.4	1.28	6943.41
2.24	6943.49	2.28	6943.5	2.32	6943.5	3.21	6943.58	3.28	6943.58
3.35	6943.59	4.18	6943.66	4.28	6943.67	4.38	6943.69	4.65	6943.72
5.14	6943.79	5.28	6943.81	5.43	6943.83	6.1	6943.94	6.28	6943.97
6.48	6943.99	7.05	6944.1	7.28	6944.12	7.54	6944.12	8.01	6944.23
8.28	6944.24	8.59	6944.25	8.96	6944.27	9.29	6944.28	9.64	6944.29
9.92	6944.3	10.29	6944.31	10.69	6944.32	10.87	6944.32	11.29	6944.33
11.74	6944.35	11.83	6944.36	12.29	6944.37	12.78	6944.39	12.8	6944.39
13.29	6944.41	13.74	6944.43	13.85	6944.43	14.29	6944.45	14.69	6944.47
14.9	6944.48	15.29	6944.49	15.65	6944.51	15.95	6944.52	16.29	6944.53
16.6	6944.54	17.01	6944.56	17.29	6944.57	17.56	6944.58	18.06	6944.6
18.3	6944.61	18.51	6944.62	19.11	6944.65	19.3	6944.65	19.47	6944.66
20.16	6944.69	20.3	6944.7	20.42	6944.71	21.21	6944.74	21.3	6944.75
21.38	6944.74	22.27	6944.53	22.3	6944.53	22.33	6944.52	22.97	6944.4
23.29	6944.34	23.3	6944.34	23.32	6944.33	24.24	6944.2	24.3	6944.19
24.37	6944.18	25.2	6944.07	25.3	6944.05	25.42	6944.03	26.15	6943.93
26.3	6943.91	26.47	6943.88	27.11	6943.79	27.31	6943.77	27.53	6943.73
28.06	6943.66	28.31	6943.62	28.58	6943.58	29.01	6943.52	29.31	6943.48
29.63	6943.43	29.97	6943.38	30.31	6943.34	30.68	6943.28	30.92	6943.25
31.31	6943.19	31.73	6943.13	31.88	6943.11	32.31	6943.05	32.79	6942.98
32.83	6942.98	33.31	6942.91	33.79	6942.84	33.84	6942.83	34.31	6942.76
34.74	6942.7	34.89	6942.68	35.31	6942.62	35.7	6942.57	35.94	6942.53
36.32	6942.48	36.65	6942.43	37	6942.38	37.32	6942.34	37.61	6942.29
38.05	6942.23	38.32	6942.19	38.56	6942.16	39.1	6942.08	39.32	6942.05
39.52	6942.02	40.15	6941.93	40.32	6941.91	40.47	6941.89	41.2	6941.85
41.32	6941.83	41.43	6941.84	42.26	6941.85	42.38	6941.85	43.31	6941.9
43.34	6941.9	43.63	6941.94	44.29	6942.02	44.32	6942.03	44.36	6942.03
45.25	6942.14	45.33	6942.15	45.41	6942.16	46.2	6942.26	46.33	6942.28
46.46	6942.29	47.16	6942.38	47.33	6942.4	47.52	6942.43	48.11	6942.5
48.33	6942.53	48.57	6942.56	49.07	6942.62	49.33	6942.65	49.62	6942.69
50.02	6942.74	50.33	6942.78	50.67	6942.82	50.98	6942.86	51.33	6942.9
51.72	6942.95	51.93	6942.98	52.33	6943.03	52.78	6943.08	52.89	6942.76
53.33	6942.83	53.83	6942.55	53.84	6940.39	54.34	6940.21	54.8	6940.2
54.88	6937.45	55.34	6937.33	55.75	6937.23	55.93	6937.18	56.12	6937.13
56.34	6937.08	56.7	6936.99	56.98	6936.92	57.34	6936.83	57.66	6936.81
58.04	6936.8	58.34	6936.78	95.38	6936.78	95.85	6936.87	95.91	6936.89
96.38	6936.99	96.81	6937.09	96.96	6937.13	97.38	6937.24	97.76	6937.33
97.9	6939.55	98.02	6941.45	98.38	6941.66	98.72	6943.21	99.07	6941.62
99.38	6943.02	99.67	6943.48	100.12	6942.82	100.39	6943.22	100.63	6943.1
101.17	6943.16	101.39	6943.06	101.58	6943.05	102.23	6943.01	102.39	6943.01
102.54	6943	103.28	6942.95	103.39	6942.95	103.49	6942.94	104.33	6942.9

Pr RAS Input Report.txt

104.39	6942.89	104.45	6942.89	105.38	6942.84	105.4	6942.84	105.59	6942.83
106.36	6942.78	106.43	6942.78	107.31	6942.73	107.39	6942.72	107.49	6942.72
108.27	6942.68	108.39	6942.67	108.54	6942.66	109.22	6942.62	109.4	6942.61
109.59	6942.6	110.17	6942.57	110.4	6942.56	110.64	6942.54	111.13	6942.52
111.4	6942.5	111.69	6942.48	112.08	6942.46	112.4	6942.44	112.75	6942.42
113.04	6942.41	113.4	6942.39	113.8	6942.37	113.99	6942.35	114.4	6942.33
114.85	6942.4	114.95	6942.53	115.4	6942.6	116.4	6943.02	116.86	6943.21
116.95	6943.25	117.4	6943.44	117.81	6943.61	118.01	6943.69	118.41	6943.86
118.77	6944.01	119.06	6944.13	119.41	6944.28	119.72	6944.41	120.11	6944.58
120.41	6944.7	120.68	6944.81	121.16	6945.02	121.41	6945.12	121.63	6945.22
122.21	6945.46	122.41	6945.54	122.59	6945.62	123.27	6945.9	123.41	6945.96
123.54	6946.02	124.32	6946.34	124.5	6946.42	125.37	6946.78	125.41	6946.8
125.45	6946.82	126.25	6947.13	126.41	6947.19	126.41	6947.2	127.36	6947.24
127.48	6947.24	128.32	6947.26	128.42	6947.26	128.53	6947.27	129.27	6947.29
129.42	6947.29	129.58	6947.3	130.23	6947.31	130.42	6947.32	130.63	6947.32
131.18	6947.33	131.68	6947.33	132.14	6947.34	132.74	6947.34	133.09	6947.35
134.05	6947.35	134.42	6947.36	135	6947.36	135.42	6947.37	136.43	6947.37
136.91	6947.38	137.43	6947.38	137.86	6947.39	138.82	6947.39	139.05	6947.4
140.1	6947.4	140.43	6947.41	141.43	6947.41	141.68	6947.42	142.64	6947.42
143.26	6947.43	143.59	6947.43	144.31	6947.44	145.5	6947.44	146.41	6947.45
146.9	6947.45	147.41	6947.46	147.47	6947.46	148.37	6947.47	150	6947.47

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-88.61	.035	54.88	.013	97.76	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	54.88	97.76		125.43	125.43		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-88.61	52.34	6945.81	T
98.18	150	6945.81	T

CULVERT

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4073

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Distance from Upstream XS = 39.21

Deck/Roadway Width = 47.87

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

Pr RAS Input Report.txt

num= 116

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-133.85	6948.14		0		-130.68	6948.06		0		-130.54	6948.05		0	
-130.4	6948.05		0		-123.71	6947.88		0		-123.55	6947.87		0	
-123.54	6947.87		0		-123.14	6947.86		0		-123.07	6947.86		0	
-120.28	6947.79		0		-116.65	6947.7		0		-116.55	6947.7		0	
-116.54	6947.7		0		-115.88	6947.68		0		-109.7	6947.53		0	
-109.56	6947.53		0		-105.51	6947.44		0		-105.42	6947.43		0	
-102.62	6947.37		0		-102.56	6947.37		0		-102.47	6947.37		0	
-98.56	6947.28		0		-95.61	6947.22		0		-95.56	6947.22		0	
-88.68	6947.07		0		-88.56	6947.07		0		-81.67	6946.93		0	
-81.55	6946.93		0		-74.65	6946.8		0		-74.55	6946.8		0	
-73.57	6946.78		0		-73.55	6946.78		0		-67.63	6946.68		0	
-67.55	6946.68		0		-60.63	6946.57		0		-60.55	6946.56		0	
-53.61	6946.46		0		-53.55	6946.46		0		-53.51	6946.46		0	
-48.55	6946.39		0		-46.57	6946.36		0		-46.55	6946.36		0	
-39.59	6946.27		0		-39.55	6946.27		0		-32.57	6946.18		0	
-32.55	6946.18		0		-25.56	6946.11		0		-25.55	6946.11		0	
-23.55	6946.08		0		-21.69	6946.07		0		-18.56	6946.04		0	
-18.55	6946.04		0		-11.55	6945.97		0		-11.53	6945.97		0	
-4.55	6945.92		0		-4.53	6945.92		0		1.45	6945.88		0	
2.45	6945.87		0		2.49	6945.87		0		9.45	6945.83		0	
9.5	6945.83		0		16.45	6945.8		0		16.52	6945.8		0	
23.45	6945.77		0		23.48	6945.77		0		26.45	6945.76		0	
30.39	6945.76		0		30.45	6945.76		0		30.54	6945.76		0	
37.45	6945.75		0		41.66	6945.74		0		41.73	6945.74		0	
41.78	6945.74		0		44.45	6945.74		0		44.57	6945.74		0	
51.45	6945.75		0		51.58	6945.75		0		58.45	6945.76		0	
58.6	6945.76		0		65.45	6945.79		0		65.61	6945.79		0	
72.45	6945.81		0		72.55	6945.82		0		76.45	6945.83		0	
79.37	6945.85		0		79.45	6945.85		0		79.64	6945.85		0	
81.02	6945.86		0		86.45	6945.9		0		86.64	6945.9		0	
93.45	6945.95		0		93.64	6945.95		0		100.45	6946.01		0	
100.47	6946.01		0		101.45	6946.02		0		101.55	6946.02		0	
105.26	6946.06		0		105.82	6946.06		0		126.45	6946.27		0	
127.09	6946.27		0		151.45	6946.51		0		152.06	6946.52		0	
176.45	6946.76		0		177.04	6946.77		0		201.45	6947.01		0	
202.02	6947.02		0		213.4	6947.13		0		226.45	6947.26		0	
226.99	6947.27		0		251.45	6947.51		0		251.95	6947.51		0	
276.45	6947.76		0		276.9	6947.76		0		301.45	6948.01		0	
301.86	6948.01		0		309.04	6948.08		0						

Upstream Bridge Cross Section Data

Station Elevation Data num= 475

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-88.61	6944.46	-87.88	6944.46	-87.76	6944.45	-87.63	6944.45	-86.91	6944.41
-86.76	6944.4	-86.6	6944.39	-85.94	6944.36	-85.76	6944.35	-85.56	6944.34
-84.98	6944.3	-84.76	6944.29	-84.53	6944.28	-84.01	6944.21	-83.76	6944.2



Pr RAS Input Report.txt

-83.5	6944.17	-83.04	6944.04	-82.76	6944.02	-82.46	6943.98	-82.07	6943.9
-81.76	6943.86	-81.43	6943.81	-81.1	6943.76	-80.76	6943.71	-80.39	6943.66
-80.13	6943.62	-79.76	6943.57	-79.36	6943.51	-79.16	6943.5	-78.76	6943.44
-78.33	6943.4	-78.19	6943.4	-77.76	6943.35	-77.29	6943.32	-77.22	6943.29
-76.76	6943.26	-76.26	6943.22	-76.25	6943.2	-75.76	6943.16	-75.28	6943.1
-75.22	6943.11	-74.76	6943.05	-74.32	6943	-74.19	6942.99	-73.75	6942.94
-73.35	6942.89	-73.16	6942.86	-72.75	6942.82	-72.38	6942.79	-72.12	6942.74
-71.75	6942.72	-71.41	6942.71	-71.09	6942.7	-70.75	6942.69	-70.44	6942.69
-70.06	6942.7	-68.75	6942.7	-68.5	6942.71	-66.95	6942.71	-66.75	6942.72
-65.59	6942.72	-64.89	6942.73	-63.66	6942.73	-62.82	6942.74	-61.78	6942.74
-61.75	6942.75	-60.72	6942.75	-59.78	6942.76	-58.68	6942.76	-57.84	6942.77
-56.75	6942.77	-56.61	6942.78	-54.93	6942.78	-54.75	6942.79	-54.55	6942.81
-53.96	6942.97	-53.75	6943	-53.51	6943.06	-53	6943.19	-52.75	6943.25
-52.48	6943.29	-52.03	6943.35	-51.74	6943.39	-51.06	6943.39	-50.74	6943.4
-48.15	6943.4	-47.74	6943.41	-45.24	6943.41	-44.74	6943.42	-42.33	6943.42
-42.14	6943.43	-41.74	6943.43	-41.37	6943.39	-41.11	6943.35	-40.74	6943.31
-40.4	6943.23	-39.74	6943.07	-39.43	6942.99	-39.04	6942.96	-38.74	6942.88
-38.46	6942.88	-38	6942.89	-36.52	6942.89	-35.94	6942.9	-34.58	6942.9
-33.87	6942.91	-32.84	6942.91	-32.74	6942.92	-31.67	6942.92	-30.77	6942.93
-29.74	6942.93	-28.77	6942.94	-27.73	6942.94	-27.67	6942.95	-26.63	6942.95
-25.86	6942.96	-24.56	6942.96	-23.92	6942.97	-22.73	6942.97	-22.5	6942.98
-21.01	6942.98	-20.73	6942.99	-19.39	6942.99	-19.08	6943	-17.73	6943
-17.33	6943.01	-17.14	6941.17	-16.73	6941.21	-16.29	6940.7	-16.17	6940.69
-15.73	6940.17	-15.26	6940.82	-15.2	6940.22	-14.73	6940.89	-14.23	6940.96
-14.23	6940.5	-13.73	6940.56	-13.26	6940.61	-13.19	6940.98	-12.73	6941.04
-12.29	6941.1	-12.16	6941.25	-11.73	6941.31	-11.32	6941.37	-11.12	6941.17
-10.73	6941.22	-10.35	6941.35	-10.09	6941.54	-9.73	6941.67	-9.39	6943.05
-9.06	6941.76	-8.73	6943.06	-7.45	6943.06	-6.99	6943.07	-5.72	6943.07
-5.51	6943.08	-4.54	6943.08	-3.89	6943.09	-2.72	6943.09	-2.6	6943.1
-1.82	6943.12	-1.72	6943.12	-1.63	6943.13	-.78	6943.23	-.72	6943.23
-.66	6943.24	.25	6943.32	.31	6943.32	1.16	6943.4	1.28	6943.41
2.24	6943.49	2.28	6943.5	2.32	6943.5	3.21	6943.58	3.28	6943.58
3.35	6943.59	4.18	6943.66	4.28	6943.67	4.38	6943.69	4.65	6943.72
5.14	6943.79	5.28	6943.81	5.43	6943.83	6.1	6943.94	6.28	6943.97
6.48	6943.99	7.05	6944.1	7.28	6944.12	7.54	6944.12	8.01	6944.23
8.28	6944.24	8.59	6944.25	8.96	6944.27	9.29	6944.28	9.64	6944.29
9.92	6944.3	10.29	6944.31	10.69	6944.32	10.87	6944.32	11.29	6944.33
11.74	6944.35	11.83	6944.36	12.29	6944.37	12.78	6944.39	12.8	6944.39
13.29	6944.41	13.74	6944.43	13.85	6944.43	14.29	6944.45	14.69	6944.47
14.9	6944.48	15.29	6944.49	15.65	6944.51	15.95	6944.52	16.29	6944.53
16.6	6944.54	17.01	6944.56	17.29	6944.57	17.56	6944.58	18.06	6944.6
18.3	6944.61	18.51	6944.62	19.11	6944.65	19.3	6944.65	19.47	6944.66
20.16	6944.69	20.3	6944.7	20.42	6944.71	21.21	6944.74	21.3	6944.75
21.38	6944.74	22.27	6944.53	22.3	6944.53	22.33	6944.52	22.97	6944.4
23.29	6944.34	23.3	6944.34	23.32	6944.33	24.24	6944.2	24.3	6944.19
24.37	6944.18	25.2	6944.07	25.3	6944.05	25.42	6944.03	26.15	6943.93
26.3	6943.91	26.47	6943.88	27.11	6943.79	27.31	6943.77	27.53	6943.73
28.06	6943.66	28.31	6943.62	28.58	6943.58	29.01	6943.52	29.31	6943.48

Pr RAS Input Report.txt

29.63	6943.43	29.97	6943.38	30.31	6943.34	30.68	6943.28	30.92	6943.25
31.31	6943.19	31.73	6943.13	31.88	6943.11	32.31	6943.05	32.79	6942.98
32.83	6942.98	33.31	6942.91	33.79	6942.84	33.84	6942.83	34.31	6942.76
34.74	6942.7	34.89	6942.68	35.31	6942.62	35.7	6942.57	35.94	6942.53
36.32	6942.48	36.65	6942.43	37	6942.38	37.32	6942.34	37.61	6942.29
38.05	6942.23	38.32	6942.19	38.56	6942.16	39.1	6942.08	39.32	6942.05
39.52	6942.02	40.15	6941.93	40.32	6941.91	40.47	6941.89	41.2	6941.85
41.32	6941.83	41.43	6941.84	42.26	6941.85	42.38	6941.85	43.31	6941.9
43.34	6941.9	43.63	6941.94	44.29	6942.02	44.32	6942.03	44.36	6942.03
45.25	6942.14	45.33	6942.15	45.41	6942.16	46.2	6942.26	46.33	6942.28
46.46	6942.29	47.16	6942.38	47.33	6942.4	47.52	6942.43	48.11	6942.5
48.33	6942.53	48.57	6942.56	49.07	6942.62	49.33	6942.65	49.62	6942.69
50.02	6942.74	50.33	6942.78	50.67	6942.82	50.98	6942.86	51.33	6942.9
51.72	6942.95	51.93	6942.98	52.33	6943.03	52.78	6943.08	52.89	6942.76
53.33	6942.83	53.83	6942.55	53.84	6940.39	54.34	6940.21	54.8	6940.2
54.88	6937.45	55.34	6937.33	55.75	6937.23	55.93	6937.18	56.12	6937.13
56.34	6937.08	56.7	6936.99	56.98	6936.92	57.34	6936.83	57.66	6936.81
58.04	6936.8	58.34	6936.78	95.38	6936.78	95.85	6936.87	95.91	6936.89
96.38	6936.99	96.81	6937.09	96.96	6937.13	97.38	6937.24	97.76	6937.33
97.9	6939.55	98.02	6941.45	98.38	6941.66	98.72	6943.21	99.07	6941.62
99.38	6943.02	99.67	6943.48	100.12	6942.82	100.39	6943.22	100.63	6943.1
101.17	6943.16	101.39	6943.06	101.58	6943.05	102.23	6943.01	102.39	6943.01
102.54	6943	103.28	6942.95	103.39	6942.95	103.49	6942.94	104.33	6942.9
104.39	6942.89	104.45	6942.89	105.38	6942.84	105.4	6942.84	105.59	6942.83
106.36	6942.78	106.43	6942.78	107.31	6942.73	107.39	6942.72	107.49	6942.72
108.27	6942.68	108.39	6942.67	108.54	6942.66	109.22	6942.62	109.4	6942.61
109.59	6942.6	110.17	6942.57	110.4	6942.56	110.64	6942.54	111.13	6942.52
111.4	6942.5	111.69	6942.48	112.08	6942.46	112.4	6942.44	112.75	6942.42
113.04	6942.41	113.4	6942.39	113.8	6942.37	113.99	6942.35	114.4	6942.33
114.85	6942.4	114.95	6942.53	115.4	6942.6	116.4	6943.02	116.86	6943.21
116.95	6943.25	117.4	6943.44	117.81	6943.61	118.01	6943.69	118.41	6943.86
118.77	6944.01	119.06	6944.13	119.41	6944.28	119.72	6944.41	120.11	6944.58
120.41	6944.7	120.68	6944.81	121.16	6945.02	121.41	6945.12	121.63	6945.22
122.21	6945.46	122.41	6945.54	122.59	6945.62	123.27	6945.9	123.41	6945.96
123.54	6946.02	124.32	6946.34	124.5	6946.42	125.37	6946.78	125.41	6946.8
125.45	6946.82	126.25	6947.13	126.41	6947.19	126.41	6947.2	127.36	6947.24
127.48	6947.24	128.32	6947.26	128.42	6947.26	128.53	6947.27	129.27	6947.29
129.42	6947.29	129.58	6947.3	130.23	6947.31	130.42	6947.32	130.63	6947.32
131.18	6947.33	131.68	6947.33	132.14	6947.34	132.74	6947.34	133.09	6947.35
134.05	6947.35	134.42	6947.36	135	6947.36	135.42	6947.37	136.43	6947.37
136.91	6947.38	137.43	6947.38	137.86	6947.39	138.82	6947.39	139.05	6947.4
140.1	6947.4	140.43	6947.41	141.43	6947.41	141.68	6947.42	142.64	6947.42
143.26	6947.43	143.59	6947.43	144.31	6947.44	145.5	6947.44	146.41	6947.45
146.9	6947.45	147.41	6947.46	147.47	6947.46	148.37	6947.47	150	6947.47

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-88.61	.035	54.88	.013	97.76	.035

Pr RAS Input Report.txt

Bank Sta: Left Right Coeff Contr. Expan.  
54.88 97.76 .3 .5

Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
-88.61 52.34 6945.81 T  
98.18 150 6945.81 T

Downstream Deck/Roadway Coordinates

num= 116

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-134.4	6948.14	0	-131.23	6948.06	0	-131.09	6948.05	0
-130.95	6948.05	0	-124.26	6947.88	0	-124.1	6947.87	0
-124.09	6947.87	0	-123.69	6947.86	0	-123.62	6947.86	0
-120.83	6947.79	0	-117.2	6947.7	0	-117.1	6947.7	0
-117.09	6947.7	0	-116.43	6947.68	0	-110.25	6947.53	0
-110.11	6947.53	0	-106.06	6947.44	0	-105.97	6947.43	0
-103.17	6947.37	0	-103.11	6947.37	0	-103.02	6947.37	0
-99.11	6947.28	0	-96.16	6947.22	0	-96.11	6947.22	0
-89.23	6947.07	0	-89.11	6947.07	0	-82.22	6946.93	0
-82.1	6946.93	0	-75.2	6946.8	0	-75.1	6946.8	0
-74.12	6946.78	0	-74.1	6946.78	0	-68.18	6946.68	0
-68.1	6946.68	0	-61.18	6946.57	0	-61.1	6946.56	0
-54.16	6946.46	0	-54.1	6946.46	0	-54.06	6946.46	0
-49.1	6946.39	0	-47.12	6946.36	0	-47.1	6946.36	0
-40.14	6946.27	0	-40.1	6946.27	0	-33.12	6946.18	0
-33.1	6946.18	0	-26.11	6946.11	0	-26.1	6946.11	0
-24.1	6946.08	0	-22.24	6946.07	0	-19.11	6946.04	0
-19.1	6946.04	0	-12.1	6945.97	0	-12.08	6945.97	0
-5.1	6945.92	0	-5.08	6945.92	0	.9	6945.88	0
1.9	6945.87	0	1.94	6945.87	0	8.9	6945.83	0
8.95	6945.83	0	15.9	6945.8	0	15.97	6945.8	0
22.9	6945.77	0	22.93	6945.77	0	25.9	6945.76	0
29.84	6945.76	0	29.9	6945.76	0	29.99	6945.76	0
36.9	6945.75	0	41.11	6945.74	0	41.18	6945.74	0
41.23	6945.74	0	43.9	6945.74	0	44.02	6945.74	0
50.9	6945.75	0	51.03	6945.75	0	57.9	6945.76	0
58.05	6945.76	0	64.9	6945.79	0	65.06	6945.79	0
71.9	6945.81	0	72	6945.82	0	75.9	6945.83	0
78.82	6945.85	0	78.9	6945.85	0	79.09	6945.85	0
80.47	6945.86	0	85.9	6945.9	0	86.09	6945.9	0
92.9	6945.95	0	93.09	6945.95	0	99.9	6946.01	0
99.92	6946.01	0	100.9	6946.02	0	101	6946.02	0
104.71	6946.06	0	105.27	6946.06	0	125.9	6946.27	0
126.54	6946.27	0	150.9	6946.51	0	151.51	6946.52	0
175.9	6946.76	0	176.49	6946.77	0	200.9	6947.01	0
201.47	6947.02	0	212.85	6947.13	0	225.9	6947.26	0
226.44	6947.27	0	250.9	6947.51	0	251.4	6947.51	0

Pr RAS Input Report.txt

275.9 6947.76	0	276.35 6947.76	0	300.9 6948.01	0
301.31 6948.01	0	308.49 6948.08	0		

Downstream Bridge Cross Section Data

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6945.08	1.53	6945.06	2.48	6944.97	7.41	6944.75	7.51	6944.75
12.38	6944.53	12.48	6944.52	12.61	6944.51	17.31	6944.29	21.85	6944.13
26.23	6943.62	29.4	6943.25	31.77	6942.61	33.63	6942.27	53.17	6942.94
53.28	6943.41	53.31	6943.51	53.54	6943.55	54.44	6943.69	54.56	6937.03
54.58	6936.94	54.94	6936.85	56.79	6936.4	58.88	6936.4	74.51	6936.4
75.79	6936.4	78.86	6936.4	94.79	6936.4	96.62	6936.85	96.98	6936.94
97	6937.03	97.12	6943.7	97.32	6943.66	98.25	6943.52	98.28	6943.41
98.4	6942.94	122.18	6943.21	124.52	6943.84	125.96	6943.87	127.43	6943.87
129.25	6943.86	135.98	6944.11	140.37	6944.08	143.66	6944.1	147.99	6944.08
150	6944.06								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	54.94	.013	96.62	.035

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	54.94	96.62		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	54.39	6945.81	F
96.9	150	6945.81	F

Upstream Embankment side slope	=	3 horiz. to 1.0 vertical
Downstream Embankment side slope	=	3 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Box	6	16

FHWA Chart # 8 - flared wingwalls

FHWA Scale # 1 - Wingwall flared 30 to 75 deg.

Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef
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Exit Loss Coef	1	120	.011	.011	0	.5
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1

Number of Barrels = 2

Pr RAS Input Report.txt

Upstream Elevation = 6936.77

Centerline Stations

Sta. Sta.  
67 85.5

Downstream Elevation = 6936.41

Centerline Stations

Sta. Sta.  
67 85.5

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4040

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6945.08	1.53	6945.06	2.48	6944.97	7.41	6944.75	7.51	6944.75
12.38	6944.53	12.48	6944.52	12.61	6944.51	17.31	6944.29	21.85	6944.13
26.23	6943.62	29.4	6943.25	31.77	6942.61	33.63	6942.27	53.17	6942.94
53.28	6943.41	53.31	6943.51	53.54	6943.55	54.44	6943.69	54.56	6937.03
54.58	6936.94	54.94	6936.85	56.79	6936.4	58.88	6936.4	74.51	6936.4
75.79	6936.4	78.86	6936.4	94.79	6936.4	96.62	6936.85	96.98	6936.94
97	6937.03	97.12	6943.7	97.32	6943.66	98.25	6943.52	98.28	6943.41
98.4	6942.94	122.18	6943.21	124.52	6943.84	125.96	6943.87	127.43	6943.87
129.25	6943.86	135.98	6944.11	140.37	6944.08	143.66	6944.1	147.99	6944.08
150	6944.06								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	54.94	.013	96.62	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	54.94	96.62		8.99 8.99	8.99	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	54.39	6945.81	F
96.9	150	6945.81	F

CROSS SECTION

RIVER: UT\_BSC2

Pr RAS Input Report.txt

REACH: NCONFL-BGM

RS: 4030

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 46

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6945.21	3.74	6945.15	11.79	6944.39	13.92	6944.3	14.57	6944.27
17.27	6944.15	17.81	6944.09	18.55	6944.01	20.88	6943.9	23.14	6943.83
25.31	6943.57	26.89	6943.39	38.91	6940.17	39.21	6940.11	42.35	6940.22
42.37	6940.3	42.49	6940.73	43.44	6940.88	43.63	6940.91	43.65	6939.56
43.77	6939.11	44.02	6939.05	54.92	6936.38	65.53	6936.38	72.11	6936.38
73.92	6936.38	89.52	6936.38	92.92	6936.38	103.83	6939.05	104.07	6939.11
104.19	6939.55	104.21	6940.91	105.19	6940.76	105.35	6940.74	105.47	6940.3
105.49	6940.22	109.33	6940.27	121.26	6943.46	124.17	6943.53	126.92	6943.52
130.05	6943.5	133.09	6943.49	136.04	6943.48	138.91	6943.46	141.7	6943.45
150	6943.42								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	44.02	.04	103.83	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	44.02	103.83		39.8	30.2	21.92	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	43.92	6945.81	F
104.02	150	6945.81	F

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 4000

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 456

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6944.51	.13	6944.51	.51	6944.49	.8	6944.47	1.01	6944.46
1.7	6944.43	1.81	6944.43	1.89	6944.42	2.47	6944.39	2.77	6944.38
2.88	6944.38	3.66	6944.34	3.83	6944.33	4.06	6944.32	4.54	6944.3
4.84	6944.28	5.24	6944.26	5.42	6944.25	5.85	6944.23	6.3	6944.21

Pr RAS Input Report.txt

6.42	6944.21	6.86	6944.19	7.19	6944.17	7.6	6944.15	7.87	6944.14
8.07	6944.13	8.79	6944.09	8.95	6944.09	9.44	6944.07	9.83	6944.05
9.89	6944.05	9.97	6944.04	10.72	6944.02	10.9	6944.01	11.15	6944
11.6	6943.99	11.91	6943.97	12.33	6943.96	12.48	6943.95	12.92	6943.93
13.36	6943.92	13.51	6943.91	13.93	6943.9	14.25	6943.89	14.69	6943.87
14.94	6943.86	15.13	6943.86	15.88	6943.83	15.95	6943.83	16.01	6943.82
16.41	6943.8	16.89	6943.78	16.96	6943.78	17.06	6943.77	17.78	6943.72
17.97	6943.7	18.24	6943.68	18.66	6943.65	18.98	6943.63	19.42	6943.59
19.54	6943.59	19.99	6943.55	20.42	6943.52	20.6	6943.51	21.01	6943.47
21.31	6943.45	21.78	6943.42	22.02	6943.4	22.19	6943.38	22.97	6943.25
23.03	6943.25	23.07	6943.24	23.38	6943.16	23.95	6943.02	24.04	6943
24.15	6942.97	24.84	6942.8	25.05	6942.74	25.33	6942.67	25.72	6942.58
26.06	6942.49	26.51	6942.38	26.6	6942.36	27.07	6942.24	27.48	6942.13
27.69	6942.08	28.08	6941.99	28.37	6941.91	28.87	6941.79	29.09	6941.73
29.25	6941.69	30.05	6941.49	30.1	6941.48	30.13	6941.47	30.36	6941.42
31.01	6941.25	31.11	6941.23	31.24	6941.2	31.9	6941.03	32.12	6940.98
32.42	6940.9	32.78	6940.81	33.13	6940.73	33.6	6940.61	33.66	6940.59
34.14	6940.47	34.54	6940.37	34.78	6940.31	35.15	6940.22	35.37	6940.16
35.43	6940.15	35.96	6940.02	36.16	6939.97	36.31	6939.93	37.14	6939.72
37.17	6939.72	37.19	6939.71	37.33	6939.68	38.07	6939.49	38.18	6939.46
38.33	6939.43	38.96	6939.27	39.19	6939.21	39.51	6939.13	39.84	6939.05
40.2	6938.96	40.69	6938.84	40.72	6938.83	41.21	6938.71	41.6	6938.61
41.87	6938.55	42.22	6938.46	42.49	6938.39	43.05	6938.25	43.23	6938.21
43.37	6938.17	44.23	6937.96	44.24	6937.95	44.25	6937.95	44.3	6937.94
45.13	6937.73	45.25	6937.7	45.42	6937.66	46.02	6937.51	46.26	6937.45
46.6	6937.37	46.9	6937.29	47.27	6937.2	47.78	6937.07	48.29	6936.95
48.66	6936.85	48.96	6936.78	49.3	6936.7	49.55	6936.63	50.14	6936.48
50.31	6936.44	50.43	6936.42	51.27	6936.29	51.31	6936.28	63.67	6936.28
64.32	6936.29	88.7	6936.29	89.13	6936.37	89.26	6936.38	89.71	6936.46
90.14	6936.56	90.32	6936.61	90.72	6936.71	91.02	6936.78	91.5	6936.9
91.73	6936.96	91.91	6937	92.68	6937.2	92.74	6937.21	92.79	6937.22
93.11	6937.3	93.67	6937.44	93.75	6937.46	93.86	6937.49	94.55	6937.66
94.76	6937.72	95.04	6937.79	95.44	6937.88	95.77	6937.97	96.22	6938.08
96.32	6938.1	96.78	6938.22	97.2	6938.32	97.41	6938.38	97.79	6938.47
98.08	6938.54	98.59	6938.67	98.8	6938.72	98.97	6938.76	99.77	6938.96
99.81	6938.98	99.85	6938.98	100.08	6939.04	100.73	6939.2	100.82	6939.23
100.95	6939.26	101.61	6939.43	101.84	6939.48	102.13	6939.55	102.5	6939.65
102.85	6939.73	103.31	6939.85	103.38	6939.87	103.86	6939.99	104.26	6940.09
104.5	6940.15	104.87	6940.24	105.14	6940.31	105.68	6940.44	105.88	6940.49
106.03	6940.53	106.86	6940.74	106.89	6940.74	106.91	6940.75	107.05	6940.78
107.79	6940.97	107.9	6940.99	108.04	6941.03	108.67	6941.19	108.91	6941.25
109.22	6941.33	109.56	6941.41	109.92	6941.5	110.4	6941.62	110.44	6941.63
110.82	6941.72	110.93	6941.75	111.32	6941.85	111.59	6941.92	111.94	6942
112.2	6942.07	112.77	6942.21	112.95	6942.26	113.09	6942.29	113.95	6942.51
113.96	6942.51	114.03	6942.52	114.85	6942.73	114.97	6942.76	115.13	6942.77
115.73	6942.82	115.98	6942.84	116.31	6942.83	118.67	6942.83	119.01	6942.82
121.03	6942.82	121.91	6942.81	123.68	6942.81	124.06	6942.8	124.56	6942.8
124.58	6942.81	125.07	6942.8	125.44	6942.8	125.76	6942.81	125.91	6942.8

Pr RAS Input Report.txt

126.67	6942.8	127.15	6942.79	128.21	6942.79	128.3	6942.78	129.27	6942.78
129.74	6942.77	130.52	6942.77	131.09	6942.76	131.55	6942.76	132.1	6942.75
132.45	6942.75	132.88	6942.74	133.67	6942.74	134.13	6942.73	134.8	6942.73
135.24	6942.72	136.02	6942.72	136.42	6942.71	137.17	6942.71	137.59	6942.7
138.38	6942.7	138.8	6942.69	139.67	6942.69	139.86	6942.68	140.92	6942.68
141.3	6942.67	141.98	6942.67	142.3	6942.66	143.24	6942.66	143.87	6942.65
144.09	6942.65	144.55	6942.64	145.44	6942.64	146.17	6942.63	146.28	6942.63
147.02	6942.62	147.8	6942.62	148.33	6942.61	148.59	6942.61	149.32	6942.6
150.16	6942.6	150.45	6942.59	151.05	6942.59	151.51	6942.58	152.51	6942.58
152.57	6942.57	152.67	6942.55	153.3	6942.51	153.62	6942.43	154.08	6942.32
154.3	6942.27	154.68	6942.18	154.87	6942.13	155.4	6942	155.65	6941.94
155.74	6941.92	155.92	6941.88	156.44	6941.75	156.8	6941.66	157.22	6941.56
157.55	6941.48	157.86	6941.41	158.01	6941.37	158.44	6941.27	158.79	6941.18
158.92	6941.15	159.18	6941.09	159.58	6940.99	159.98	6940.9	160.36	6940.8
160.8	6940.7	161.04	6940.64	161.15	6940.61	161.48	6940.53	161.94	6940.43
162.1	6940.39	162.43	6940.32	162.72	6940.25	163.15	6940.15	163.51	6940.07
164.05	6939.93	164.21	6939.9	164.29	6939.88	164.52	6939.82	165.08	6939.7
165.27	6939.66	165.68	6939.57	165.86	6939.53	166.33	6939.43	166.65	6939.36
167.3	6939.21	167.39	6939.2	167.43	6939.19	167.55	6939.16	168.22	6939.01
168.45	6938.96	168.93	6938.87	169	6938.84	169.51	6938.74	169.79	6938.72
170.55	6938.71	170.59	6938.71	171.36	6938.69	171.63	6938.68	172.14	6938.67
172.18	6938.67	172.68	6938.66	172.93	6938.65	173.63	6938.64	173.8	6938.64
174.5	6938.62	174.8	6938.61	175.28	6938.6	175.43	6938.6	175.86	6938.59
176.07	6938.59	176.67	6938.65	176.86	6938.66	176.92	6938.67	177.05	6938.7
177.64	6938.84	177.98	6938.92	178.43	6939.03	178.68	6939.09	179.04	6939.18
179.21	6939.23	179.71	6939.35	180	6939.42	180.1	6939.45	180.3	6939.5
180.78	6939.62	181.16	6939.71	181.57	6939.82	181.93	6939.91	182.21	6939.98
182.35	6940.01	182.75	6940.11	183.14	6940.21	183.27	6940.24	183.55	6940.31
183.92	6940.41	184.33	6940.51	184.71	6940.6	185.18	6940.72	185.39	6940.78
185.49	6940.8	185.79	6940.87	186.28	6941	186.45	6941.04	186.8	6941.13
187.06	6941.19	187.51	6941.31	187.85	6941.39	188.43	6941.54	188.57	6941.57
188.63	6941.59	188.83	6941.64	189.42	6941.79	189.63	6941.84	190.05	6941.95
190.2	6941.98	190.69	6942.1	190.99	6942.18	191.68	6942.35	191.74	6942.37
191.78	6942.38	191.86	6942.4	192.56	6942.57	192.8	6942.62	193.31	6942.63
193.35	6942.63	193.86	6942.64	194.13	6942.65	194.9	6942.66	194.93	6942.66
195.7	6942.68	195.98	6942.68	196.49	6942.69	196.56	6942.7	197.04	6942.71
197.27	6942.71	197.94	6942.73	198.18	6942.73	198.84	6942.74	199.16	6942.75
199.63	6942.76	199.81	6942.76	200.22	6942.77	200.41	6942.78	200.98	6942.79
201.2	6942.79	201.27	6942.8	201.43	6942.8	201.98	6942.81	202.33	6942.82
202.62	6942.82								

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.035	35.37	.035
		110.82	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	35.37	110.82		85.66	85.66		.1	.3
Ineffective Flow			num=	1				



Pr RAS Input Report.txt

Sta L Sta R Elev Permanent  
152.39 202.62 6942.6 T

CROSS SECTION

RIVER: UT\_BSC2  
REACH: NCONFL-BGM RS: 3900

INPUT

Description: Source: Revised Condition Topo  
Datum: NGVD29  
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		33					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6943.2	2.46	6943.22	33.41	6939.86	35.37	6939.67	36.6	6939.52
39.71	6939.33	45.47	6939.13	52.98	6938.93	58.14	6937.65	64.68	6936.04
71.55	6936.03	73.66	6936.03	79.41	6936.03	80.98	6936.03	83.75	6936.03
87.1	6936.03	90.85	6936.03	92.74	6936.02	103.06	6936.02	105.91	6936.73
107.03	6937.01	109.59	6937.64	112.81	6937.65	113.66	6937.66	114.33	6937.66
129.2	6937.61	148.46	6937.5	151.59	6937.21	153.38	6937.13	156.56	6937.91
171.58	6942.04	176.24	6942.19	190.37	6942.59				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.035	52.98	.035	156.56	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	52.98	156.56		35.1 50.3	65.88		.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
REACH: NCONFL-BGM RS: 3850

INPUT

Description: Source: Revised Condition Topo  
Datum: NGVD29  
Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6942.16	3.34	6941.79	16.12	6941.2	44.4	6939.51	45.87	6939.43
46.22	6939.41	47.38	6939.35	48.21	6939.3	56.35	6937.27	61.02	6936.11
61.91	6935.89	75.41	6935.88	79.35	6935.88	79.69	6935.88	80.96	6935.88
82.4	6935.88	82.99	6935.88	90.23	6935.88	100.05	6935.88	104.3	6936.94

Pr RAS Input Report.txt

105.69	6937.29	105.87	6937.35	108.18	6937.39	123.96	6937.2	133.88	6935.31
149.05	6939.25	156.89	6941.24	161.79	6941.36				

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	48.21	.035	149.05	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	48.21	149.05		37.4    50.43	64.11	.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 3800

INPUT

Description: Source: Revised Condition Topo  
 Datum: NGVD29  
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data                      num=                      26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6940.08	23.83	6938.59	26.75	6938.1	27.41	6938.02	31.79	6937.43
34.91	6936.64	39.02	6935.9	41.7	6935.42	43.32	6935.41	58.12	6935
58.22	6934.99	63.76	6934.44	64.69	6934.35	66.28	6934.68	67.06	6935
71.73	6935.38	75.33	6935.53	83.44	6937.16	88.43	6937.54	90.78	6938.12
90.82	6938.12	93.1	6937.56	107.51	6934.66	127	6938.71	132.8	6939.83
140	6940.13								

Manning's n Values                      num=                      3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	23.83	.035	132.8	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	23.83	132.8		105.51    105.75	101.97	.1	.3

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM                      RS: 3694

INPUT

Description: Source: Revised Condition Topo  
 Datum: NGVD29  
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Pr RAS Input Report.txt

Station Elevation Data		num=		72					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6940.88	.22	6940.88	.38	6940.88	1.74	6940.88	3.43	6940.88
5.58	6940.88	8.48	6940.89	12.64	6940.89	19.24	6940.9	25.41	6940.92
26.35	6940.89	28.07	6940.83	29.17	6940.8	33.34	6940.67	33.38	6940.67
34.69	6940.19	34.79	6940.16	35.87	6940.23	36.02	6940.24	43.86	6940.31
51.84	6940.38	53.01	6940.34	54.76	6940.29	67.57	6939.93	68.11	6939.88
68.8	6939.82	69.34	6940.01	70.19	6940.31	74.39	6940.35	75.42	6940.36
77.88	6940.39	78.04	6940.39	95.74	6941.4	97.19	6941.48	98.79	6941.54
102.02	6941.54	117.91	6940.64	148.27	6940.6	170.62	6940.45	189.38	6940.33
192.77	6940.15	194.41	6940.08	209.54	6939.46	212.94	6939.43	215.23	6939.41
216.13	6939.4	216.61	6939.4	218.04	6939.38	224.16	6939.37	224.8	6939.39
230.17	6939.34	283.17	6938.28	321.32	6932.99	329.85	6931.81	330.75	6931.92
335.9	6932.51	345.72	6933.69	350.66	6934.1	352.53	6934.05	367.38	6933.83
391.71	6933.51	405.62	6933.21	419.98	6935.82	438.03	6938.72	493.39	6940.01
515.83	6940.54	519.02	6940.59	553.64	6940.73	565.72	6940.78	567.7	6940.79
567.83	6940.79	580.54	6940.92						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.05	283.17	.035	438.03	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	283.17	438.03		94.09	94.09		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3600

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num=		17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6937.62	3.4	6937.62	12.79	6937.38	31.35	6936.43	41.1	6935.11
72.3	6930.64	72.71	6930.58	85.12	6931.53	99.12	6932.37	109.14	6933.33
125.17	6934.55	145.22	6931.88	153.89	6930.85	173.12	6935.35	181.06	6937.1
185.24	6937.26	194.98	6937.42						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.05	12.79	.035	181.06	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
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Pr RAS Input Report.txt

12.79 181.06 106.69 100.23 101.74 .1 .3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3500

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6935.09	15.01	6935.25	28.58	6934.15	35.27	6933.7	49.03	6931.78
74.87	6928.8	75.13	6928.82	88.97	6930.15	92.89	6930.24	97.98	6929.93
111.92	6929.62	120.37	6928.86	136.63	6932.23	146.26	6934.93	150	6934.42

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	15.01	.035	146.26	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	15.01	146.26		39.01	50.1	61.55	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3450

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6934.04	12.09	6933.79	12.83	6933.78	16.91	6933.02	34.95	6931.31
65.27	6928.75	75.11	6928.49	78.87	6928.39	88.93	6927.99	98.97	6930.78
107.19	6932.75	109.55	6932.86	114.68	6933.1	140.81	6933.36	150	6933.46

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	12.09	.035	109.55	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

Pr RAS Input Report.txt

12.09 109.55 73.26 100.11 126.77 .1 .3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3350

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6932.77	3.8	6932.72	5.77	6932.69	7.36	6932.6	35.04	6931.32
58.71	6927.57	67.53	6926.42	69.95	6926.44	73.15	6926.54	81.57	6926.79
98.39	6928.03	119.22	6929.56	143.64	6930.24	162.24	6930.68	169.23	6930.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	35.04	.035	162.24	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	35.04	162.24		69.29	50.21	21.13	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3300

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6931.17	1.46	6931.16	44.98	6930.18	48.76	6929.8	64.02	6925.77
69.23	6924.78	72.51	6924.96	73.78	6925.03	84.98	6925.91	105.49	6927.36
128.8	6929.31	141.49	6929.55	185.07	6931.08	185.49	6931.08	192	6931.06

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	44.98	.035	128.8	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

Pr RAS Input Report.txt

44.98 128.8 65.29 49.89 27.72 .1 .3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3250

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6929.55	4.97	6929.53	22.77	6929.02	50.59	6928.45	55.37	6927.16
70.4	6923.75	74.08	6924.06	77.53	6924.34	81.44	6924.74	88.07	6925.55
122.82	6929.1	123.27	6929.11	155.02	6929.73	171.66	6930.38	173.05	6930.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	50.59	.035	122.82	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	50.59	122.82		50.17 50.17	50.17		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3200

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.69	16.79	6928.61	37.89	6927.96	47.88	6927.46	61.58	6925.2
70.66	6923.44	75.17	6923.29	75.47	6923.28	79.54	6923.32	108.39	6927.73
109.33	6927.91	114.48	6928.1	140.39	6929.05	150	6929.31		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	47.88	.035	109.33	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.

Pr RAS Input Report.txt

47.88 109.33 50.08 50.08 50.08 .1 .3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3150

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6927.49	22.24	6926.88	45.77	6926.19	52.94	6924.92	62.61	6923.15
75.17	6923.39	82.58	6923.53	93.8	6923.61	101.67	6925.21	106.55	6926.24
133.38	6928.12	144.02	6928.52	150	6928.6				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	45.77	.035	106.55	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	45.77	106.55		40.98 49.96	61.22	.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM RS: 3100

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6928.05	38.05	6927.43	43.4	6927.16	93.94	6925.45	95.21	6925.41
96.15	6925.26	113.08	6921.99	125.32	6922.51	127.87	6922.54	149.07	6922.79
160.41	6924.83	162.73	6925.31	174.68	6926.23	189.47	6927.42	191.56	6927.56
191.58	6927.56	193.94	6927.59	200.66	6927.61				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	95.21	.035	162.73	.05

Pr RAS Input Report.txt

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
95.21	162.73	33.13	33.13	33.13		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3050

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 418

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-3.6	6927.2	-3.5	6927.2	-3.11	6927.18	-2.56	6927.15	-2.48	6927.15
-1.62	6927.1	-1.52	6927.1	-1.41	6927.09	-.68	6927.06	-.52	6927.05
-.34	6927.04	.26	6927.02	.48	6927.01	.73	6927	1.2	6926.99
1.48	6926.98	1.8	6926.97	2.14	6926.96	2.49	6926.95	2.88	6926.93
3.08	6926.92	3.49	6926.91	3.95	6926.9	4.02	6926.89	4.49	6926.88
4.96	6926.86	5.02	6926.86	5.34	6926.85	5.49	6926.84	5.93	6926.83
6.05	6926.83	6.49	6926.81	6.91	6926.8	7.07	6926.79	7.49	6926.78
7.89	6926.77	8.09	6926.76	8.49	6926.75	8.87	6926.73	9.11	6926.73
9.49	6926.71	9.85	6926.7	10.13	6926.69	10.49	6926.68	10.84	6926.67
11.15	6926.66	11.49	6926.65	11.82	6926.64	12.17	6926.62	12.49	6926.61
12.8	6926.6	13.19	6926.59	13.49	6926.58	13.78	6926.57	14.21	6926.56
14.49	6926.55	14.76	6926.54	15.23	6926.52	15.49	6926.52	15.75	6926.51
16.24	6926.49	16.49	6926.48	16.75	6926.47	17.24	6926.46	17.49	6926.45
17.75	6926.44	18.24	6926.43	18.49	6926.42	18.75	6926.41	19.24	6926.39
19.49	6926.39	19.75	6926.38	20.24	6926.36	20.49	6926.35	20.75	6926.34
21.24	6926.33	21.49	6926.32	21.63	6926.32	21.74	6926.31	22.26	6926.3
22.49	6926.29	22.71	6926.28	23.29	6926.26	23.49	6926.25	23.68	6926.25
24.32	6926.23	24.49	6926.22	24.65	6926.22	25.36	6926.19	25.49	6926.19
25.62	6926.18	26.39	6926.16	26.49	6926.15	26.59	6926.15	29.49	6926.06
29.5	6926.06	30.46	6926.02	30.53	6926.02	31.43	6925.99	31.57	6925.99
32.4	6925.96	32.5	6925.96	32.6	6925.95	33.37	6925.93	33.47	6925.92
33.5	6925.92	33.96	6925.91	34.12	6925.9	34.68	6925.88	34.85	6925.87
35.12	6925.86	35.57	6925.85	35.85	6925.84	36.3	6925.82	37.02	6925.79
37.04	6925.79	37.75	6925.75	38.21	6925.72	38.47	6925.71	38.86	6925.69
39.19	6925.67	39.42	6925.66	39.92	6925.63	41.36	6925.55	41.82	6925.53
42.08	6925.52	42.46	6925.49	42.8	6925.48	43.02	6925.46	43.52	6925.44
44.96	6925.36	45.43	6925.34	45.68	6925.32	46.06	6925.3	46.4	6925.28
46.63	6925.27	47.13	6925.24	48.57	6925.17	48.62	6925.17	49.04	6925.14
49.29	6925.12	49.66	6925.06	50.01	6925.01	50.24	6924.96	50.73	6924.85
52.17	6924.54	52.64	6924.44	52.89	6924.39	53.26	6924.31	53.61	6924.23
53.85	6924.18	54.33	6924.07	55.78	6923.76	56.25	6923.66	56.5	6923.61
56.86	6923.53	57.22	6923.45	57.46	6923.4	57.94	6923.3	59.38	6922.98



Pr RAS Input Report.txt

59.86	6922.89	60.1	6922.84	60.46	6922.77	60.82	6922.7	61.06	6922.65
61.54	6922.56	62.26	6922.42	62.27	6922.42	62.99	6922.28	63.47	6922.19
63.71	6922.14	64.06	6922.07	64.43	6922	64.67	6921.96	65.15	6921.86
65.86	6921.73	65.87	6921.73	65.87	6921.72	65.89	6921.72	66.59	6921.59
67.08	6921.49	67.31	6921.45	67.66	6921.42	68.03	6921.38	68.75	6921.38
69.46	6921.39	69.51	6921.39	70.19	6921.4	70.68	6921.4	70.92	6921.41
71.64	6921.41	71.89	6921.42	72.36	6921.42	73.06	6921.43	73.14	6921.43
73.8	6921.44	74.52	6921.44	74.86	6921.45	75.49	6921.45	75.96	6921.46
76.66	6921.46	76.68	6921.47	77.4	6921.47	77.9	6921.48	78.46	6921.48
78.85	6921.49	79.57	6921.49	80.26	6921.5	80.38	6921.5	81.01	6921.51
81.51	6921.51	81.73	6921.52	82.45	6921.52	82.71	6921.53	83.17	6921.53
83.86	6921.54	84.01	6921.54	84.61	6921.55	85.33	6921.55	85.66	6921.56
86.32	6921.56	86.78	6921.57	87.46	6921.58	88.22	6921.58	88.72	6921.59
89.26	6921.59	89.66	6921.6	90.38	6921.6	91.06	6921.61	91.25	6921.61
91.82	6921.62	92.33	6921.62	92.54	6921.63	93.26	6921.63	93.53	6921.64
93.99	6921.64	94.66	6921.65	94.87	6921.65	95.43	6921.66	95.94	6921.66
96.15	6921.67	96.46	6921.67	96.87	6921.68	97.14	6921.68	97.59	6921.7
98.26	6921.71	98.5	6921.71	99.03	6921.73	99.54	6921.74	99.75	6921.74
100.06	6921.75	100.47	6921.76	100.75	6921.77	101.19	6921.78	101.86	6921.8
101.95	6921.8	102.12	6921.81	102.64	6921.82	103.15	6921.83	103.36	6921.84
103.66	6921.85	104.08	6921.86	104.35	6921.89	104.8	6921.98	105.46	6922.1
105.52	6922.11	105.56	6922.12	105.74	6922.15	106.24	6922.23	106.67	6922.3
107.04	6922.37	107.34	6922.42	107.68	6922.47	107.96	6922.52	108.45	6922.6
108.68	6922.64	108.88	6922.67	109.55	6922.78	109.69	6922.81	109.8	6922.83
110.66	6922.97	110.69	6922.97	110.72	6922.98	111.04	6923.03	111.64	6923.13
111.69	6923.14	111.76	6923.15	112.56	6923.28	112.7	6923.31	112.86	6923.34
113.48	6923.44	113.7	6923.47	113.97	6923.52	114.4	6923.59	114.71	6923.64
115.07	6923.7	115.32	6923.74	115.71	6923.81	116.18	6923.89	116.24	6923.9
116.71	6923.98	117.16	6924.05	117.28	6924.07	117.72	6924.14	118.08	6924.2
118.38	6924.25	118.72	6924.31	119.01	6924.36	119.49	6924.44	119.73	6924.48
119.93	6924.51	120.59	6924.62	120.73	6924.64	120.85	6924.66	121.7	6924.77
121.73	6924.77	121.77	6924.78	122.12	6924.8	122.13	6924.8	122.69	6924.84
122.8	6924.84	123.61	6924.9	123.74	6924.91	123.9	6924.92	124.53	6924.96
124.75	6924.97	125.01	6924.99	125.45	6925.02	125.75	6925.04	126.11	6925.07
126.37	6925.08	126.75	6925.11	127.22	6925.14	127.29	6925.15	127.76	6925.18
128.21	6925.21	128.32	6925.21	128.76	6925.24	129.13	6925.27	129.42	6925.29
129.77	6925.31	130.05	6925.33	130.53	6925.36	130.77	6925.38	130.97	6925.39
131.63	6925.44	131.78	6925.44	131.89	6925.45	132.74	6925.51	132.81	6925.51
133.21	6925.54	133.74	6925.58	133.84	6925.58	134.66	6925.64	134.79	6925.65
134.94	6925.66	135.58	6925.7	135.79	6925.71	136.05	6925.73	136.5	6925.76
136.8	6925.78	137.15	6925.8	137.42	6925.82	137.8	6925.85	138.26	6925.88
138.34	6925.88	138.8	6925.91	139.26	6925.94	139.36	6925.95	139.81	6925.98
140.18	6926.01	140.46	6926.03	140.81	6926.05	141.1	6926.07	141.57	6926.1
141.82	6926.12	142.02	6926.13	142.67	6926.17	142.82	6926.18	142.94	6926.19
143.78	6926.25	143.86	6926.25	144.29	6926.28	144.78	6926.31	144.83	6926.32
144.88	6926.32	145.7	6926.38	145.83	6926.38	145.99	6926.39	146.62	6926.44
146.84	6926.45	147.09	6926.47	147.54	6926.5	147.84	6926.52	148.19	6926.54
148.47	6926.56	148.84	6926.59	149.3	6926.62	149.39	6926.62	149.85	6926.65

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150.31	6926.66	150.4	6926.67	150.85	6926.67	151.23	6926.68	151.51	6926.68
151.86	6926.69	152.15	6926.7	152.61	6926.7	152.86	6926.71	153.07	6926.71
153.71	6926.72	153.86	6926.72	153.99	6926.73	154.82	6926.74	154.91	6926.74
155.37	6926.75	155.83	6926.76	156.25	6926.76				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-3.6	.035	48.62	.035	122.13	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	48.62	122.13		75.27	75.27		.1	.3

CROSS SECTION

RIVER: UT\_BSC2

REACH: NCONFL-BGM

RS: 3000

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data		num= 492							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-86.1	6927.39	-84.34	6927.39	-83.81	6927.4	-81.57	6927.4	-81.28	6927.41
-79.24	6927.41	-78.91	6927.42	-76.57	6927.42	-76.18	6927.38	-75.97	6927.43
-75.57	6927.38	-69.57	6927.38	-69.1	6927.39	-69.04	6927.38	-68.57	6927.39
-68.12	6927.42	-68.02	6927.38	-67.57	6927.41	-67.14	6927.42	-67	6927.41
-66.57	6927.42	-65.98	6927.42	-65.57	6927.41	-64.2	6927.41	-63.94	6927.4
-62.57	6927.4	-62.23	6927.39	-60.88	6927.39	-60.57	6927.38	-59.29	6927.38
-58.84	6927.37	-57.82	6927.37	-57.57	6927.36	-56.57	6927.36	-56.35	6927.35
-55.37	6927.35	-54.76	6927.34	-53.74	6927.34	-53.57	6927.33	-52.43	6927.33
-50.68	6927.31	-49.57	6927.31	-49.48	6927.3	-48.5	6927.3	-46.6	6927.28
-45.56	6927.28	-45.06	6927.27	-44.56	6927.27	-42.62	6927.25	-41.64	6927.25
-41.57	6927.24	-40.65	6927.24	-40.57	6927.23	-39.67	6927.23	-39.57	6927.22
-38.69	6927.22	-38.57	6927.21	-37.71	6927.21	-37.57	6927.2	-36.73	6927.2
-36.57	6927.19	-35.75	6927.19	-35.57	6927.18	-34.77	6927.18	-34.57	6927.17
-33.79	6927.17	-33.57	6927.16	-32.81	6927.16	-32.57	6927.15	-31.83	6927.15
-31.57	6927.14	-30.85	6927.14	-30.57	6927.13	-29.87	6927.13	-29.57	6927.12
-28.88	6927.12	-28.57	6927.11	-27.9	6927.11	-27.57	6927.1	-26.92	6927.1
-26.57	6927.09	-25.94	6927.09	-25.57	6927.08	-24.96	6927.08	-24.57	6927.07
-23.98	6927.07	-23.57	6927.06	-23	6927.06	-22.57	6927.05	-22.02	6927.05
-21.57	6927.04	-21.04	6927.04	-20.57	6927.03	-20.06	6927.03	-19.57	6927.02
-19.06	6927.02	-18.57	6927.01	-18.04	6927.01	-17.57	6927	-17.01	6927
-16.57	6926.99	-15.99	6926.99	-15.57	6926.98	-14.97	6926.98	-14.57	6926.97
-13.95	6926.97	-13.56	6926.96	-12.93	6926.96	-12.56	6926.95	-11.91	6926.95
-11.56	6926.94	-10.89	6926.94	-10.56	6926.93	-9.87	6926.93	-9.56	6926.92

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-8.85	6926.92	-8.56	6926.91	-7.83	6926.91	-7.56	6926.9	-6.81	6926.9
-6.56	6926.89	-5.79	6926.89	-5.56	6926.88	-4.77	6926.88	-4.56	6926.87
-3.75	6926.87	-3.56	6926.86	-2.73	6926.86	-2.4	6926.85	2.37	6926.8
2.5	6926.79	3.39	6926.79	3.44	6926.78	4.44	6926.77	4.47	6926.76
5.43	6926.67	5.89	6926.62	6.31	6926.59	6.49	6926.6	7.02	6926.59
7.06	6926.58	7.6	6926.58	8.24	6926.57	8.56	6926.53	9.14	6926.48
9.82	6926.41	10.56	6926.35	12.03	6926.2	12.31	6926.18	13.39	6926.07
13.81	6926.04	14.25	6925.99	14.56	6925.97	15.36	6925.88	16.06	6925.83
17.52	6925.69	18.31	6925.62	19.06	6925.56	20.9	6925.4	22.01	6925.3
22.15	6925.28	22.81	6925.23	24.22	6925.1	25.06	6925.03	25.33	6925
26.12	6924.93	26.56	6924.9	26.79	6924.87	28.24	6924.75	30.3	6924.56
31.05	6924.5	31.43	6924.46	31.98	6924.42	34.2	6924.22	34.8	6924.17
36.41	6924.02	36.73	6924	37.34	6923.94	37.8	6923.9	38.63	6923.83
40.05	6923.7	42.3	6923.46	43.03	6923.39	43.8	6923.3	44.17	6923.27
45.22	6923.16	45.35	6923.14	46.05	6923.07	47.34	6922.93	47.5	6922.92
48.3	6922.83	49.05	6922.76	49.46	6922.71	49.99	6922.66	50.82	6922.55
51.3	6922.5	51.93	6922.41	52.8	6922.3	53.04	6922.26	54.3	6922.09
55.25	6921.95	56.55	6921.77	58.05	6921.57	58.58	6921.49	60.07	6921.29
60.8	6921.18	61.59	6921.08	61.9	6921.03	63.3	6920.84	64.12	6920.72
64.32	6920.71	64.8	6920.66	65.55	6920.64	66.22	6920.61	66.44	6920.61
67.05	6920.58	67.8	6920.56	69.3	6920.5	70.68	6920.46	71.55	6920.43
71.88	6920.43	72.8	6920.41	72.99	6920.4	73.8	6920.39	74.93	6920.36
75.3	6920.36	76.05	6920.48	78.53	6921.04	79.17	6921.19	80.14	6921.4
80.55	6921.5	82.05	6921.83	82.46	6921.93	82.8	6922	84.07	6922.29
85.54	6922.62	86.28	6922.79	87.1	6922.97	87.39	6923.04	88.05	6923.18
89.78	6923.57	90.3	6923.67	91.05	6923.83	91.8	6923.91	92.55	6923.92
93.23	6923.94	93.3	6923.94	95.55	6923.97	97.37	6924.01	97.8	6924.01
98.7	6924.03	99.58	6924.04	100.39	6924.06	100.69	6924.06	101.55	6924.08
102.3	6924.09	102.51	6924.1	103.34	6924.11	105.12	6924.14	107.34	6924.18
108.3	6924.2	110.29	6924.23	110.54	6924.24	111	6924.24	111.77	6924.26
112.04	6924.26	113.99	6924.3	114.93	6924.31	115.79	6924.33	117.37	6924.35
118.04	6924.37	119.57	6924.39	120.29	6924.41	120.64	6924.41	121.61	6924.43
122.54	6924.44	123.29	6924.46	123.96	6924.47	124.79	6924.48	125.54	6924.5
126.53	6924.51	127.29	6924.53	128.4	6924.55	128.85	6924.55	129.5	6924.57
130.04	6924.57	130.1	6924.58	130.61	6924.58	132.83	6924.62	133.04	6924.63
133.49	6924.63	133.79	6924.64	134.54	6924.65	135.29	6924.67	135.81	6924.67
136.47	6924.69	136.79	6924.69	138.13	6924.72	138.59	6924.72	139.48	6924.74
139.79	6924.74	140.45	6924.76	140.71	6924.76	141.69	6924.78	142.04	6924.78
142.77	6924.8	144.96	6924.83	145.09	6924.84	146.13	6924.85	147.08	6924.87
147.41	6924.87	148.35	6924.89	148.79	6924.89	149.68	6924.91	150.57	6924.92
151.43	6924.94	151.95	6924.94	152.8	6924.96	153.27	6924.96	153.92	6924.98
155.81	6925	156.49	6925.02	157.01	6925.02	157.75	6925.04	158.37	6925.04
159.25	6925.06	160.18	6925.07	161.03	6925.09	161.49	6925.09	162.24	6925.11
162.83	6925.11	165.57	6925.16	165.97	6925.16	166.72	6925.18	167.28	6925.18
169.51	6925.22	170.72	6925.23	183.51	6925.1	184.12	6925.1	184.52	6925.09
186.49	6925.07	187.47	6925.07	187.52	6925.06	188.52	6925.06	188.59	6925.05
189.52	6925.05	189.6	6925.04	190.52	6925.04	190.62	6925.03	191.52	6925.03
191.63	6925.02	192.52	6925.02	192.65	6925.01	193.52	6925.01	193.66	6925

Pr RAS Input Report.txt

194.68	6925	195.69	6924.99	196.71	6924.97	197.72	6924.97	200.29	6924.94
200.76	6924.94	201.28	6924.93	201.78	6924.93	202.26	6924.92	202.79	6924.92
203.25	6924.91	203.81	6924.91	204.23	6924.9	204.82	6924.9	205.22	6924.89
205.84	6924.89	206.2	6924.88	206.85	6924.88	207.19	6924.87	207.87	6924.87
208.18	6924.86	208.88	6924.86	209.16	6924.85	209.9	6924.85	210.15	6924.84
210.91	6924.84	211.13	6924.83	211.93	6924.83	212.12	6924.82	212.94	6924.82
213.1	6924.81	213.96	6924.81	214.09	6924.8	215.08	6924.8	215.52	6924.79
216.06	6924.79	216.52	6924.78	217.05	6924.78	218.02	6924.76	218.03	6924.77
219.02	6924.75	219.52	6924.75	220.52	6924.64	221.06	6924.54	221.52	6924.44
221.98	6924.36	222.96	6924.16	223.95	6923.97	224.52	6923.85	225.12	6923.74
226.13	6923.54	226.9	6923.38	227.15	6923.34	228.16	6923.13	229.52	6922.86
231.83	6922.41	233.52	6922.07	233.81	6922.02	234.52	6921.88	234.79	6921.82
235.52	6921.68	236.28	6921.76	236.53	6921.78	237.75	6922.1	239.32	6922.5
239.72	6922.61	240.71	6922.85	242.37	6923.24	243.38	6923.48	244.53	6923.74
246.43	6924.19	247.44	6924.41	247.61	6924.43	248.46	6924.45	248.59	6924.46
249.58	6924.48	253.15	6924.59	253.53	6924.6	257.46	6924.72	258.45	6924.74
258.6	6924.75	259.43	6924.77	267.32	6925.01	267.53	6925.01	268.31	6925.04
268.53	6925.04	269.29	6925.07	269.53	6925.07	270.28	6925.1	270.53	6925.1
271.26	6925.13	271.53	6925.13	272.25	6925.16	272.53	6925.16	273.24	6925.19
273.53	6925.19	274.22	6925.22	274.53	6925.22	275.21	6925.25	275.86	6925.26
276.19	6925.28	276.87	6925.3	277.18	6925.3	277.53	6925.32	278.16	6925.33
278.53	6925.35	279.15	6925.36	279.53	6925.38	280.14	6925.39	280.53	6925.41
281.12	6925.42	281.53	6925.44	282.11	6925.45	282.53	6925.47	283.09	6925.48
284.08	6925.52	284.53	6925.53	287.53	6925.65	288.03	6925.66	289.99	6925.74
291.08	6925.78	292.09	6925.81	292.95	6925.85	294.53	6925.9	295.14	6925.93
295.91	6925.96	296.15	6925.96	296.53	6925.98	297.16	6926	297.53	6926.02
298.86	6926.06	299.19	6926.08	300.21	6926.11	300.53	6926.13	301.82	6926.17
302.24	6926.19	303.34	6926.23						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-86.1	.035	37.34	.035	93.23	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	37.34	93.23		92.31	92.31		.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
176.3	303.34	6925.25	F

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 2900

INPUT  
 Description: Source: Revised Condition Topo  
 Datum: NGVD29

Pr RAS Input Report.txt

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6925.25	.28	6925.24	.56	6925.24	.94	6925.23	1.31	6925.23
2.34	6925.21	2.61	6925.21	3.37	6925.2	3.44	6925.19	3.75	6925.19
4.27	6925.18	4.59	6925.18	5.93	6925.15	6.45	6925.15	7.28	6925.13
7.6	6925.13	8.43	6925.11	9.26	6925.1	9.53	6925.1	10.09	6925.09
10.92	6925.07	11.3	6925.07	11.76	6925.06	12.65	6925.05	13.42	6925.03
13.99	6925.03	14.66	6925.01	15.08	6925.01	15.33	6925	15.69	6925
15.91	6924.99	16.67	6924.98	17.75	6924.97	18.41	6924.95	18.77	6924.95
19.8	6924.93	20.07	6924.93	20.83	6924.92	20.9	6924.91	21.23	6924.91
21.74	6924.9	21.85	6924.89	22.88	6924.83	23.39	6924.79	24.23	6924.74
24.73	6924.7	25.6	6924.65	26.73	6924.58	26.99	6924.56	27.42	6924.54
28.02	6924.5	28.76	6924.46	30.1	6924.37	30.89	6924.33	31.1	6924.31
31.72	6924.27	32.13	6924.25	32.55	6924.22	33.15	6924.19	33.38	6924.17
34.13	6924.13	34.34	6924.11	35.21	6924.06	35.47	6924.04	36.24	6924
37.26	6923.93	37.54	6923.92	38.16	6923.88	39.2	6923.82	40.03	6923.76
40.34	6923.75	40.85	6923.71	41.37	6923.68	41.7	6923.61	41.82	6923.58
42.53	6923.42	43.08	6923.3	43.36	6923.23	43.53	6923.2	44.45	6922.99
44.87	6922.9	45.02	6922.86	45.86	6922.68	46.51	6922.53	47.45	6922.32
47.56	6922.3	48.56	6922.07	49.18	6921.94	49.59	6921.84	50.62	6921.62
50.85	6921.56	51.82	6921.35	52.51	6921.19	53.7	6920.93	54.17	6920.82
55	6920.64	56.19	6920.37	56.67	6920.27	56.78	6920.24	58.3	6919.9
58.33	6919.9	58.83	6919.79	59.64	6919.62	59.99	6919.54	60.57	6919.42
60.83	6919.36	60.99	6919.35	61.66	6919.34	63.97	6919.34	64.15	6919.35
66.65	6919.35	67.05	6919.34	73.68	6919.34	74.13	6919.33	80.4	6919.33
80.79	6919.32	81.43	6919.32	81.62	6919.33	82.47	6919.36	83.28	6919.48
83.49	6919.5	83.81	6919.55	85.16	6919.74	85.78	6919.82	86.5	6919.93
86.57	6919.93	86.79	6919.97	87.44	6920.06	87.84	6920.11	88.27	6920.17
89.65	6920.37	90.68	6920.51	91.87	6920.68	92.43	6920.75	92.73	6920.8
93.21	6920.86	94.09	6920.99	94.56	6921.03	94.78	6921.07	94.93	6921.08
95.53	6921.15	96.59	6921.26	97.87	6921.4	98.58	6921.45	98.89	6921.48
99	6921.48	99.08	6921.48	100.75	6921.52	101.27	6921.54	101.58	6921.54
102.41	6921.56	103	6921.58	103.24	6921.58	104.27	6921.61	105.06	6921.62
105.3	6921.63	106.08	6921.65	107.11	6921.67	107.4	6921.68	107.98	6921.69
108.23	6921.7	109.06	6921.72	109.33	6921.73	109.9	6921.74	110.19	6921.75
111.22	6921.77	112.39	6921.8	113.01	6921.81	114.05	6921.84	114.3	6921.84
114.89	6921.86	115.72	6921.88	116.04	6921.88	116.55	6921.9	118.21	6921.94
118.41	6921.94	119.05	6921.96	119.44	6921.96	119.88	6921.97	120.46	6921.99
120.71	6921.99	121.75	6922.02	122.37	6922.03	123.55	6922.06	124.1	6922.07
124.57	6922.09	124.87	6922.09	125.44	6922.11	125.7	6922.11	126.53	6922.13
126.78	6922.14	127.36	6922.15	127.65	6922.16	128.68	6922.18	129.86	6922.21
130.49	6922.23	130.81	6922.23	131.76	6922.26	132.15	6922.26	132.35	6922.27
133.5	6922.3	133.82	6922.3	134.02	6922.31	135.68	6922.35	135.87	6922.35
136.51	6922.37	137.34	6922.39	137.53	6922.39	138.17	6922.41	138.87	6922.42
138.95	6922.43	139.23	6922.43	139.84	6922.45	140.21	6922.45	140.67	6922.47
141.01	6922.47	141.5	6922.49	142.03	6922.5	142.33	6922.5	142.9	6922.52

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143.16	6922.52	144	6922.54	144.24	6922.55	144.83	6922.56	145.12	6922.57
146.14	6922.59	147.32	6922.62	148.27	6922.65	148.99	6922.66	149.61	6922.68
149.82	6922.68	150.65	6922.7	151.28	6922.72	151.48	6922.72	153.14	6922.76
153.33	6922.76	153.98	6922.78	154.81	6922.8	154.98	6922.8	156.32	6922.84
156.71	6922.84	157.3	6922.86	158.47	6922.89	159.5	6922.91	159.8	6922.92
160.35	6922.93	160.63	6922.94	161.46	6922.96	161.7	6922.96	162.29	6922.98
162.58	6922.98	163.04	6922.99	163.13	6923	164.79	6923.04	165.62	6923.05
165.66	6923.06	166.45	6923.07	167.07	6923.09	167.28	6923.09	168.12	6923.11
168.74	6923.13	168.95	6923.13	170.61	6923.17	170.8	6923.18	171.1	6923.18
172.27	6923.21	172.85	6923.23	173.11	6923.23	174.19	6923.26	174.77	6923.27
175.93	6923.3	176.96	6923.32	177.81	6923.34	178.1	6923.35	178.93	6923.37
179.15	6923.37	179.76	6923.39	180.04	6923.39	180.5	6923.41	181.07	6923.42
181.84	6923.44	182.25	6923.45	182.93	6923.46	183.09	6923.47	183.37	6923.47
184.03	6923.49	184.22	6923.5	185.04	6923.52	185.21	6923.53	186.05	6923.55
186.21	6923.56	187.06	6923.58	187.2	6923.59	188.06	6923.61	188.19	6923.62
189.07	6923.64	189.18	6923.65	190.18	6923.67	191.09	6923.7	192.16	6923.71
194.11	6923.69	195.14	6923.69	196.12	6923.68	196.68	6923.68	197.12	6923.67
198.14	6923.67	199.11	6923.66	200.15	6923.66	202.09	6923.64	203.18	6923.64
205.06	6923.62	206.2	6923.62	208.04	6923.6	209.22	6923.6	210.03	6923.59
211.02	6923.59	211.13	6923.58	212.24	6923.58	213	6923.57	214	6923.57
214.13	6923.56	215.27	6923.56	215.98	6923.55	217.13	6923.55	217.28	6923.54
218.29	6923.54	218.96	6923.53	220.13	6923.53	220.31	6923.52	221.31	6923.52
221.94	6923.51	223.13	6923.51	223.33	6923.5	224.34	6923.5	224.91	6923.49
226.35	6923.49	226.9	6923.48	227.89	6923.48	228.13	6923.47	229.37	6923.47
229.88	6923.46	230.87	6923.46	231.13	6923.45	232.4	6923.45	232.85	6923.44
233.85	6923.44	234.13	6923.43	235.42	6923.43	235.83	6923.42	237.13	6923.42
237.43	6923.41	238.44	6923.41	238.81	6923.4	240.13	6923.4	240.46	6923.39
241.13	6923.39	241.79	6923.27	242.13	6923.2	242.78	6923.08	243.48	6922.96
243.77	6922.9	244.13	6922.84	245.49	6922.58	245.76	6922.54	246.75	6922.35
247.51	6922.21	248.52	6922.03	249.13	6921.91	249.52	6921.84	249.73	6921.81
250.13	6921.73	251.71	6921.46	252.13	6921.38	252.7	6921.28	253.55	6921.14
254.13	6921.04	255.57	6920.78	255.68	6920.77	257.13	6920.51	257.58	6920.59
257.67	6920.62	258.13	6920.7	259.6	6921.14	259.65	6921.15	261.13	6921.58
261.61	6921.73	261.64	6921.73	262.13	6921.88	262.63	6922.02	263.62	6922.32
264.13	6922.46	264.61	6922.61	264.64	6922.61	265.13	6922.76	266.13	6923.05
266.65	6923.21	267.13	6923.34	268.12	6923.64	268.67	6923.8	269.58	6924.06
270.57	6924.35	270.68	6924.39	271.56	6924.65	271.69	6924.68	272.55	6924.94
273.12	6925.1	273.55	6925.23	273.71	6925.27	274.12	6925.4	274.54	6925.52
275.53	6925.81	275.72	6925.87	276.12	6925.98	276.52	6926.12	276.73	6926.16
277.12	6926.29	277.52	6926.44	277.74	6926.46	278.12	6926.6	278.51	6926.61
278.74	6926.57	279.12	6926.57	279.75	6926.54	280.12	6926.51	280.76	6926.48
281.48	6926.44	281.77	6926.42	282.48	6926.38	282.77	6926.36	284.46	6926.26
284.79	6926.25	288.12	6926.05	288.43	6926.04	288.82	6926.01	289.12	6926
290.42	6925.91	290.83	6925.89	292.4	6925.78	292.85	6925.76	294.12	6925.67
294.39	6925.66	294.86	6925.62	295.12	6925.61	295.87	6925.56	296.12	6925.54
296.37	6925.53	296.88	6925.49	297.89	6925.43	298.12	6925.41	298.36	6925.4
298.89	6925.36	299.35	6925.33	299.9	6925.3	301.33	6925.2	301.92	6925.17
302.92	6925.1	303.32	6925.08	303.93	6925.04	304.12	6925.02	305.3	6924.95

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305.95	6924.9	307.29	6924.82	307.96	6924.77	308.97	6924.71	310.12	6924.63
310.27	6924.63	311.12	6924.57	311.26	6924.57	311.99	6924.54	312.25	6924.54
313	6924.52	313.24	6924.51	314.01	6924.49	314.24	6924.48	315.02	6924.5
315.23	6924.49	316.02	6924.53	316.22	6924.53	317.03	6924.56	317.21	6924.56
318.04	6924.6	318.21	6924.6	319.05	6924.63	319.2	6924.64	320.05	6924.67
320.19	6924.68	321.06	6924.71	321.18	6924.72	322.07	6924.75	322.18	6924.76
323.08	6924.8	323.32	6924.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	41.82	.035	99	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

41.82	99	110.37	99.71	68.37	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
190.81	323.32	6923.73	F

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 2800

INPUT

Description: Source: Revised Condition Topo  
 Datum: NGVD29  
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6922.59	.13	6922.59	.93	6922.57	1.04	6922.57	1.94	6922.55
2.07	6922.54	2.84	6922.52	3.2	6922.52	3.74	6922.5	4.34	6922.49
4.65	6922.48	5.48	6922.46	5.82	6922.45	6.45	6922.44	6.62	6922.43
7.35	6922.42	7.53	6922.41	7.75	6922.41	8.26	6922.4	9.16	6922.37
9.54	6922.37	10.55	6922.33	11.56	6922.28	11.87	6922.27	12.3	6922.25
12.56	6922.23	12.77	6922.23	13.44	6922.19	17.28	6922.02	17.99	6921.98
18.19	6921.98	18.6	6921.96	19.09	6921.93	19.61	6921.91	19.99	6921.89
20.26	6921.88	20.62	6921.86	21.4	6921.83	21.8	6921.81	22.54	6921.78
23.32	6921.74	23.6	6921.73	23.68	6921.72	24.51	6921.69	24.81	6921.67
25.41	6921.64	25.95	6921.62	26.31	6921.6	26.66	6921.59	27.09	6921.57
27.21	6921.56	28.12	6921.52	28.23	6921.51	28.67	6921.49	29.02	6921.48
29.36	6921.46	29.92	6921.44	30.5	6921.41	30.82	6921.39	31.64	6921.36
31.73	6921.35	32.07	6921.34	32.78	6921.3	33.53	6921.27	33.91	6921.25
34.71	6921.22	35.05	6921.2	35.34	6921.19	35.71	6921.17	36.72	6921.13
37.73	6921.08	38.05	6921.07	39.6	6921	40.74	6920.95	40.82	6920.95
41.87	6920.9	43.46	6920.83	43.77	6920.82	44.77	6920.77	45.78	6920.73
46.42	6920.7	46.79	6920.69	47.07	6920.67	47.79	6920.64	47.98	6920.63

Pr RAS Input Report.txt

48.7	6920.6	48.88	6920.59	49.84	6920.55	50.68	6920.51	51.59	6920.48
51.82	6920.47	52.11	6920.45	52.49	6920.44	52.82	6920.42	53.25	6920.4
53.39	6920.4	53.83	6920.38	54.29	6920.32	54.38	6920.29	54.84	6920.23
54.97	6920.19	55.2	6920.13	55.52	6920.05	55.84	6919.96	57	6919.65
57.91	6919.4	58.93	6919.13	59.71	6918.92	59.87	6918.87	60.07	6918.82
60.61	6918.67	61.21	6918.51	61.52	6918.43	61.88	6918.33	62.35	6918.21
62.89	6918.06	63.48	6917.91	63.9	6917.8	64.22	6917.71	64.9	6917.54
65.91	6917.28	66.03	6917.26	66.9	6917.18	67.08	6917.18	67.84	6917.19
68.03	6917.19	68.74	6917.21	69.17	6917.21	69.64	6917.22	69.94	6917.23
70.31	6917.23	70.54	6917.24	70.94	6917.24	71.95	6917.26	72.35	6917.26
72.58	6917.27	72.96	6917.27	73.25	6917.28	73.72	6917.29	74.15	6917.29
74.86	6917.31	75.06	6917.31	75.83	6917.32	75.99	6917.32	76.23	6917.33
76.86	6917.34	77.13	6917.34	77.76	6917.35	77.99	6917.36	78.27	6917.36
78.67	6917.37	78.99	6917.37	79.41	6917.38	79.57	6917.38	80.47	6917.4
81.01	6917.41	81.68	6917.52	82.01	6917.58	82.28	6917.62	82.82	6917.72
83.02	6917.76	83.18	6917.78	83.95	6917.92	84.08	6917.95	84.58	6918.03
85.09	6918.13	86.23	6918.33	86.79	6918.43	87.05	6918.48	87.37	6918.53
88.05	6918.66	88.5	6918.74	88.6	6918.75	89.06	6918.84	89.5	6918.91
89.64	6918.94	90.4	6919.08	90.78	6919.14	91.07	6919.2	91.31	6919.24
92.08	6919.38	92.21	6919.4	93.33	6919.6	94.19	6919.75	94.92	6919.88
95.1	6919.92	95.82	6920.05	96.47	6920.16	96.72	6920.21	97.11	6920.28
97.6	6920.33	97.62	6920.34	98.12	6920.4	98.3	6920.4	98.53	6920.41
98.74	6920.42	99.12	6920.42	99.88	6920.44	100.13	6920.45	100.33	6920.45
101.01	6920.47	101.24	6920.48	103.04	6920.52	103.29	6920.52	103.94	6920.54
104.16	6920.55	104.43	6920.55	105.56	6920.58	105.75	6920.58	106.17	6920.59
106.65	6920.61	107.18	6920.62	107.55	6920.63	107.84	6920.63	108.46	6920.65
108.98	6920.66	109.19	6920.67	109.36	6920.67	110.11	6920.69	110.26	6920.69
110.83	6920.71	111.2	6920.71	111.25	6920.72	112.07	6920.74	112.39	6920.74
112.97	6920.76	113.22	6920.76	114.22	6920.79	114.78	6920.8	115.68	6920.82
115.8	6920.83	116.24	6920.84	116.58	6920.84	117.24	6920.86	117.48	6920.87
118.07	6920.88	118.25	6920.88	118.39	6920.89	119.59	6920.92	120.19	6920.93
120.35	6920.93	121.09	6920.95	121.27	6920.96	121.49	6920.96	122	6920.97
122.9	6921	123.28	6921	123.76	6921.02	124.71	6921.04	124.9	6921.04
125.61	6921.06	126.04	6921.07	126.3	6921.08	126.51	6921.08	127.17	6921.1
127.41	6921.1	128.31	6921.13	129.22	6921.15	129.45	6921.15	130.12	6921.17
130.33	6921.17	130.59	6921.18	131.02	6921.19	131.72	6921.21	131.93	6921.21
132.86	6921.23	133.35	6921.25	133.73	6921.26	134	6921.26	134.63	6921.28
135.13	6921.29	135.36	6921.29	135.54	6921.3	136.27	6921.32	136.44	6921.32
137.09	6921.34	137.41	6921.34	138.25	6921.36	138.38	6921.37	138.55	6921.37
139.15	6921.39	139.39	6921.39	140.39	6921.42	140.95	6921.43	141.86	6921.45
142.4	6921.46	143.41	6921.49	143.66	6921.49	144.23	6921.51	144.56	6921.51
145.4	6921.54	145.6	6921.54	146.33	6921.56	146.59	6921.56	147.21	6921.57
147.78	6921.59	148.09	6921.59	148.46	6921.6	149.47	6921.62	150.48	6921.65
150.72	6921.65	151.35	6921.66	151.6	6921.67	152.3	6921.68	152.54	6921.69
153.36	6921.71	153.73	6921.71	154.24	6921.73	154.53	6921.73	154.93	6921.74
155.11	6921.74	155.99	6921.76	156.12	6921.77	156.55	6921.77	157.31	6921.79
157.56	6921.8	157.75	6921.8	158.5	6921.82	159.51	6921.84	159.69	6921.84
160.39	6921.86	160.6	6921.86	161.26	6921.88	161.61	6921.88	162.62	6921.9



Pr RAS Input Report.txt

163.02	6921.91	163.63	6921.93	163.9	6921.93	164.46	6921.94	164.78	6921.95
166.54	6921.99	166.84	6921.99	167.41	6922.01	167.68	6922.01	168.03	6922.02
168.29	6922.02	168.69	6922.03	169.7	6922.05	170.71	6922.08	170.93	6922.08
171.6	6922.1	171.84	6922.1	172.6	6922.11	172.83	6922.12	173.61	6922.13
173.72	6922.14	174.61	6922.15	174.83	6922.16	175.61	6922.17	175.72	6922.18
176.72	6922.19	176.83	6922.2	177.72	6922.21	177.83	6922.22	178.72	6922.23
178.82	6922.24	179.61	6922.25	179.82	6922.25	180.62	6922.27	180.82	6922.27
181.62	6922.29	182.82	6922.29	183.62	6922.28	184.81	6922.28	185.62	6922.27
185.81	6922.27	186.63	6922.26	187.81	6922.26	188.63	6922.25	188.81	6922.25
189.63	6922.24	190.8	6922.24	191.63	6922.23	191.8	6922.23	192.64	6922.22
193.8	6922.22	194.64	6922.21	195.64	6922.21	195.72	6922.2	196.79	6922.2
197.64	6922.19	203.78	6922.19	204.66	6922.18	218.75	6922.18	219.68	6922.17
234.73	6922.17	235.71	6922.16	238.72	6922.16	239.72	6922.11	240.71	6921.95
241.71	6921.79	241.72	6921.79	242.71	6921.63	242.72	6921.63	243.71	6921.46
243.72	6921.46	244.71	6921.3	244.72	6921.3	245.71	6921.14	245.72	6921.13
246.7	6920.97	246.72	6920.97	247.7	6920.81	247.72	6920.8	248.7	6920.64
248.73	6920.64	249.7	6920.48	249.73	6920.48	250.7	6920.32	250.73	6920.31
251.7	6920.15	251.73	6920.15	252.69	6919.99	252.73	6919.99	253.69	6920.4
253.73	6920.42	254.74	6920.85	255.69	6921.26	255.74	6921.28	256.69	6921.69
256.74	6921.72	257.69	6922.13	257.74	6922.15	258.68	6922.56	258.74	6922.58
259.68	6922.99	259.74	6923.02	260.68	6923.42	261.75	6923.88	262.68	6924.29
263.67	6924.72	263.75	6924.75	264.67	6925.15	264.75	6925.18	265.67	6925.55
266.67	6925.92	266.76	6925.96	267.67	6926.3	267.76	6926.33	268.67	6926.67
268.76	6926.7	269.66	6927.04	269.76	6927.08	270.66	6927.41	270.76	6927.45
271.66	6927.78	271.76	6927.82	272.66	6928.16	274.77	6928.94	275.65	6929.27
275.77	6929.32	276.65	6929.65	276.77	6929.69	277.65	6930.02	277.77	6930.06
278.65	6930.39	278.77	6930.44	279.65	6930.76	280.64	6931.13	280.78	6931.17
281.64	6931.38	281.78	6931.39	282.64	6931.38	283.78	6931.37	284.64	6931.35
285.64	6931.34	286.63	6931.33	286.79	6931.33	287.63	6931.31	287.79	6931.31
288.63	6931.3	288.79	6931.3	289.63	6931.29	289.79	6931.28	290.63	6931.27
290.79	6931.27	291.63	6931.26	291.8	6931.26	292.71	6931.25	292.8	6931.24
293.62	6931.23	293.8	6931.23	294.62	6931.22	294.8	6931.22	295.62	6931.21
295.8	6931.2	296.62	6931.19	296.8	6931.19	297.62	6931.18	297.81	6931.18
298.61	6931.17	298.72	6931.16						

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
0	.05	54.97	.035
		98.3	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	54.97	98.3		142.81	150.39	.1	.3
Ineffective Flow			num= 1				
Sta L	Sta R	Elev	Permanent				
181.3	298.72	6922.41	F				

CROSS SECTION

Pr RAS Input Report.txt

RIVER: UT\_BSC2  
REACH: NCONFL-BGM

RS: 2650

INPUT

Description: Source: Revised Condition Topo

Datum: NGVD29

Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 492

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-7.75	6919.41	-7.13	6919.41	-5.94	6919.37	-3.02	6919.28	-2.05	6919.26
-1.18	6919.23	-.1	6919.2	.76	6919.17	2.94	6919.11	3.97	6919.07
4.76	6919.05	6.03	6919.01	6.7	6918.98	7.67	6918.95	7.88	6918.95
9.13	6918.9	9.62	6918.89	10.88	6918.85	11.19	6918.83	12.22	6918.8
12.53	6918.78	12.88	6918.77	13.88	6918.72	14.28	6918.71	15.31	6918.66
15.44	6918.66	16.35	6918.62	17.38	6918.58	17.39	6918.59	18.36	6918.55
18.88	6918.54	19.33	6918.52	19.88	6918.51	20.3	6918.49	20.88	6918.48
21.27	6918.46	21.5	6918.46	21.88	6918.44	22.53	6918.43	22.88	6918.41
24.89	6918.35	25.16	6918.35	25.89	6918.32	26.13	6918.32	26.89	6918.29
27.1	6918.29	29.75	6918.21	30.78	6918.17	30.99	6918.17	31.81	6918.14
31.96	6918.14	36.82	6917.99	36.97	6917.99	38	6917.95	40.7	6917.87
40.89	6917.87	41.67	6917.84	41.89	6917.84	42.64	6917.81	42.89	6917.81
43.89	6917.77	44.19	6917.77	44.89	6917.74	46.89	6917.68	47.5	6917.65
47.89	6917.62	48.18	6917.56	48.31	6917.54	48.47	6917.5	48.89	6917.42
49.89	6917.22	50.37	6917.12	50.42	6917.1	51.4	6916.89	52.36	6916.68
53.33	6916.45	53.9	6916.33	54.3	6916.23	54.9	6916.1	55.53	6915.95
55.9	6915.87	57.22	6915.57	57.59	6915.48	58.19	6915.35	60.13	6914.91
61.1	6914.68	61.71	6914.55	62.07	6914.46	62.9	6914.28	64.02	6914.13
64.81	6914.08	64.99	6914.06	65.96	6913.99	66.87	6913.93	66.93	6913.92
67.9	6913.89	68.87	6913.85	69.84	6913.82	69.96	6913.81	70.73	6913.78
70.99	6913.78	72.76	6913.71	72.9	6913.71	73.73	6913.92	74.09	6914
74.7	6914.16	75.12	6914.26	75.9	6914.46	76.9	6914.7	78.21	6915.03
78.91	6915.2	79.24	6915.29	79.91	6915.45	80.53	6915.61	80.91	6915.7
82.34	6916.06	83.37	6916.31	84.4	6916.58	84.42	6916.58	85.39	6916.84
85.43	6916.86	85.91	6916.99	87.33	6917.4	87.91	6917.56	88.3	6917.68
88.91	6917.85	89.27	6917.94	89.55	6917.98	89.91	6918.06	90.07	6918.06
90.24	6918.07	91.22	6918.07	91.62	6918.08	92.65	6918.08	92.91	6918.09
94.13	6918.09	94.71	6918.1	95.74	6918.11	97.04	6918.11	98.83	6918.13
99.91	6918.13	99.96	6918.14	100.93	6918.14	101.93	6918.16	103.84	6918.18
103.99	6918.19	106.05	6918.21	106.76	6918.22	107.73	6918.24	108.7	6918.25
109.15	6918.25	110.18	6918.27	110.64	6918.27	111.61	6918.29	112.24	6918.29
114.53	6918.33	114.92	6918.33	115.33	6918.34	115.92	6918.34	116.92	6918.36
117.44	6918.36	118.41	6918.38	118.92	6918.38	119.92	6918.4	120.49	6918.4
121.33	6918.42	121.92	6918.42	122.92	6918.44	123.58	6918.44	124.92	6918.46
125.21	6918.47	125.64	6918.47	126.67	6918.49	127.16	6918.49	127.92	6918.5
128.13	6918.51	128.74	6918.51	128.92	6918.52	130.07	6918.53	131.83	6918.55
131.92	6918.56	133.96	6918.58	135.9	6918.61	137.84	6918.63	137.93	6918.64
140.08	6918.66	140.93	6918.67	141.11	6918.68	141.73	6918.69	142.14	6918.69

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142.7	6918.7	143.17	6918.7	144.2	6918.72	144.64	6918.72	146.27	6918.75
146.93	6918.75	147.93	6918.77	148.33	6918.77	148.53	6918.78	148.93	6918.78
149.36	6918.79	149.93	6918.79	150.93	6918.81	152.45	6918.81	152.93	6918.8
153.93	6918.8	154.36	6918.79	154.93	6918.79	155.33	6918.78	156.3	6918.78
156.58	6918.77	157.27	6918.77	157.61	6918.76	158.24	6918.76	158.64	6918.75
159.67	6918.75	159.94	6918.74	160.7	6918.74	160.94	6918.73	161.94	6918.73
162.13	6918.72	163.1	6918.72	167.92	6918.67	168.95	6918.67	174.76	6918.61
175.73	6918.61	175.94	6918.6	176.94	6918.6	177.2	6918.59	177.94	6918.59
178.23	6918.58	179.26	6918.58	179.61	6918.57	180.29	6918.57	180.59	6918.56
181.56	6918.56	181.94	6918.55	182.53	6918.55	182.94	6918.54	183.5	6918.54
183.94	6918.53	184.94	6918.53	185.44	6918.52	185.95	6918.52	186.41	6918.51
186.95	6918.51	187.39	6918.5	188.36	6918.5	188.54	6918.49	189.57	6918.49
189.95	6918.48	190.6	6918.48	190.95	6918.47	191.63	6918.47	191.95	6918.46
192.95	6918.46	193.21	6918.45	194.19	6918.45	194.73	6918.44	195.16	6918.44
196.79	6918.42	198.85	6918.4	199.88	6918.4	199.95	6918.39	200.99	6918.39
202.15	6918.38	205.84	6918.34	206.81	6918.34	206.95	6918.33	207.95	6918.33
208.13	6918.32	209.16	6918.32	209.73	6918.31	210.19	6918.31	210.7	6918.3
212.26	6918.3	212.96	6918.28	213.97	6918.16	214.03	6918.16	215.06	6918.04
215.61	6917.99	216.37	6917.9	218.78	6917.64	221.95	6917.3	222.44	6917.24
222.69	6917.22	223.54	6917.13	224.55	6917.2	225.61	6917.31	225.85	6917.33
226.71	6917.42	227.43	6917.5	228.22	6917.58	229.01	6917.67	229.83	6917.75
229.87	6917.76	230.88	6917.86	231.93	6917.99	232.17	6918.01	233.75	6918.21
234.63	6918.31	235.33	6918.4	236.21	6918.5	236.91	6918.53	238.26	6918.58
238.49	6918.58	239.18	6918.61	239.38	6918.61	240.37	6918.65	241.42	6918.67
242.34	6918.68	242.55	6918.69	243.53	6918.7	244.59	6918.72	244.81	6918.72
245.49	6918.74	246.39	6918.75	246.7	6918.76	247.18	6918.76	247.3	6918.77
247.75	6918.77	247.97	6918.78	249.55	6918.8	249.86	6918.81	250.91	6918.83
251.79	6918.84	252.06	6918.85	253.02	6918.86	254.08	6918.89	254.94	6918.9
255.23	6918.91	257.24	6918.95	257.45	6918.96	258.09	6918.97	259.82	6919.01
260.61	6919.02	261.25	6919.04	262.19	6919.05	263.57	6919.08	263.77	6919.09
265.36	6919.12	266.15	6919.14	266.94	6919.15	267.55	6919.17	267.9	6919.17
268.52	6919.19	269.31	6919.2	269.89	6919.22	270.7	6919.23	272.47	6919.27
273.85	6919.29	274.84	6919.31	275.17	6919.31	277	6919.34	277.21	6919.35
278.33	6919.36	280.16	6919.39	281.49	6919.42	281.95	6919.42	282.16	6919.43
282.55	6919.43	283.31	6919.45	283.75	6919.45	285.11	6919.48	286.46	6919.5
287.48	6919.52	287.82	6919.52	289.61	6919.55	290.98	6919.58	291.43	6919.58
292.22	6919.6	292.76	6919.6	293.8	6919.62	294.59	6919.64	294.84	6919.64
296.42	6919.67	296.96	6919.67	297.75	6919.69	299.07	6919.71	299.42	6919.72
300.47	6919.73	301.53	6919.76	302.58	6919.78	302.76	6919.79	304.07	6919.82
304.69	6919.84	305.74	6919.86	305.93	6919.87	307.23	6919.9	307.52	6919.9
308.02	6919.92	308.81	6919.94	309.1	6919.94	309.6	6919.96	309.96	6919.96
311.67	6920.01	312.27	6920.02	315.23	6920.09	317.02	6920.14	317.34	6920.14
318.61	6920.18	319.87	6920.21	322.61	6920.28	323.03	6920.3	323.36	6920.3
323.82	6920.32	324.72	6920.34	324.95	6920.35	326.98	6920.4	328.11	6920.43
328.56	6920.45	333.3	6920.57	333.73	6920.59	334.09	6920.59	334.88	6920.62
339.62	6920.74	340.04	6920.76	340.79	6920.78	345.94	6920.91	346.34	6920.93
351.47	6921.06	351.88	6921.08	356.21	6921.19	357	6921.23	357.41	6921.24
358.46	6921.29	358.58	6921.29	359.52	6921.34	360.16	6921.36	360.95	6921.4

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361.74	6921.43	362.97	6921.49	363.33	6921.5	364.12	6921.54	364.56	6921.55
365.25	6921.59	365.7	6921.6	366.49	6921.64	367.28	6921.66	367.95	6921.69
368.4	6921.7	368.86	6921.72	369.65	6921.74	370.06	6921.76	370.9	6921.79
372.02	6921.82	372.17	6921.83	373.23	6921.86	373.6	6921.88	374.71	6921.91
375.18	6921.93	375.65	6921.94	375.97	6921.96	376.76	6921.98	377.44	6922.01
377.86	6922.02	379.13	6922.06	379.55	6922.08	380.71	6922.11	381.01	6922.13
381.5	6922.14	382.29	6922.17	383.08	6922.19	383.77	6922.22	384.66	6922.25
385.45	6922.27	385.88	6922.29	387.31	6922.34	387.82	6922.35	389.04	6922.4
389.91	6922.42	391.77	6922.49	392.56	6922.51	394.14	6922.57	394.93	6922.59
395.37	6922.61	396.77	6922.66	397.3	6922.67	398.09	6922.7	398.53	6922.71
398.88	6922.73	399.42	6922.74	401.25	6922.81	402.04	6922.83	403.62	6922.89
404.17	6922.9	404.86	6922.93	405.99	6922.97	406.22	6922.97	407.57	6923.02
408.02	6923.03	408.97	6923.06						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-7.75	.05	48.18	.035	90.07	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

48.18	90.07	44.76	44.76	44.76	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
150.92	408.97	6918.86	F

CROSS SECTION

RIVER: UT\_BSC2  
 REACH: NCONFL-BGM RS: 2605

INPUT

Description: Source: 2003 LOMR Hec-2 Output  
 Datum: NGVD29  
 Coordinate System:

NAVD88 Colorado State Planes Central, US Feet.

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	6920	90.01	6918	100.01	6916.2	108.01	6918	115.01	6918.2
127.01	6918	138.01	6917.5	150.01	6918	182.01	6918	190.01	6917.6
200.01	6918	222.01	6918.4	242.01	6918	258.01	6914	270.01	6916
305.01	6918	325	6919.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.05	90.01	.035	305.01	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

90.01	305.01	0	0	0	.1	.3
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Pr RAS Input Report.txt

SUMMARY OF MANNING'S N VALUES

River:UT\_BSC2

Reach	River Sta.	n1	n2	n3
NCONFL-BGM	5100	.05	.035	.05
NCONFL-BGM	5000	.05	.035	.05
NCONFL-BGM	4900	.05	.035	.05
NCONFL-BGM	4850	.05	.035	.05
NCONFL-BGM	4750	.05	.035	.05
NCONFL-BGM	4650	.05	.035	.05
NCONFL-BGM	4600	.05	.035	.05
NCONFL-BGM	4550	.05	.035	.05
NCONFL-BGM	4500	.05	.035	.05
NCONFL-BGM	4400	.035	.035	.035
NCONFL-BGM	4300	.035	.035	.035
NCONFL-BGM	4280	.035	.035	.035
NCONFL-BGM	4250	.035	.035	.035
NCONFL-BGM	4240	.035	.035	.035
NCONFL-BGM	4200	.035	.035	.035
NCONFL-BGM	4175	.035	.035	.035
NCONFL-BGM	4150	.035	.013	.035
NCONFL-BGM	4073	Culvert		
NCONFL-BGM	4040	.035	.013	.035
NCONFL-BGM	4030	.035	.04	.035
NCONFL-BGM	4000	.035	.035	.035
NCONFL-BGM	3900	.035	.035	.035
NCONFL-BGM	3850	.035	.035	.035
NCONFL-BGM	3800	.05	.035	.05
NCONFL-BGM	3694	.05	.035	.05
NCONFL-BGM	3600	.05	.035	.05
NCONFL-BGM	3500	.05	.035	.05
NCONFL-BGM	3450	.05	.035	.05
NCONFL-BGM	3350	.05	.035	.05
NCONFL-BGM	3300	.05	.035	.05
NCONFL-BGM	3250	.05	.035	.05
NCONFL-BGM	3200	.05	.035	.05
NCONFL-BGM	3150	.05	.035	.05
NCONFL-BGM	3100	.05	.035	.05
NCONFL-BGM	3050	.035	.035	.035
NCONFL-BGM	3000	.035	.035	.035
NCONFL-BGM	2900	.05	.035	.05
NCONFL-BGM	2800	.05	.035	.05
NCONFL-BGM	2650	.05	.035	.05

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NCONFL-BGM 2605 .05 .035 .05

SUMMARY OF REACH LENGTHS

River: UT\_BSC2

Reach	River Sta.	Left	Channel	Right
NCONFL-BGM	5100	123.64	123.64	123.64
NCONFL-BGM	5000	106.14	100.12	95.6
NCONFL-BGM	4900	67.95	50.29	29.23
NCONFL-BGM	4850	100.34	100.34	100.34
NCONFL-BGM	4750	100.72	100.72	100.72
NCONFL-BGM	4650	17.95	48.25	87.43
NCONFL-BGM	4600	48.37	48.37	48.37
NCONFL-BGM	4550	60.1	60.1	60.1
NCONFL-BGM	4500	88.02	91.85	94.75
NCONFL-BGM	4400	117.95	112.69	105.12
NCONFL-BGM	4300	6.2	14.98	23.62
NCONFL-BGM	4280	19	19	19
NCONFL-BGM	4250	15.35	15.35	15.35
NCONFL-BGM	4240	46.77	46.77	46.77
NCONFL-BGM	4200	13.79	13.79	13.79
NCONFL-BGM	4175	15.93	15.93	15.93
NCONFL-BGM	4150	125.43	125.43	125.43
NCONFL-BGM	4073	Culvert		
NCONFL-BGM	4040	8.99	8.99	8.99
NCONFL-BGM	4030	39.8	30.2	21.92
NCONFL-BGM	4000	85.66	85.66	85.66
NCONFL-BGM	3900	35.1	50.3	65.88
NCONFL-BGM	3850	37.4	50.43	64.11
NCONFL-BGM	3800	105.51	105.75	101.97
NCONFL-BGM	3694	94.09	94.09	94.09
NCONFL-BGM	3600	106.69	100.23	101.74
NCONFL-BGM	3500	39.01	50.1	61.55
NCONFL-BGM	3450	73.26	100.11	126.77
NCONFL-BGM	3350	69.29	50.21	21.13
NCONFL-BGM	3300	65.29	49.89	27.72
NCONFL-BGM	3250	50.17	50.17	50.17
NCONFL-BGM	3200	50.08	50.08	50.08
NCONFL-BGM	3150	40.98	49.96	61.22
NCONFL-BGM	3100	33.13	33.13	33.13
NCONFL-BGM	3050	75.27	75.27	75.27
NCONFL-BGM	3000	92.31	92.31	92.31
NCONFL-BGM	2900	110.37	99.71	68.37

		Pr RAS Input Report.txt		
NCONFL-BGM	2800	142.81	150.39	167.75
NCONFL-BGM	2650	44.76	44.76	44.76
NCONFL-BGM	2605	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
River: UT\_BSC2

Reach	River Sta.	Contr.	Expan.
NCONFL-BGM	5100	.1	.3
NCONFL-BGM	5000	.1	.3
NCONFL-BGM	4900	.1	.3
NCONFL-BGM	4850	.1	.3
NCONFL-BGM	4750	.1	.3
NCONFL-BGM	4650	.1	.3
NCONFL-BGM	4600	.1	.3
NCONFL-BGM	4550	.1	.3
NCONFL-BGM	4500	.1	.3
NCONFL-BGM	4400	.1	.3
NCONFL-BGM	4300	.1	.3
NCONFL-BGM	4280	.1	.3
NCONFL-BGM	4250	.1	.3
NCONFL-BGM	4240	.1	.3
NCONFL-BGM	4200	.1	.3
NCONFL-BGM	4175	.3	.5
NCONFL-BGM	4150	.3	.5
NCONFL-BGM	4073	Culvert	
NCONFL-BGM	4040	.3	.5
NCONFL-BGM	4030	.3	.5
NCONFL-BGM	4000	.1	.3
NCONFL-BGM	3900	.1	.3
NCONFL-BGM	3850	.1	.3
NCONFL-BGM	3800	.1	.3
NCONFL-BGM	3694	.1	.3
NCONFL-BGM	3600	.1	.3
NCONFL-BGM	3500	.1	.3
NCONFL-BGM	3450	.1	.3
NCONFL-BGM	3350	.1	.3
NCONFL-BGM	3300	.1	.3
NCONFL-BGM	3250	.1	.3
NCONFL-BGM	3200	.1	.3
NCONFL-BGM	3150	.1	.3
NCONFL-BGM	3100	.1	.3
NCONFL-BGM	3050	.1	.3

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NCONFL-BGM	3000	.1	.3
NCONFL-BGM	2900	.1	.3
NCONFL-BGM	2800	.1	.3
NCONFL-BGM	2650	.1	.3
NCONFL-BGM	2605	.1	.3

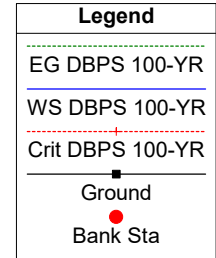
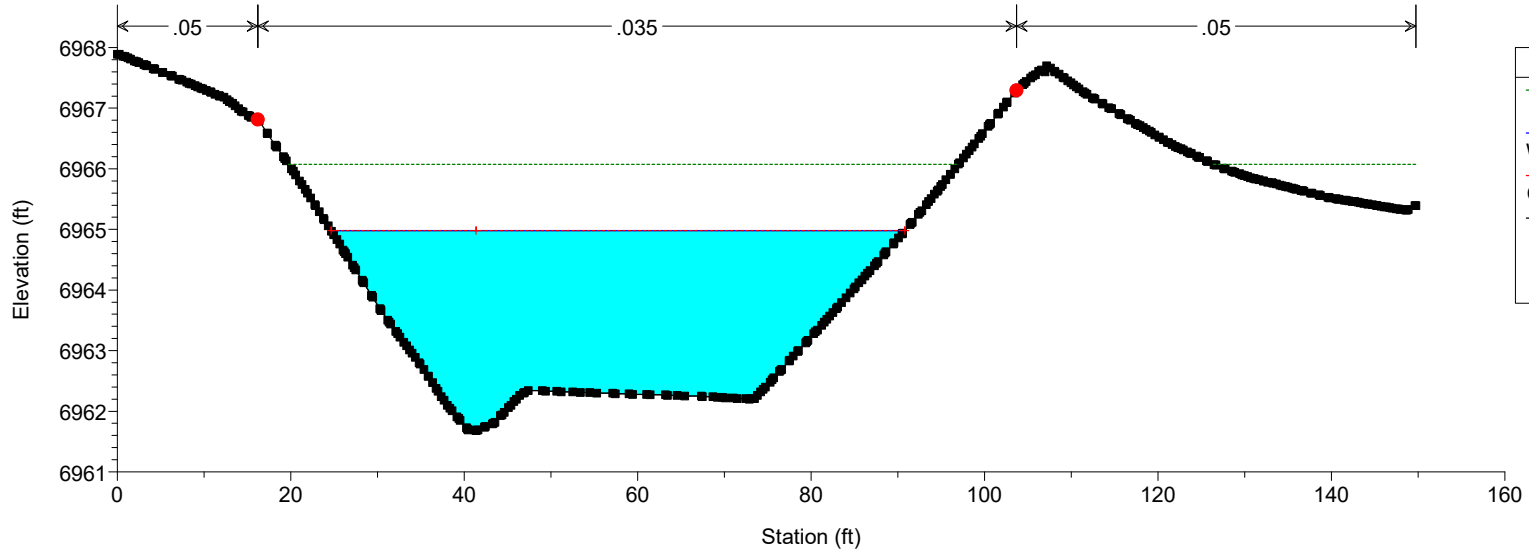


**Revised Condition**

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Shear Chan	Shear Total	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(lb/sq ft)	(lb/sq ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NCONFL-BGM	5100	FEMA 100-YR	1450	6961.68	6965.31	2.01	2.01	6965.31	6966.5	0.013647	8.78	165.23	69.52	1
NCONFL-BGM	5000	FEMA 100-YR	1450	6959.57	6963.33	2.06	1.83	6963.33	6964.58	0.013151	8.98	161.83	71.6	0.99
NCONFL-BGM	4900	FEMA 100-YR	1450	6956.08	6960.79	1.96	1.96	6960.79	6961.95	0.013751	8.63	167.98	72.94	1
NCONFL-BGM	4850	FEMA 100-YR	1450	6954.44	6959.58	2.04	1.58	6959.58	6960.85	0.011886	9.09	164.84	76.61	0.96
NCONFL-BGM	4750	FEMA 100-YR	1450	6952.25	6957.61	1.75	1.09	6957.61	6958.68	0.009513	8.52	197.2	106.64	0.87
NCONFL-BGM	4650	FEMA 100-YR	1450	6950.54	6955.7	2.04	1.21	6955.7	6956.99	0.009615	9.4	181.5	89.06	0.89
NCONFL-BGM	4600	FEMA 100-YR	1450	6949.23	6954.15	2.1	1.54	6954.15	6955.5	0.011109	9.36	162.85	72.45	0.94
NCONFL-BGM	4550	FEMA 100-YR	1450	6947.92	6954.09	0.94	0.6		6954.69	0.003918	6.5	263.6	106.84	0.58
NCONFL-BGM	4500	FEMA 100-YR	1450	6947.9	6952.81	2.23	1.89	6952.81	6954.22	0.012699	9.54	153.3	63.23	0.99
NCONFL-BGM	4400	FEMA 100-YR	1450	6945	6949.06	2.11	1.96	6948.98	6950.42	0.011344	9.35	156.84	67.53	0.95
NCONFL-BGM	4300	FEMA 100-YR	1450	6944.71	6948.34	1.4	1.33	6947.85	6949.24	0.007601	7.63	191.51	215.39	0.78
NCONFL-BGM	4280	FEMA 100-YR	1450	6944.64	6947.8	2.08	2.08	6947.8	6949.06	0.013478	9.01	161	203.94	1
NCONFL-BGM	4250	FEMA 100-YR	1450	6940.08	6943.2	2.11	1.9	6943.2	6944.52	0.012253	9.25	159.4	100.87	0.98
NCONFL-BGM	4240	FEMA 100-YR	1450	6937.01	6943.72	0.18	0.09		6943.85	0.000547	3.03	580.63	209.57	0.23
NCONFL-BGM	4200	FEMA 100-YR	1450	6936.87	6943.62	0.24	0.24		6943.81	0.00068	3.55	408.05	208.21	0.26
NCONFL-BGM	4175	FEMA 100-YR	1450	6936.83	6943.42	0.44	0.44		6943.78	0.001083	4.85	299.02	186.78	0.34
NCONFL-BGM	4150	FEMA 100-YR	1450	6936.78	6943.35	0.07	0.05	6940.09	6943.76	0.000168	5.17	285.54	154.16	0.36
NCONFL-BGM	4073		Culvert											
NCONFL-BGM	4040	FEMA 100-YR	1450	6936.4	6940.05	0.29	0.27	6939.74	6941.47	0.001263	9.57	153.28	42.55	0.89
NCONFL-BGM	4030	FEMA 100-YR	1450	6936.38	6940.36	1.44	1.44	6939.5	6941.1	0.006694	6.94	209.04	68.93	0.66
NCONFL-BGM	4000	FEMA 100-YR	1450	6936.28	6939.58	1.86	1.86	6939.45	6940.73	0.011507	8.58	168.98	79.52	0.93
NCONFL-BGM	3900	FEMA 100-YR	1450	6936.02	6939.36	0.85	0.73		6939.87	0.005632	5.72	258.04	122.62	0.65
NCONFL-BGM	3850	FEMA 100-YR	1450	6935.31	6938.84	1.15	1.15		6939.51	0.008202	6.58	220.49	97.4	0.77
NCONFL-BGM	3800	FEMA 100-YR	1450	6934.35	6937.95	1.76	1.76	6937.95	6938.94	0.014759	7.95	182.42	94.05	1.01
NCONFL-BGM	3694	FEMA 100-YR	1482	6931.81	6935.53	1.28	1.28	6935.35	6936.24	0.010872	6.76	219.11	115.41	0.87
NCONFL-BGM	3600	FEMA 100-YR	1482	6930.58	6934.13	1.66	1.66	6934.13	6935.02	0.015245	7.59	195.35	111.22	1.01
NCONFL-BGM	3500	FEMA 100-YR	1482	6928.8	6933.06	0.72	0.72		6933.51	0.004225	5.39	274.81	99.75	0.57
NCONFL-BGM	3450	FEMA 100-YR	1482	6927.99	6931.95	1.95	1.95	6931.95	6933.09	0.01378	8.59	172.56	75.61	1
NCONFL-BGM	3350	FEMA 100-YR	1482	6926.42	6930.26	1.7	1.7	6930.26	6931.2	0.014757	7.76	190.87	102.92	1.01
NCONFL-BGM	3300	FEMA 100-YR	1482	6924.78	6929.52	1.37	1.21	6929.14	6930.36	0.00868	7.34	202.85	89.96	0.81
NCONFL-BGM	3250	FEMA 100-YR	1482	6923.75	6928.66	1.9	1.67	6928.57	6929.81	0.012179	8.63	172.72	77.97	0.96
NCONFL-BGM	3200	FEMA 100-YR	1482	6923.28	6927.88	2.09	1.86	6927.88	6929.18	0.012816	9.12	164	69.79	0.99
NCONFL-BGM	3150	FEMA 100-YR	1482	6923.15	6926.8	1.97	1.41	6926.8	6928.02	0.011701	8.89	173.92	89.73	0.95
NCONFL-BGM	3100	FEMA 100-YR	1482	6921.99	6925.66	1.92	1.65	6925.61	6926.83	0.012306	8.68	172.24	79.63	0.96
NCONFL-BGM	3050	FEMA 100-YR	1482	6921.38	6925.94	0.75	0.55		6926.44	0.003459	5.7	271.11	106.11	0.54
NCONFL-BGM	3000	FEMA 100-YR	1482	6920.36	6925.04	1.59	0.84	6925.04	6926	0.008551	8.14	210.53	210.44	0.83
NCONFL-BGM	2900	FEMA 100-YR	1482	6919.32	6923.09	1.82	1.11	6923.09	6924.14	0.010417	8.61	210.14	146.5	0.9
NCONFL-BGM	2800	FEMA 100-YR	1482	6917.18	6921.88	1.68	0.77	6921.88	6922.91	0.007634	8.58	227.48	156.9	0.8
NCONFL-BGM	2650	FEMA 100-YR	1482	6913.71	6919.22	1.21	0.4	6919.22	6919.89	0.005223	7.34	334.61	270.62	0.67
NCONFL-BGM	2605	FEMA 100-YR	1482	6914	6918.85	0.72	0.63	6918.58	6919.21	0.008288	4.82	321.29	262.7	0.72

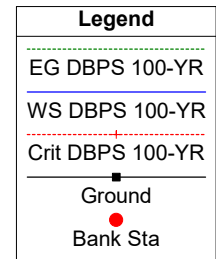
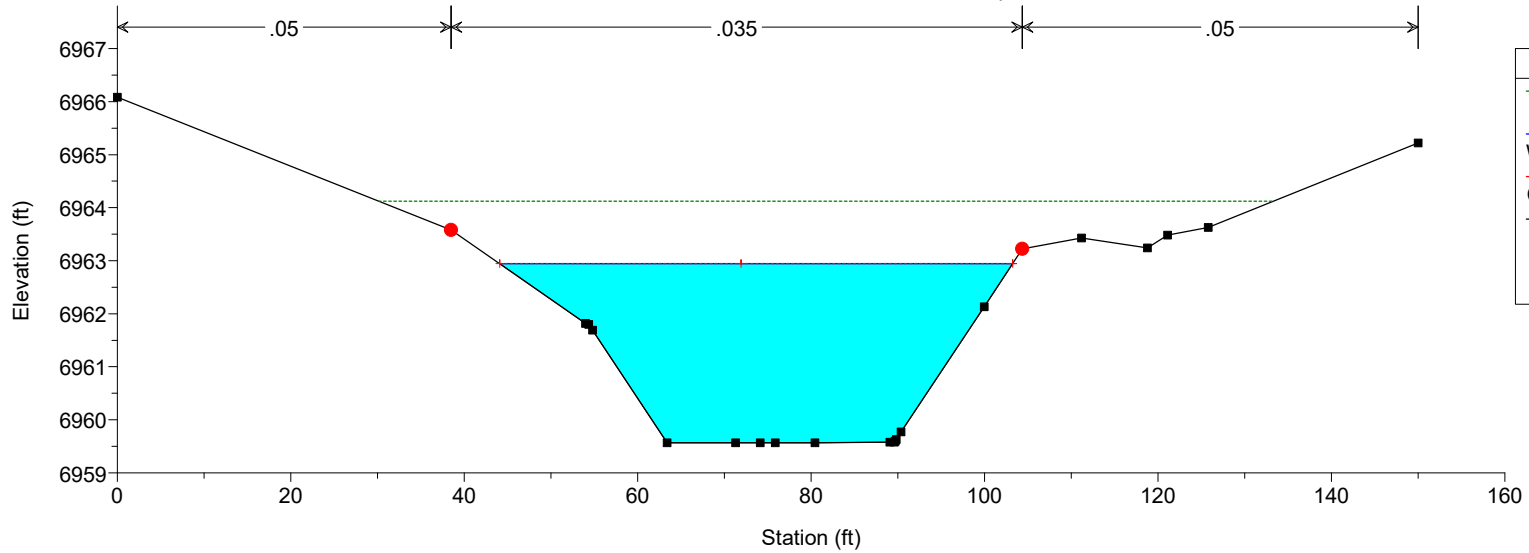
# HEC-RAS Model Plan: RC 2/4/2020

Source: Revised Condition Topo



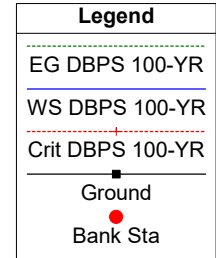
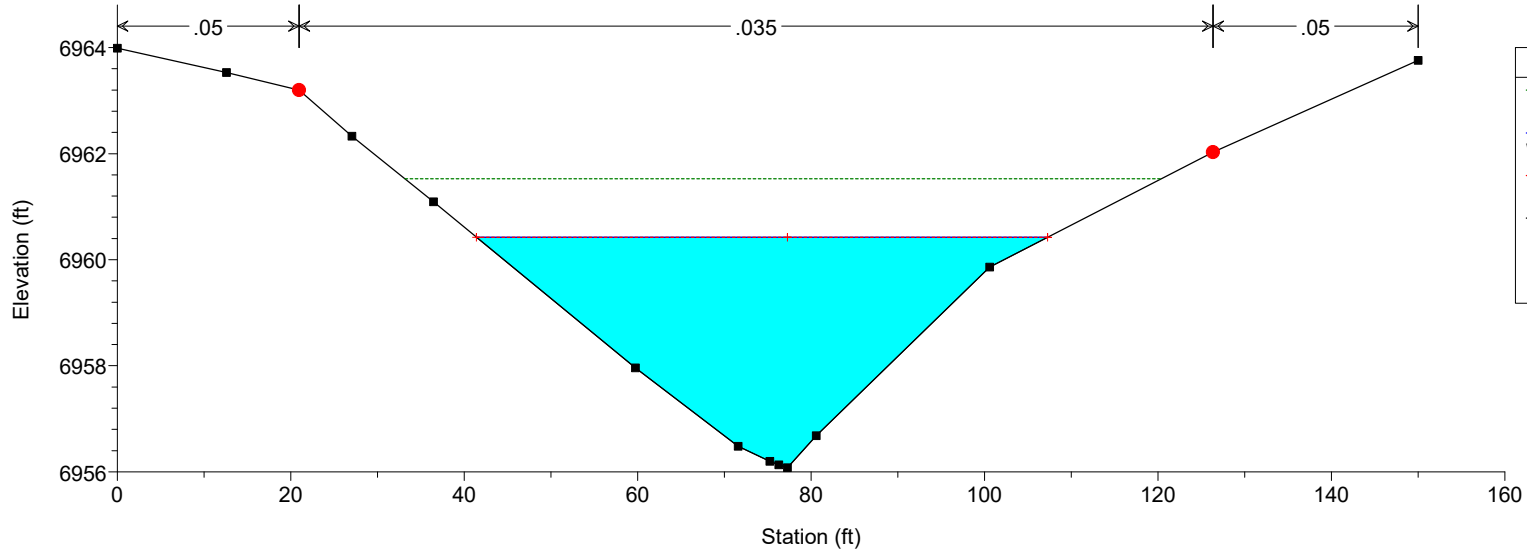
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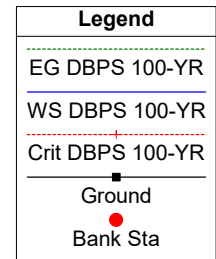
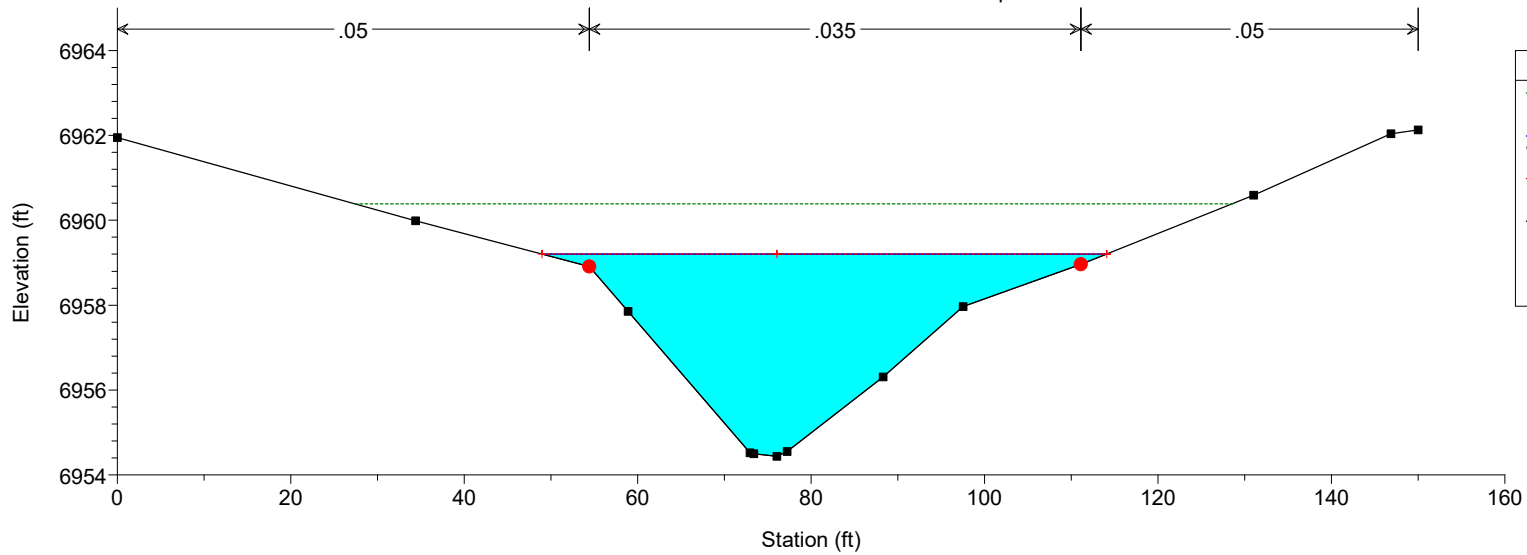
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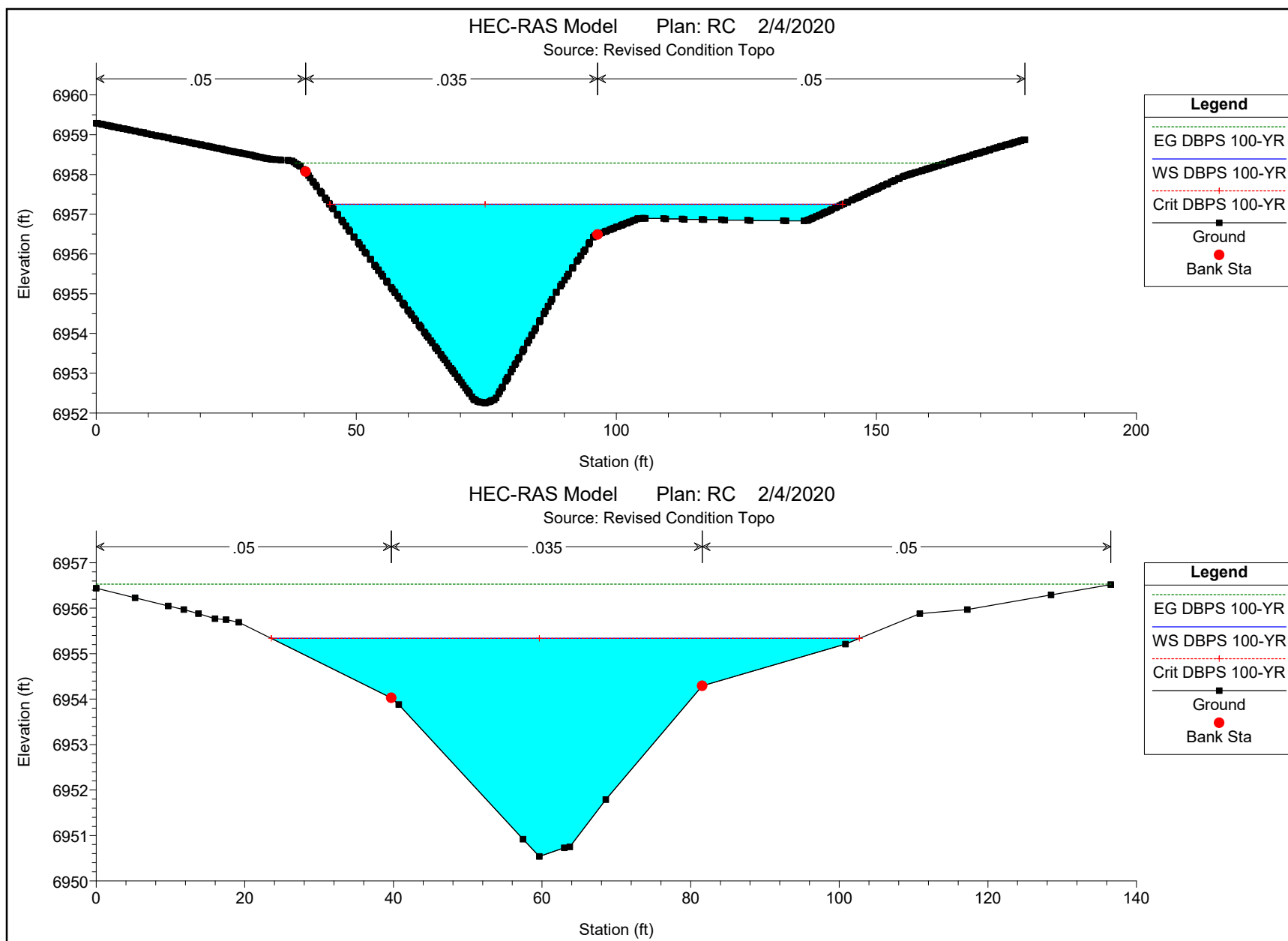
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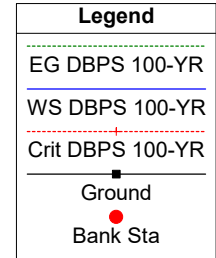
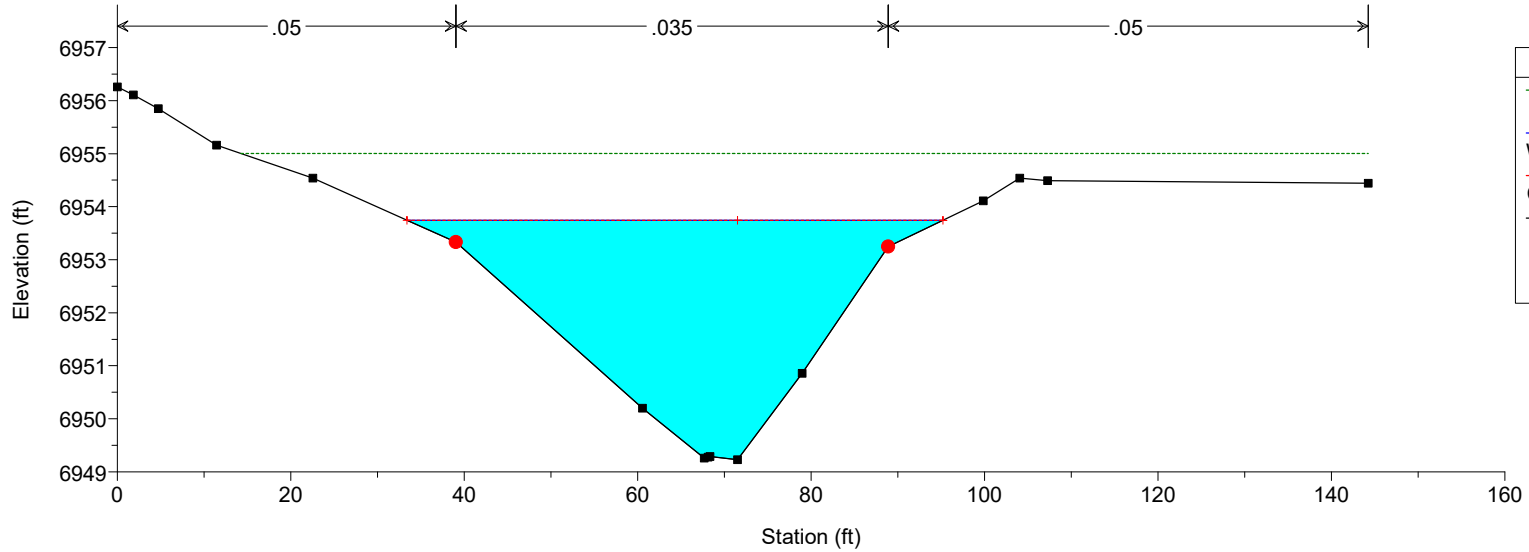
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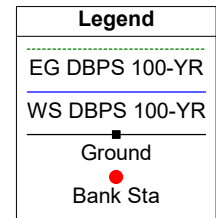
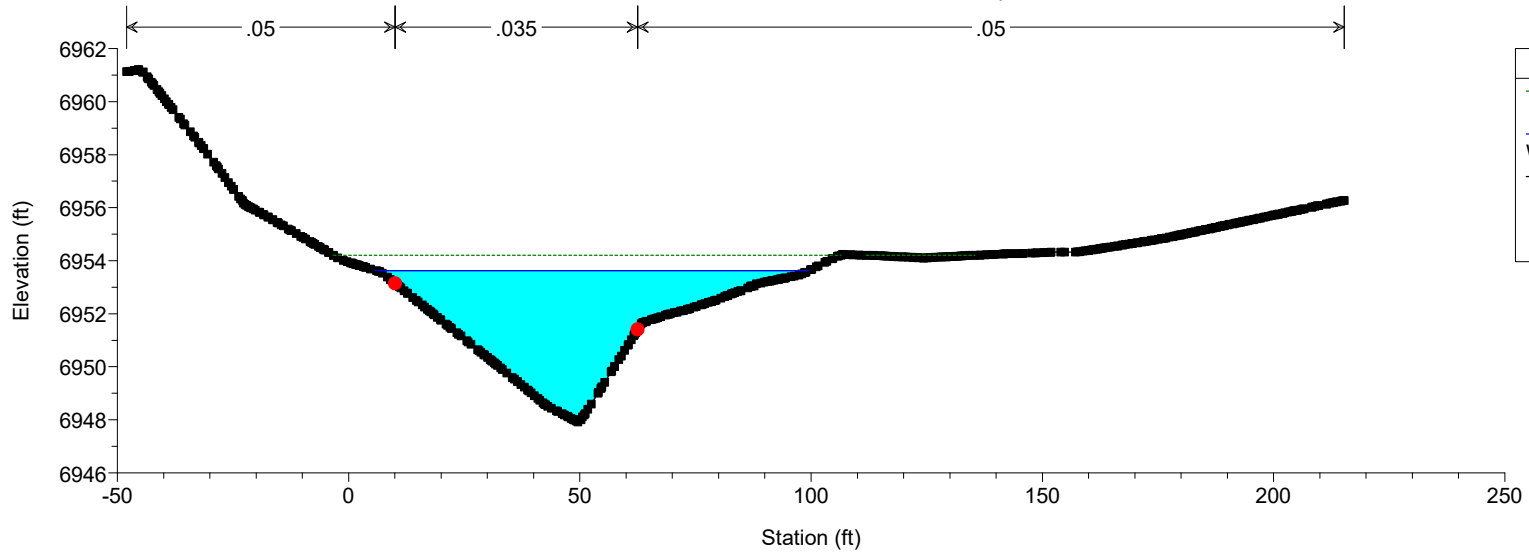
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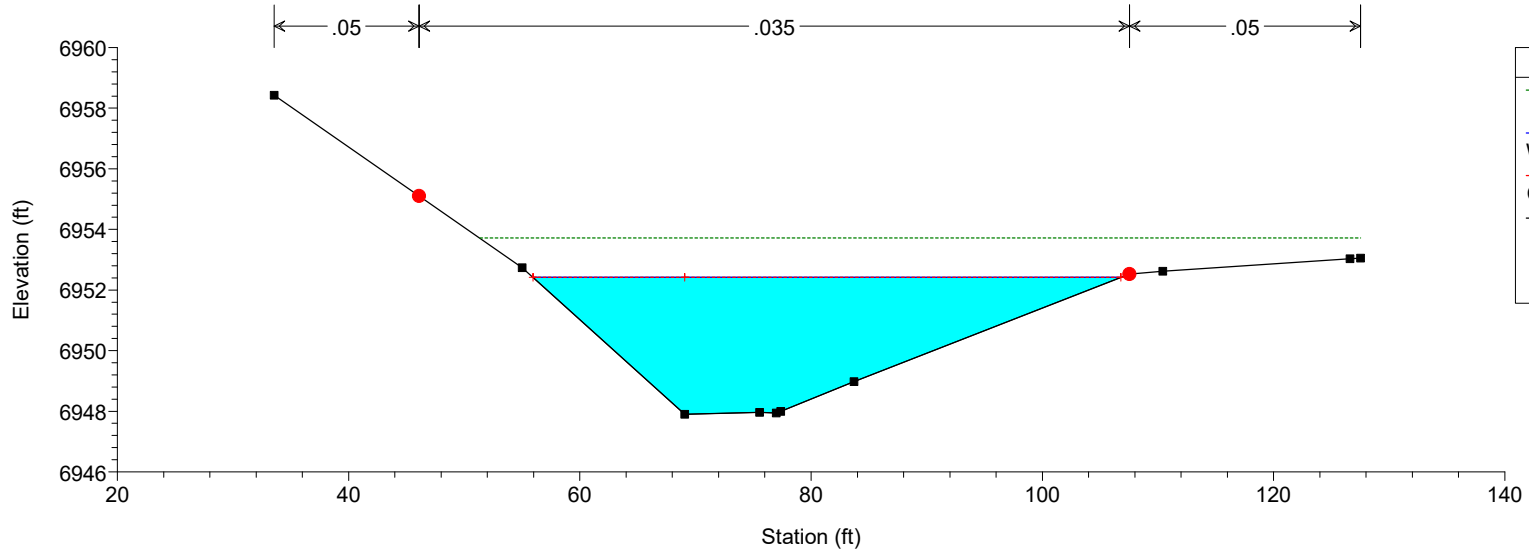
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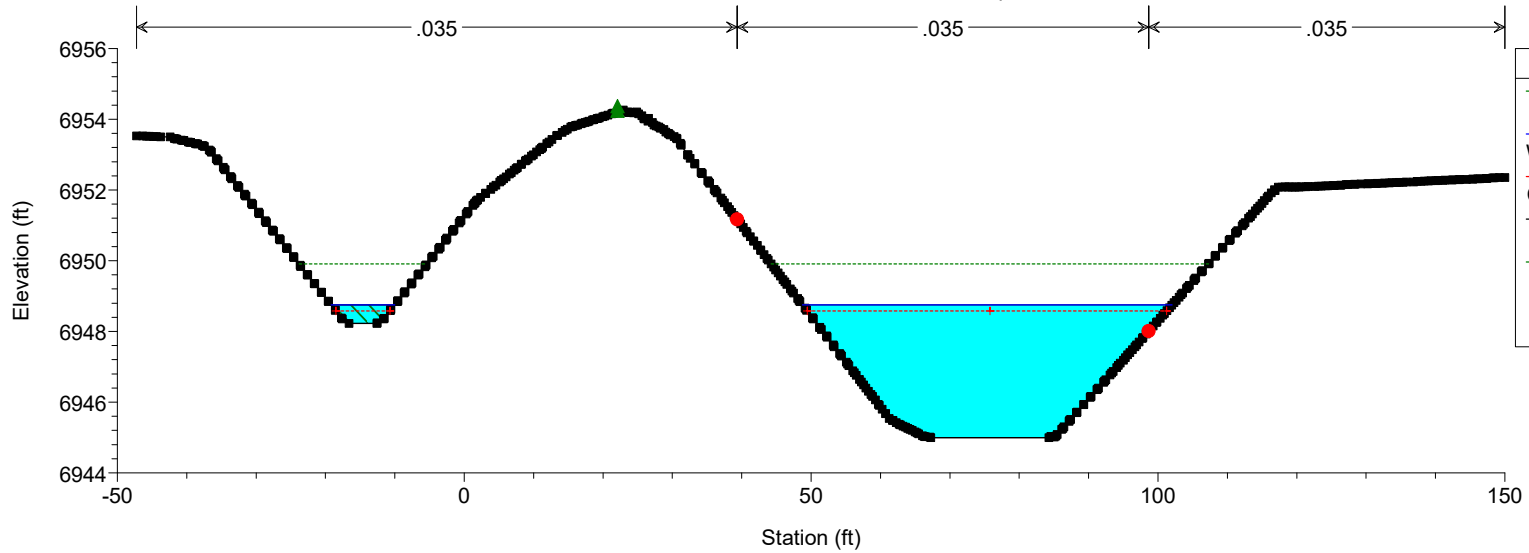
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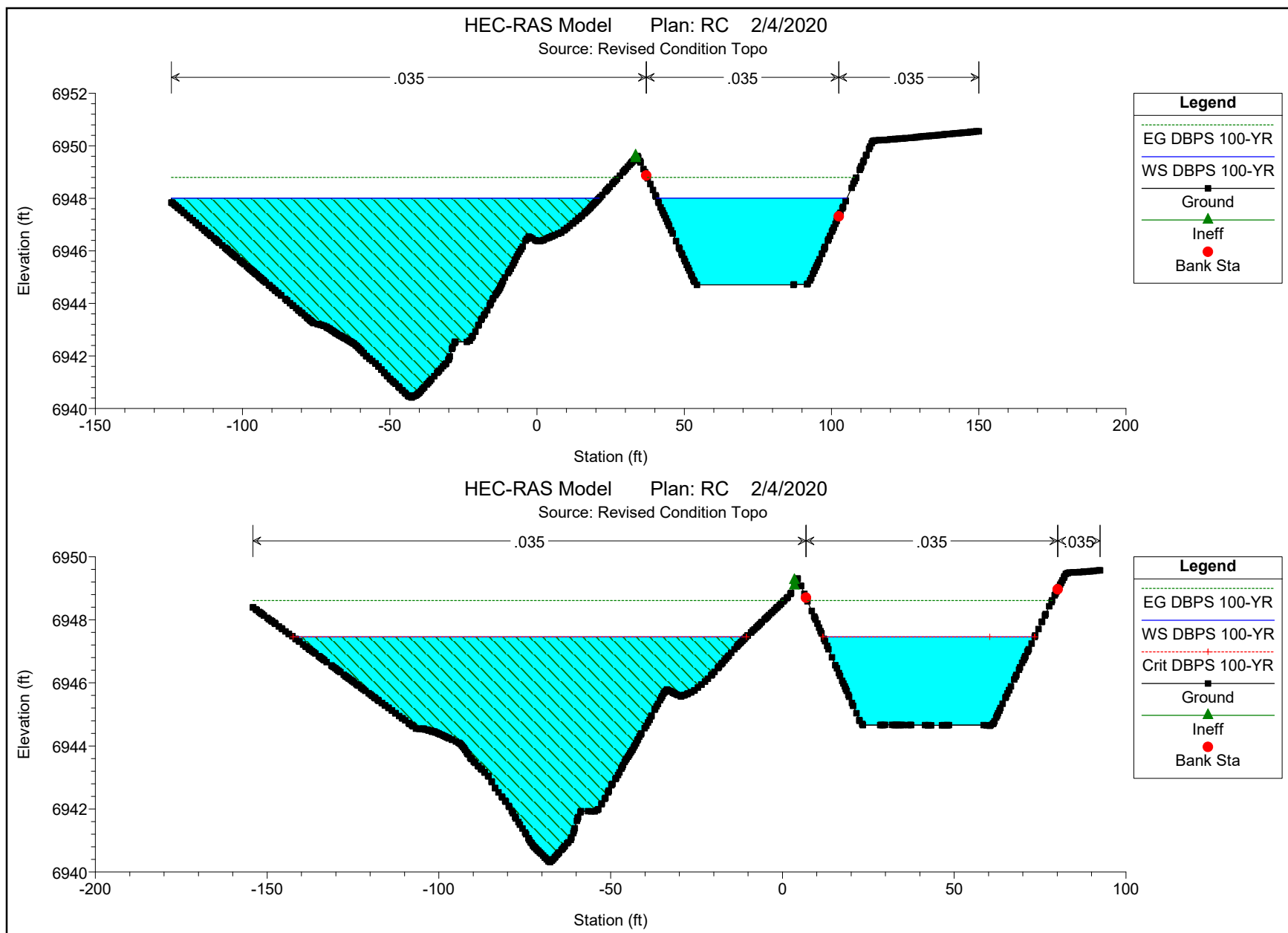
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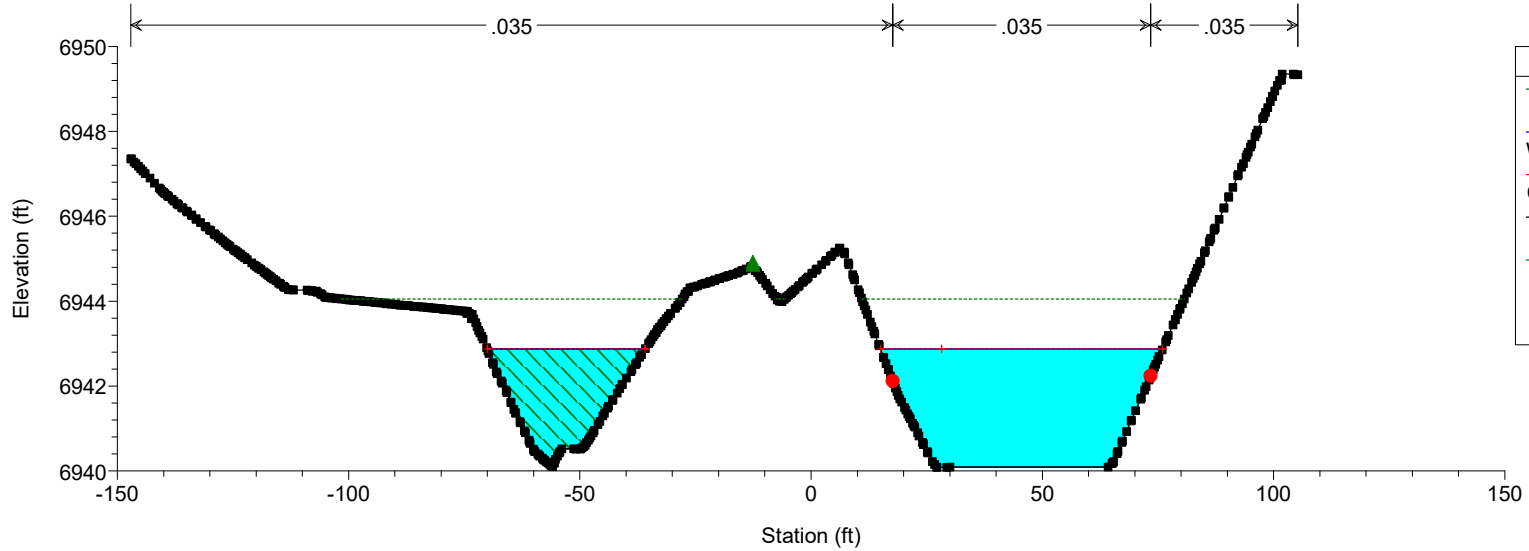
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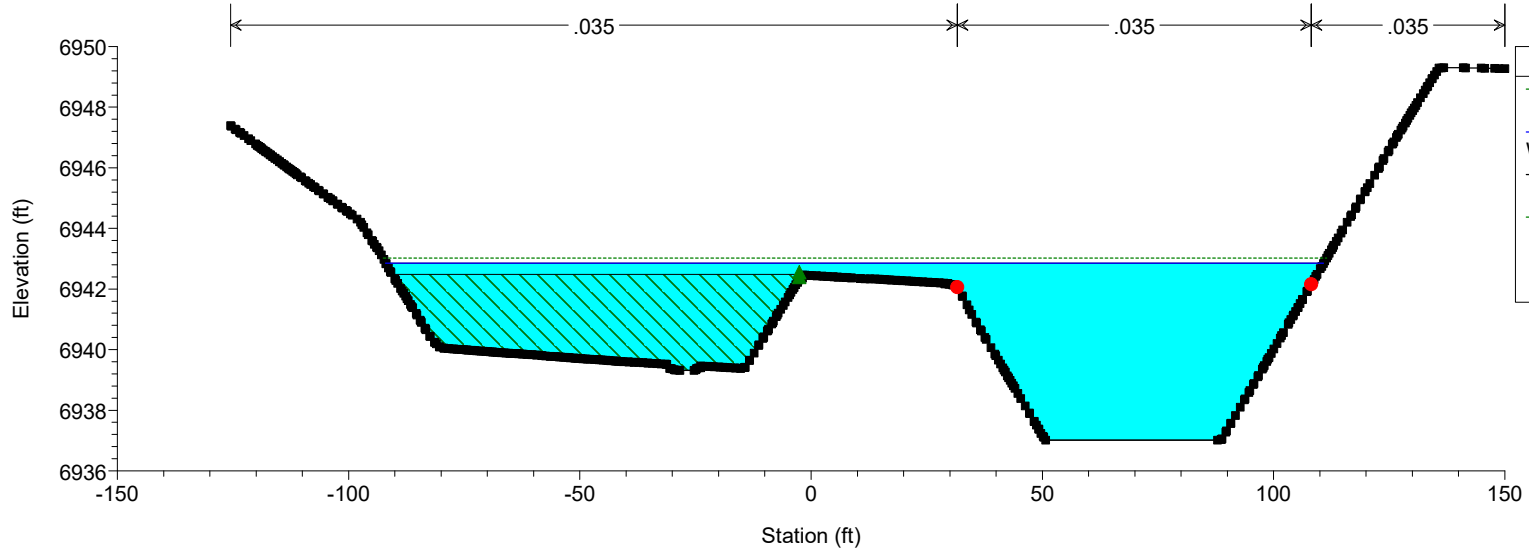
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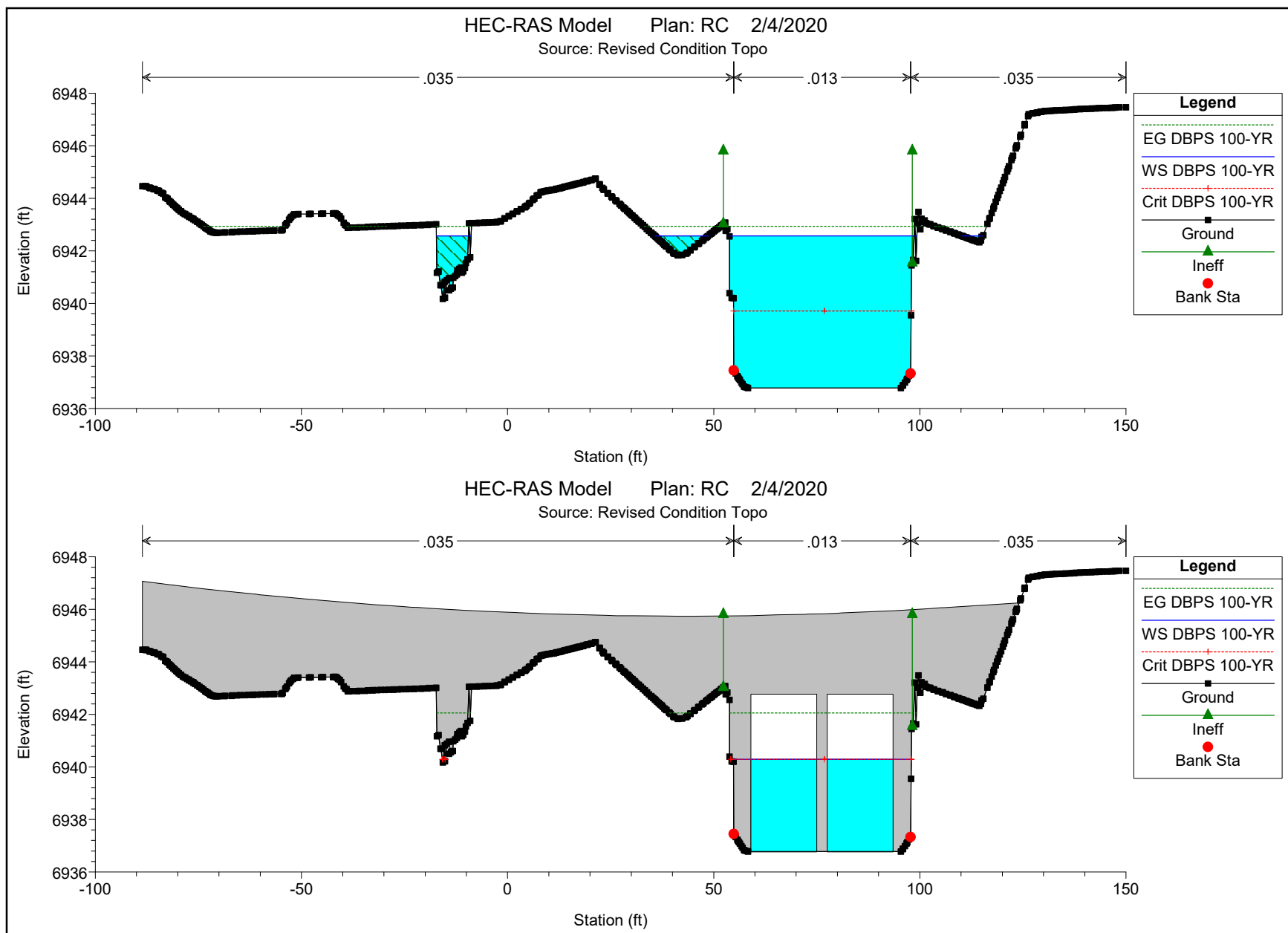
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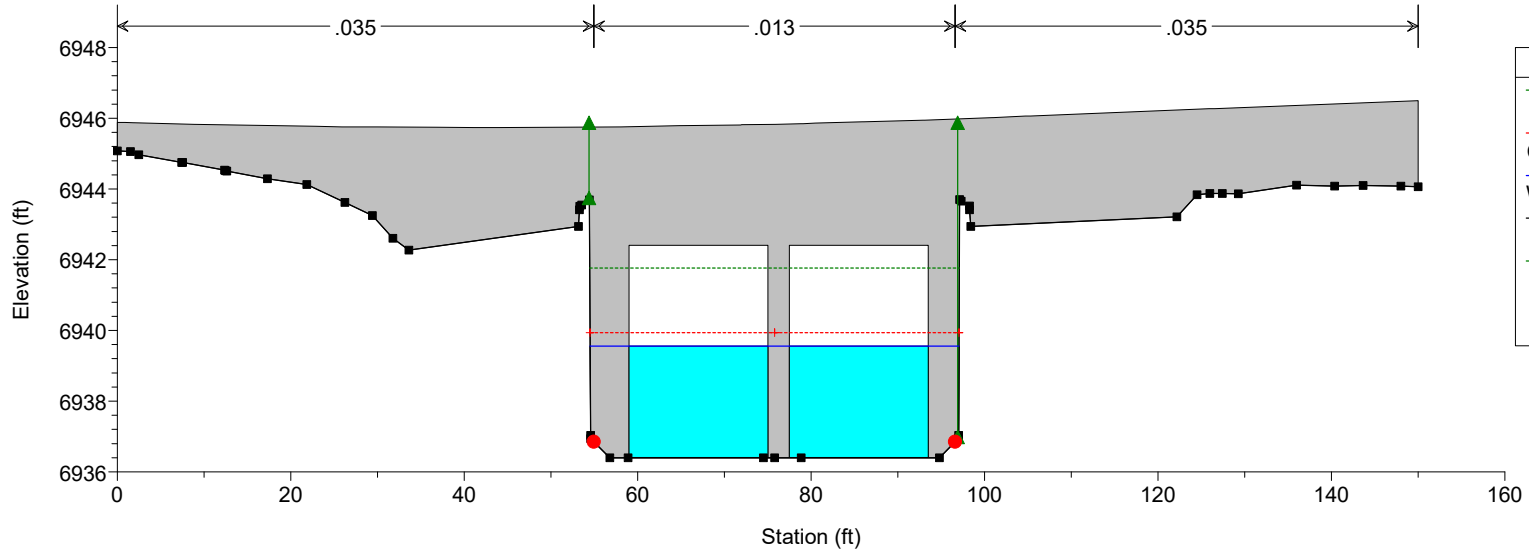






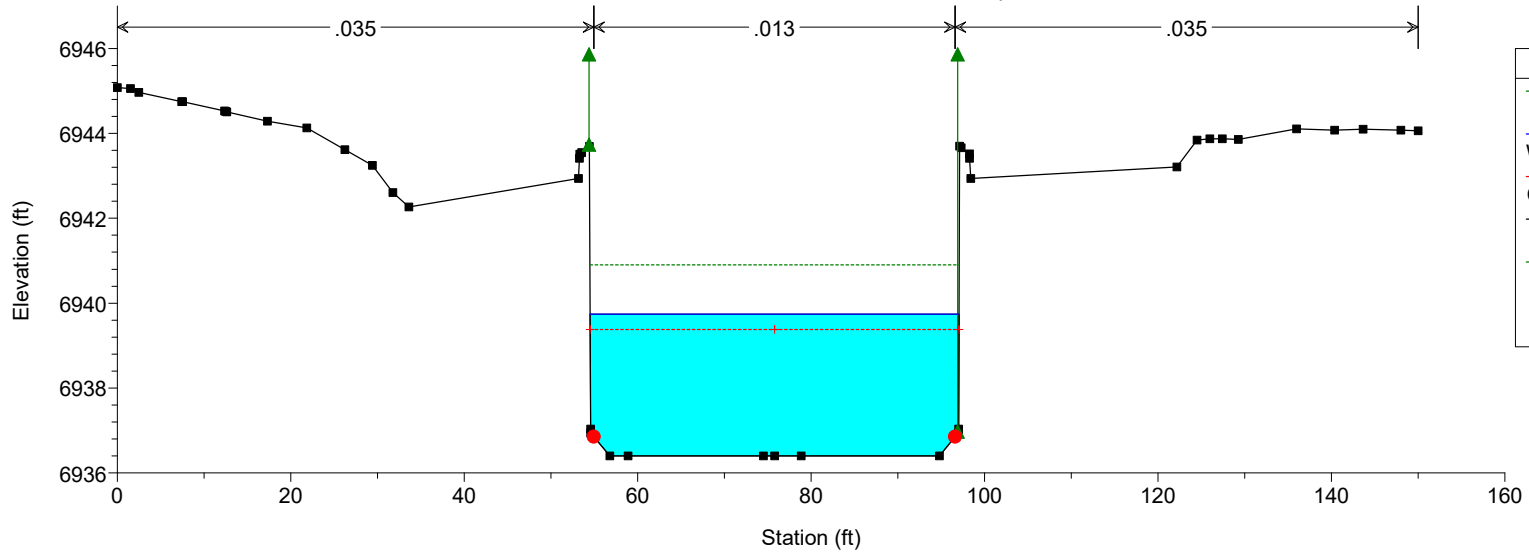
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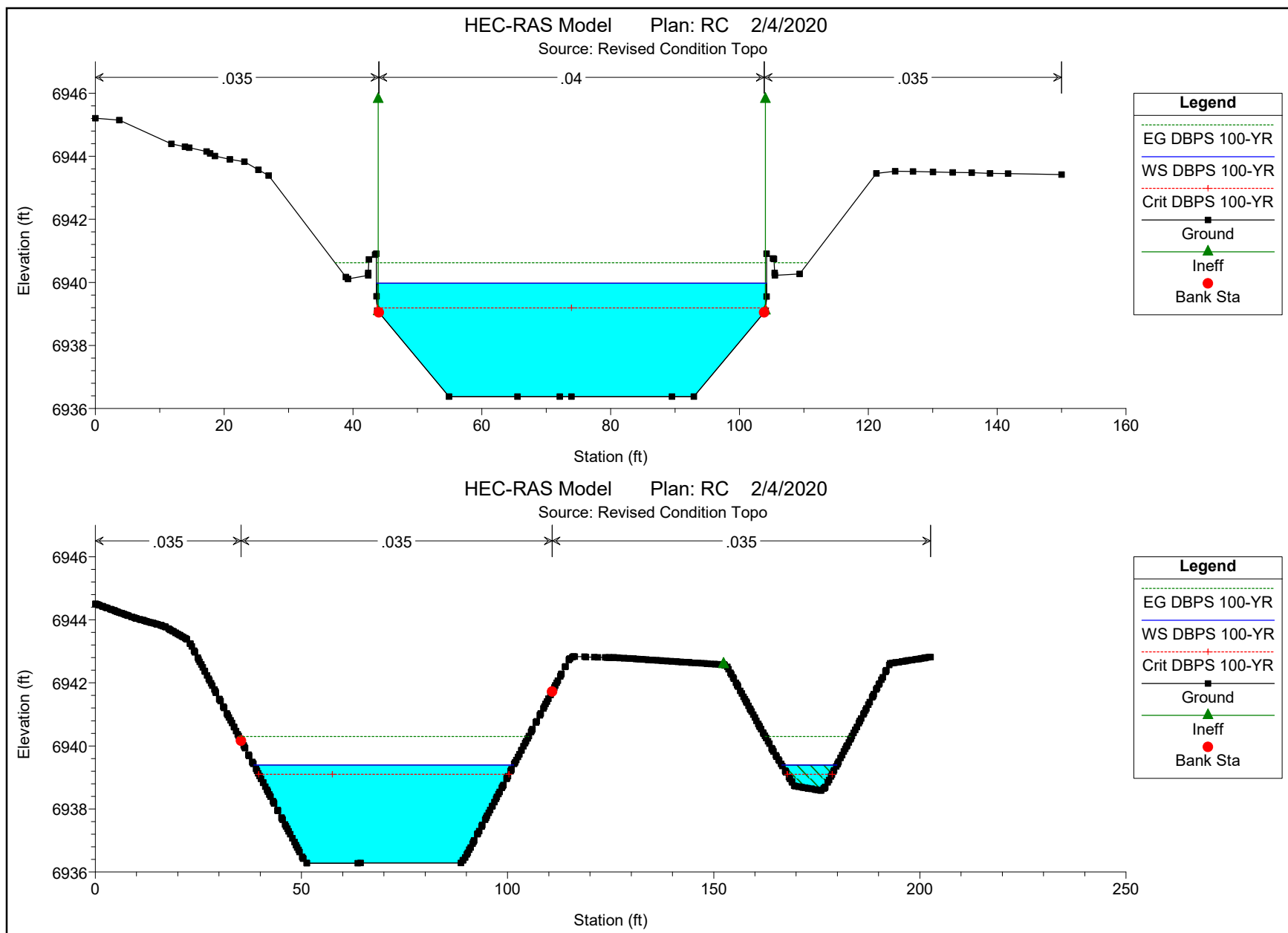
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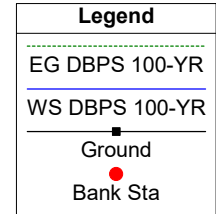
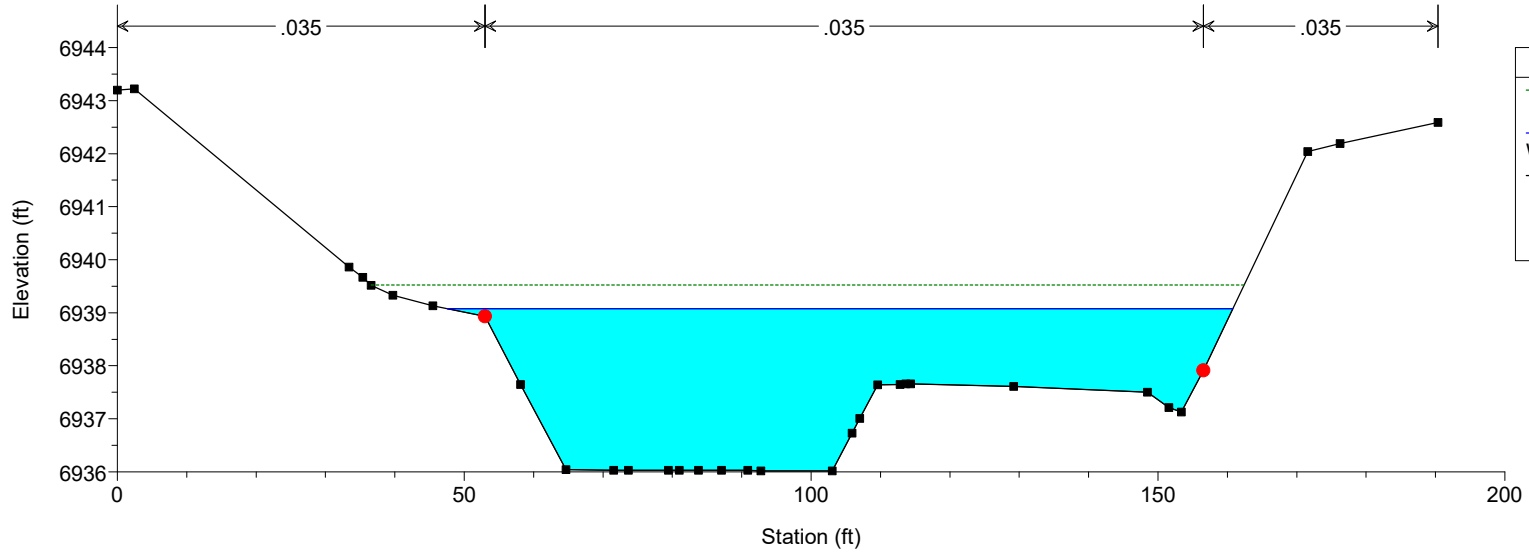
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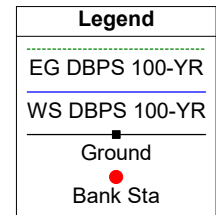
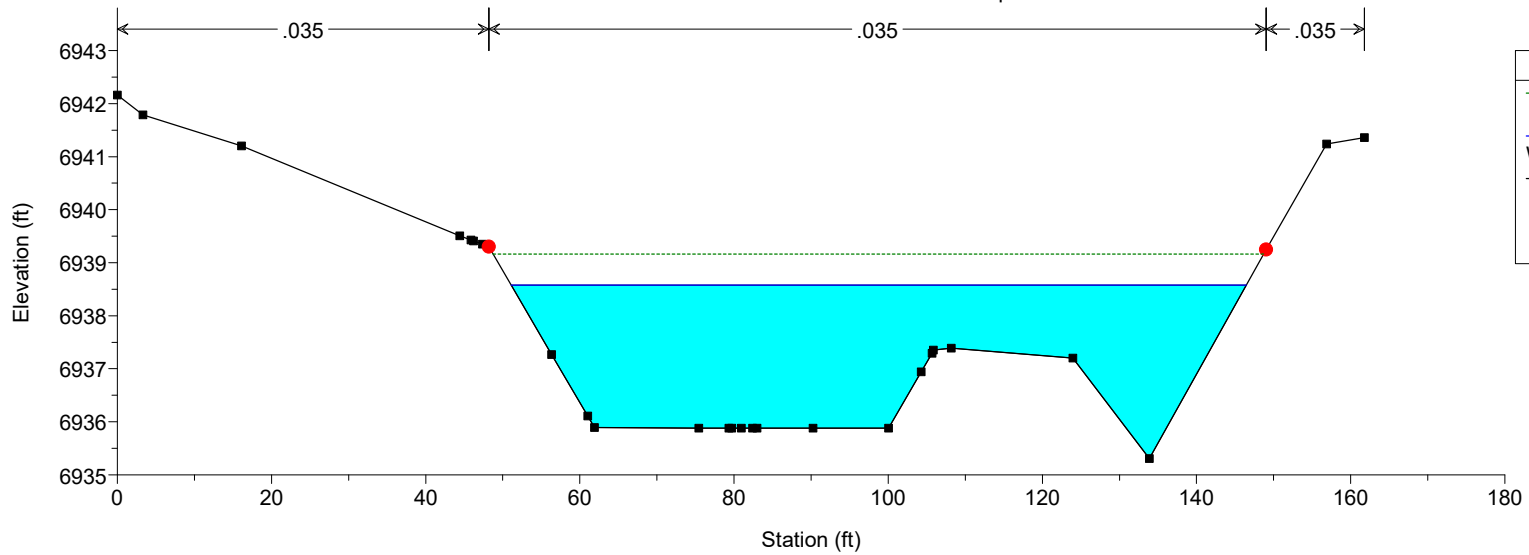
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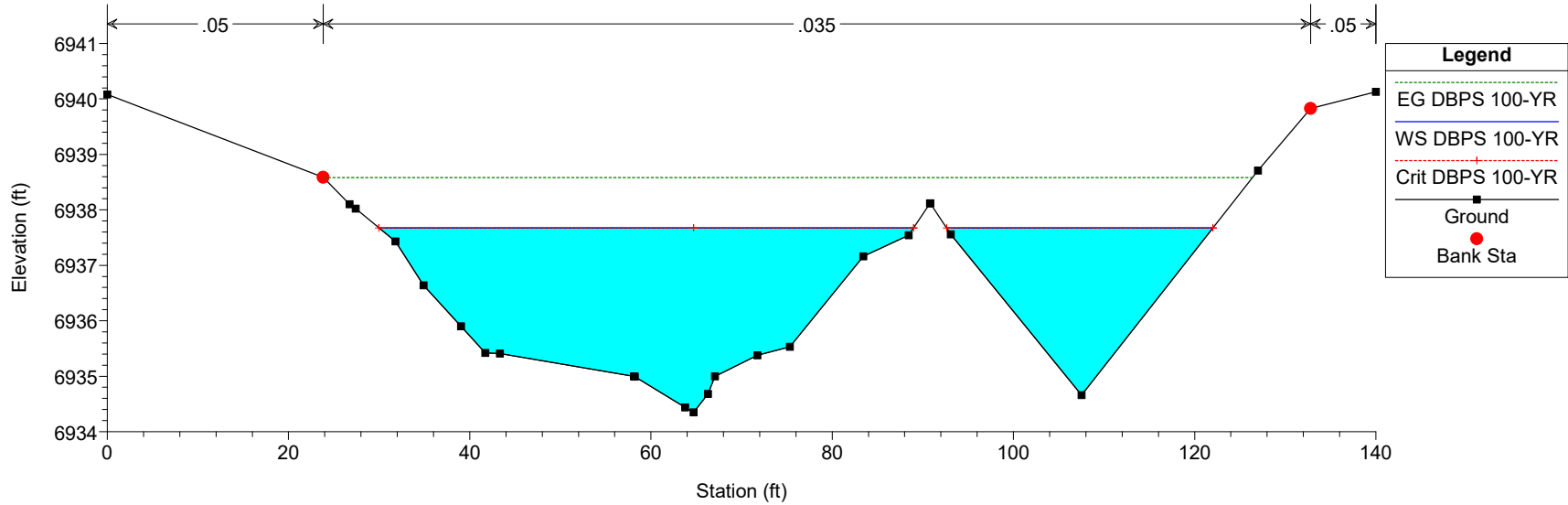
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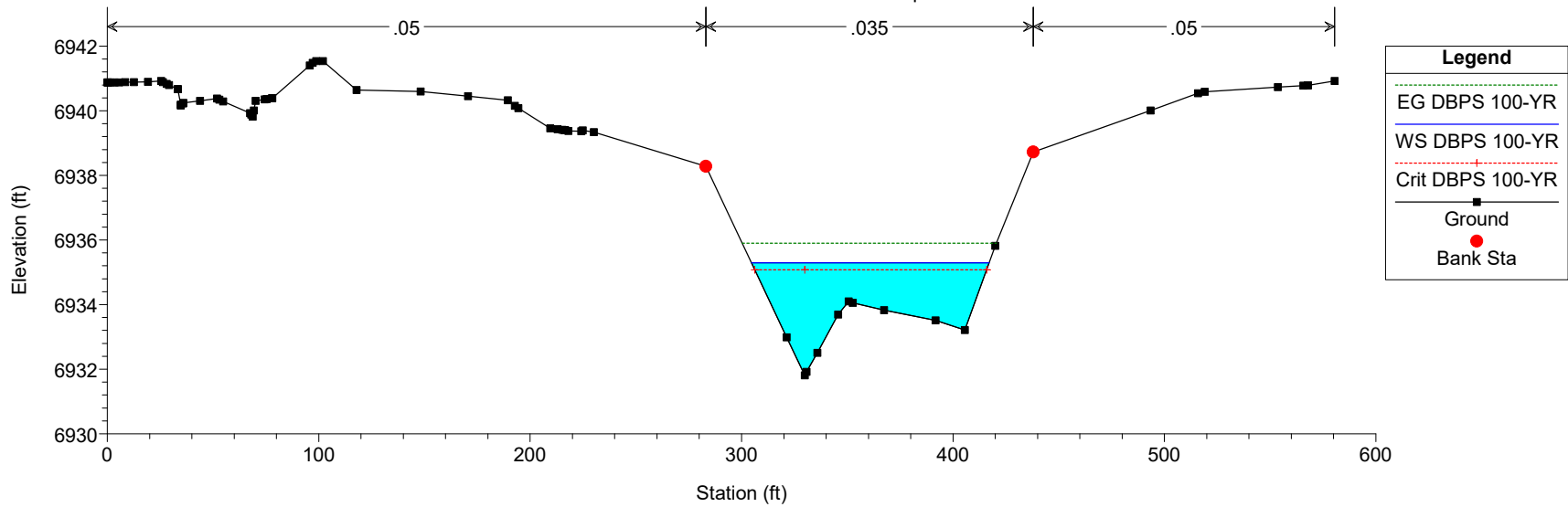
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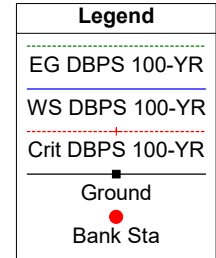
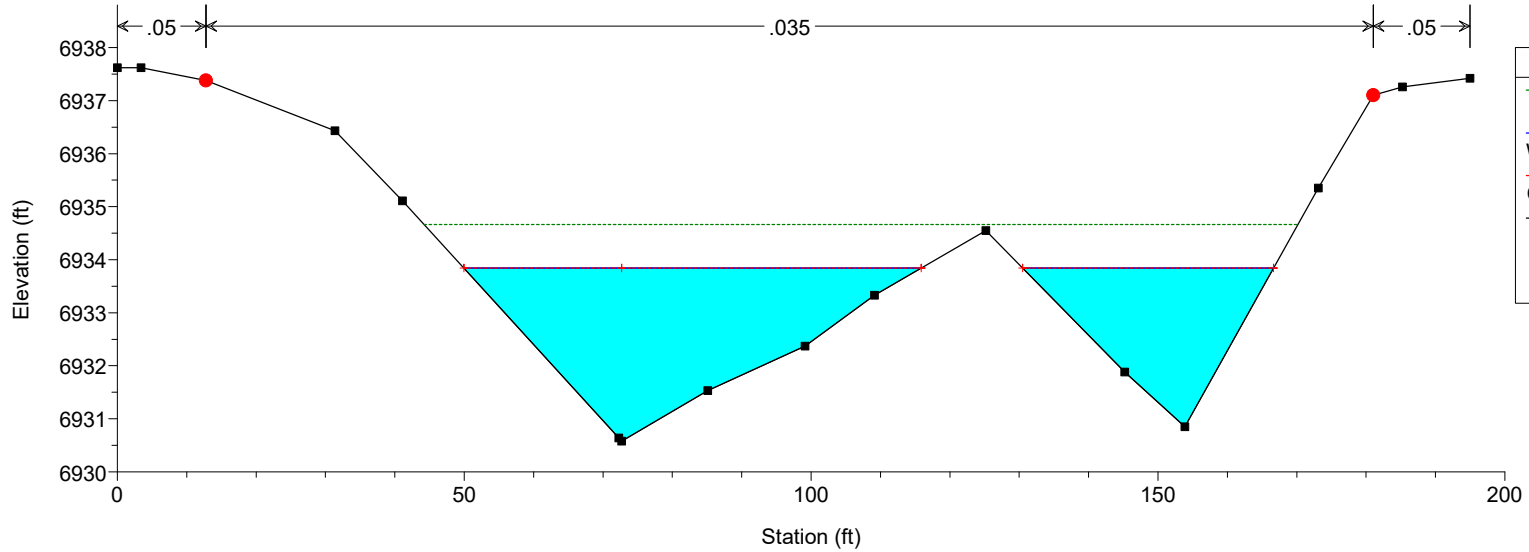
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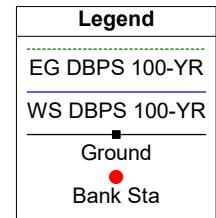
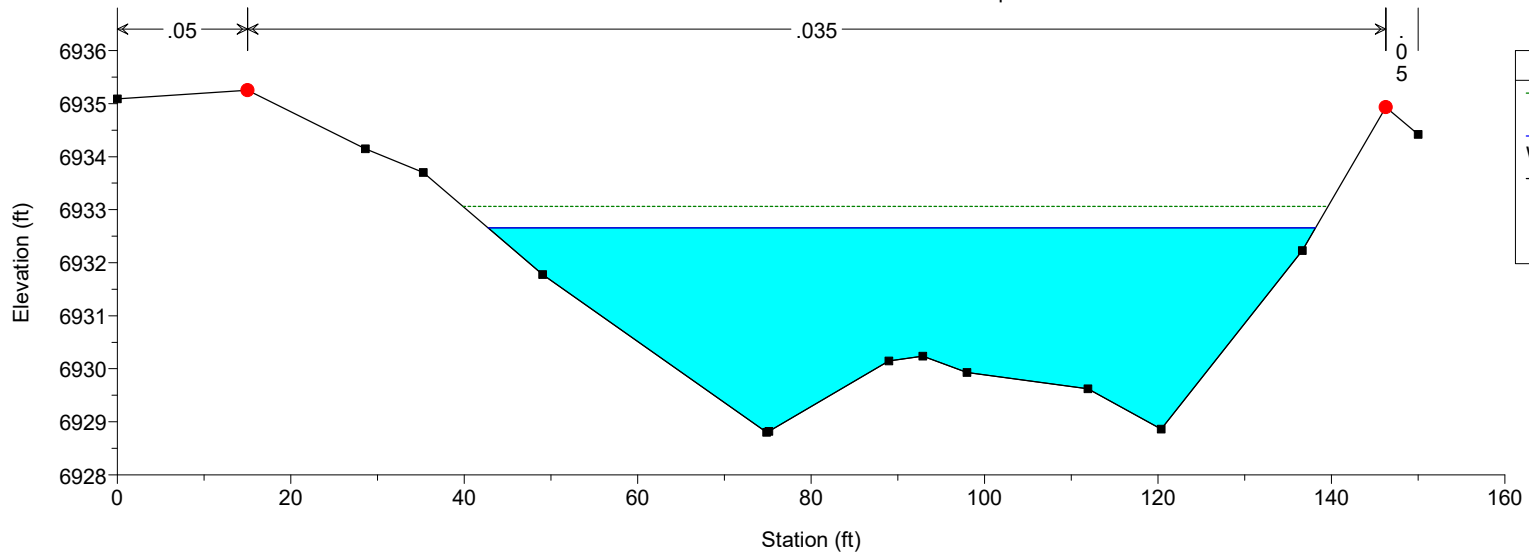
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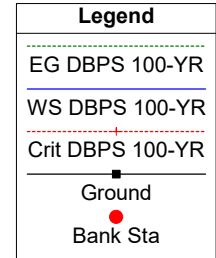
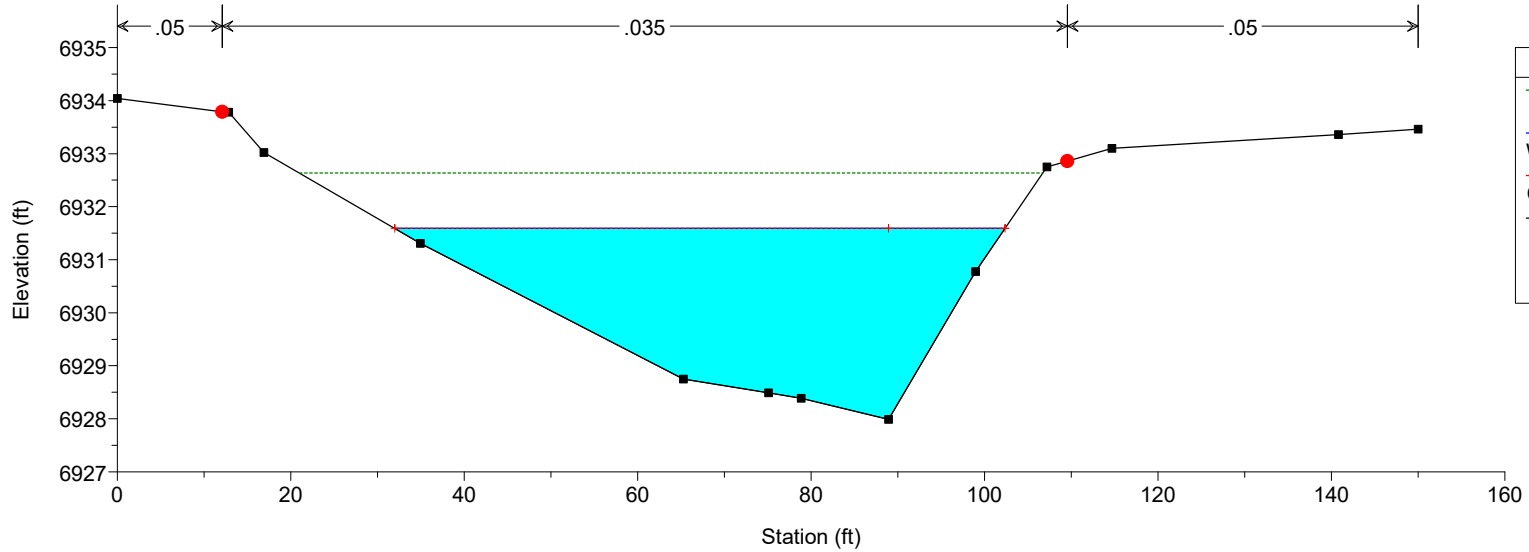
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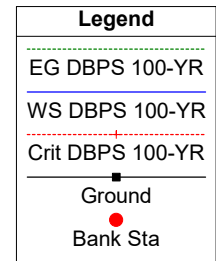
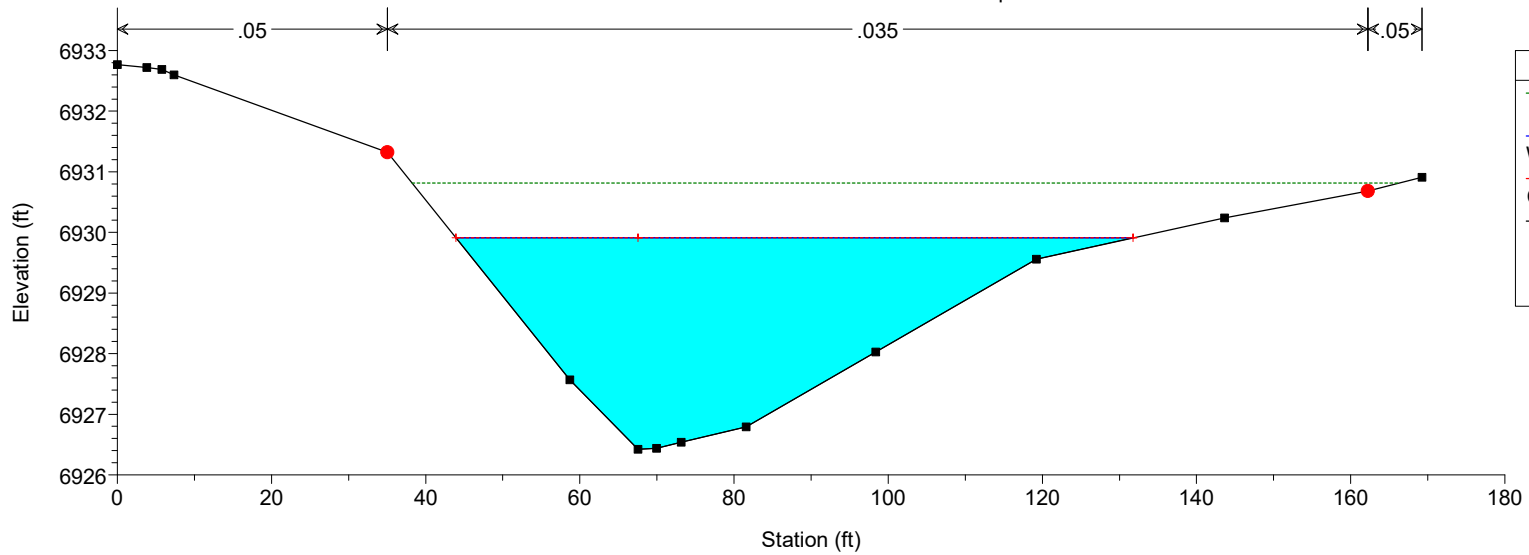
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Source: Revised Condition Topo



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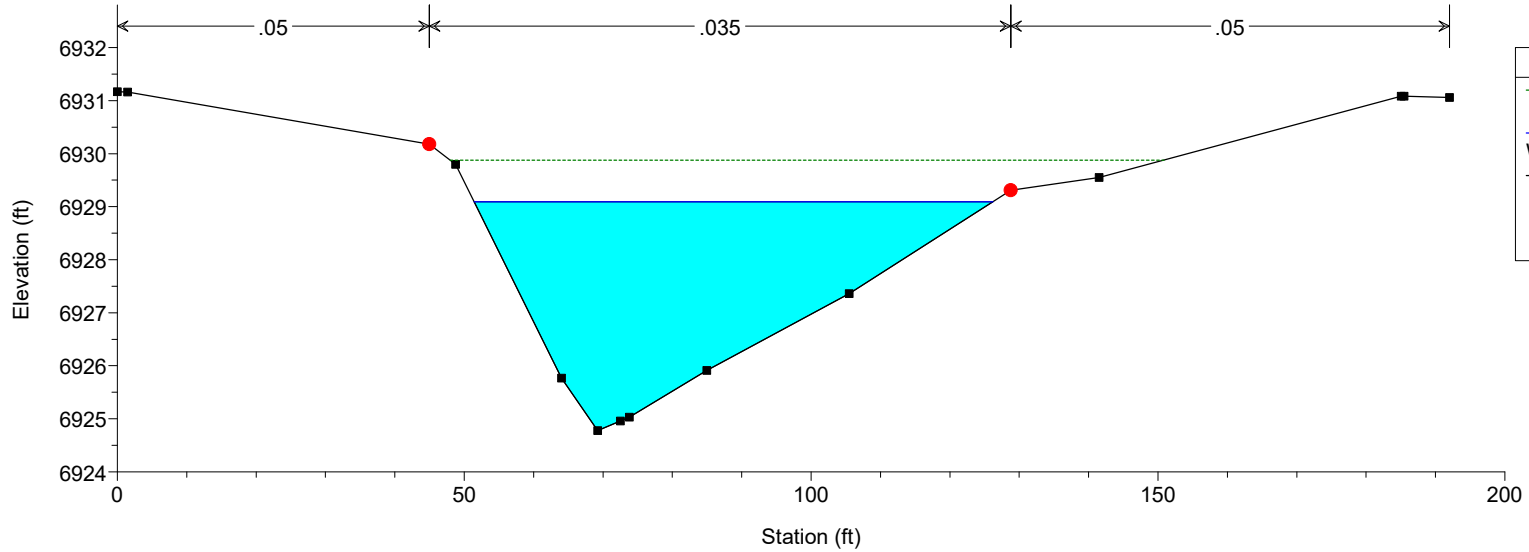
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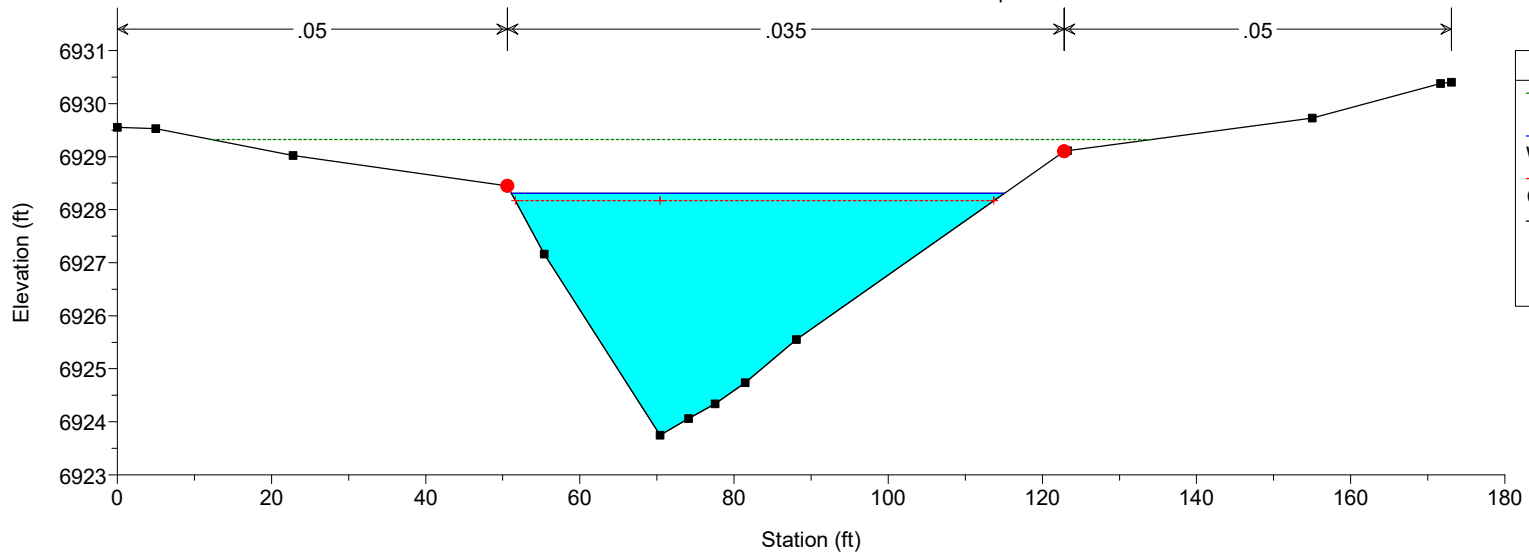
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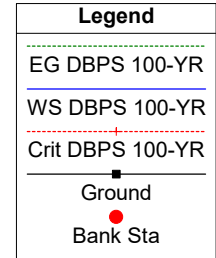
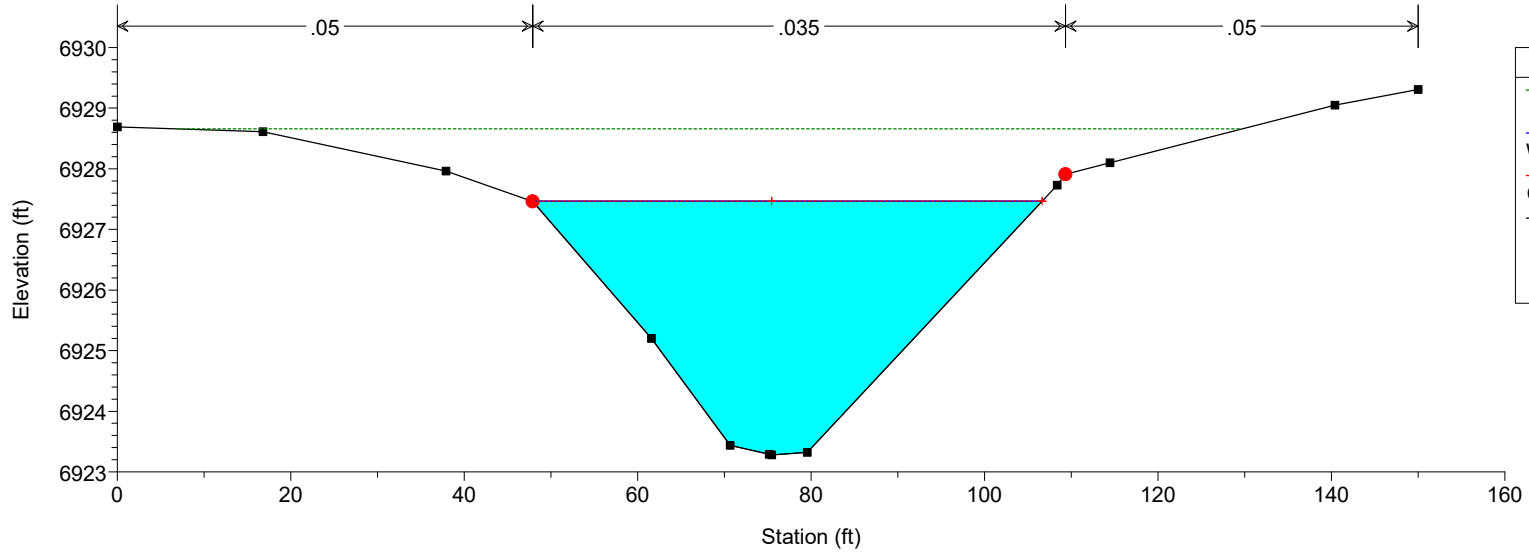
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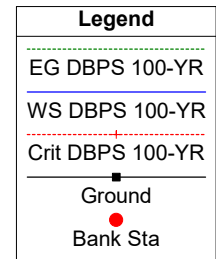
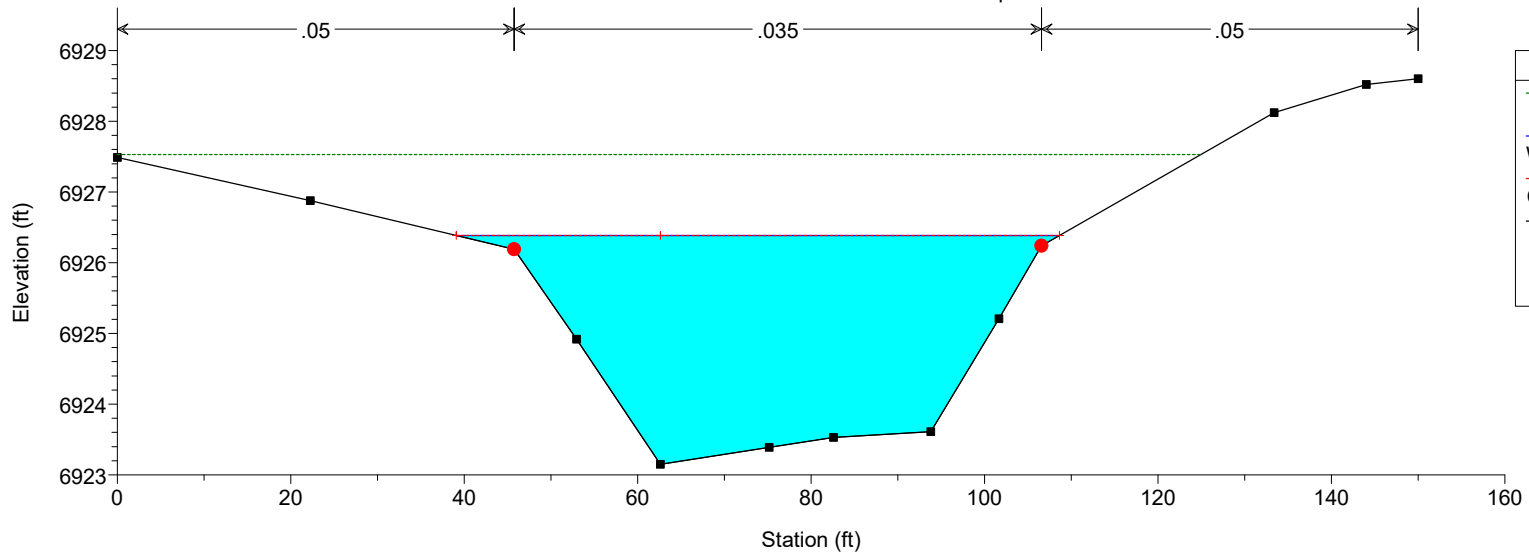
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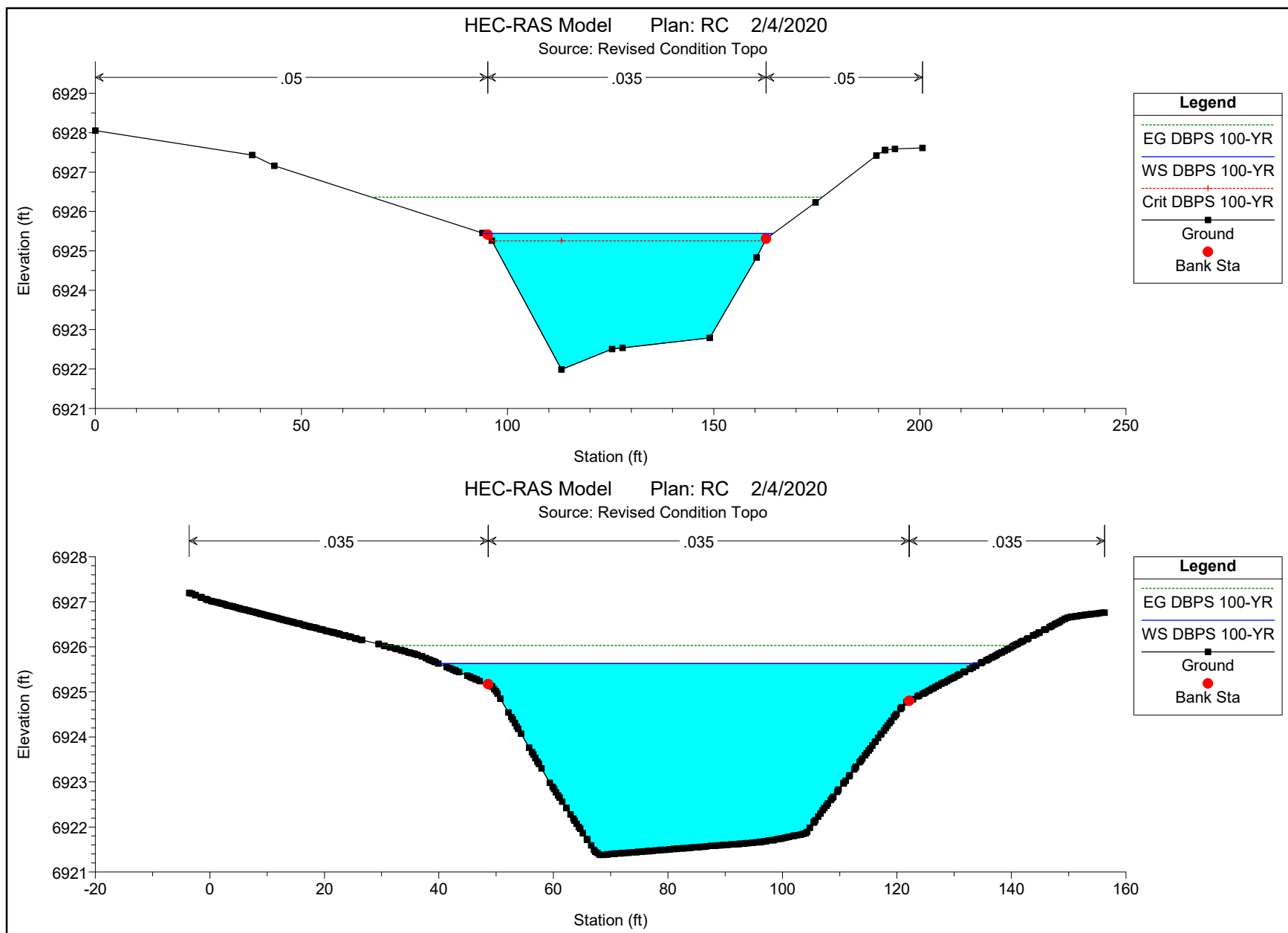
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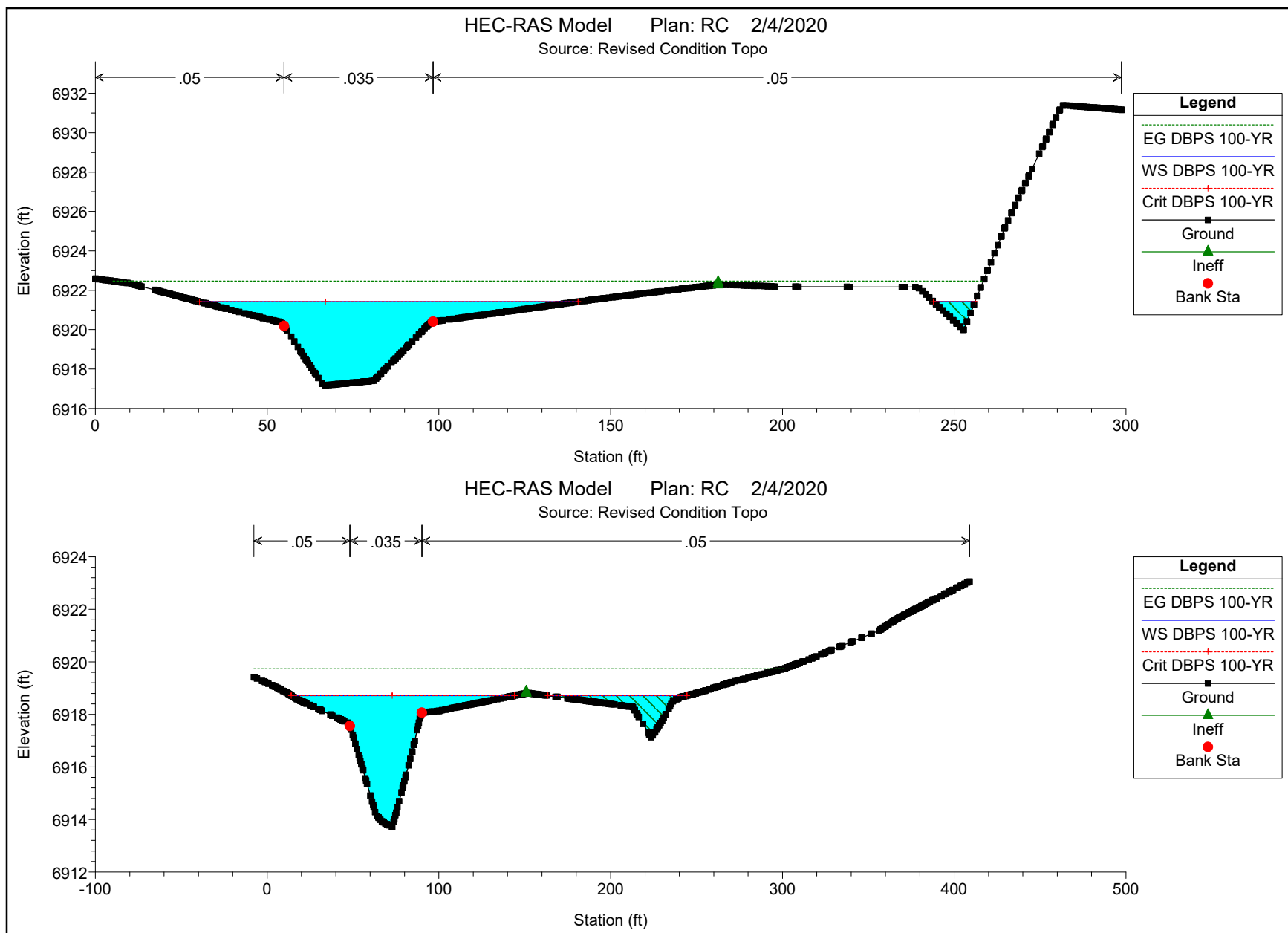
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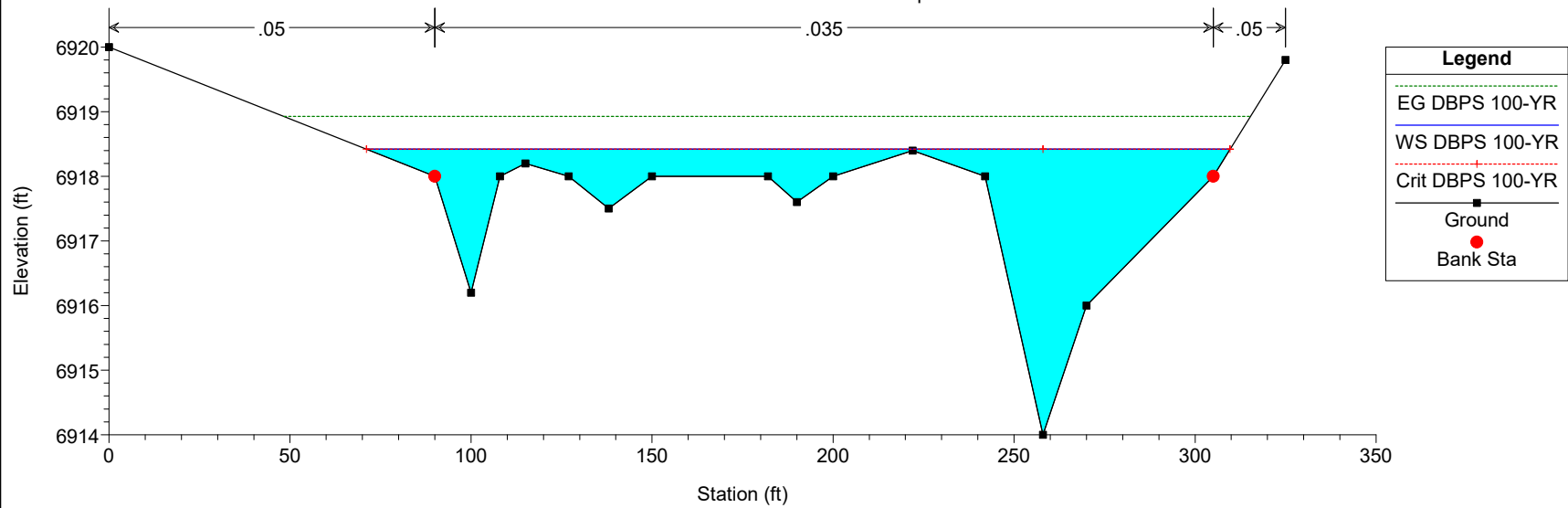






# HEC-RAS Model Plan: RC 2/4/2020

Source: 2003 LOMR Hec-2 Output



**USDA NRCS Part 650 Engineering Field Handbook, Chapter 7 Grassed Waterways. 2007.**

**By: AJL**

**Date: 1/21/2020**

Variable		Unit	Source
Allowable Effective Stress, $T_a$	0.03	lb/ft <sup>2</sup>	Table 7-1: "Erodible"
Void Ratio, $e$	0.65		Table 7-2: "Dense angular-grained silty sand"
Void Ratio Correction Factor, $C_e$	1.04		Table 7-7
Vegetation Height, $h$	0.21	ft	Estimated from photos
Stem Density, $M$	116.7	#/sf	Table 7-3: "Kentucky Bluegrass, Poor Condition"
Retardance Curve Index, $C_1$	3.3		Eq 7-5
Allowable Vegetative Stress, $T_{va}$	2.46		Eq 7-4
Max Shear in Existing Condition	2.38	lb/sf	OK, SHEAR STRESS ON CHANNEL < ALLOWABLE VEGETATIVE STRESS
Max Shear in Revised Condition	2.23	lb/sf	OK, SHEAR STRESS ON CHANNEL < ALLOWABLE VEGETATIVE STRESS

Steps in waterway design are as follows:

*Step 1* Determine allowable effective stress based on an evaluation of the soil material.

*Step 2* Determine the flow retardance and the allowable stress on the vegetation based on the sparsest and shortest vegetation expected (typically winter vegetation) and the flow retardance offered by the densest and longest vegetation (typically summer vegetation).

*Step 3* Determine the vegetal cover factor associated with sparsest vegetation expected.

*Step 4* Determine the bed slope.

*Step 5* Choose a cross section shape.

*Step 6* Use design aids or equations to size channel for sparsest and shortest vegetation.

*Step 7* Use design aids or equations to determine depth required to contain the flow for densest and longest vegetation.

*Step 8* Add freeboard as appropriate.

$$\tau_e = \gamma DS(1 - C_F) \left( \frac{n_s}{n} \right)^2 \quad (\text{eq. 7-1})$$

where:

$\gamma$  = unit weight of water, 62.4 lb/ft<sup>3</sup>

$D$  = maximum flow depth in the cross section

$C_F$  = a vegetal cover factor

$n_s$  = roughness associated with soil grain size

$n$  = Manning's roughness coefficient

$S$  = channel bed slope, ft/ft

**Table 7-1** Allowable effective stress for categories of soil erodibility

Category	Allowable stress, $\tau_a$ , lb/ft <sup>2</sup>
Easily eroded	0.02
Erodible	0.03
Erosion resistant	0.05
Very erosion resistant	0.07

$$\tau_{va} = 0.75C_I \quad (\text{eq. 7-4})$$

Retardance curve index ( $C_I$ ) is in turn related to the stem length and density of the cover as:

$$C_I = 2.5 \left( h \sqrt{M} \right)^{\frac{1}{3}} \quad (\text{eq. 7-5})$$

where:

$h$  = the representative height of the vegetation in feet

$M$  = the stem density in stems per square foot



## **APPENDIX D**

### **Preliminary Pond Design**

### *Tributary to Detention Pond WU*

See Figures 3-2 & 3-7 of the Falcon Drainage Basin Planning Study (September 2015)

Basin	Area (sq miles)	Percent Impervious
WT10	0.14	2%
WT20	0.07	2%
WT30	0.08	4%
WT40	0.19	3%
WT50	0.19	2%
WT60	0.20	2%
WT70	0.17	1%
WT80	0.07	2%
WT90	0.15	1%
WT100	0.19	1%
WT110	0.19	2%
WT120	0.05	3%
WT130	0.10	29%
WT140	0.13	2%
WT150	0.23	10%
WT160	0.11	20%
WT170	0.12	3%
WT180	0.10	0%
WT190	0.06	8%
WT200	0.30	4%
WT210	0.27	12%
WT220	0.19	13%
WT230	0.20	27%
WT240	0.08	27%
Total	3.58	7.33%

Water Quality Capture Volume, WQCV:

$$WQCV = a(0.91I^3 - 1.19I^2 + 0.78I) \quad (\text{Equation 3-1})$$

Where:

a = Coefficient corresponding to WQCV drain time

I = Imperviousness (%/100)

Drain Time = 40 hrs

WQCV = 0.051 Inches

BMP Storage Volume, V:

$$V = (WQCV/12)A \quad (\text{Equation 3-3})$$

Where:

A = Tributary area (acres)

V = 9.764 acre-ft

\*Reference Section 3.0 of UDFCD Volume 3, August 2011

## UD-Detention, Version 3.07 (February 2017)

**Basin ID:** Detention and Water Quality Pond WU

The diagram illustrates a retention pond configuration with three distinct zones. Zone 1 is the bottom-most layer, followed by Zone 2, and Zone 3 is the top-most layer. A permanent pool is located at the bottom of Zone 1. The pond is bounded by a 100-year grade on the right side. The 100-year volume is indicated by a vertical line on the left. The EURV (Effective Upstream Retention Volume) and WOCV (Water of Concern Volume) are also indicated. The 100-year orifice is shown at the bottom of the pond.

### Required Volume Calculation

Selected BMP Type =	<b>EDB</b>	
Watershed Area =	2312.70	acres
Watershed Length =	27.984	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	7.33%	percent
Percentage Hydrologic Soil Group A =	100.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Castle Pines - City Office	
Water Quality Capture Volume (WQCV) =	9.856	acre-feet
Excess Urban Runoff Volume (EURV) =	11.418	acre-feet
2-yr Runoff Volume (P1 = 0.84 in.) =	5.205	acre-feet
5-yr Runoff Volume (P1 = 1.12 in.) =	7.573	acre-feet
10-yr Runoff Volume (P1 = 1.36 in.) =	10.562	acre-feet
25-yr Runoff Volume (P1 = 1.72 in.) =	17.920	acre-feet
50-yr Runoff Volume (P1 = 2.01 in.) =	37.919	acre-feet
100-yr Runoff Volume (P1 = 2.31 in.) =	83.576	acre-feet
500-yr Runoff Volume (P1 = 3.07 in.) =	203.707	acre-feet
Approximate 2-yr Detention Volume =	4.786	acre-feet
Approximate 5-yr Detention Volume =	6.972	acre-feet
Approximate 10-yr Detention Volume =	9.691	acre-feet
Approximate 25-yr Detention Volume =	14.807	acre-feet
Approximate 50-yr Detention Volume =	22.296	acre-feet
Approximate 100-yr Detention Volume =	41.280	acre-feet

### Optional User Override 1-hr Precipitation

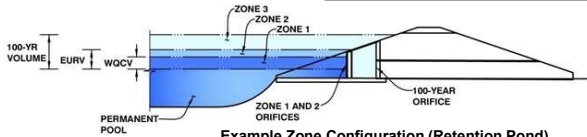
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## Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project: Thompson Thrift

Basin ID: Detention and Water Quality Pond



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	5.66	9.856	Orifice Plate
Zone 2 (EURV)	6.02	1.562	
Zone 3 (100-year)	12.16	29.862	
		41.280	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	N/A	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	N/A	ft <sup>2</sup>
Underdrain Orifice Centroid =	N/A	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	5.66	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	15.87	sq. inches (use rectangular openings)

Calculated Parameters for Plate

WQ Orifice Area per Row =	1.102E-01	ft <sup>2</sup>
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft <sup>2</sup>

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	1.00	2.00	3.00	4.00	5.00		
Orifice Area (sq. inches)	15.87	15.87	15.87	15.87	15.87	15.87		

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =			inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =			ft <sup>2</sup>
Vertical Orifice Centroid =			feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Not Selected	Not Selected	
Overflow Weir Front Edge Height, Ho =	6.00		ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	30.00		feet
Overflow Weir Slope =	3.80		H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	5.50		feet
Overflow Grate Open Area % =	100%		%, grate open area/total area
Debris Clogging % =	50%		%

Calculated Parameters for Overflow Weir

	Not Selected	Not Selected	
Height of Grate Upper Edge, H <sub>u</sub> =	7.45		feet
Over Flow Weir Slope Length =	5.69		feet
Grate Open Area / 100-yr Orifice Area =			should be ≥ 4
Overflow Grate Open Area w/o Debris =	170.62		ft <sup>2</sup>
Overflow Grate Open Area w/ Debris =	85.31		ft <sup>2</sup>

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Not Selected	Not Selected	
Depth to Invert of Outlet Pipe =			ft (distance below basin bottom at Stage = 0 ft)
Circular Orifice Diameter =			inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Not Selected	Not Selected	
Outlet Orifice Area =			ft <sup>2</sup>
Outlet Orifice Centroid =			feet
Half-Central Angle of Restrictor Plate on Pipe =	N/A	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage =	12.70	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	200.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	0.00	feet

Calculated Parameters for Spillway

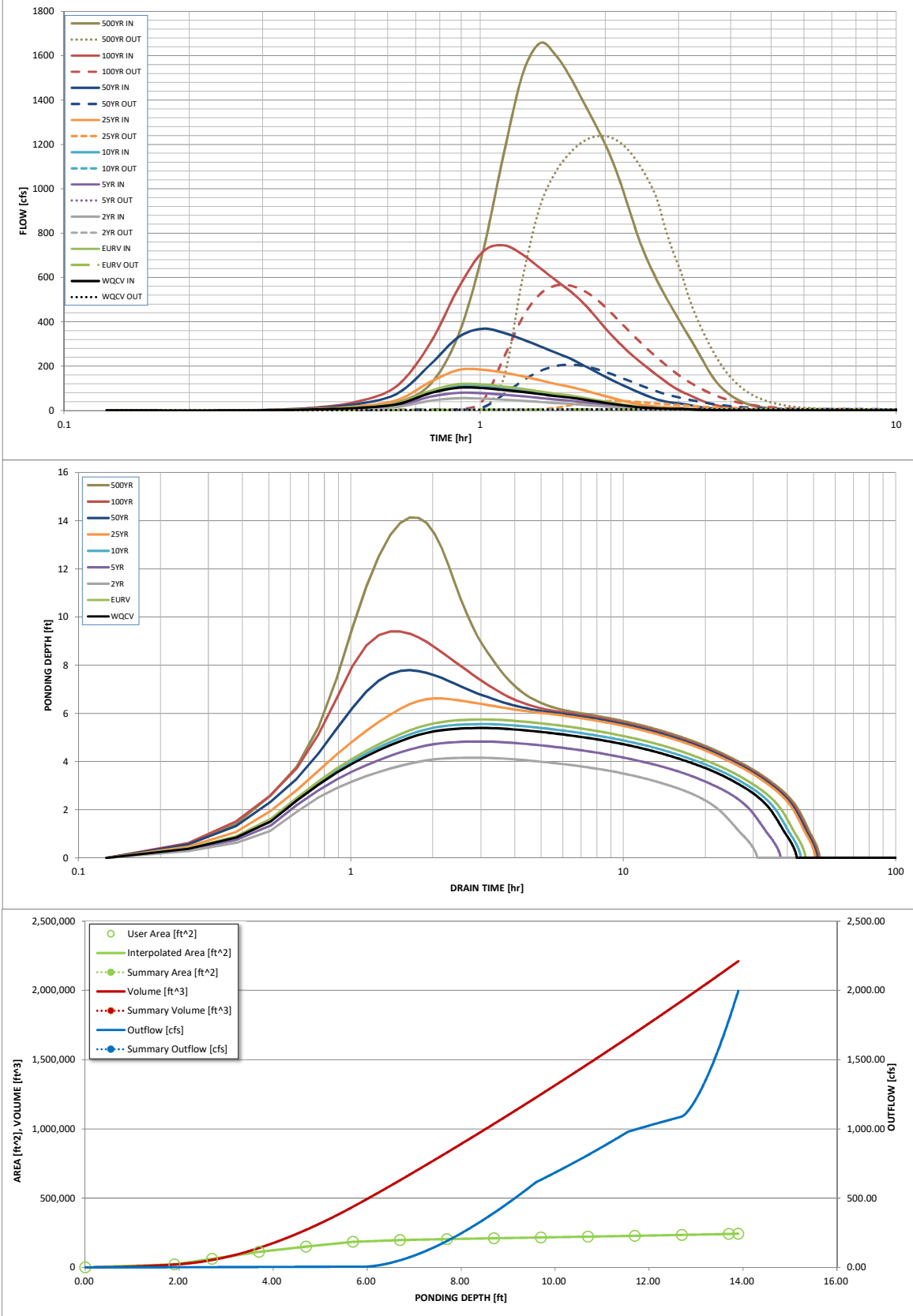
Spillway Design Flow Depth =	1.13	feet
Stage at Top of Freeboard =	13.83	feet
Basin Area at Top of Freeboard =	5.56	acres

### Routed Hydrograph Results

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =									
One-Hour Rainfall Depth (in) =	0.53	1.07	0.84	1.12	1.36	1.72	2.01	2.31	3.07
Calculated Runoff Volume (acre-ft) =	9.856	11.418	5.205	7.573	10.562	17.920	37.919	83.576	203.707
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	9.847	11.406	5.199	7.568	10.553	17.912	37.899	83.471	203.592
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.00	0.00	0.01	0.01	0.11	0.27	0.68
Predevelopment Peak Q (cfs) =	0.0	0.0	0.8	5.4	13.1	32.6	251.4	632.0	1583.9
Peak Inflow Q (cfs) =	102.7	118.4	55.2	79.5	109.8	183.9	368.6	744.9	1657.0
Peak Outflow Q (cfs) =	5.1	5.5	3.6	4.3	5.3	43.0	206.5	563.4	1236.5
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.8	0.4	1.3	0.8	0.9	0.8
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Plate	Overflow Grate 1	Overflow Grate 1	Overflow Grate 1	N/A
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	0.0	0.0	0.0	-0.1
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	37	40	27	32	38	42	39	32	20
Time to Drain 99% of Inflow Volume (hours) =	40	43	29	35	42	46	44	41	35
Maximum Ponding Depth (ft) =	5.39	5.75	4.16	4.83	5.56	6.62	7.79	9.40	14.13
Area at Maximum Ponding Depth (acres) =	3.99	4.25	2.96	3.54	4.12	4.50	4.69	4.92	5.57
Maximum Volume Stored (acre-ft) =	8.783	10.228	4.459	6.673	9.431	14.034	19.463	27.150	50.761

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			



**Design Values**

**Angular**  $D_{50}$  dia. = 11.7 in.  
 Rock<sub>chute</sub> thickness = 23.5 in.  
 Inlet apron length = 10 ft.  
 Outlet apron length = 15 ft.  
 Radius = 33 ft.

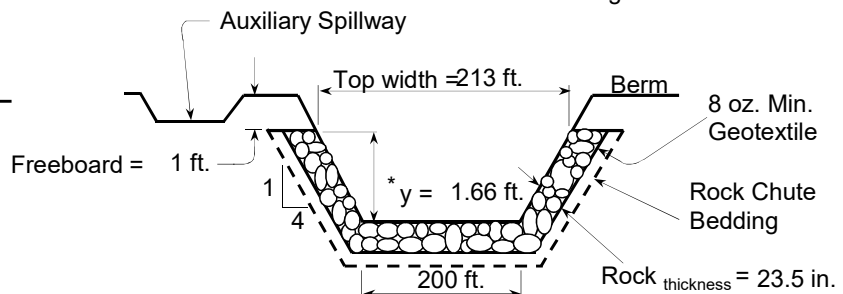
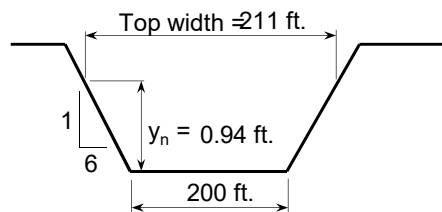
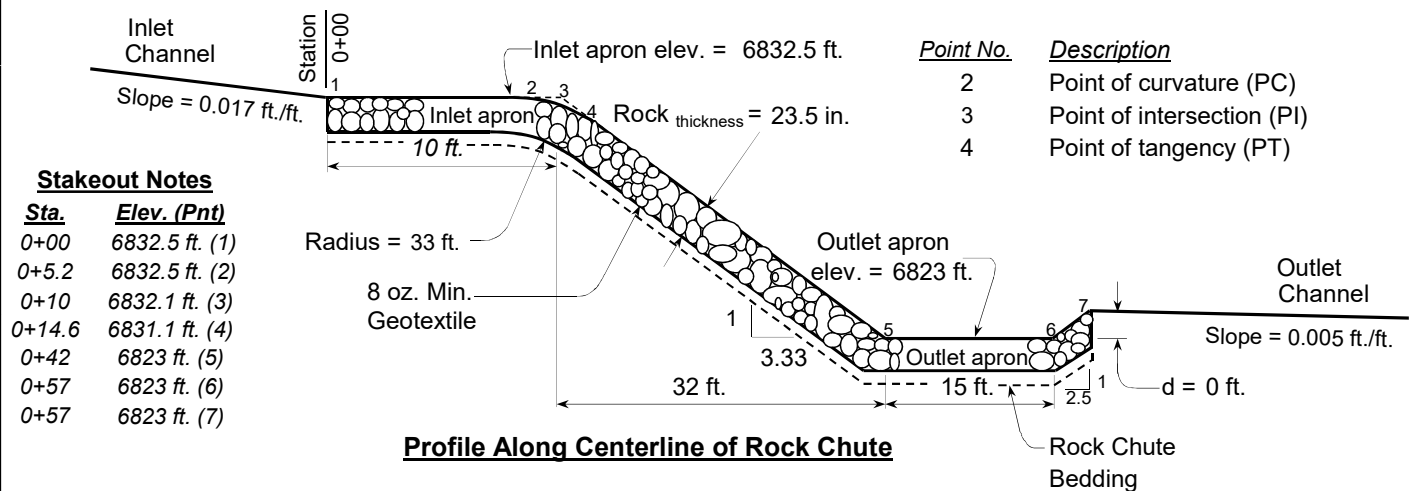
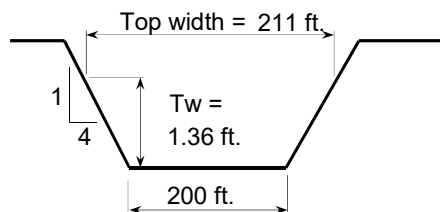
Will bedding be used? Yes

**Rock Gradation Envelope**

% Passing	Diameter, in. (weight, lbs.)
$D_{100}$ -----	18 - 23 (394 - 934)
$D_{85}$ -----	15 - 21 (256 - 681)
$D_{50}$ -----	12 - 18 (117 - 394)
$D_{10}$ -----	9 - 15 (60 - 256)

Coefficient of Uniformity,  $(D_{60})/(D_{10}) \leq 2.0$ **Quantities<sup>a</sup>**

**Angular** Rock = 935 yd<sup>3</sup>  
 Geotextile (8 oz.)<sup>b</sup> = 1486 yd<sup>2</sup>  
 Bedding (6 in.) = 250 yd<sup>3</sup>  
 Excavation = 0 yd<sup>3</sup>  
 Earthfill = 0 yd<sup>3</sup>  
 Seeding = 0.0 acres

**Notes:** <sup>a</sup> Rock, bedding, and geotextile quantities are determined from x-section below (neglect radius).<sup>b</sup> Geotextile shall be overlapped (18-in. minimum) and anchored (18-in. minimum along sides and 24-in. minimum on the ends) --- quantity not included.\* Use  $H_p$  throughout chute but not less than  $Z_2$ .**Inlet Channel Cross Section****Rock Chute Cross Section****Outlet Channel Cross Section****Profile, Cross Sections, and Quantities**

Project: Pond WU - Riprap Weir

Location: County

**U.S. Department of Agriculture**  
**Natural Resources Conservation Service**
Designed: Aaron Johnston

Approved by: \_\_\_\_\_

Drawn: NRCS Standard Dwg.

Title: \_\_\_\_\_

Traced: \_\_\_\_\_

Sheet

Drawing No.

Checked: \_\_\_\_\_

No.

of

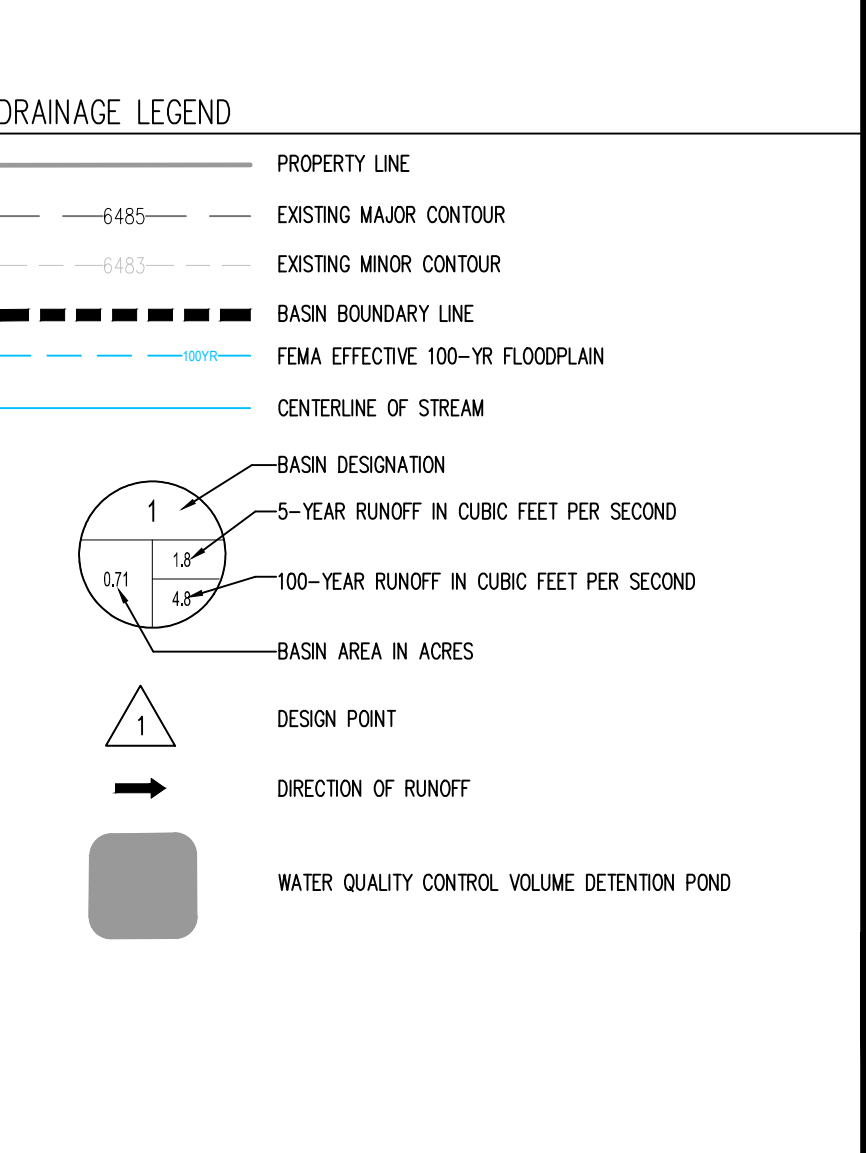
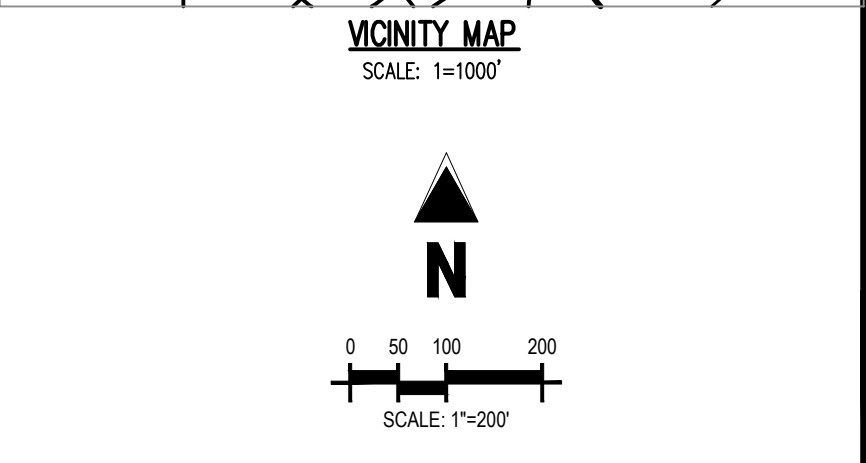
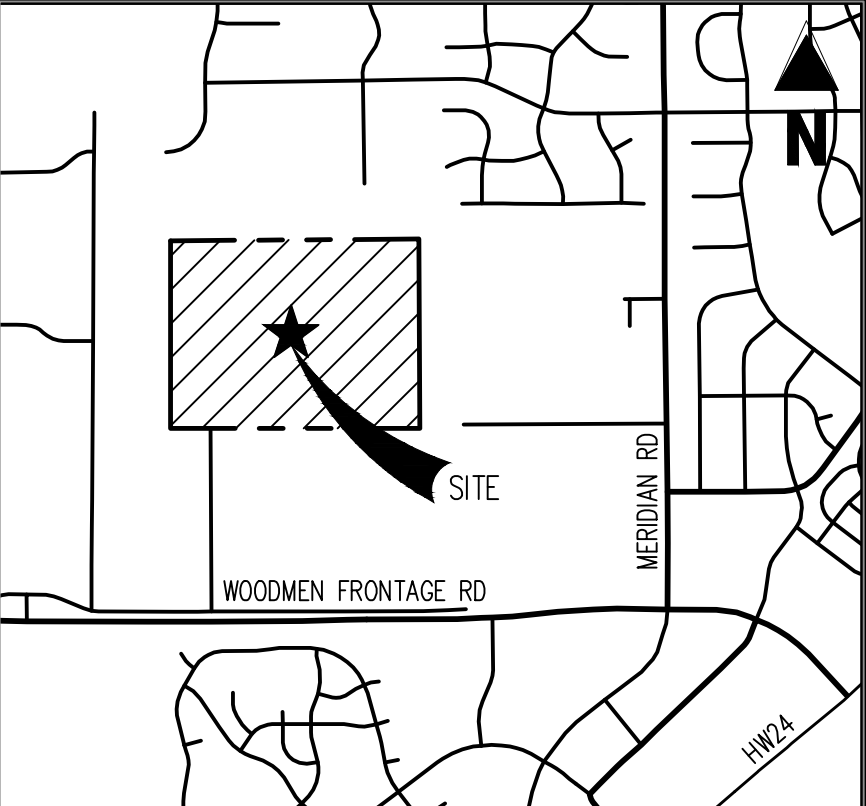
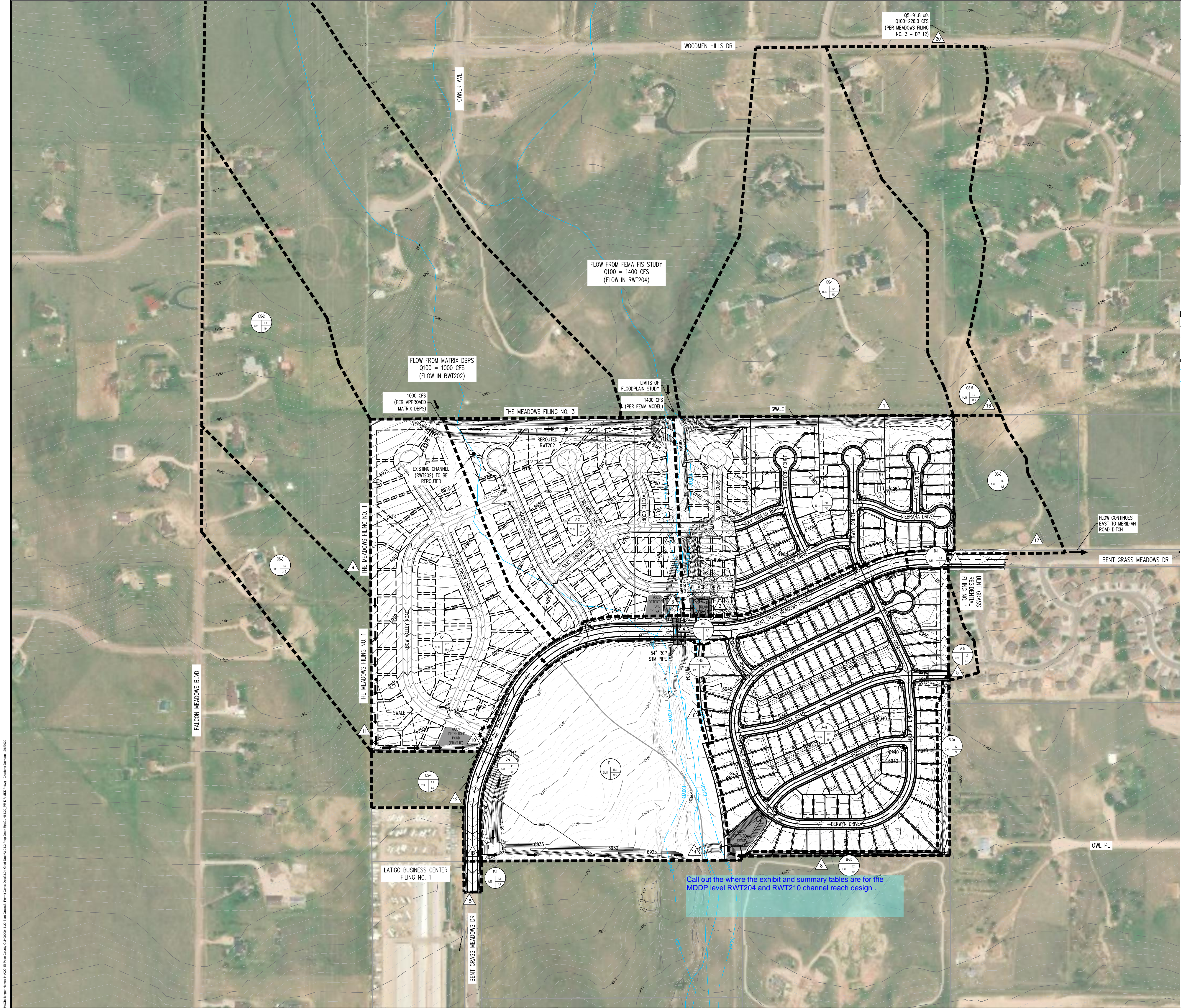
## **APPENDIX E**

### **Drainage Maps**









**RUNOFF SUMMARY TABLE**

Basin ID	Qs (cfs)	Q100 (cfs)
A-1	29.5	70.3
A-2	25.6	61.2
A-3	6.7	15.7
A-4a	38.8	85.4
A-4b	0.8	1.8
A-5	1.6	3.6
B-1	1.0	2.1
B-2a	1.7	3.8
B-2b	0.9	2.1
C-1	23.2	58.0
C-2	4.1	9.0
D-1	33.8	74.3
E-1	1.0	1.8
OS-1	16.1	68.2
OS-2	9.3	43.4
OS-3	5.3	24.3
OS-4	0.9	6.0
OS-5	4.9	27.8
OS-6	8.8	19.3

**DESIGN POINT SUMMARY TABLE**

Design Point	Qs (cfs)	Q100 (cfs)
1	16.1	68.2
2	29.5	70.3
3	25.6	61.2
4	60.8	145.1
5	1.6	3.6
6	41.3	90.9
7	1.0	2.1
8	0.9	2.1
18	0.8	1.8
9	9.3	43.4
10	37.5	124.3
11	5.3	24.3
12	0.9	6.0
13	41.5	136.4
14	33.8	74.3
15	1.0	1.8
16	103.0	253.8
17	112.7	275.2
20	98.1	226.0

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**DRAINAGE PLAN**  
**BENT GRASS RESIDENTIAL FILING NO. 2**  
**FOR**  
**CHALLENGER COMMUNITIES, LLC**  
**BENT GRASS MEADOWS DRIVE & MERIDIAN ROAD**  
**FALCON, CO - EL PASO COUNTY**

#	Date	Issue / Description	Init.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Project No: CLH000014.20  
Drawn By: CMWJ  
Checked By: SMB  
Date: OCTOBER 2019

PROPOSED DRAINAGE MAP - MDDP